Dissertation

Disability and Self-Employment in Germany

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Siegen

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Christoph Metzler

Zusammenfassung auf Deutsch

Unternehmerinnen und Unternehmer sind so unterschiedlich wie ihre Firmen. Ihr Erfolg am Markt ist teilweise durch ihre Persönlichkeit und ihre demografischen Merkmale bestimmt. Ein individuelles Merkmal kann dabei eine „Behinderung“ sein – und auf dieses fokussiert sich die vorliegende kumulativen Dissertation. Die Rolle von Menschen mit Behinderung im Arbeitsleben hat durch das „Übereinkommen über die Rechte von Menschen mit Behinderungen“ in der gesellschaftlichen und politischen Diskussion an Bedeutung gewonnen. Daher ist das Thema hochrelevant, insbesondere vor dem Hintergrund eines selbstbestimmten Lebens mit der Möglichkeit zur Wahl der Erwerbsform: also entweder als abhängig Erwerbstätige zu arbeiten oder selbständig tätig zu werden in Form einer Unternehmensgründung.

Ein Einstieg ins Unternehmertum kann für Menschen mit Behinderung Vorteile bieten: Eine größere zeitliche Flexibilität, weniger Herausforderungen mit den Kolleginnen und Kollegen sowie auch ein Weg in den Arbeitsmarkt, wenn sich keine Alternativen ergeben. Die vorliegende Promotion analysiert die Situation von Unternehmerinnen und Unternehmern mit Behinderung in Deutschland anhand von zwei quantitativen Analysen und einer Analyse der vorhandenen Literatur zur Thematik. Die Merkmale „Behinderung“ im rechtlichen Sinne und „Gesundheit“ in der Eigenwahrnehmung von Unternehmerinnen und Unternehmern werden dabei gesondert und kombiniert betrachtet. Das ist wichtig, denn der spezifische Kontext, den Menschen mit Behinderung in Deutschland vorfinden, könnte sie in der Berufswahl beeinflussen. „Behinderung“ ist in dieser Hinsicht keinesfalls ein fester Begriff, sondern hat medizinische, rechtliche und soziologische Bedeutungen – Hintergründe, welche die zitierten Studien in der Arbeit aufzeigen. Sogenannte Nachteilsausgleiche, wie zusätzlicher Urlaub, ein erweiterter Kündigungsschutz oder kostenlose Hilfsmittel, können Menschen gewährt werden, wenn sie eine Anerkennung einer Behinderung in Deutschland beim Versorgungsamt beantragen. Der relevante Indikator für die Bewilligung ist der anerkannte Grad der Behinderung (GdB). Regressionsanalysen mit dem repräsentativen Mikrozensus Datensatz unter Berücksichtigung dieses GdB zeigen auf: In Deutschland hat eine

Behinderung einen signifikant negativen Einfluss auf die Chance eines Menschen selbstständig zu sein. Auf mögliche Gründe hierfür geht die Dissertation ein.

Das Alter der Individuen spielt in diesem Kontext eine wichtige Rolle. So ist zu unterscheiden zwischen Menschen, die bereits mit einer Behinderung geboren werden oder in jungen Jahren damit konfrontiert sind und solchen, die erst mit steigendem Alter von einer Behinderung betroffen werden. Viele junge Menschen mit Behinderung werden bereits während ihrer Schulzeit besonders gefördert und sind so nicht immer Teil des regulären Schulsystems. Dies kann starken Einfluss auf die weiteren Bildungswege und Erwerbswahl haben. Hingegen durchlaufen Individuen, die erst spät mit einer Behinderung konfrontiert werden, die regulären Bildungswege und üben oft bereits jahrelang auch ihren Beruf aus. Mit dem Alter steigt dann die Anzahl der Menschen mit Behinderung in einer Altersgruppe in Deutschland an und ihre Zusammensetzung verändert sich. Viele Fachkräfte oder Menschen mit Führungsfunktion mit Berufserfahrung erwerben eine Behinderung erst in diesem Status des Erwerbslebens. Dies lässt vermuten, dass dann eine Erwerbsentscheidung anders entschieden wird. Regressionsanalysen in der Arbeit zeigen (allerdings), dass in beiden betrachteten Altersgruppen (25 bis 44 Jahre und 45 bis 64 Jahre) eine Behinderung einen signifikant negativen Einfluss auf die Chance eines Menschen selbstständig zu sein hat. In vielen anderen Ländern sind Menschen mit Behinderung häufiger selbstständig als Menschen ohne Behinderung. Die Ergebnisse der Promotion zeigen jedoch: Deutschland ist hier eine Ausnahme.

Ein blinder Fleck der Analyse ist die Form der Behinderung, da nur wenige quantitative Daten für eine Unterscheidung des Einflusses verschiedener Formen vorhanden sind. Das Narrativ „psychische Behinderung und „Unternehmertum“ ist in den letzten Jahren vermehrt in der öffentlichen Berichterstattung gewesen, nicht zuletzt auf Grund des Selbstmordes einiger bekannter Unternehmer. Die zitierte Literatur zeigt wie schwierig das Phänomen „psychische Behinderung“ zu greifen ist. In einem Literaturreview werden Studien diskutiert, die auf der persönlichen aber auch der gesellschaftlichen Ebene sowohl Chancen als auch Barrieren für eine Person mit einer psychischen Behinderung aufzeigen Unternehmer bzw.

Unternehmerin zu werden. Ein Schwerpunkt wird dabei auf den deutschen Kontext gelegt und ein originäres Modell zur Berufswahl von Unternehmern mit psychischer Behinderung wird dargestellt. Das Ergebnis ist keinesfalls eindeutig und ein Zeichen dafür, dass weitere Forschung in diesem Bereich notwendig ist.

Das Merkmal „Gesundheit“ wird in Analysen manchmal als latente Variable zu Behinderung verwendet. In einer abschließenden multivariaten Analyse zeigt sich, dass der negative Einfluss des Merkmals „Behinderung“ auf die Wahrscheinlichkeit eines Individuums selbstständig zu sein konstant bleibt, wenn das Merkmal „Gesundheit“ zusätzlich in die Analyse miteinfließt. Gleichwohl wird die Eintrittswahrscheinlichkeit in das Unternehmertum vorrangig von dem Merkmal „Gesundheit“ bestimmt, die Austrittswahrscheinlichkeit wiederum von dem Merkmal „Behinderung“. Daraus folgt: In Deutschland sind beide Begriffe unterschiedlich auf ihre Auswirkung auf Unternehmerinnen und Unternehmer zu betrachten.

Die Arbeit schließt mit einer Zusammenfassung der Ergebnisse und allgemeinen Empfehlungen, welche weiteren Forschungslücken in Angriff genommen werden und welche Ableitungen für die Praxis getroffen werden können.

Abstract in English

Entrepreneurs are as unique as their businesses. The success of their entrepreneurial endeavors is partly determined by their personality and their demographics. A relevant demographic attribute in this retrospect can be a “disability” – and this is the topic of the cumulative dissertation at hand. The role of people with disabilities on the labor market has become more important in public and political discussion due to the Convention on the Rights of Persons with Disabilities. Hence, the topic has a high relevance in the sense of having a self-determined life with the freedom of choosing your own type of occupation: working either as a dependent professional or being self-employed and starting your own business. Entering entrepreneurship can be advantageous for people with disabilities: An increased flexibility concerning working hours, less trouble with team members and especially a possibility to join and stay active on the labor market, if there are no other alternatives available. The dissertation at hand is an analysis about entrepreneurs with disability in Germany. The included papers consist of two quantitative analyses and one analysis of current related literature. The attributes “disability” in terms of the German law and “health” in terms of self-assessment of individuals are used in the analysis on their own as well as combined. This is important, as the specific context, which people with disabilities are facing in Germany, might influence them in their vocational choice. In this regard, “Disability” is not a fixed term, but can be interpreted from a medical, social and legal point of view – interpretations that can be found in the cited studies of the dissertation. The federal state may grant affirmative action for people with disabilities, e.g. additional paid leave, extended job protection or free disability aids, for individuals, who apply for an official status as an recognized disabled individual, which is admitted by the pension office. The relevant indicator is the recognized degree of disability. Regression analyses, including the degree of disability as an independent variable of interest, using the representative Mikrozensus dataset illustrate: In Germany a disability indicates a significant negative influence on the chance of an individual of being self-employed.

The age of individuals plays a vital part in this regard. With an increasing age the number of people with a disability within an age groups rises and the distribution of the people with disability changes. Many skilled workers attain a disability later in life.

One must differ between individuals, who were either already born with a disability or attained the status within their youth and individuals, who were affected by a disability in later years. Many young people with disabilities received additional support during their schooling time and were not necessarily part of the regular school system. This start in their education can have a decisive influence on their further educational career and their occupational choice. On the contrary, individuals who were affected by a disability later in life did pursue a regular educational career and often take up a profession. With rising age, the number of individuals with a disability within an age group in Germany rises and the in-group distribution changes. Many skilled workers or managers with vocational experience acquire a disability not until this state of their occupational career. This circumstance might indicate that their occupation choice changes in that case. Nonetheless, regression analyses within in the dissertation show that in both regarded age groups (25 to 44 years and 45 to 64 years) a disability has a negative significant influence on the chance of an individual on being self-employed. In many states people with disabilities have a higher self-employment rate than people without disabilities. The results of the dissertation show: Germany is an exception.

A blind spot of the analysis is the type of disability, as few quantitative data is available. The narrative “mental disability” and “entrepreneurship” has been an increasing topic in recent years in media coverage, not least due to the suicide of some prominent entrepreneurs. The cited literature illustrates how difficult and fickle the phenomena of “mental disability” is. A literature review discusses studies, that describe chances but also barriers for people with a mental disability to join entrepreneurship. The studies are clustered on an individual and a societal level and the focus is set on the German context. An original model concerning the occupational choice of mentally disabled entrepreneurs is provided. The result is not clear but ambiguous and a sign, that more research is needed.

The attribute “health“ is sometimes used as a latent variable for “disability”. A final multivariate analysis demonstrates that the negative influence of the attribute “disability” on the likelihood of an individual being self-employed stays constant, if the variable “health” is included as an additional independent variable. On the other hand, the likelihood of entering entrepreneurship is mainly determined by “health”, while the likelihood of leaving “entrepreneurship” is determined by “disability”. The results show that “disability” and “health” cannot be used synonymous but have their own effect on entrepreneurs in Germany.

The dissertation closes with a summary of the results and general recommendations for additional research and managerial options.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

Abs.	Absatz / paragraph
ADHD	Attention deficit hyperactivity disorder
BMI	Body Mass Index
e.g.	exempli gratia / for example
et al.	et alii, et alia, et aliae / and others
etc.	et cetera / and so forth
IFM	Institut für Mittelstandsforschung Bonn
i.e.	id est / that is to say
ILO	International Labor Organisation
INKAR	Indikatoren und Karten zur Raum- und Stadtentwicklung / Indicators and maps concerning the development of regions and towns
MBA	Master of Business Administration
p. / pp.	page / pages
PhD	philosophiae doctor / doctor of philosophy
SGB	Sozialgesetzbuch / social code
SHARE	Survey of Health, Ageing and Retirement in Europe
SME	small and medium-sized enterprises
SOEP	Socio-Econonomic Panel
STEM	Science, technology, engineering, mathematics

1. Introduction

Disabled entrepreneurs are neither a novelty in Germany nor worldwide. Margarete Steiff – as a prominent example - was a German entrepreneur famous for establishing the world known company "Margarete Steiff GmbH", which sells stuffed animals, including the German version of the teddy bear. She is also famous for having survived polio in her childhood and being unable to walk or adequately using her right hand in her adulthood. Training her left arm, she was able to implement an innovative idea of her own and create toy elephants out of sleaze. She died in 1909 (Gebhardt, 2018; Schriftleitung des „Aufstiegs", 1964).

But in regard to the general entrepreneurship literature entrepreneurs with disabilities are rarely mentioned and discussed (Kašperová & Kitching, 2014). So, the question at hand is: What is the situation of contemporary disabled individuals in entrepreneurship? Research on the effect of health in general and disability in specific on the occupational choice of individuals concerning entrepreneurship has been sparse in the past (Cooney, 2008; Jones & Latreille, 2011; Parker Harris, Caldwell & Renko, 2014; Simoes, Crespo & Moreira, 2015; Tihic, 2019; Torrès & Thurik, 2019). This thesis describes the connection between entrepreneurial activity and disability in Germany. The following research questions shall be examined in particular:

Are disabled individuals in Germany more or less active in entrepreneurship than their non-disabled peers?

What specific German context factors could influence them in their occupational choice?

What individual health factors could influence them in their occupational choice?

Are the effects of disability and health status on entrepreneurship similar or different?

Disability itself is a concept that potentially influences an individual directly by altering his or her abilities (e.g. due to enhanced creativity (Freeman, Johnson,

Staudenmaier, Zisser & Andresen, 2018)) and / or attitudes (e.g. having to balance their working schedule in respect to the needs of his or her disability (Doyel, 2002; Pagán, 2009)). Disability might also alter the context in which an individual operates, e.g. having access to affirmative action (FMLS, 2018; FMLS, 2019) or facing disadvantages like stigma (Angermeyer, Matschinger & Schomerus, 2013) due to negative characteristics society associates with disability. The combination of these individual factors might hence change the utility function of an individual, e.g. his or her likelihood of entering, staying in or leaving entrepreneurship. Following this line of thought, Renko, Parker Harris and Caldwell (2015) argue that the disability status is a relevant context factor for the success and failure of start-ups and might be an important factor in the occupational choice to become an entrepreneur as well.

Disabled individuals are part of a larger group of marginalized individuals that often are associated with enhanced barriers to enter and fewer chances to sustain entrepreneurship (OECD, 2014; OECD & European Union, 2017). As individuals have varying needs and abilities the opportunities, they might be able to pursue in entrepreneurship, differ (Stevenson & Jarillo, 1990). Demographic differences might alter the chances of an entrepreneur in terms of context and assets and thereby change the likelihood in succeeding in his or her business venture (Bird, 1993). Analyzing the situation of a specific group of individuals could consequently help to create policies that foster entrepreneurial activities and could further help to extend entrepreneurial careers.

The papers of this cumulated PhD thesis focus on being a disabled entrepreneur in a specific country: Germany. Welter (2011, p. 165) states that "context is important for understanding when, how, and why entrepreneurship happens and who becomes involved". Carsrud & Brännback (2011) identify the influence of context on entrepreneurial motivation as a worthwhile topic for future research. Concerning the case of female entrepreneurs, Welter, Baker and Wirsching (2019) argue that recent studies have shown that context is directed in a way that hindrances the female gender and that the outcomes of being female vary across multiple variables. The results of the research in this dissertation aim to provide a comprehensive look at the situation of disabled entrepreneurs in Germany, but also at the influence that

the specific German context provides for disabled individuals in becoming or not becoming entrepreneurs.

1.1 Research contribution and motivation

Illustrating the relationship between disability and entrepreneurship in Germany enhances current discussions in this research field.

From a context perspective in entrepreneurial research (Welter, 2011, pp. 167-168) the relationship is determined by the question "where?" in the sense that the regarded issue takes in place in one country: Germany. The question "who?" offers information on who is influenced by the studied context: The disabled in general and the disabled entrepreneurs in specific. "When?" can also be used as a secondary question: In recent times, after the unification of Germany. "Disability status" in Germany is associated with rules and laws (FMLS, 2018, FMLS, 2019) that constitute "formal constraints" of human behaviour (North, 1994, p. 360). One focus of this dissertation lies therefore on institutions as a sub-part of the question "when?" since institutional settings change over time (Welter, 2011, pp. 167-168).

In this line of research, the dissertation tries to determine the influence of "regulative systems and policies on entrepreneurial intentions" (Fayolle & Liñán, 2014, pp. 664-665) of disabled individuals in Germany and on their survival as entrepreneurs. Institutions determine the "rules of the game" and influence the available benefits and costs related to a specific course of action (Boettke & Coyne, 2009, p. 141) like joining entrepreneurship versus becoming an employee or remaining in this status. Institutions do not merely constrain actions, but foster individuals to perform actions by providing incentives as well as adequate resources (Scott, 2014). Hayton, George and Zahra (2002, p. 46) remark that "economic and institutional contexts play a causal role in creating a climate for innovation and entrepreneurship". Taking all this together, it seems important to analyse the impact of institutional settings on the context of disability to understand its impact on entrepreneurship for this specific community.

Complementary to the construct "context" – disability is also a part of the health status of individuals. A negative health status in general (Shepherd & Patzelt, 2017) or a negative mental health status in specific (Torrès & Thurik, 2019; Wiklund,

Hatak, Patzelt & Shepherd, 2018) might be positively correlated with entrepreneurial entry. Studying the health status of entrepreneurs can provide information for improving entrepreneurial health (Shepherd & Patzelt, 2017) as entrepreneurial work itself has a potential dark side and might lower the health capital of an individual (Shepherd, 2019). This dissertation primarily looks at the context perspective and aims to illustrate what influences exist on the occupational choice of individuals. To avoid negligence, the analyses also include the individual´s health perspective to determine a) if both effects -disability and health- exist on their own and b) which connections are to be found and c) if these results might have an impact on the occupational decision to become or stay entrepreneurial.

The (self-)employment of disabled individuals is an important topic from a labour market perspective. Disabled individuals do enrich entrepreneurship. Miller & Le Breton-Miller (2017, p. 7.) postulate "that negative personal circumstances of … cognitive, and physical/ emotional nature" may foster individuals to become successful entrepreneurs as "entrepreneurship is often born of enduring life hardship" (Miller & Le Breton-Miller, 2017, p. 8.). According to the authors affected individuals must develop skills, to cope with their challenges, that might turn out helpful for entrepreneurial endeavours. Shepherd & Patzelt (2017) argue from a similar point of view and postulate that adapting to or overcoming a health problem advances the resilience of individuals. A personality trait helpful for entrepreneurship.

But, in contrast to these positive effects, only a smaller percentage of individuals with disability participate in the labour market compared to nondisabled individuals. This is true from a global (Jones, 2008), a European (Fundación ONCE & ILO Global Business and Disability Network, 2019), as well as a German perspective (Metzler & Werner, 2017). Even though in many countries - unlike Germany (Pagán, 2009) - disabled individuals are overrepresented in entrepreneurship from a relative perspective, the absolute numbers are very low (Freeman et al., 2018; Maritz & LaFerriere, 2016; Pagán, 2009; Renko et al., 2015) and thus they are categorized as part of "the missing entrepreneurs" (OECD & European Union; 2015, 2017, 2019).

The relationship between entrepreneurship and disabled individuals is also important from a human rights perspective. The International Labor Organisation of the United Nations stated in a declaration (International Labor Conference, 2019, p. 4) that the organisation wants to focus on "ensuring equal opportunities and treatment in the world of work for persons with disabilities". Five key objectives are described to foster "the inclusion of persons with disabilities in the future of work" (Fundación ONCE & ILO Global Business and Disability Network, 2019, p. 6). The authors for example recommend that public authorities should "invest in and encourage education and training of persons with disabilities with a special focus on … entrepreneurship training" (Fundación ONCE & ILO Global Business and Disability Network, 2019, p. 32). This strategy builds on the ideas of the United Nations Convention on the Rights of Persons with Disabilities (UN General Assembly, 2006). Article 27 of the Convention (UN General Assembly, 2006, pp. 19-20) calls for action that the "states parties shall safeguard and promote the realization of the right to work … by taking appropriate steps, including through legislation, to, inter alia: …

f) Promote opportunities for self-employment, entrepreneurship, the development of cooperatives and starting one's own business".

Recent administrative approaches further underline the importance of the topic: In 2010, the European Union created a disability strategy that aims to reduce barriers in society and further participation in employment for people with disabilities (Halabisky, 2014). Within this strategy the commission also wanted to "address the issue of self-employment" (European Commission 2010, p. 7).

1.2 Structure of the dissertation

Three research themes shall be addressed in the included studies:

The first paper analyses the influence of the status of being disabled on the likelihood of being an entrepreneur in Germany using the representative Mikrozensus dataset. The quantitative logistic regression analyses distinguish between several grades of disability and two age groups. The influence of being disabled on the likelihood of being an entrepreneur stays constantly significantly

negative and cannot be explained by different characteristics within the regarded groups, nor by a sample bias. These results contrast with another European study by Pagán (2009) and could be caused by the specific German context of labor benefits for the disabled.

The second paper illustrates current literature on the connection between being mentally disabled and being an entrepreneur. Several existing narratives are presented and discussed, e.g. the positive connection between mental disability and entrepreneurship due to individual creativity and a negative connection of mental disability being caused by the hardship of entrepreneurship. The regarded papers are clustered based on incentives for and barriers for being an entrepreneur as a mentally ill or disabled person. A further distinction between influences within an individual and influences created by society is made in the categorization of the papers. The results show ambiguity and no clear dominance of a specific narrative.

The third and last paper looks at changes in the status of being an entrepreneur. Using the Socio-Economic Panel dataset transitions to and from self-employment are regarded. In addition of disability the dataset allows the inclusion of the factor health. In the time span from 1994 to 2016 disability had a negative significant effect on staying in entrepreneurship. A positive health on the other hand significantly increases the chance of transitioning into entrepreneurship. The negative effects of disability status on being self-employed found in the first paper stay consistent, while a negative health status also has a significant diminishing effect.

To further illustrate the underlying context, an opening chapter will provide a short overview of current research illustrating the entrepreneurial context in Germany. Supplementary, research on the terms of “disability” and “health” and finally context based prior research analyzing the connection between disability and entrepreneurship shall be discussed.

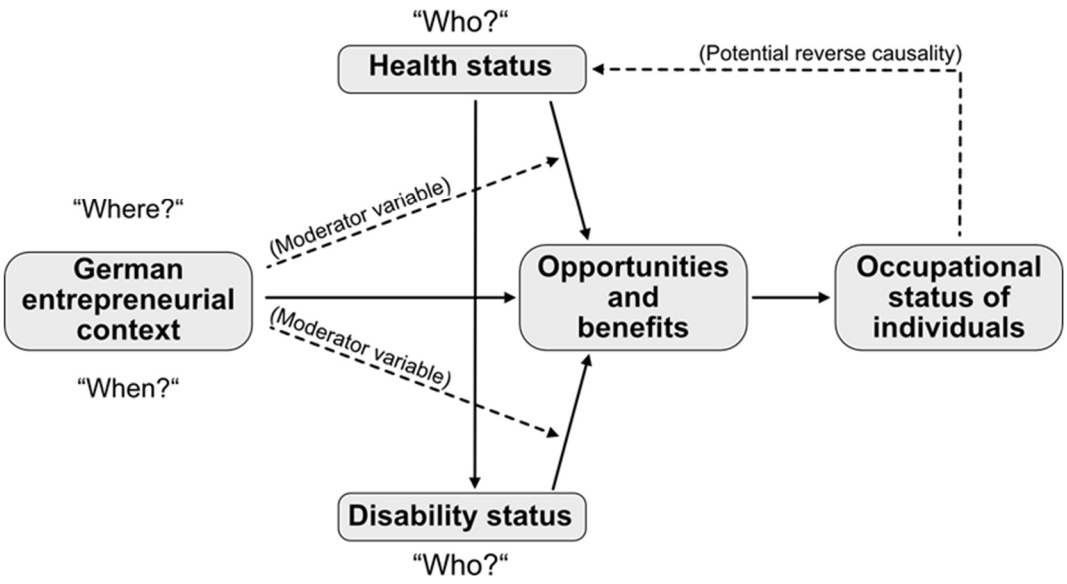
As Welter and Lasch (2008, p. 242) remark “context matters not only for entrepreneurship as such, because it is influenced by culture, political, and economic environments, thus explaining cross-national differences in themes and

topics, but context also matters for the institutionalization of entrepreneurship research and research communities". Schmude, Welter and Heuman (2008) note that entrepreneurial research in Germany has been a topic in a variety of disciplines. The included papers in this dissertation are majorly based on theoretical concepts found in economics like "human capital" (Becker, 1962) or "entrepreneurship in context" (Welter, 2011). The approach used links those concepts, especially in the second paper, to concepts discussed in disability studies, like the social model of disability (Oliver 1990, 1996). Following Goodley (2011, p.32) "disability studies continue to develop theoretically in ways that can and should encompass the ambitions of all disabled people". Therefore, connecting specific concepts of disability studies to entrepreneurship is valid and a chance to meet the requirements of describing the challenges and chance of disabled individuals within a specific context that is not merely influenced by economics.

Wrapping up this conceptual discussion, the PhD thesis is based on a model incorporating all the mentioned aspects and relations. Figure 1 shows the assumed interdependencies between those concepts.

Figure 1: Modell of regarded (potential) interdependencies

Influence of the key elements "German entrepreneurial context", "Disability status" and "Health status" on occupational status



The model includes the context questions raised by Welter (2011). The arrows differ in their representation. E.g., a direct effect on the health status of an individual concerning his or her disability status based on German social law is proposed (FMLS, 2018, 2019). An indirect effect takes place when the German entrepreneurial context, in the sense of support measures available for disabled entrepreneurs (Einfach Teilhaben, 2019), which might influence the opportunities and benefits to be found for disabled individuals on the labour market. All the interdependencies are regarded as one sided, in the sense that one concept influences the other, but is not influenced in return. An exception is the potential reverse causality of entrepreneurial activity on health status, e.g. due to enhanced stress (Witters, Agrawal and Brown, 2012), which is partly analysed in the second paper. The model will be taken up again in the following chapters to comment and elaborate on its different aspects for each included paper in this PhD thesis.

Table 1: Studies included in this dissertation

Title:	Authors:	Methodology:	Research topic:	Presentations and submissions:
The missing entrepreneurs: Disabled People and Entrepreneurship	Metzler, Christoph, Moog, Petra, Audretsch, David	Quantitative analyses using the Mikrozensus waves of 2009 and 2013	The effect of disability on the likelihood of being an entrepreneur in Germany, considering vocational qualifications and personal characteristics as control variables	Earlier version presented at: "Economic, Technological and Societal Impacts of Entrepreneurial Ecosystems, 2017, University Augsburg, Germany", among others In submission process
Entrepreneurship and mental illness: a multi-layered relationship	Metzler, Christoph	Conceptual literature review of qualitative and quantitative studies with a focus on Germany	The possible distinctive role of mentally disabled individuals in entrepreneurship, including the challenge to differ cause and consequence	Earlier version presented at: "Fünftes Forum Mittelstandsforschung, 2017, Vienna University of Economics and Business, Austria"
The influence of disability and health self-perception on entering and leaving self-employment	Metzler, Christoph, Petra Moog	Quantitative analysis using the Socio-Economic Panel waves from 1994 to 2016	The effect of health and disability on the likelihood of joining or leaving entrepreneurship in Germany, considering personal characteristics and personality traits as control variables	Earlier version presented at: "Personnel, Innovation, and Education Economists Network Meeting, 2017, University Wuppertal, Germany" Proposal accepted by "Research in Human Resource Management"

2. Theoretical framework

This chapter illustrates the theoretical concepts behind “German entrepreneurial context”, “health” and “disability” by referring to and debating relevant studies. In a fourth sub-chapter prior studies on a possibility connection of disability and opportunity and benefits on the labour market in general and entrepreneurship are stated and discussed.

2.1 Entrepreneurship and self-employment

Entrepreneurship can be defined as a “process by which individuals pursue opportunities … without regard to the resources they currently control” (Stevenson, Roberts & Grousbeck, 1989 (as cited in Stevenson & Jarillo, 1990, p. 23)). Schumpeter (1947, p. 147) describes two abilities as necessary for entrepreneurial capacity: First, being able “to perceive new opportunities that cannot be proved at the moment at which action has to be taken” and second, possessing “will power adequate to break down the resistance that the social environment offers to change”.

Economists studying occupational choice have used the terms “self-employment” and “entrepreneurship” as mere synonyms to illustrate a binary distinction between “dependent work” and “non-dependent work” (Parker, 2004). Bradley and Roberts (2004, p. 38) even postulate that “self-employment and entrepreneurship are linked in the popular imagination”. This PhD thesis follows Parker´s (2004, p. 5, p. 68) approach of using the term “entrepreneurship” “at the conceptional level” and a suitable measure of entrepreneurial activity at a level of describing quantitative analysis. The analysed datasets Mikrozensus (Suprinovič & Norkina, 2015) and Socio-Economic Panel (TNS Infratest Sozialforschung, 2015) with German data are designed to specifically measure this concept in the respective questions as self-employment. This state endorses Katz (1990) argument that representative data on self-employment is easily available and the preferable approach for quantitative analysis on entrepreneurship.

As decisive differences determine the choice of analysis (Welter, Baker, Audretsch, & Gartner, 2017), in the case of Germany self-employment as a subfield of entrepreneurship is also a justifiable position in terms of content. Being self-employed and able to maintain your own livelihood is a precondition for being an entrepreneur of the Mittelstand, the predominant German model of entrepreneurship (Welter, May-Strobl, Wolter & Günterberg, 2015). The Mittelstand segment, small and medium companies that in the past were run and owned by the same family for generations, is a characteristic quality and a backbone of the German economy (Berghoff, 2006). The special situation of the self-employed in Germany is also defined in the German social code book four, as they are majorly not included in the social security systems (Welter et al., 2015). Therefore, the decisions of the self-employed do not only create risk in their business life but the consequences of those decisions might also affect their future private life. Taking risk is a typical sign of entrepreneurship (Berthold & Neumann, 2008).

This approach does not deny that entrepreneurship for disabled individuals might take different forms in other contexts, as entrepreneurship can take many shapes (Welter, Baker, Audretsch, & Gartner, 2017).

In Germany entrepreneurs are facing the consequences of a social market model in their pursuit of opportunities. In this model trade unions and employer associations are trying to find a balance within structures partly independent of and partly supervised by the German democratically elected government. These structures have created a high standard of living, an economic upswing since the end of the Second World war (Audretsch, 2000) and helped Germany to overcome the economic crisis in 2008 (Lesch, Vogel & Hellmich, 2017). Firms in Germany are "a matter of public interest" (Streeck, 1997, p. 241). Employment protection in Germany is extensive and includes various measures, like maternity leave or working time arrangements, that aim to protect the health of employees (Neumann & Schaper, 2008). The social market economy tries to enable all members of a society to properly participate based on their individual skills and not on their personal background (Raddatz, 2012). Everyone has an incentive to achieve the

highest possible (vocational) education fitting his or her interests and abilities (Mertins, 2013).

The amount of entrepreneurial research in Germany has increased since the late 1980s (Audretsch, 2000) or respectively the late 1990s (Schmude et al., 2008), although in Audretsch (2000) opinion this increase in Germany is not unique compared to other developed countries. There is no synonym for entrepreneurship to be found in the German language and the amount of existing definitions is astonishing (Fallgatter, 2004). Concerning the importance of entrepreneurship in Germany a brief insight in the current situation will be given:

In Germany in 2017 over 3.5 million companies - about 99.5 percent of all companies- were small and medium-sized enterprises (SME) (IFM, 2019). SME in Germany are highly productive. Based on data of the European Commission Röhl (2017) calculates that SME in Germany employed the most professionals and contributed the most gross value added across the European Union in 2015. These results are despite the fact that in Germany only 2.7 SME existed in 2015 per 100 inhabitants, the second smallest figure across the European Union. Audretsch & Lehmann (2015) conclude that the German SME sector is not unique in terms of quantity but in terms of quality measures like the long-term perspective and employers having “deep ties with their employees” (Audretsch & Lehmann, 2015, p. 45).

The percentage of individuals either in process of starting a business or having started a business in the last 3,5 years in Germany is very small and statistically lower than in many other comparable countries with high income. This situation has stayed constant for nearly a decade. Germany has also a very low ratio of nascent entrepreneurs. Males are more likely to be founders than females (Sternberg, Wallisch, Gorynia-Pfeffer, Bloh & Baharian, 2019). The strong tradition of vocational education in Germany as an alternative to academic studies (Blöchle et al., 2016) significantly contributes to the number of entrepreneurs (Fritsch, Kritikos & Rusokova, 2012; Abel-Koch, 2015). Only 29 percent of all Germans would prefer to be self-employed, compared to 65 percent who would

prefer to be an employee. While the situation in a majority of European countries is also favourable to be an employee, the German result regarding entrepreneurship is below the European average of 37 percent (European Commission, 2012). One reason for this attitude might be a discouraging school system. Fuchs, Werner and Wallau (2008) compared the entrepreneurial intentions of pupils from Germany and Sweden and found over time a rising tendency towards entrepreneurship in Sweden but a declining tendency in Germany. One possible explanation: Business education by practical training (e.g. internships) is more common in Sweden than in Germany. Regarding individual motivations, Metzger (2015) studied latent entrepreneurs in Germany concerning reasons not to start a business. The results of his survey refer to the financial risk of entrepreneurship, the loss of benefits, like a secure income, related to being employed and the lack of a business plan as the three main reasons that hindered latent entrepreneurs from fulfilling their ambition. Caliendo & Kritikos (2019) studied a data sample of unemployed individuals, who became self-employed between 2003 and 2006 in Germany. The authors found that the studied individuals primarily wanted to end unemployment, but also stated that they already got their first client or stated that they constantly had the desire to be their own boss. Therefore, even for prior unemployed individuals "pull-motives" play an important role in Germany. In a representative survey of the German population, the relative number of founders stating that they wanted to profit from a business idea as their prime motive for starting a business has risen sharply between 2008 and 2017, while the motivation of having no better alternative has declined (Metzger, 2018).

In these studies, disability is rarely mentioned nor involved as an independent variable in multivariate analyses, so it becomes clear in this respect, that the situation of the individual group of disabled in Germany as entrepreneurs should be more closely analysed. However, there is one vital field in which disability is considered as a decisive factor and that is support measures for entrepreneurship. Nascent entrepreneurs have access to a variety of support programmes, e.g. financial support, by the state, the counties and the European Union. There are also support measures for currently unemployed individuals. Further, the state has built websites, which offer free information on the process of starting a business

(Wissenschaftliche Dienste Deutscher Bundestag, 2016a). (Severely) Disabled individuals aiming to enter self-employment can get further assistance by the institution of the "Integrationsamt" in the form of loans under certain conditions, e.g. having the correct prerequisites on an personal as well as on a professional level and being able to secure their personal life based on earnings of the new occupation as entrepreneur in the future (Einfach Teilhaben, 2019).

2.2 Disability

Taken the former discussion, data, and explanations into consideration, it becomes obvious, that disability in the context of entrepreneurship, occupational choice and institutional setting has been a sparsely studied subject and more research should be undertaken. To provide reliable insights and results, it is necessary to understand what is meant by talking about disability. This sub-chapter is dealing with this issue. While there are a variety of models defining the concept of disability (Goodley, 2011; Mitra, 2006; Retief & Letšosa, 2018), three models shall be discussed in detail as they are important for the presented studies.

The medical model of disability is centered on the individual and his or her pathology. Its´ basic reasoning is to ideally overcome those symptoms due to medical treatment (Marks, 1996). A disability is therefore a personal challenge, in which medical experts can assist and offer solutions (Beaudry, 2016).

The social model of disability differs from this. Advocates (e.g. Oliver 1990, 1996; Barnes & Mercer, 2005; Marks, 1996; Siminski, 2003) criticize the medical model for being solely focused on the individual and his or her functional limitations. They advocate for an analysis of societal structures that might create barriers for individuals in everyday life. The medical condition is in this line of thought called impairment. A disability is seen as the result of the interexchange process of societal (un)intentional neglection and individual impairment (Wassermann, Asch, Bluestein & Putnam, 2016). Beaudry (2016) assesses that some advocates of the social model neglect the role of individual suffering and focus on collective oppression. Oliver (1996) notes that doctors still are important for treating or

stabilizing the illnesses of the disabled, but they are not able to treat the social status of the individuals.

Silvers (2003) proposes a neutral position and argues that both perspectives are important. It might be adequate to assist individuals medically so they might be able to operate within existing societal structures, as it might be adequate to rethink societal structures so they might fit individual needs.

Considering this dissertation is examining the German situation, there is a third perspective to be considered, as definitions what constitutes a "disability" are also culturally specific (Kitching, 2014). Specifying the situation in a single country is important, as the assessment of disability is to some point based on the performance of an individual. The performance a society typically expects from an individual and therefore assumes as normal has changed dramatically over time and still differs across different societies nowadays (Haveman & Wolfe, 2000). The German social law in SGB IX is based on a disability model that enables individuals with certain features to gain access to benefits. This model has changed in the time of writing this thesis. The former model focused on the specific conditions of the individual that were different from the norm of the respective age and therefore hindered him or her from participating in daily life (Niehues & Bauer, 2013). The new model established in 2018 focuses on the interdependence of individual impairments and barriers found in the attitude of third individuals as well as the environment. A disability is the effect of this relationship on the equal participation of affected individuals in daily life (BAR, 2018). While both models contain elements of the medical and the social model, the former orientation leans towards the medical model, while the current one leans towards the social model. The datasets used in the analyses are exclusively from the period of the former disability term, due to reasons of uniformity but also due to availability at the time of writing. Many sources cited in this dissertation also use the former term, as in official labor statistics the statement of "being severely disabled" is often the sole information about disability (Niehaus & Bauer, 2013).

Individuals in Germany, who wish to have a federally recognized disability, have to make a motion to their local pension office. The medical assessment should be supported by the evaluation of health professionals. Successful applicants are issued a degree of disability ranging from 20 to 100 that is based on the extent of limitations of an individual. Based on the degree of disability individuals are qualified to receive benefits to assist them in different areas of their lives, including their jobs. The available compensations increase with the grade of disability. Individuals with a grade of disability of 50 are called severely disabled. At this grade, many job-related benefits, like greater job protection, additional paid leave as well as the possibility to be exempted from excess work, also become available. The available job-related benefits did by the majority not change applying the new model (FMLS, 2018, FMLS, 2019).

Kitching (2014) advises caution regarding the term "disability" as a mere dichotomous distinction, as individuals might change from one status to the other. Further, negative health consequences may alter over time and individuals might experience periods of sound health (Boyd, 2012). Indeed, in Germany the certification of being disabled is issued temporarily as a rule, unless the underlying medical conditions make it unlikely that any change will happen (FMLS, 2018). Concerning labor market participation, disabled individuals are still influenced by demographic and educational characteristics (Metzler & Werner, 2017). Additionally, for the British Labor Market, a negative effect on employment concerning the duration of being disabled exists (Jenkins & Rigg, 2004).

Disabled individuals in Germany face discrimination. In 2016, a representative survey of the German population over 14 years, showed that 7,9 percent of all interviewed persons did face discrimination in the last 24 months due to their disability or impairment (Beigang, Fetz, Foroutan, Kalkum & Otto, 2016). Results of a survey of 517 individuals with disabilities or chronic diseases offer the insight that 51 percent of them faced discrimination in the past. 60 percent of those affected did experience discrimination in the working place (Aktion Mensch, 2019). Schur (2003) notes that work-based discrimination can have negatives consequences on existing health problems. Negative attitudes concerning people with a mental illness

or disability have stayed consistent despite campaigns by different organisations (Angermeyer et al., 2013; Schomerus, Matschinger & Angermeyer, 2006).

To conclude this discussion on the term disability, the third definition, based on the German social law, is used in this PhD thesis. This definition allows to measure the absolute and relative numbers of disabled in Germany as well as the grade of disability. Therefore, the potential German specific effects of labor law for disabled employees versus disabled self-employed can be examined.

2.3 Health

Health is part of the human capital – the resources an individual embodies (Becker, 1962). Individuals start with a stock of health and can reinvest in it, e.g. by medical care or upholding a diet. When people turn to become older, health capital is a diminishing feature. Humans prefer to be healthy. Health further reduces the unproductive days lost due to sickness (Grossman, 1972). Investments in health and investments in other forms of human capital, like education, are not substitutes but complements (Becker, 2007). Social capital is positively connected to individual health (Islam, Merlo, Kawachi, Lindström & Gerdtham, 2006). Consequently, health and health issues seem to play an important role concerning occupation, productivity and probably also in occupational choice. In this respect, the health of employees was for a long time a preferred research topic compared to the health of entrepreneurs. This has changed in recent years, although more research is needed (Torrès & Thurik, 2019), e.g. "little is known about the consequences of mental illness for entrepreneurs" (Hessels, Rietveld, Thurik & Van der Zwan, 2018, p. 323). Miller, Wiklund and Yu (2020) illustrate that mental health might also play a crucial part within family business and outline several research opportunities. Therefore, this PhD thesis is analyzing health issues in connection with the disability context to deliver new insights and contribute to this ongoing discussion.

Measuring health itself leads to ambiguous results. Basically, there are four approaches (for an alternative classification see Ziebarth (2010)). **First,** the usage of pathology to measure derivation from the norm. Stephan & Roesler (2010) use

various indicators to measure the health of entrepreneurs in Germany, including the occurrence of stress-induced physical diseases like ulcers and stress-induced mental diseases like affective disorders. The description of the diseased was based on medical guidelines. The study results indicate that entrepreneurs in Germany might indeed be healthier than employees. Freeman et al. (2018) use self-reported symptoms of mental diseases to differentiate between healthy and non-healthy entrepreneurs. Their results indicate that mental health issues are widespread among American entrepreneurs. The **second** definition concerns the use of objective indicators to indirectly measure health. E.g., Schultz (1997) uses the Body Mass Index (BMI) connecting health to the "nutritional status". The author states that this variable also influences the efficiency of a person and ranks it as part of human capital. Kalwij & Vermeulen (2008) demonstrate that grip strength, which according to the authors is an established health indicator in the medical sciences, is ceteris paribus positively associated with participation on the labor market. **Third** the use of indicators of self-perception of individuals. Haan & Myck (2009) use a dichotomous version of the self-assessed health scale of the SOEP to illustrate the connection between labor market risks and poor health in Germany. The authors demonstrate that the occurrence of one factor in a prior period increases the chance of the occurrence of the other factor in a later period. Hatak & Zhou (2019) exemplify with SOEP data that the self-assessed physic health of an individual, but also of his or her spouse, does indeed influence entrepreneurial success concerning annual income but also concerning life satisfaction. **Fourth** and last, there is also the critical view of health itself as a construct created by society. Szasz (1960) questioned the idea of mental illness itself and named it an umbrella term for individuals who have "problems in living" (Szasz., 1960, p. 114) in current society. Affected individuals might act different than the accepted norms within a society, but these actions are not necessarily caused by a disease of the brain. Following this line of thought, the societal norm of entrepreneurs as champions overcoming obstacles for a long term did not leave room for a narrative including vulnerabilities or agony (Torrès & Thurik, 2019). Based on this reflection of different definition approaches and the results of the short literature analysis this PhD thesis is dealing with health according to the concept of self-perception of individuals. This path is

chosen as this kind of definition allows to work with the representative quantitative data of the SOEP.

2.4 Disability and entrepreneurship

From a context perspective, linking disability to entrepreneurship is a recent phenomenon. Table 2 offers an overview of studies in different countries.

Table 2: Overview of studies linking national context, disability, and entrepreneurship

Author(s):	National context:	Research method:	Central results:	Connection to the papers in this dissertation:
Pagán, R. (2009)	Europe based on 13 countries	Quantitative analysis using European Community Household Panel (ECHP) for the period 1995 to 2001 using a self-assessed and context independent definition of disability.	In most of the regarded countries males and females with disabilities were more likely to be self-employed than their non-disabled peers. Germany is one of a few exceptions. The author offers no specific policy recommendation for Germany.	This dissertation uses a **context specific definition of disability** to reanalyze the German situation and establish policy recommendations.
Renko, M., Parker Harris, S., & Caldwell, K. (2015)	United States	Quantitative analysis using Panel Study of Entrepreneurial Dynamics II (PSED II)	Disabled nascent entrepreneurs are less likely to achieve the first sale and acquire external financing. Entrepreneurs with disabilities are less educated and further have less access to capital compared to entrepreneurs without disabilities.	This dissertation looks closer at the influence of (vocational) education on occupational choice and further on the influence of a disability **on staying in and leaving entrepreneurship**.
Maritz A., & LaFerriere, R. (2016)	Australia	Conceptual study illustrating the Australian definition of disability, coherent labor market statistics and policy recommendation. The study includes two case studies of disabled entrepreneurs.	The participation of disabled individuals in the Australian labor market is expandable. Self-employment could be a viable way to improve this situation. Certain initiatives could strengthen their path to entrepreneurship.	The authors call for research on the **factors that persuade disabled individuals to consider entrepreneurship**.
Bhuvaneswari, R., & Natarajan, P. (2016)	(South) India	Quantitative analysis of secondary data of the Indian Ministry of Social Justice & Empowerment for the period of 2011 and 2015	The paper offers information how many people with different disabilities live in different states of South India and how many disabled entrepreneurs received state sponsored funding.	The authors advocate for policies that not only inspire disabled individuals to join entrepreneurship but **help them realize their ambition** and **achieve success** as entrepreneurs.

Dhar, S., & Farzana, T. (2017)	Bangladesh	Qualitative interviews with forty disabled entrepreneurs and ten disability specialists in 2017	The authors (2017, p. 89) conclude that "desire to create an individual identity" is the main driver for disabled individuals in Bangladesh to join entrepreneurship and list several barriers, citing coherent cases of disabled entrepreneurs.	The authors state that no study so far has explored the **barriers individuals with disability face** while joining entrepreneurship in Bangladesh, the same holds true for Germany.
Győri, Z., Svastics, C., & Csillag, S. (2019)	Hungary	Qualitative interviews with ten disabled entrepreneurs	The authors identify patterns in the responses to cluster push- and pull-factors for entrepreneurship for people with disabilities in Hungary.	The authors found evidence that the **time of the onset of disability is relevant concerning entrepreneurial motivation**. Therefore, a multivariate analysis with different age groups, as done in this dissertation, could offer insights about the effect of age on occupational choice.
Martínez-León, I., Olmedo-Cifuente, I., & Nicolás-Martínez, C. (2019)	Spain	Qualitative interviews with fifteen individuals with a connection to disability and entrepreneurship	The authors find a mixture of majorly push-factors and some pull-factors for entrepreneurship among their interviewed. An ambiguous role is fulfilled by the disability pensions, as access to it would likely incent past of the disabled to stay out of the labor market.	The authors state that **monetary support as an incentive** offered by the state could influence the occupational choice of disabled individuals. In Germany affirmative action exists that might persuade disabled individuals to avoid self-employment.

To wrap this section up, there is currently various research available concerning disability and entrepreneurship in different countries with varying results. None of the cited papers specifically highlight the situation in Germany. As this dissertation looks at the opportunities and benefits, influenced by "disability status" and "health status", that an individual might come across on the labor market (Figure 1), further subfields of related research shall be discussed that are mentioned in the cited studies as factors influencing the occupational choice of disabled individuals. First, barriers and support systems that might influence the transition from being (un)employed to being an entrepreneur. Second, benefits for disabled individuals gained through and potential success found in entrepreneurship that could influence the transition to entrepreneurship as well as the likelihood of staying an entrepreneur.

Barriers to entrepreneurship for disabled individuals

Disabled individuals do face other barriers to become an entrepreneur than their non-disabled peers. Renko et al. (2015) report that nascent disabled entrepreneurs not only have a lower income, but start-ups run by people with disabilities also are slightly less able to acquire external investment than start-ups run by people without a disability. Nascent disabled entrepreneurs also had a low amount of human capital in the form of education, although a higher education within the group did not lead to a higher likelihood of becoming an entrepreneur. Concerning the difficulty to gain external funding, Caldwell, Parker Harris & Renko (2016) cite a participant of their qualitive study

> I definitely feel that if I walk into a bank cold and I'm starting a business and I have a business plan and point out that I have a visual disability, I believe that they would need to see some success before they would maybe invest more or support my company. I've seen it several times and it's the same thing with potential customers (Caldwell et al., 2016, p. 222).

Therefore, while entrepreneurship might be a way to escape discrimination as an employee, discrimination against disabled individuals itself does not vanish in entrepreneurship (Caldwell et al., 2016).

Financial challenges are also mentioned by Boylan & Burchardt (2002), Parker Harris, Renko & Caldwell (2013), Martínez-León, Olmedo-Cifuente & Nicolás-Martínez (2019) and Uddin & Syed (2015). While deficits in funding might also affect other minority entrepreneurs, disabled entrepreneurs have the additional costs of assistive technology (Parker Harris et al., 2014). For the disabled assistive technology costs can be a substantial hindrance for entrepreneurship (Hedrick, Pape, Heinemann, Ruddell & Reis, 2006).

Maritz & LaFerriere (2016) state that disabled individuals might have deficits in their belief of becoming an entrepreneur and furthermore receive "limited support to engage in entrepreneurial endeavors from family and friends" (Maritz & LaFerriere, 2016, p. 51). A quantitative analysis of a small sample of 300 participants in India illustrates that disabled entrepreneurs are twice as often affected by a lack of confidence than non-disabled entrepreneurs (Uddin & Syed, 2015). The lower appreciation by others might led to situations in which disabled individuals do not get suitable opportunities "to build entrepreneurial self-efficacy through practice, such as internship, apprenticeship, job shadowing, or mentorship" (Caldwell et al., 2016, p. 227).

Some challenges might be specific for certain disabilities. Vaziri, Schreiber, Wieching & Wulf (2014) take the basic example of an entrepreneur being able to do his or her accounting. Physically disabled or blind entrepreneurs might not be able to use adequate software and require assistance from a qualified third person. Entrepreneurs with disabilities might also have to balance their desire to create income with their reliance on state-supported programs, like having access to healthcare, as these programs might impose limitations upon them (Caldwell et al., 2016).

Support systems for entrepreneurship for disabled individuals

Entrepreneurs with disabilities might use various support systems to face their individual challenges in their daily business life. Hsieh, Molina & Weng (2019) build their qualitive study on an analysis of individuals with physical impairments. Their participants stated inter alia the importance of their respective family, access to the internet and assistive technology as adaptive mechanisms. The authors clustered the found adapting mechanisms in a model. For example, a "supportive social network" might be one way to counter "social & attitudinal barriers" like discrimination (Hsieh et al., 2019, p. 14). Access to the internet might help disabled entrepreneurs "to overcome challenges related to communication and mobility" (Halabisky, 2014, p. 18). However, while the internet might prove useful, the quality of available entrepreneurial information must be taken with caution. Social media might prove to be advantageous for networking but can also be difficult to handle for disabled (social) entrepreneurs (Parker Harris et al., 2013).

Bagheri (2016) highlights the importance of social competencies that empowered the disabled entrepreneurs in her study to work with their clients and other entrepreneurs to solve their business challenges, e.g. by communicating adequate information to build new business opportunities. Doyel (2002, p. 123) mentions that, as a disabled entrepreneur, she established benefits in her own business, that include "medical, prescription drug, long-term disability, AD&D, and life insurance policies" that also helped her to cope with her own business life. Out of personal experience, she also adapted her recruitment policy. Entrepreneurs with disabilities might also assist the disability community in general and help nascent disabled entrepreneurs (Bagheri, 2016; Győri, Svastics & Csillag, 2019; Hagner & Davies, 2002). Parker Harris et al. (2013) emphasize the value of mentorship for disabled social entrepreneurs. The examples of disabled entrepreneurs, who overcame barriers as dynamic individuals, can provide "help in understanding and ascertaining the feasibility of a venture" for mentees (Parker Harris et al., 2013, p. 44).

Benefits of entrepreneurship for disabled individuals

Entrepreneurship might offer disabled persons certain benefits. A disability and the resulting health challenges might intermittently or permanently influence an individual by restricting his or her ability to do certain activities and/or work on a regular full-time schedule (Hernández & Pérez, 2019; Schur, 2003). Jones & Latreille (2011) suggest that self-employment might be a way for disabled individuals to adjust their working life to their disability by freely choosing the amount and kind of work. In a similar line of thought more flexible work schedules, a working environment accommodated to their individual needs and more freedom in choosing their own pace might be achievable benefits for disabled individuals successfully adapting to entrepreneurship (Cooney, 2008; Ostrow, Nemec & Smith, 2018; Pagán, 2009). Hagner & Davies (2002) also report that flexibility and autonomy were especially valued by their interviewed self-employed participants.

Pagán-Rodríguez (2011) proposes that self-employment enhances the job satisfaction of (older) disabled individuals through these paths. Doyel (2002) lists several potential advantages -like accurately fitting working opportunities- entrepreneurship might provide for disabled individuals. Looking back at her own entrepreneurial career she recounts how business decisions helped her to cope with her disability, while her disability also placed limitations on her and thereby influenced her business decisions. Boylan & Burchardt (2002) place a restriction on pull-factors for entrepreneurship like flexibility. In their experience those factors are less important for those disabled entrepreneurs with fewer education.

Aktion Psychisch Kranke e. V. (2004), Shaheen (2016) and Seyd, Wicher, Bischoff & Firle (2009) argue that entrepreneurship might be a vital alternative for individuals who have difficulties in dealing with their workmates. Shaheen (2016) further remarks that entrepreneurship might be a device to overcome the barriers public perception sets for individuals by attributing the term disability to an individual. Disabled individuals might build their self-image based on those restrictions. Entrepreneurship could empower them to live a life based on their actual abilities and not their perceived disabilities. Traditional benefits (Gilad &

Levine, 1986) of being an entrepreneur like “personal gain” (Győri et al., 2019, p. 358) or “the opportunity to do what they enjoyed” (Hagner & Davies, 2002, p. 71) can also be found among disabled entrepreneurs.

The effect of disability on entrepreneurial success

Freeman et al. (2018, p. 328) postulate that “many traits associated with entrepreneurial success are also features of diagnosable psychiatric disorders”. A quantitative analysis of an American sample by the authors illustrate that entrepreneurs are more likely to self-report mental illnesses and have family members with associated symptoms than a comparison group. The close family of mental ill individuals might also have specific attributes like “traits of social ease, confidence and assertiveness”, as Higier et al. (2014, p. 1196) demonstrate for twins.

The specific effect on entrepreneurship could partly depend on the form of mental illness and might also vary according to the entrepreneurial situation. Wiklund et al. (2018) address mental disability as a way to cope with entrepreneurial challenges. E.g., bipolar disorder is characterized by different phases: In the phase of hypomania (heightened activity) individuals would be able to endure enhanced work activities without being affected by stress. Kyaga et al. (2011) find higher amounts of people with bipolar disorder in creative occupations, hence this mental illness could also be linked to enhanced creativity. According to Yu, Wiklund & Pérez- Luño (2019), ADHD symptoms of hyperactivity and impulsivity have an indirect positive effect on the performance of an enterprise, as these symptoms help individuals to endorse risk and innovation. Lerner, Hunt & Verheul (2018) build on current literature to determine how ADHD may help or hinder during different phases of the entrepreneurial lifecycle. On the contrary, based on a quantitative study of a representative Australian sample, Hessels et al. (2018) depict a positive effect of depression on entrepreneurial exits. The authors postulate that depression could lead to a lower self-efficacy of affected entrepreneurs. The resulting decreased confidence in their abilities might make it challenging to continue working as an entrepreneur. Miller et al. (2020) postulate that a more severe mental

disease might make it harder for affected entrepreneurs to exploit possible advantages.

Integration of the concepts

While all four subfields are mentioned in various studies, few to no systemic approach exists to link these fields. On the contrary, a fragmentary view is preferred to highlight one aspect. The three papers in this cumulated PhD thesis link these four concepts in the following way:

The **first paper** highlights disability compensations (FMLS, 2018; 2019) provided by the state that might act as support systems for individuals to overcome existing barriers. Unfortunately, these compensations might also influence the relative benefits an individual might find in entrepreneurship compared to other professions (Segal, Borgia & Schoenfeld, 2005) and therefore change his or her occupational choice.

The **second paper** provides an overview of research on the incentives and barriers concerning mental illness as a factor of occupational choice. Support systems and benefits are summarized as incentives. Barriers -as well as the other aspects- are clustered on an individual and a societal level. The potential effect of mental illness on entrepreneurial success is regarded as an incentive as well as a barrier.

The **third paper** enhances the perspective of the first paper and highlights entrepreneurial success. Existing benefits (or lack thereof) might act as a factor concerning the transition of individuals into and out of self-employment.

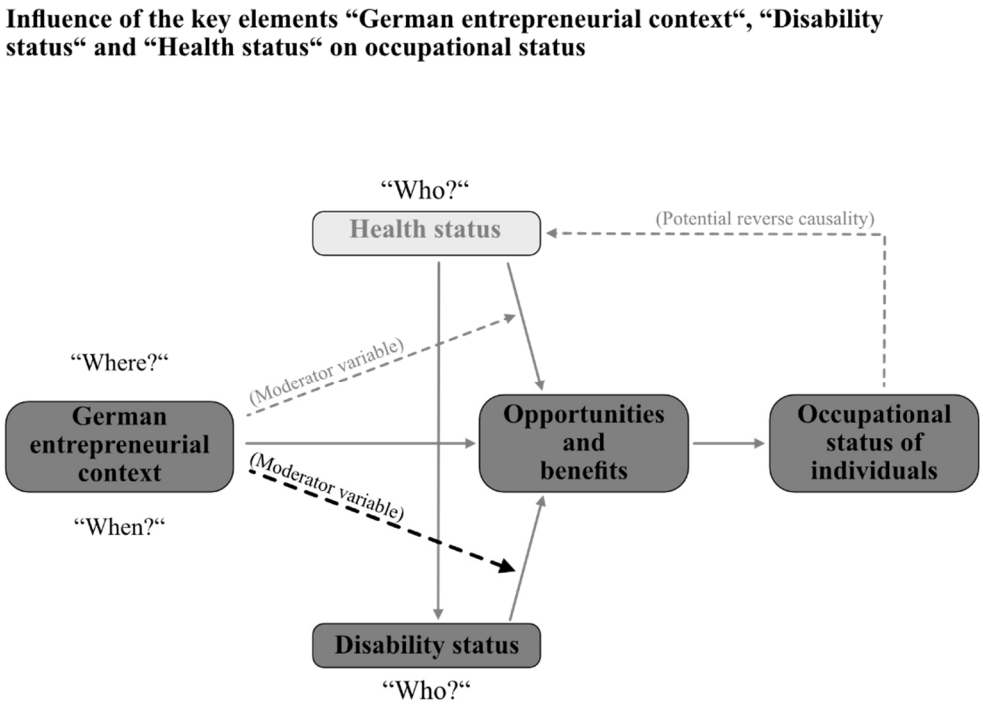
2.5 Summary and outlook

This chapter has given an insight into the theoretical background behind the terms "German entrepreneurial context", "disability" and "health". In a fourth subchapter current studies looking at the relation of entrepreneurship and disability in seven different national contexts were introduced. Further current studies focusing on four

important actors, that might influence the occupational choice of disabled individuals with respect to entrepreneurship, were briefly discussed.

In the next chapter, the first paper of this cumulated PhD thesis contains a quantitative approach to evaluate, if the "German national context" indeed has an significant influence on the likelihood of a disabled person to become self-employed by influencing his or her "opportunities and benefits" (Figure 2). In this first step, the potential influence of the "health status" of individuals on the "occupational status of individuals" is not considered.

Figure 2: Main regarded (potential) interdependencies of the first paper



Paper 1: The missing entrepreneurs: Disabled People and Entrepreneurship

Abstract:

A blatant anomaly is the paucity of entrepreneurs among the disabled in Germany. Virtually every other country exhibits a higher propensity for the disabled in self-employment, but not Germany. The purpose of this paper is to resolve this anomaly but positing that the specific context makes a difference. The model of occupational choice might be influenced by context, i.e. due to specific and unique compensations for people with disabilities in Germany that are not found in most other nations. However, too few studies are currently available about the involvement of disabled individuals in entrepreneurship literature, even though they account for 13 percent of the overall population (Statistisches Bundesamt, 2017). Thus, this paper seeks to shed light on disabled people in Germany by analysing their career choices, differentiated by age groups, the kind of disability and other personal characteristics. Using data from two waves of the Mikrozensus survey, individuals who are considered disabled by German authorities and have specific access to work related compensations are identified. The results of several regression models suggest that in all cases disabled individuals are less likely to become entrepreneurs than their non-disabled peers. An Oaxaca-Blinder decomposition is used to analyse the overall gap in the entrepreneurship rate of disabled and non-disabled people, indicating that for younger individuals this gap is even larger. All analyses show a singular effect that a disability might have on career choices of individuals in Germany due to non-observed context conditions like existing compensations.

3.1 Introduction

The overall rate of entrepreneurship with disabilities is in most countries higher than the average rate of entrepreneurship (Maritz & LaFerriere, 2016; Pagán, 2009; Renko et al., 2015). Comparing the entrepreneurial activities of people with and without disabilities, the extant research finds a systematic positive and statistically significant greater propensity for disabled individuals to become an entrepreneur. However, in Germany the noticeable entrepreneurship gap between disabled people and the remainder of the population disappears for both females and males (Pagán, 2009), which poses a striking anomaly.

Besides this anomaly for Germany regarding disabled individual entrepreneurship, the contribution of disabled entrepreneurs to the economy can be quite complex. Although just 16 percent "of the total working age population of the European Union" is categorized as disabled (Blackburn & Smallbone, 2014, p. 30), being an entrepreneur offers for the disabled founders as well as their employees a bridge for transitioning into the regular labour market (Callahan & Mank, 1998). This is because initial access to the (German) labour market for employment, as is the case in any developed country labour market, is highly correlated with certain demographics, such as educational (Lazear, 1998) or ethnic background (Beicht & Walden, 2015), gender (Beicht & Walden, 2014) or disability (Callahan & Mank, 1998). Facing barriers when entering the labour market and in maintaining a job as an employee, entrepreneurship has been interpreted as a last resort for individuals confronted with problems in participating in the regular labour market, i.e. immigrants or disabled people (OECD & European Union, 2017; Pagán-Rodríguez, 2011). Moreover, often firms run by disabled owners offer other disabled people jobs and disabled entrepreneurs can act as role models for others (Blanck, Sandler, Schmeling, & Schartz, 2000). They further offer specific and trusted services and products for disabled or specific customer groups (Kašperová, Kitching, & Blackburn, 2018). Moreover, the specific working conditions (e.g. flexible working hours, being able to work from home) offered by work situations in entrepreneurial firms might benefit people with disabilities by supporting their individual and societal challenges (Cooney, 2008; Doyel, 2002; Kitching, 2014). Thus, several

researchers in the literature of entrepreneurship have suggested to look deeper into different, individual contextual factors like gender, unemployment, migration, ethics, religion, age or minority status in general (OECD & European Union, 2017; Welter, 2011) but fairly neglected disability (OECD & European Union, 2017) which has led to a paucity of research and insights regarding the contextualization of entrepreneurship of disabled individuals (Parker Harris et al., 2014; Renko et al., 2015). This study will fill this key gap in the entrepreneurship literature. In particular, this paper disentangles the macro-level factors influencing the decision of disabled individuals to become entrepreneur along with the heterogeneous group of disabled individuals to look beyond a collective definition and identity to gain and provide insights on the micro-level context of those individuals.

In addition, this study builds on first results of Renko et al. (2015) as well as Pagán (2009) with the specific goal of enriching the literature through a contribution to develop a clearer picture of disability as a context factor. Thus, the unique contributions of this study are to a) differentiate the group of disabled people to better understand the effect of being disabled on linking the decision to become entrepreneur to age, education, grade and kind of disability, and b) control for the specific labour market set-up for this specific group in Germany which is unique and cannot be found in most of other countries, following the recommendations of Dhar and Farzana (2017), Renko et al. (2015) and Maritz and LaFerriere (2016). For example, most people become disabled during their life-time, so the rates of disabled people increase within age cohorts (Statistisches Bundesamt, 2014), as that it is necessary to understand the challenges to enter or stay in the labour market for these people due to their different kind of context resulting from their disability. There could be different chances and challenges when the disability occurred. The same holds true for the severity.

Thus, we contribute to the ongoing discussion focusing on the importance of context in entrepreneurship research (Welter, 2011; Zahra, Wright, & Abdelgawad, 2014) to analyse in more depth the decision making of heterogeneous disabled people, i.e. by the strength of disability and the age when the disability comes into play, because this might differentiate the barriers for occupational choices more in

depth in comparison to former studies (Renko et al., 2015). Second, by identifying the decision-making factors for disabled individuals in the German context, we can explain the specific impact of macro-level context factors like the work protection acts in Germany and subsidiaries and shelters and their specific impact in Germany, as compared to other nations.

Our analyses indicate that disabled people in Germany are ceteris paribus significantly less likely to become entrepreneurs than non-disabled individuals in general. These results stay robust and deliver specific insights when using different analyses across age groups of disabled people, as well as the severity of the disability. Therefore, in contrast to what has been found for most countries, the empirical evidence in this paper suggest the existence of a disability gap in Germany for entrepreneurial choice (Pagán, 2009), based especially on the German specific legal situation and context. Thus, our study furthers the discussion on the influence of societal institutions on the likelihood of hindering or enabling marginalized individuals becoming entrepreneurs. Considering the German context, the study shows that the potential of disabled individuals to become entrepreneurs might not be actualized due to existing context factors.

The ongoing paragraphs follow a clear structure: The illustrated theoretical background concerning the connection between disability and entrepreneurship builds a solid basis to create research hypotheses. To test the hypotheses, we offer information on the structure of the data set, the used items within it and the preferred methods. Lastly, in our discussion we connect our finding to existing research and offer implications for entrepreneurial practise.

Disability and entrepreneurship

Being or becoming disabled does influence the social context of individuals in the labour market. These situations will generate chances and challenges in regard to occupational choice, including the decision to become and remain an entrepreneur (Haynie & Shepherd, 2011; Welter, 2011; Zahra et al., 2014).

The Flash Eurobarometer compares the occupational preferences of people from 27 member states of the European Union and 13 countries from outside. Only 29 percent of the German participants preferred self- to dependent employment, whereas the average of participants from other EU-members amounted to 37 percent (European Commission, 2012). Thus, already the basic attitude towards entrepreneurship in Germany is not quite favourable. Pagán (2009) analysed data from the European Community Household Panel from the years 1995-2001 for 13 European countries and found that a significantly higher entrepreneurship rate for disabled people exists in most European countries than in Germany. By contrast, he could not find any significant differences in Germany in the decision to be an entrepreneur between disabled and non-disabled, either male or female. When comparing with the United States and Australia (Maritz & LaFerriere, 2016; Renko et al., 2015), where disabled people exhibit higher rates of entrepreneurship, in Germany the low rate of disabled entrepreneurs remains unexplained.

Specifying the context in a single country is important (Busenitz, Gomez & Spencer, 2000; Hayton et al., 2002) to explain the decision to become an entrepreneur (in regards to disabled individuals see Bhuvaneswari & Natarajan, 2016; Dhar & Farzana, 2017). This paper deals with the underlying reasons a) explaining the specific macro-institutional factors in Germany for disabled individuals to help them to participate in the labour market as employees, and b) to explain specific occupational choices of disabled people due to their age because most disabilities occur as individuals get older, and c) to analyse the impact of the severity of disability. On top, the study controls for personal, individual characteristics (i.e. family status, education, etc.), to explain the German phenomenon of low entrepreneurship rates of disabled.

The German Context

At a first look, the situation in Germany appears to be the same as in other nations. After completing secondary education, individuals with disabilities are more likely to join vocational preparation courses and less likely to promptly start vocational training in the dual education system in Germany compared to their non-disabled

peers (Euler & Severing, 2014). Even after completing initial training, disabled individuals are more likely to be jobless, and the time necessary to find a new job is longer compared to non-disabled peers (FMLS, 2013). The chance of being employed decreases if a person becomes disabled (Lechner & Vazquez-Alvarez, 2011); this holds true for Germany, when taking into account the official statistics (Metzler & Werner, 2017). In 2013, 42.8 percent of all severely disabled individuals were active in the labour market, compared to 81.8 of all people without a disability (Metzler & Werner, 2017).

Apart from being a human right (UN General Assembly, 2006), being able to take part in the labour market also has a positive influence on the life satisfaction of an individual because it increases personal self-esteem (Layard, 2005). Therefore, entrepreneurship could be an interesting alternative for disabled individuals, who wish to participate in the labour market or continue to work. In this sense entrepreneurship might be a survivor strategy for disabled individuals (Pagán-Rodríguez, 2011) giving them independence, freedom of working time, pace and schedules (ODEP, 2013). Acquiring a job and creating wealth might be an important factor to start a business, but solely focusing on these factors might prevent an analysis of the whole picture of entrepreneurial intentions of disadvantaged individuals, while further stigmatizing them in the process (Welter et al., 2017). Entrepreneurship itself might be a favourable choice for disabled individuals because it offers specific benefits that might help an individual to accommodate his or her personal situation with working life. Entrepreneurs could tailor their business and attendant daily activities according to their needs. As an example, entrepreneurship could help individuals with intermittent mental health problems by providing a working environment where they can flexibly choose to work less on some days and work more on others (Burchardt, 2000; Haynie & Shepherd, 2011). Entrepreneurship might also offer disabled individuals the opportunity for self-fulfilment by providing them a more challenging and personally rewarding work experience (Doyel, 2002), helping them meet their own expectations (McNaughton, Symons, Light, & Parsons, 2006). Individuals with disabilities may see entrepreneurship as a good path to continue to participate

economically, even in the presence of daunting obstacles or challenges to become and remain an entrepreneur (Boylan & Burchardt, 2002; De Clercq & Honig, 2011).

Thus, it could be doubtful, that entrepreneurship is a reasonable or preferable career option for individuals with disabilities in Germany compared to employment. The interpretation of entrepreneurship as a last resort to participate in the labour market might not be as compelling in the German context. Individuals, who either temporarily or permanently cannot take part in the regular labour market due to the severity or type of disability have outside options in regard to macro-level or micro-level contextual factors. This would be in line with the idea of Jovanovic (2019) that the entrepreneurial premium is not high enough to be attractive in the occupational choice for individuals with disabilities. We argue that, in the case of Germany, existing benefits based on the German social law, influence the occupational choice of (severely) disabled individuals to favour employment over self-employment. Using a disability definition that holds across different countries, Pagán (2009) asked individuals if they are disabled (subjective measure) but neglected the specific situation of disabled in Germany. Thus, we have to take into account, that disabled individuals in Germany have exclusive access to specific compensations that could influence their occupational choice by acting as a surplus value in certain employed jobs. Those benefits include measures like expanded paid leave or additional vacation for disabled individuals, affirmative action, access to sheltered workshops and severe job protection (FMLS, 2018, 2019; Steinbach, Hesse, & Daniel, 2010).

These alternatives could prevent disabled individuals from becoming entrepreneurs. By contrast, there are only small and scarce specific benefits available for disabled entrepreneurs (Einfach Teilhaben, 2019). The institutional setting in Germany is much more aligned to compensate disabled employees. In a society like Germany with a fairly regulated labour market and a tendency for individuals to avoid risk, entrepreneurship is less likely to be the prime occupational choice for handicapped individuals than in most other European countries. Therefore, in Germany the opportunity costs to become an entrepreneur as a disabled person are higher than in other (European) countries. Thus, the

entrepreneurial intention of German disabled individuals might be lower compared to non-disabled individuals (Pagán, 2009), due to the specific institutional context.

To understand, how these institutional contexts might affect the occupational choice to become and remain an entrepreneur, it is necessary to know what exactly is meant by the construct of disability. In recent decades the predominant definition of disability has changed. Formerly the *medical model* was used in most studies: It proposes that disadvantages an individual might have due to his or her disability are primarily based on physical, mental or intellectual deficits (Donoghue, 2003) (i.e. a visually challenged person has a disadvantage at the working place because the optical nerve is not quite functional and she or he therefore has problems interacting with personal computers). The focus of this model is on treating the individual´s condition, if possible, and therefore helping her or him overcome the disability (Lightfoot, 2009). Differentiating between an illness, a chronic illness and a disability is the task of medical doctors. Following this approach, variables like poor health and chronic illness could act as proxies for disabilities. *Currently*, the understanding has shifted towards the so-called *social model*, which is used in international political treaties and is part of the United Nations Convention on the Rights of Persons with Disabilities (2006). This model focusses on interchanging effects between the impairments of an individual and the barriers society creates for him or her (Oliver, 1996; Siminski, 2003). The medical model is in this line of thought associated with individualism and individual tragedy, therefore it neglects the social oppression privileged people without impairments might impose on people with impairments. Disability is hence seen as the result of an uncaring society. Illnesses are viewed as impairments of an individual that might influence this process, but are not causal for it (Oliver, 1990, 1996). Using this approach a visually challenged person has a disadvantage at the working place because his employer suspects in an assumption of normalcy that all his employees are able to read text on a computer screen and therefore does not provide adequate equipment, like a screen reader, to enable a visually challenged employee to perform his or her tasks accordingly. The social approach is extremely useful to analyse and determine the individual barriers and challenges of people with disabilities in a specific

context: A doctor living with a chronic depression might meet different challenges than a restaurant owner sitting in a wheelchair.

According to German social law a person is disabled if his or her physical, mental or intellectual condition differs from the average status of a person in his or her age for a period of at least six months. Additionally, this personal situation has to restrict an individual from participating in German society (§ 2 Abs. 1 SGB IX). Thus, the German definition approach combines the medical and social model of disability. It also includes a time span, so short-term impairments of an individual are not recognized as disabilities, and on top of that a disability can be issued by the authorities either as temporary or permanent. Disability is measured in a grade, issued by the German pension office and based on medical examinations (FMLS, 2018). The ordinal scale starts at 20 and increases in steps of ten until it reaches 100 (Pfaff, 2012). The request for an examination is supplied by the potentially disabled person (FMLS, 2018).

At a certain grade of disability, a person gets additional support and assistance measures to compensate for disadvantages based on the extent of the disability. These benefits are considered here as existing institutional settings at large and the legal and regulatory regulations in specific (Welter, 2011). As “institutions form the incentive structure of a society” (North, 1994, p. 359), they could influence the occupational choice made by a disabled individual. Because this study takes a closer look at the labour market, only those individuals who have access to compensations, which have a direct or indirect effect on their chances of participating are considered. Thus, benefits that are available shall be illustrated. The first relevant compensations are eligible at a disability grade of 30. Thus, individuals with a grade of less than 30 are not regarded in the study. Starting from this grade of disability of 30, people, who are either unemployed or not able to get a new job, or employed but not able without those benefits to uphold the current job, are eligible to get special job protection. Employers, hiring disabled individuals with this grade of disability, receive financial and technical support providing barrier-free working places and financial incentives (subsidized labour costs for the first employment months, granted by the Employment Agency (FMLS, 2019; Steinbach et al., 2010).

From the grade of disability of 50 and upwards, individuals are defined as severely disabled. They are entitled to elaborated benefits and have access to additional compensations, i.e. being exempted from overtime work. Further, they have five days of additional paid holiday leave and they can retire several years earlier. Private and public employers are obligated to inform the Federal Employment Agency of vacant positions to ensure that unemployed severely disabled individuals have a chance to apply for these vacancies. If they do apply for a job, public employers generally have to invite them for a job interview. Certain types of disabilities are entitled to specific compensations, i.e. being severely restricted in moving these individuals will get free access to public transport for themselves and an accompanying person, lower taxation and strong job protection(FMLS, 2019, 2018; Steinbach et al., 2010).

Support measures for disabled individuals to become an entrepreneur, are organized at a local level. The “Integrationsamt”, an institution that manages all business affairs that allude to disability, supports people with disabilities with information on business start-ups and offers business counselling (BIH, 2018). This institution might help to find handicapped individuals with a grade of disability of at least 50, loans and interest subsidies for starting their own enterprise. As a precondition for a loan or an interest subsidy, a disabled individual has to fulfil the personal qualities (e.g. being endurable) and professional qualities (having a related qualification and / or working experience) required for the selected job. Moreover, the business idea has to be sustainable under market conditions and enable a nascent entrepreneur to make a living (Einfach Teilhaben, 2019). Additionally, publicly funded projects rarely take place: i.e., the project enterability in Berlin supported 420 people with disabilities from 2004 to 2008 to develop a business idea. 109 individuals started a company, and roughly a third of the companies survived for at least three years. But this is – to our knowledge – the only hands-on institutional approach supporting disabled people in Germany to become entrepreneurs (OECD & European Union, 2015).

3.2 Research hypotheses

Focusing on the social context of being disabled, this paper follows the research stream that context has an impact on opportunities and constraints (Johns, 2006) that either influence or determine a possible outcome - in our case the occupational choice of individuals, of whether or not to become entrepreneur. Based on the discussion the following first hypothesis is:

Hypothesis 1: Disabled individuals in Germany are more likely to become and remain entrepreneurs compared to their counterparts without disabilities.

The null hypothesis for this research question reflects Pagán (2009), that no significant differences in the likelihood of becoming an entrepreneur exists between the groups of disabled and non-disabled individuals in Germany.

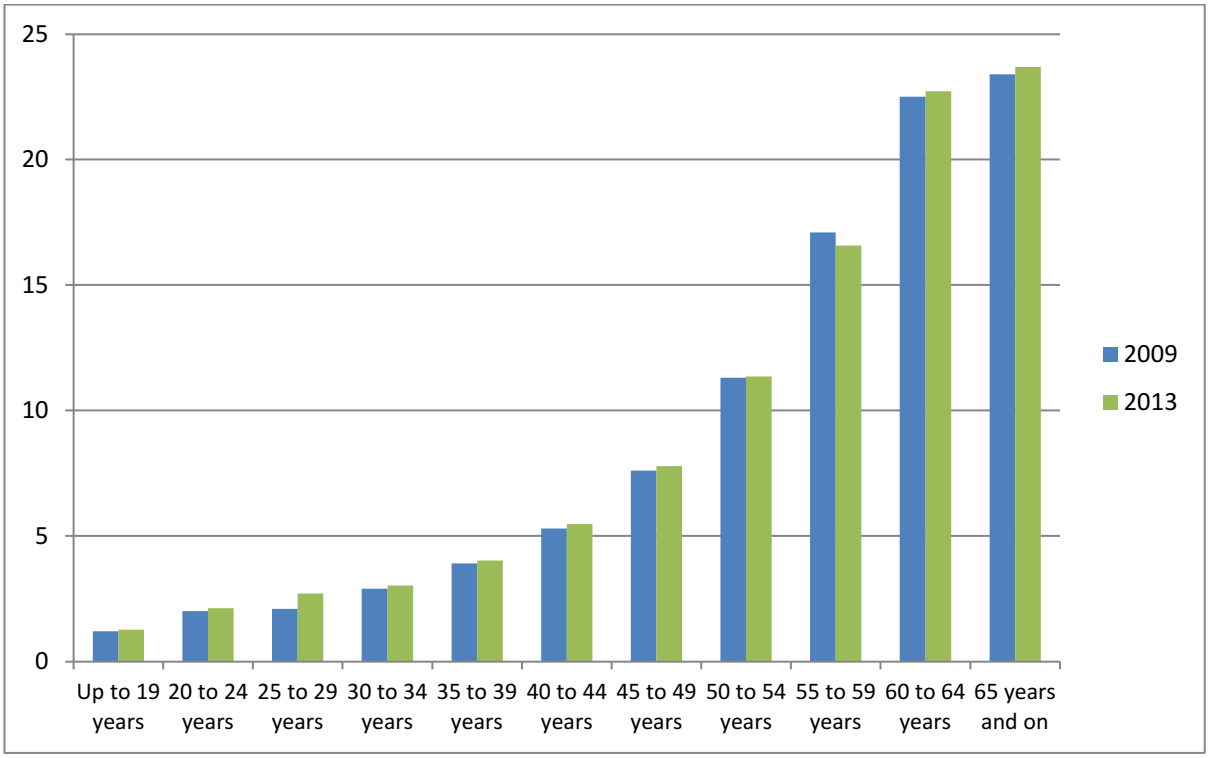
Based on the former discussion on the heterogeneity of disabled individuals, the paper contributes to this discussion by questioning the impact of the grade, and in this regard the impact of the severity of the disability on the decision to become an entrepreneur.

Hypothesis 2: Disabled individuals, depending on the severity of their disability, are more likely to become and be an entrepreneur compared to their counterparts without disabilities.

When analysing occupational choice in general, other influences need to be controlled for, such as age (Boskin, 1974). This is even more important when analysing disabled individuals, because only a small percentage of all disabled people in Germany attain their condition (i.e. genetic disposition) before or within the first years of their birth (about four percent). On the contrary about 85 percent of all severe disabilities are the result of illnesses in later life, implying that illnesses are the main cause of severe disabilities for all age groups starting from up to four years through 65 years and more (Statistisches Bundesamt, 2014). The consequences of those illnesses may be curable (e.g. blindness caused by grey star) or chronic (e.g. blindness caused by nerve damage due to multiple sclerosis).

Therefore, people with and without disabilities are not two separate fixed groups, but the status of a person might and does change, especially in the age groups typically considered as working age, as Burchardt (2000) showed in an analysis using data from the British Household Panel Survey. As shown in Figure 3, in both waves (2009 and 2013) the percentage of disabled people in an age group rises from 2.1 percent (respectively 2,7 percent) in the age group between 25 and 29 years to 22.5 percent (respectively 22.7 percent) in the age group between 60 and 64 years. To test this significant age effect a logistic regression instead of a T-test with "being disabled" as a dependent variable and the different age groups as the binary independent variable was estimated.

Figure 3: Disabled people as a share of population in age group



Source: Mikrozensus 2009 and 2013 data, weighted, percent. This calculation was originally conducted for this PhD thesis. Further, the results have been used in the project "Kompetenzzentrum Fachkräftesicherung" at the German Economic Institute for non-academic purposes in illustrations and presentations to consult SMEs to integrate disabled professionals into their workforce.

The odds ratios in both waves imply that the chance of being disabled is higher for people who belong to the age group 45-64 years. The difference between the age groups is highly significant. This supports the conclusion that older disabled

individuals are more likely to have made their prime occupational choice in younger years without regard to a disability aspect.

Table 3: The influence of age on being disabled in Germany

Dependent Variable: Being self-employed (yes=1/no=0),

	Being disabled	Odds Ratio	Standard Error	P>|z|
2009	Age groups (1 = 25 to 44 years, 2=45 to 64 years)	4.140	0.067	0.000
	Constant	0.389	0.001	0.000
2013	Age groups (1 = 25 to 44 years, 2 = 45 to 64 years)	4.072	0.067	0.000
	Constant	0.001	0.000	0.000

Note: Own calculation with Mikrozensus 2009 and 2013 data, weighted, Logistic Regression – Measured in Odds Ratios, an odds ratio smaller than 1 indicates a negative effect, a value of 1 indicates a neutral effect, a value larger than 1 indicates a positive effect

This study therefore takes a closer look at the possible influence of a disability in choosing either employment or self-employment within the age groups of 25 and 44 years and 45 to 64 years, to disentangle the heterogenous group of disabled and non-disabled individuals with respect to their age.

Hypothesis 3: The differences in the likelihood of entrepreneurship is attributable to different distributions of age in the group of disabled and non-disabled individuals.

An early onset of disability might also influence the first years of a career, when young professionals specialize and seek specific work experience in a certain area that could help them become entrepreneurs. Younger people are more likely to invest in human capital, because the potential costs for postponing it to later ages are high. An early investment in human capital generates a longer duration of revenue over time (Becker, 1962). Such investments are irreversible and therefore could have an important influence on the occupational choice decision of a young individual in the long run, although individuals can and do choose to change their occupation in later years. Ginzberg (1972) argues that the occupational choice of an individual is an optimization process to accommodate her changing needs and desires with regard to the opportunities and constraints she faces on the labour

market. Younger age groups might include individuals, who later opt out of the entrepreneurial process, but prior studies show that the initial entrepreneurial intention to become an entrepreneur is a predictor for future entrepreneurial action (Backes-Gellner & Moog, 2013).

3.3 Empirical study design

Official German statistics on people with disabilities are mostly restricted to people with a severe disability. Therefore, another approach has to be used to analyse all people with disabilities and compare them to their non-disabled peers. To do so, this study primarily uses data from the German Mikrozensus for the wave 2013 and then checks for possible cyclical fluctuations as well for the earlier wave of 2009. Thus, the paper can compare two waves in the census to deliver more robust analyses. The Mikrozensus is a representative annual survey of one percent of the German households, Participants are selected on the basis of a geographic sample of households (Statistisches Bundesamt, 2006). It is conducted since 1957 in Western Germany and since 1991 in the newly-formed (eastern) German States, by the statistical offices of the federal states of Germany (Lüttinger & Riede, 1997), through personal interviews (Statistische Ämter des Bundes und der Länder, 2018). The dataset focuses on the current status in the labour market (e.g. economic activity, working hours, type of employment) and offers additional information concerning social status (e.g. family status) and personal characteristics (e.g. age, education, disability) (Lüttinger & Riede, 1997). While most items are asked annually, those concerning disability are included only every four years, with disabled individuals living in an own household as well as living in residential homes. Participation in the questionnaire is obligatory, although some questions (i.e. disability) are voluntarily. With regard to the 2009 wave, 81 percent of all questioned did make statements concerning their disability, making the survey representative (Pfaff, 2012).

As every year a fourth of the selected households change (Lüttinger & Riede, 1997), the data cannot be used for panel studies. However due to its large number of participants compared i.e. to the German SOEP (DIW Berlin, 2016) the data is a

suitable choice for a cross section and/or trend study, especially since it is a basis for several official statistics. To analyse the research questions discussed in the current paper, the data fits all expectations, i.e. because it is used by the Federal Research Institute for SMEs (IFM Bonn) to calculate the overall quota of self-employed individuals regarding all economic active people in Germany (Suprinovič & Norkina, 2015).

3.4 Operationalization

Dependent Variable

The dependent variable in the following models is the current labour status of **being either employed or an entrepreneur**, which is defined as being classified as self-employed or an owner of a business. To determine if a person is working as an entrepreneur the question in the Mikrozensus is taken into account, which asks "are you employed as ..." (for this description and a wording of all other variables of the Mikrozensus see Statistische Ämter des Bundes und der Länder, 2013). Two indicators "self-employed with employees" and "self-employed without employees" are aggregated as one group to have enough cases in the first step of analysis. All other items classify the person as civil servant or as blue- or white-collar workers, which are summarized as "dependent work". People who are still in training, in temporary military service or working for free, are excluded, because they have not made their "final" occupational choice, which follows the precedent already established in other studies (Suprinovič & Norkina, 2015).

Independent and control variables

Disability:

The independent variable of greatest interest is the status of being disabled or non-disabled. In the Mikrozensus disability is measured by two separate questions. First the participants are asked: "Has a disability been acknowledged to you by an official authority?" (Statistische Ämter des Bundes und der Länder, 2013, p. 58). Those who answer "no" in this question are considered "non-disabled" and classified as

one group. Others answering that a disability was either recognized by the German pension office, by other official means like a court ruling or both, are asked a second question concerning the grade of their disability. All those participants who state their grade of disability are considered "disabled" and classified as one group. All those who either refuse to answer the first question, as it is voluntary, or state that their application is still in process are excluded from further analysis. Additionally, people who answered that they actually have a proofed disability, but did not specify their grade, are excluded as well, because in the latter analysis the differentiation of the severity can't be used and the data are missing at random (Little & Rubin, 2002).

Based on these two questions in the Mikrozensus, disability is operationalized in three different ways following the definitions discussed in the former sections. *First*, a binary distinction is made between a person being either **disabled or not**. *Second*, a binary distinction is undertaken between a person **being either severely disabled or not** to have a closer look at a possible distinctive effect for individuals with more severe disabilities. In the *final* categorization disability is measured as a continuous variable, to reflect an additional effect from higher degrees of disability, although higher degrees of disability are not associated with further job-related benefits after reaching the threshold value of 50. For this operationalization the individual's **grade of disability** works to measure the variable. In the following we will use these three measures to estimate three regression test models in parallel.

Age: The dataset includes people spanning all ages. Due to the nature of this study and current occupational choice literature (Caliendo, Fossen, & Kritikos, 2009; Sorgner & Fritsch, 2013), only individuals who are in an age spectrum correlated with economic activity are considered in our analysis. At the lower end of the spectrum, the study starts with people aged 25. This is to try to exclude most individuals who have not completed their initial vocational training or academic studies, to control for possible effects concerning different academic or vocational degrees on being an entrepreneur. The average age for graduates of vocational studies in Germany was 22,2 years in 2013. Less than 11 percent of all graduates were older than 25 years (BIBB, 2015). The median age of graduates from academic

studies was 24.6 years in 2013 (Statistisches Bundesamt, 2016a). At the higher end of the age spectrum all people 65 and older are excluded, because in 2012 the official retirement age in Germany was 65 years (OECD, 2013).

For further analysis and to deliver the best and robust results for all age groups, the entire sample in both waves (2009, 2013) is divided in two different samples based on the respective age, due to the increased rate of disabled people after a specific age (Statistisches Bundesamt, 2014). On top, there are several important differences between the age groups: a) older people, who acquire a disability, are more likely to have an established career and actually have to adapt their existing situation with the new circumstance of disability. Certain benefits of self-employment, like flexible working hours, could accommodate these challenges and help them to stay active in the labor market (Pagán-Rodríguez, 2011, 2012). In addition, the human capital decision has already been made. Instead for younger people with disabilities the time in life at which a disability appears is even more important regarding the human capital investment as well as the occupational choice (see i.e. Figure 3). I.e. younger people might include their disposition in their prime career choice, due to avoiding jobs based on physical activities like construction, thus, having an impact not only on training but also on industry choice. Along with other variables, such as family status, migration status etc. age, disability produces specific effects, which may significantly differ for the two age groups. Due to all this, the metric age variable is used to split the dataset into two age groups and to test our hypotheses simultaneously in those two. The split produces two sub-samples in both waves consisting of roughly the same number of participants. The first sub-sample includes all persons from 25 years to 44 years, the second sample of 45 years to 64 years. This is to better understand the influence of age groups in combination with disability in the different regression models and the independent variables and their age specific effects. Both groups include individuals from 19 age cohorts. As shown in Figure 3 a steady increase in the rate of disability takes place after the mid-forties. Besides dividing the main samples based on age, it is important to control for age because it has consistently been found to influence the decision to enter self-employment. Kautonen, Down and Minniti (2014) suggest that there is an effect of

increasing age on the chance of being an entrepreneur. Younger disabled and non-disabled individuals in the dataset might be less interested in becoming an entrepreneur, as they lack sufficient capital to start their own business and potentially also human capital to successfully lead it (Gottschalk & Theuer, 2008; Werner & Moog, 2009). One might argue however, that people who acquire a disability with increasing age could lose their current job, which might lead to an income loss and hence prevent them from attaining an increasing personal wealth in later years, so a contrasting effect might happen (Lechner & Vazquez-Alvarez, 2011). Age is measured as a metric variable and additionally as age squared to respect possible decreasing effects over time.

Several additional variables typically having an impact on occupational choice are included in the regression models to control for their influence on occupational choice.

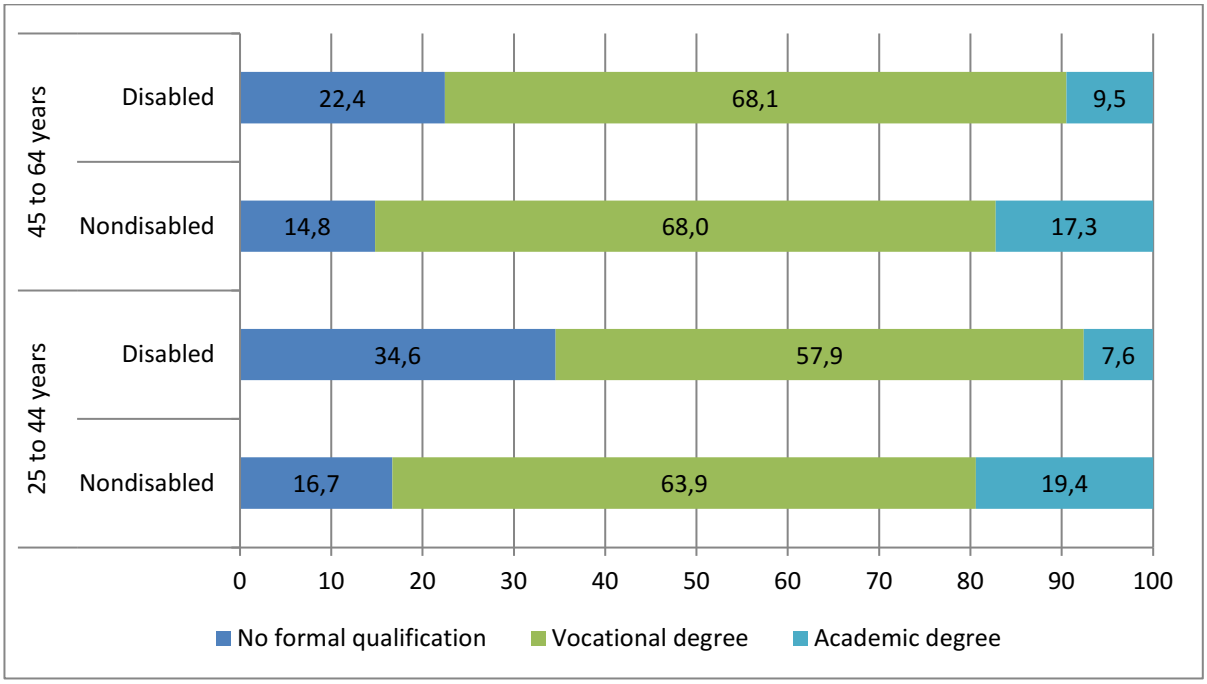
Human Capital – education and training

A set of variables dealing with human capital measured by education and training variables are included due to the fact that those kinds of human capital are central in the entrepreneurship literature and the impact on occupational choice – becoming an entrepreneur or not (Backes-Gellner & Moog, 2013; Cassar, 2006; Davidsson & Honig, 2003; Unger, Rauch, Frese, & Rosenbusch, 2011). Individuals were asked if they have finished a vocational training or have an academic degree (bachelor/master) or have not attained any of those levels of education. Professionals with a vocational degree are an essential part of the German business model (Blöchle et al., 2016). Professionals with such a degree also play a crucial part for entrepreneurship in Germany (Fritsch et al., 2012). Within each year (1991-2009) 60 percent of all business founders in Germany had a vocational degree, making up the largest share of entrepreneurs. An individual in this study obtains a vocational degree with a successful apprenticeship or the master craftsmen. Individuals with an academic degree have successfully studied at a university, applied university or at a public administration school, including bachelor, masters up to a PhD, which are summarized in one category. Since 2001 the amount of

young people in Germany attaining an academic degree has risen sharply, and since 2007 their percentage within the group of all founders has also increased, (Abel-Koch, 2015).

A distinctive variable encompasses all individuals who have so far not successfully achieved a vocational or academic degree and are currently not enrolled in job training. Separating persons with no qualification as an individual variable is important, as people with disabilities are more likely to have no qualification than are non-disabled people (Meager & Higgins, 2011).

Figure 4: Ratio of disabled and nondisabled people in regard to their professional qualification



Source: Mikrozensus 2009 data, weighted, percent. This calculation was originally conducted for this PhD thesis. Part of the results have already been mentioned in the publication of Metzler, Pierenkemper & Seyda (2015, p. 40).

Figure 4 shows the distribution of disabled and non-disabled people for both age groups with regard to their professional qualifications. These variables might contribute to explaining some of the heterogeneity between the disabled and non-disabled individuals, and thus it is necessary to look for a potential effect on occupational choice. Both samples show that in the younger age group, disabled individuals are more likely to have no formal qualification and less likely to be an academic compared to their non-disabled peers. In the older age group however,

the percentage of individuals possessing a vocational degree in the disabled groups is higher compared to their non-disabled counterparts and they are less likely to have no formal qualification.

In addition, the level of education as well as the kind of training often effects the choice to become an entrepreneur. Prior studies show some mixed effects of the field of education and training, i.e. individuals with a vocational degree in science, technology, engineering and mathematics (STEM) are more likely to be entrepreneurs than their peers with a vocational degree in other fields. On the contrary, academics with a specialization in STEM are less likely to be entrepreneurs than their peers with an academic degree in other fields (Hagen, Metzger & Ulrich, 2002). Thus, this study differentiates between vocational and academic degrees in four distinct categories: activities in STEM, healthcare - due to the aging population the healthcare industry has risen sharply between 2004 and 2015 (BMWi, 2016), job fields related to activities in Economics, Law or Social Science (i.e. bookkeeping or knowledge in commercial laws) (Abel-Koch, 2015), and the fourth job field includes all other specializations.

Besides these discussed aspects, personal characteristics like gender and legal status are included factors as influencing occupational choice and the decision to become an entrepreneur (Simoes et al. , 2015). **Gender** reflects the different context of individuals regarding their preferences and challenges and chances. Thus, different attitudes and career realization between males and females concerning entrepreneurship have been found in studies on non-disabled and disabled population groups (Jones & Latreille, 2011; Pagán, 2009; Wagner, 2007; Welter & Bergmann, 2002). Males generally view entrepreneurship more favorably than do females in both population groups. Thus, in this study the effect of gender on occupational choice is controlled for. Other demographics could have an impact on occupational choice as well, i.e. life situation or family background. Therefore, control variables measuring the **legal status** (living with a partner, being married or not) or having one or more **children** under the age of 18 are included due to the mixed but measurable effects on occupational choice (Blanchflower, 2000; Georgellis & Wall, 2005; Özcan, 2011; Verbakel & de Graaf, 2007). **Migration**

background as a variable is used to measure the ethnicity of a person. People with an original foreign nationality might have problems in attaining dependent work due to restrictions on the German labor market. E.g. they might not receive their training, previously completed in a foreign country, recognized by the authorities or possible employers might offer jobs for them, which are below their actual qualification (Beinke & Bohlinger, 2011). Thus, in this study the impact is tested. A distinction between individuals having a personal experience of migration and individuals being born in Germany, but having parents who migrated, is made.

Entrepreneurship is also correlated to a number of regional characteristics, like unemployment rates (Fritsch, Kritikos, & Pijnenburg, 2013), agglomeration (Bergmann & Sternberg, 2007) or industrial structure (Dawson, Henley, & Latreille, 2014), which cannot be directly measured using the Mikrozensus. The **place of residence** in a federal state is therefore added as a proxy variable for regional characteristics. Stuetzer, Obschonka, Brixy, Sternberg and Cantner (2014) argue that individuals in the same area might perceive the same environment differently because of varying personal and social characteristics. One of those personal characteristics could be an existing disability. Some legislation concerning disability (e.g. the amount of subsidiary blind people receive) is regulated on the level of the federal states of Germany. Those varying environments might have an indirect effect on the decision of an individual with disability to become self-employed.

3.5 Econometric analyses and results

To test the occupational choice decision of disabled and non-disabled individuals and thus, to test our hypotheses, different regression models are undertaken. All three models include only individuals who are currently economically active. Individuals who are currently not employed due to different reasons, such as providing family care are excluded (Hintikka, 2005). Identical logistic regressions are estimated, splitting the database into the two mentioned age groups as discussed, to deliver robust effects. Due to the nominal scale of the dependent variable being an entrepreneur or not, all models are estimated using logistic regressions. To

interpret the results, it is important to emphasize that the beta-coefficient is expressing an odds ratio, always showing a positive prefix and so only to distinguish by the size of the value itself. *Thus, an odds ratio smaller than 1 indicates a negative effect, a value of 1 indicates a neutral effect, and a value larger than 1 indicates a positive effect* (Szumilas, 2010). The following tables 4 and 5 show the results of the three estimated models regarding disability first, for the younger age group and their occupational choice and second, for the older age group.

Table 4: The influence of disability on being self-employed in younger individuals

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 25-44 years

	Model A (Disability)	Model B (Severe disability)	Model C (Disability as a continuous variable)
Being disabled	0.362***(0.038)	0.340***(0.044)	0.983*** (0.002)
Vocational qualification (reference category: vocational degree in STEM):			
Vocational degree in Healthcare	0.967 (0.059)	0.965 (0.586)	0.966(0.059)
Vocational degree in Economics, Laws or Social Science	0.967(0.042)	0.968 (0.416)	0.968(0.042)
Vocational degree (other)	1.951***(0.076)	1.951***(0.076)	1.950***(0.076)
Academic degree in STEM	1.043 (0.053)	1.051(0.053)	1.047(0.053)
Academic degree in Healthcare	2.540 ***(0.197)	2.553***(0.198)	2.545***(0.197)
Academic degree in Economics, Laws or Social Science	1.532 *** (0.074)	1.540***(0,742)	1.535***(0.073)
Academic degree (other)	2.622 *** (0.116)	2.652***(0.117)	2.642***(0.117)
No formal qualification	1.414***(0.064)	1.412***(0.064)	1.422***(0.064)
Personal characteristics:			
Gender (reference category: male)	0.497 ***(0.014)	0.450***(0.013)	0.497***(0.014)
Living in a partnership	1.004 (0.030)	1.005 (0.030)	1.003(0.030)
Parent with children under age 18	1.010 (0.029)	1.014 (0.030)	1.012 (0.030)
Migration background (no personal experience)	1.150**(0.063)	1.149**(0.063)	1.148**(0.063)

Migration background (personal experience)	1.116***(0.038)	1.119***(0.381)	1.114***(0.038)
Age	1.370***(0.042)	1.370***(0.042)	1.370***(0.042)
Age Square	0.997***(0.000)	0.997***(0.000)	0.997***(0.000)
Further controls: Personal residence in in a federal state of Germany (16)			
Pseudo R^2	0.0547	0.0540	0.0545

Note: Own calculation with Mikrozensus 2013 data, weighted, Logistic Regression – **Measured in Odds Ratios**, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets, an odds ratio smaller than 1 indicates a negative effect, a value of 1 indicates a neutral effect, a value larger than 1 indicates a positive effect

The results from *Model A* in Table 4, show that disabled people in general in the age group from 25 to 44 years ceteris paribus are less likely to work as entrepreneurs than people without a disability. The odds ratio of 0.362 is significant at one percent level; the positive prefix is due to the odds ratios to interpret as a negative effect, because the odds ratio is far lower than 1.

Table 5: The influence of disability on being self-employed in older individuals

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 45-64 years

	Model A (Disability)	Model B (Severe disability)	Model C (Disability as a continuous variable)
Being disabled	0.417***(0.018)	0.455***(0.026)	0,984***(0,001)
Vocational qualification (reference category: vocational degree in STEM):			
Vocational degree in Healthcare	1.426***(0.065)	1.422***(0.064)	1.424***(0.065)
Vocational degree in Economics, Laws or Social Science	1.046(0.033)	1.054*(0.033)	1.051(0.033)
Vocational degree (other)	1.877***(0.054)	1.886***(0.054)	1.882***(0.054)
Academic degree in STEM	1.511***(0.055)	1.554***(0.056)	1.531***(0.055)
Academic degree in Healthcare	9.110***(0.488)	9.334***(0.496)	9.233***(0.493)

Academic degree in Economics, Laws or Social Science	2.224***(0.086)	2.264***(0.087)	2.237***(0.086)
Academic degree (other)	2.138***(0.077)	2.189***(0.079)	2.160***(0.078)
No formal qualification	0.981*(0.039)	0.981(0.038)	0.990(0.039)
Personal characteristics:			
Gender (reference category: male)	0.441***(0.010)	0.444**(0.010)	0.442***(0.010)
Living in a partnership	0.950**(0.021)	0,953**(0,021)	0.948**(0.021)
Parent with children under age 18	1.218***(0.030)	1.228**(0,030)	1.220***(0.030)
Migration background (no personal experience)	1.208**(0.126)	1.210(0,126)	1.209*(0.126)
Migration background (personal experience)	0.826***(0.026)	0.828**(0,025)	0.823***(0.025)
Age	0.810***(0.029)	0.816***(0.029)	0.816***(0.029)
Age Square	1.002***(0.000)	1.002***(0.000)	1.002***(0.000)
Further controls: Personal residence in in a federal state of Germany (16)			
Pseudo R^2	0.0598	0.0567	0.0592

Note: Own calculation with Mikrozensus 2013 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Regarding the age group from 45 to 64 years, Table 5 (ceteris paribus) shows the odds ratio of 0.417 for *Model A*, which again is significant at a one percent level. Thus, this result is analogous to the analysis of the younger age group, although the odds ratio is somewhat closer to 1, making it therefore weaker. This means, even though older disabled individuals are still less likely to become an entrepreneur compared to non-disabled individuals in this age group, the chance of becoming an entrepreneur in older people is higher compared to the chance for their younger counterparts. Regarding hypothesis 1, the results in both age groups show that the possibility to become or to be an entrepreneur is significantly lower for disabled individuals in general compared to non-disabled people. Thus, the hypothesis has to be rejected. This is consistent with our idea that the non–significant results of Pagán (2009) for Germany - regarding the rate of disabled compared to non-disabled individuals working as entrepreneurs - can be explained more in depth with

the data used here, showing the impact of the German specific context. It seems that especially for the younger disabled the institutional context is much more favorable to enter the labor market by becoming an employee, driven by the governmental support measures. For the older age group of disabled individuals this still holds true, but at a lower level. Thus, the wish to remain in the previously held position prior to the disability, and the likelihood of finding a new job leveraging former employment experiences seems to be higher for older rather than younger people Moreover, having been an entrepreneur even at a younger age facilitates maintaining this labor status over time, once established.

With regard to hypothesis 2, that people with more severe disabilities have a higher likelihood of becoming an entrepreneur than their non-disabled peers, several key results emerge from *Models B and C* in both age groups (Table 4 and 5). In particular, for the younger age group severely disabled individuals are less likely than other individuals to become self-employed. The odds ratio of 0.340 is significant at a one percent level. This is especially interesting because individuals with a severe disability in this model are not only compared to non-disabled people less likely to be entrepreneurs but to people with a less severe disability as well. The sustained effect could result from the high rate of people with a severe disability within the group of people with a disability. For example, in 2013 only 31,4 percent of people with a disability between 25 to 64 years had a recognized grade of disability of less than 50.

Using disability as a continuous variable in *Model C*, which separates possible effects of different grades of disability, offers the insight, that with a rising degree of disability, the probability of being self-employed continually decreases in small steps. The occurring odds ratio of 0.983 is highly significant. The effects of vocational degrees and personal characteristics on self-employment are consistent with the former two models. This effect indicates that a disability might not only affect an individual occupational choice due to eligibility for certain benefits, but it also may be influenced by other factors e.g. restrictions of his or her mobility or abilities in certain areas.

A similar effect can be seen in the older age group: *Model B* regarding older severely disabled individuals in comparison to older non-severely disabled individuals has an odds ratio of 0.455 which is again highly significant and once again somewhat closer to 1 compared to the analysis of younger severely disabled individuals. Thus, the likelihood of becoming an entrepreneur is lower for older severely disabled people compared to non-disabled individuals, but somewhat higher compared to less disabled. In *Model B* the odds ratio for severely disabled individuals is also closer to one in comparison to all disabled individuals in *Model A*. Therefore, older severely disabled individuals as a sub-group are more likely to be self-employed than all older disabled individuals in general. In *Model C* the same effect can be observed as in the other age group, that the likelihood of becoming an entrepreneur becomes lower as the disability status increases compared to non-disabled individuals. The tested models for 2009 data show similar results for all three models. For the 2009 dataset virtually the same models, with the exception of the two-stage-Heckman-regression, were compiled with related variables available. The full results can be found in Appendix A. The tables follow the same order as their 2013 counterparts. Regardless of small differences, in the younger age group (Table 18) we find for model A an odds ratio of 0.376, for model B an odds ratio of 0.327 and for model C an odds ratio of 0.982. These results indicate that cyclical fluctuations between 2009 and 2013 did not change the observed pattern. These patterns are also found in the results for the 2009 cohort for the older age group (Table 19) (Model A: 0.428, Model B: 0.484, Model C: 0.985). So again, we have to reject the second hypothesis following the general idea that in most other countries in Europe, as well as in the US and Australia, people with a more severe disability are more likely to become an entrepreneur than are their non-disabled peers. This does not hold true for Germany. Thus, the results testing the impact of disability and severe disability on occupational choice regarding the younger and the older age group are robust and indicate a lower rate of disabled individuals due to their disability, regardless how it is measured, compared to non-disabled peers.

Testing for the age effect, we find important differences between the age groups. In particular, the age of the disabled has an impact on the likelihood of becoming an

entrepreneur. The empirical evidence provides support for our third hypothesis that age has an impact on the likelihood of becoming an entrepreneur, even for disabled people. The effect becomes stronger with age. Also, within the groups the influence of age is highly significant, indicating a positive effect for the younger age group and a negative for the older age group in 2009 and 2013.

For the control variables, the odds ratio of the variable for vocational degree in other professions is positive and statistically significant for the younger age group, suggesting that the likelihood of becoming an entrepreneur increases with a vocational degree, compared to a vocational degree in STEM. Similarly, with the exception of an academic specialization in STEM, all other academic degrees are found to be positively related to the likelihood of becoming self-employed. People with no formal qualifications are found to be more likely to be an entrepreneur compared to those with a vocational degree in STEM. Females are found to be less likely to become an entrepreneur than males. Having a migration background is positively related to the likelihood of being self-employed.

The results for the control variables vary somewhat for the older age group. Holding a vocational degree in health care or economics, law or in the social sciences increases the likelihood of becoming self-employed than holding a vocational degree in STEM. While younger individuals with no formal qualifications are more likely to be entrepreneurs than are individuals with a qualification in STEM, the contrary is true for older individuals. The difference may be attributable to German labor agreements and job protection laws that protect the interests of long-term workers (Seifert & Funken-Hötzel, 2005). Older individuals in both years being less self-employed might be also attributed to the fact that individuals with no formal qualification are less likely to receive further training in Germany and additionally are more likely to work in jobs with a high amount of routine (Flake, Malin, Middendorf, & Seyda, 2014). Both conditions might restrict the amount of human capital useful for starting and running a business, which an individual can receive out of dependent work.

Taken together the empirical results suggest that, independent of the operationalization and measurement of disability, in both age groups and both cohorts being disabled has a highly significant and very robust negative influence on the decision to become self-employed. As argued in the theory and introduction sections, this might be affected by the specific German laws and support measures dealing with disability Disabled individuals in the older age groups exhibit a higher likelihood of becoming an entrepreneur than the younger age group due to their former educational decisions and careers.

3.6 Robustness checks

Further analysis can help to identify possible specific influences of other variables on the decision to become an entrepreneur for disabled people and people without a disability. An exogenous switching analysis for both groups, being disabled or not-disabled and being severely disabled or not, was undertaken. Disability as a continuous variable is not used in these analyses, since the amount of cases available for each rising grade of disability might lead to non-representative results. We do undertake these robustness checks, to a) support our former results and b) to deliver more in-depth results regarding the heterogeneity of disabled people explaining more precisely their decision regarding the labor market and thus the impact of context differentiating different kinds of disability.

Table 6: The influence of vocational qualifications and personal characteristics on being self-employed in non-disabled and disabled younger individuals

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 25-44 years

	Group I Non-disabled	**Group II Disabled**
Vocational qualification (reference category: vocational degree in STEM):		
Vocational degree in Healthcare	0.973 (0.059)	0.912(0.489)
Vocational degree in Economics, Laws or Social Science	0.960 (0.042)	1.266(0.410)
Vocational degree (other)	1.986***(0.077)	1.529(0.571)
Academic degree in STEM	1.064 (0.054)	1.776(0.920)
Academic degree in Healthcare	2.605***(0.200)	6.903***(4.958)
Academic degree in Economics, Laws or Social Science	1.590***(0,076)	0.965(0.625)
Academic degree (other)	2.758***(0.123)	4.763***(1.858)
No formal qualification	1.454***(0.065)	0.920(0.342)
Personal characteristics:		
Gender (reference category: male)	0.497***(0.014)	0.514***(0.121)
Living in a partnership	0.962**(0.029)	1.530(0.515)

Parent with children under age 18	1.011(0.029)	1.529(0.453)
Migration background (no personal experience)	1.108*(0.043)	1.002(0.487)
Migration background (personal experience)	1.090**(0.061)	0.828(0.285)
Age	1.379***(0.042)	2.041**(0.703)
Age Square	0.996***(0.000)	0.992*(0.005)
Pseudo R^2	0.0469	0.0849

Note: Own calculation with Mikrozensus 2013 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

The switching regression delivers more insight about the key factors influencing the occupational choice decision. Thus, it can be shown that younger individuals with and without disability seem to be influenced by different factors in their decision of being self-employed, even when in this age group the rate of disabled individuals is less than five percent (explaining some non-significant results). Comparing the results of 2009 and 2013, there is another robust result: Non-disabled people with no formal qualification are more likely to be entrepreneurs. Disabled people with no formal qualification however are less likely to be self-employed than people with a vocational degree in STEM and therefore more likely to be employed in dependent work. They seem to either choose other available career options in dependent work or are not able to realize a career as an entrepreneur. Entrepreneurship is therefore not their last resort. To some degree this might seem obvious: People with an intellectual disability are primarily taught in German special schools. Although it is possible to gain a regular school certificate at these schools, about three quarters of the pupils there are not able to achieve a certificate of secondary education, limiting their future possibilities on the labor market (Klemm, 2009). They are therefore more likely to be trained in German sheltered workshops, which do not offer a regular vocational or even academic degree, and also continue to work after their initial training in those facilities (Detmar et al., 2008). It can be assumed that the amount of people with intellectual disabilities is higher in the regarded younger age group than in all people with disabilities in Germany, as this condition is often existent at birth or in the first years

of childhood. On the contrary, several illnesses like cancer, chronic back pain or diabetes are more likely to be found within higher age groups (Statistisches Bundesamt, 2014). Looking at personal characteristics, non-disabled people living in a partnership are less likely to be self-employed compared to their peers. This result is significant in both cohorts, which is a unique effect in the regression analysis compared to former analysis shown in Table 4. Females, disabled or non-disabled, are less likely to be self-employed than males. Having a child under 18 years increases the likelihood of being self-employed in both groups. Looking at the migration background, migrants without a disability are more likely to be self-employed in both cohorts.

Table 7: The influence of vocational qualifications and personal characteristics on being self-employed in non-disabled and disabled older individuals

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 45-64 years

	Group I Non-disabled	**Group II Disabled**
Vocational qualification (reference category: vocational degree in STEM):		
Vocational degree in Healthcare	1.433***(0.067)	1.672***(0.320)
Vocational degree in Economics, Laws or Social Science	1.060**(0.034)	1.118(0.161)
Vocational degree (other)	1.887***(0.055)	2.002***(0.262)
Academic degree in STEM	1.508***(0.055)	2.737***(0.486)
Academic degree in Healthcare	9.255***(0.504)	1.042***(2.672)
Academic degree in Economics, Laws or Social Science	2.263***(0.089)	2.855***(0.536)
Academic degree (other)	2.207***(0.081)	1.792***(0.352)
No formal qualification	1.022 (0.041)	0.652**(0.122)
Personal characteristics:		
Gender (reference category: male)	0.435***(0.010)	0.540 ***(0.055)
Living in a partnership	0.935***(0.021)	0.898(0.089)
Parent with children under age 18 (reference category: having no children under 18)	1.224***(0.030)	1.240(0.181)

Migration background (no personal experience)	1.214*(0.130)	1.053(0.533)
Migration background (personal experience)	0.850***(0.026)	0.535***(0.099)
Age	0.831***(0.030)	0.537***(0.088)
Age Square	1.000***(0.300)	1.001***(0.002)
Pseudo R^2	0.0525	0.0606

Note: Own calculation with Mikrozensus 2013 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

A sub-group analysis of older individuals with and without disabilities shows again some significantly unique effects as well as some similarities. Disabled individuals with no formal qualification in the age group of 45 to 64 years are significantly less likely to opt for self-employment than are individuals with a vocational degree in STEM. The estimated odds ratio of 0.652 is significant at the 5 percent level and more distinguished from one than the non-significant result of 0.920 for younger individuals. To some degree the group of older disabled individuals with no formal qualification might consist of disabled individuals, who never got a job on the regular labor market but held a job in sheltered workshops after their initial training. However, all in all the majority of disabled individuals acquire their condition later in life, after having already established a career and seem to be able to maintain it. Considering personal characteristics, older females in both subgroups are less likely to become entrepreneurs than are their male peers. The effect for disabled individuals is somewhat weaker, indicating that older disabled individuals are more influenced by their health than their gender in their decision to become self-employed.

In a last step, a third exogenous switching analysis for not severely disabled people and severely disabled people is undertaken, as the sample of all disabled individuals consists of people who have access to some benefits but might face restrictions to others, especially tailored for severely disabled people. So, this analysis provides deeper insights in the differences between the two subgroups regarding the different grades of disability.

Table 8: The influence of vocational qualifications and personal characteristics on being self-employed in non-severely disabled and severely disabled younger individuals

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 25-44 years

	Group I Not severely disabled	**Group II Severely Disabled**
Vocational qualification (reference category: vocational degree in STEM):		
Vocational degree in Healthcare	0.995(0.060)	1.049(0.711)
Vocational degree in Economics, Laws or Social Science	0.967(0.040)	1.135(0.471)
Vocational degree (other)	2.013***(0.076)	0.886(0.482)
Academic degree in STEM	1.082(0.054)	3.337**(1.874)
Academic degree in Healthcare	2.735***(0.210)	1.229***(1.118)
Academic degree in Economics, Laws or Social Science	1.581***(0.074)	0.834(0.651)
Academic degree (other)	2.803***(0.122)	4.872***(2.178)
No formal qualification	1.473***(0.064)	0.676 (0.296)
Personal characteristics:		
Gender (reference category: male)	0.493***(0.013)	0.601*(0.176)
Living in a partnership	0.961(0.028)	2.208**(0.717)
Parent with children under age 18	1.029(0.029)	1.045(0.323)
Migration background (no personal experience)	1.091(0.058)	1.680(0.856)
Migration background (personal experience)	1.056*(0.034)	0.897(0.387)
Age	1.380***(0.043)	1.520(0.609)
Age Square	0.997***(0.000)	0.996(0.005)
Pseudo R^2	0.0468	0.1171

Note: Own calculation with Mikrozensus 2013 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Results from this switching regression deviate from the former analysis in certain aspects. In all sub-group analyses as well as the overall regression analyses females are less likely than their male counterparts to become self-employed, a result that is

not surprising but consistent with current research. Surprisingly however, the odds ratio for younger severely disabled females compared to younger severely disabled males is the weakest of all of the groups. In 2009 the weakest effect is found among older severely disabled females in comparison to their peers, indicating that it is not the age but rather the severity of disability that influences females in their decision to become self-employed. Both genders have access to the same specific compensations for severely disabled individuals, which could help to close the gap between them. Different from all other subgroups, younger severely disabled people living in a partnership are significantly more likely to be self-employed than their peers living alone. As severely disabled individuals could have specific challenges that might affect their private life (e.g. physically disabled people keeping up their household), a stable partnership might be vital for them.

Table 9: The influence of vocational qualifications and personal characteristics on being self-employed in non-severely disabled and severely disabled older individuals

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 45-64 years

	Group I Not severely disabled	**Group II Severely Disabled**
Vocational qualification (reference category: vocational degree in STEM):		
Vocational degree in Healthcare	1.440***(0.65)	2.015***(0.497)
Vocational degree in Economics, Laws or Social Science	1.059*(0.033)	1.222(0.227)
Vocational degree (other)	1.880***(0.053)	2.271***(0.394)
Academic degree in STEM	1.577***(0.056)	2.450***(0.563)
Academic degree in Healthcare	9.805***(0.513)	8.875***(2.837)
Academic degree in Economics, Laws or Social Science	2.304***(0.087)	2.915***(0.687)
Academic degree (other)	2.235***(0.080)	1.872**(0.467)
No formal qualification	1.017(0.039)	0.689*(0.152)
Personal characteristics:		
Gender (reference category: male)	0.440***(0.009)	0.554***(0.072)
Living in a partnership	0.932***(0.020)	1.015(0.128)

Parent with children under age 18	1.240***(0.030)	1.273(0.241)
Migration background (no personal experience)	1.253**(0.128)	0.840(0.623)
Migration background (personal experience)	0.812***(0.024)	0.440***(0.114)
Age	0.825***(0.030)	0.599**(0.123)
Age Square	1.002***(0.000)	1.005***(0.002)
Pseudo R^2	0.0531	0.0606

Note: Own calculation with Mikrozensus 2013 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

The influences of vocational qualifications and personal characteristics on the likelihood of becoming an entrepreneur for older severely disabled individuals was also analyzed. Concerning vocational qualification, all severely disabled individuals possessing an academic or vocational degree are more likely to be self-employed than their peers possessing a vocational degree in STEM. This result is specific to the subgroup of all older disabled individuals found in Table 9, indicating that older (severely) disabled individuals possessing a vocational degree in STEM are less likely to be self-employed than nearly all their peers. A reason why older individuals possessing a vocational or academic degree in STEM choose to avoid entrepreneurship might be that the overall demand for skilled workers with this type of qualification was very high in 2013 (Bundesagentur für Arbeit, 2014). Older severely disabled individuals with no formal qualification are slightly more likely to be self-employed than all older disabled individuals. The odds ratio of 0.689 is slightly closer to one than 0.652. This is surprising, because individuals in this group are likely to alter their job after the onset of a disability. Jobs associated with no formal qualifications are more physically challenging, as 80,5 percent of all individuals in Germany working in un- or semiskilled labor had tasks associated with manual labor in their jobs. Only 48,2 percent of all professionals with a degree had manual labor as part of their job description (Flake et al., 2014). As the overall amount of severe disabilities based on physical grounds rises in higher age groups (Statistisches Bundesamt, 2014), severely disabled individuals with no formal qualification might find themselves in a situation to be unable to perform manual

labor. Becoming self-employed could be a suitable alternative but working in a sheltered workshop or even opting out of the labor market into social security or retirement could also be suitable alternatives. The results so far imply that disabled people as a group and severely disabled people as a subgroup are less likely to be self-employed than people without disability in both age groups.

Further Robustness checks

After looking at our first research question and establishing a difference between non-disabled and (severely) disabled individuals, an examination of the differences between those two groups using an Oaxaca-Blinder decomposition is performed to underline, that the observed existing differences might really be caused by the influence of disability, but rather by a different distribution of characteristics traits.

As an example, females seem to be less likely to start a career as an entrepreneur than males. The distribution in gender between disabled and non-disabled people varies, as males are more likely to be disabled than females. The Oaxaca-Blinder decomposition identifies the adjusted difference between two groups, which will still hold up, if all characteristics in both groups would be equal. We tested this for both separated groups in both age classes.

Table 10: An Oaxaca-Blinder decomposition to determine the influence of different endowments of younger non-disabled and disabled individuals on being self-employed

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 25-44 years

	Model A: 1. Not Disabled 2. Disabled	Model B: 1. Not severely disabled 2. Severely disabled
Unadjusted Difference	0.050 ***(0.004)	0.051***(0.004)
Cumulated explained difference	-0.006***(0.001)	-0.006***(0.002)
Cumulated unexplained difference	0.056***(0.004)	0.057***(0.004)
Explained part in variables:		
Vocational degree in Healthcare	0.000(0.000)	0.000(0.000)
Vocational degree in Economics, Laws or Social Science	0.000(0.000)	0.000(0.000)
Vocational degree (other)	0.001***(0.000)	0.002***(0.000)
Academic degree in STEM	0.000(0.000)	0.000(0.000)
Academic degree in Healthcare	0.001***(0.000)	0.001***(0.000)
Academic degree in Economics, Laws or Social Science	0.001***(0.000)	0.001***(0.000)
Academic degree (other)	0.002***(0.000)	0.002***(0.000)
No formal qualification	-0.004***(0.001)	-0.006***(0.001)
Gender	-0.001***(0.000)	-0.002***(0.001)
Living in a partnership	0.000(0.000)	0.000(0.000)
Parent with children under age 18	0.000(0.000)	0.000(0.000)
Age	-0.027*** (0.004)	-0.020***(0.004)
Age Square	0.021***(0.004)	0.016***(0.003)
Migration background (no personal experience)	0.000 (0.000)	0.000(0.000)
Migration background (personal experience)	0.000***(0.000)	0.000***(0.000)
Unexplained part in variables:		
Vocational degree in Healthcare	0.000(0.001)	0.000(0.001)
Vocational qualification in Economics, Laws or Social Science	-0.002(0.003)	-0.001(0.003)
Vocational qualification (other)	0.001(0.002)	0.003*(0.002)
Academic degree in STEM	-0.001(0.001)	-0.001*(0.000)
Academic degree in Healthcare	0.000(0,000)	0.000(0.000)
Academic degree in Economics, Laws or Social Science	0.001(0,001)	0.001(0.001)
Academic degree (other)	-0.001(0,001)	-0.001(0.001)

No formal qualification	0.006(0,005)	0.011(0.007)
Gender	-0.002(0,015)	-0.009(0.017)
Living in a partnership	-0.009(0,006)	-0.013**(0.005)
Parent with children under age 18	-0.005(0.004)	0.000(0.003)
Age	-0.617(0.518)	-0.136(0.560)
Age Square	0.290(0.262)	0.039(0.280)
Migration background (no personal experience)	0.000(0.001)	-0.001(0.001)
Migration background (personal experience)	0.001(0.001)	0.001(0.002)

Note: Own calculation with Mikrozensus 2013 data, weighted, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Table 11: An Oaxaca-Blinder decomposition to determine the influence of different endowments of older non-disabled and disabled individuals on being self-employed

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 45-64 years

	Model A: 1. Not Disabled 2. Disabled	Model B: 1. Not severely disabled 2. Severely disabled
Unadjusted difference	0.072***(0.003)	0.065***(0.003)
Cumulated explained difference	0.004***(0.001)	0.003***(0.001)
Cumulated unexplained difference	0.068***(0.003)	0.062***(0.003)
Explained part in variables:		
Vocational degree in Healthcare	0.000*(0.000)	0.000(0.000)
Vocational degree in Economics, Laws or Social Science	0.000(0.000)	0.000(0.000)
Vocational degree (other)	0.002***(0.001)	0.003***(0.001)
Academic degree in STEM	0.003***(0.001)	0.002***(0.001)
Academic degree in Healthcare	0.004***(0.001)	0.002***(0.001)
Academic degree in Economics, Laws or Social Science	0.003***(0.001)	0.002***(0.001)
Academic degree (other)	0.004***(0.001)	0.002***(0.001)
No formal qualification	0.000(0.001)	0.000(0.001)
Gender	-0.004**(0.002)	-0.004**(0.002)
Living in a partnership	-0.001**(0.000)	-0.001**(0.001)
Parent with children under age 18	0.005***(0.001)	0.005***(0.001)
Age	0.100***(0.028)	0.073***(0.022)
Age Square	-0.111***(0.031)	-0.081***(0.024)
Migration background (no personal experience)	0.000(0.000)	0.000(0.000)

Migration background (personal experience)	-0.001***(0.000)	-0.001***(0.000)
Unexplained part in variables:		
Vocational degree in Healthcare	-0.001(0.001)	-0.002(0.001)
Vocational qualification in Economics, Laws or Social Science	-0.001(0.002)	-0.002(0.003)
Vocational qualification (other)	-0.001(0.001)	-0.001(0.002)
Academic degree in STEM	-0.002***(0.000)	-0.001**(0.001)
Academic degree in Healthcare	0.000(0.000)	0.000(0.000)
Academic degree in Economics, Laws or Social Science	-0.001(0.000)	-0.001(0.001)
Academic degree (other)	0.001(0.001)	0.001(0.001)
No formal qualification	0.005**(0.002)	0.004(0.003)
Gender	-0.023**(0.011)	-0.023(0.014)
Living in a partnership	0.002(0.005)	-0.003(0.006)
Parent with children under age 18	0.000(0.001)	0.000(0.001)
Age	1.745***(0.664)	1.278(0.868)
Age Square	-0.926***(0.334)	-0.688(0.438)
Migration background (no personal experience)	0.000(0.000)	0.000(0.000)
Migration background (personal experience)	0.004**(0.002)	0.005**(0.002)

Note: Own calculation with Mikrozensus 2013 data, weighted, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

In both models for the younger people the unadjusted difference between the two groups is actually smaller than the cumulated unexplained part in variables. The unadjusted difference between non-disabled and disabled people (0.50) is less than the cumulated unexplained difference between both groups (0.56). Similarly, the unadjusted difference between not severely people and severely people (0.51) is less than the cumulated unexplained difference (0.56). A further Oaxaca-Blinder decomposition is estimated for older disabled individuals. The results are almost the same: The unadjusted difference between non-disabled and disabled people (0.72) is larger than the cumulated unexplained part in variables (0.68). Similarly, the unadjusted difference between not severely disabled people and severely disabled people (0.65) is larger than the cumulated unexplained part in variables (0.62). As in the case of younger people only a small part of the difference can be explained.

Thus, for both age groups we observe, if all characteristic traits between the subgroups would be equal either younger or older (severely) disabled people would be fractionally less likely to be self-employed. Similar patterns can be found for the Mikrozensus 2009 dataset. Thus, all the results are robust and tested in different ways Therefore, disabled individuals in general are less often entrepreneurs than non-disabled. Similarly, severely disabled individuals are less likely to be entrepreneurs than less severely disabled.

There is a possible restriction resulting from including only individuals who are economically active in the analysis. Data from the British Life Opportunities Survey suggests that certain types of disabilities like health conditions or behavioral problems are correlated with a lower chance of participation in the labor market (Berthoud, 2014). Following this line of thought, the regarded sample might not be random but might consist of a self-selection of disabled individuals that are more likely to cope with their individual condition. Therefore, a two-stage Heckman-Correction (Heckman, 1979) was performed.

Table 12: Two-step-Heckman-Probit-Regression for younger individuals

Only persons between 25-44 years

	Model A (Disability)	Model B (Severe disability)	Model C (Disability as a continuous variable)
Wald Chi²	2833.03	2756.26	2819.26
Prob > chi²	0.000	0.000	0.000
First Stage - dependent variable: being active on the labor market (yes / no)			
Being disabled	-0,516***(0,023)	-0,494***(0,026)	-0,007***(0,000)
Vocational qualification (reference category: vocational degree in STEM):			
Vocational degree in Healthcare	0,119***(0,022)	0,119***(0,021)	0,119***(0,021)
Vocational degree in Economics, Laws or Social Science	0,007(0,017)	0,005(0,017)	0,006(0,017)
Vocational degree (other)	-0,063***(0,018)	-0,065***(0,018)	-0,064***(0,018)
Academic degree in STEM	0,108***(0,024)	0,114***(0,024)	0,113***(0,024)
Academic degree in Healthcare	0,217***(0,045)	0,222***(0,045)	0,222***(0,045)

Academic degree in Economics, Laws or Social Science	0,152***(0,024)	0,157***(0,024)	0,156***(0,024)
Academic degree (other)	0,086***(0,022)	0,091***(0,022)	0,089***(0,022)
No formal qualification	-0,715***(0,016)	-0,716***(0,016)	-0,709***(0,016)
Personal characteristics:			
Gender (reference category: male)	-0,436***(0,011)	-0,433***(0,010)	-0,435***(0,010)
Living in a partnership	0,282***(0,011)	0,284***(0,011)	0,282***(0,011)
Parent with children under age 18	-0,363***(0,011)	-0,356***(0,011)	-0,358***(0,011)
Migration background (no personal experience)	-0,160***(0,020)	-0,156***(0,020)	-0,159***(0,020)
Migration background (personal experience)	-0,309***(0,012)	-0,305***(0,012)	-0,308***(0,012)
Age	0.083***(0.011)	0.082***(0.010)	0.083***(0.011)
Age Square	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.000)
Exclusionary Variables:			
Year the facility the individual lives in was build (reference category: before 1987)			
Between 1987 and 1991	0,051(0,032)	0,050(0,032)	0,052*(0,032)
After 1991	0,167***(0,013)	0,168***(0,013)	0,170***(0,013)
No data available	-0,008(0,063)	-0,022(0,063)	-0,021(0,063)
Individual receives a pension (reference category: yes)			
No	0,909***(0,034)	0,961***(0,034)	0,935 *** (0,034)
No data available	0,070(0,406)	-0,027(0,403)	-0,023(0,406)
Second Stage – dependent variable: being self-employed (yes / no)			
Being disabled	-0.514*** (0.052)	-0,530***(0,063)	-0,008***(0,001)
Vocational qualification (reference category: vocational degree in STEM):			
Vocational degree in Healthcare	0,009 (0,029)	0,006(0,029)	0,008(0,029)
Vocational degree in Economics, Laws or Social Science	-0,008 (0,021)	-0,008(0,021)	-0,007(0,021)
Vocational degree (other)	0,346*** (0,020)	0,347***(0,020)	0,345***(0,020)
Academic degree in STEM	0,026 (0,025)	0,028 (0,025)	0,028(0,025)
Academic degree in Healthcare	0,486*** (0,042)	0,486***(0,042)	0,487***(0,042)
Academic degree in Economics, Laws or Social Science	0,226*** (0,025)	0,226***(0,025)	0,226***(0,025)

Academic degree (other)	0,506*** (0,024)	0,510***(0,024)	0,510***(0,024)
No formal qualification	0,148*** (0,035)	0,162***(0,035)	0,150***(0,035)
Personal characteristics:			
Gender (reference category: male)	-0,370***(0,017)	-0,363***(0,018)	-0,370***(0,017)
Living in a partnership	0,015(0,017)	0,011(0,017)	0,015(0,017)
Parent with children under age 18	-0,003 (0,017)	0,003(0,017)	-0,003 (0,017)
Migration background (no personal experience)	0,068(0,028)	0,070 (0,028)	0,067(0,028)
Migration background (personal experience)	0,046(0,019)	0,052*(0,019)	0,045(0,019)
Age	0.148***(0.015)	0.147***(0.015)	0.149***(0.015)
Age Square	-0.002***(0.000)	-0.002***(0.000)	-0.002***(0.000
Further controls in both stages: Personal residence in in a federal state of Germany (16)			

Note: Own calculation with Mikrozensus 2013 data, weighted, Probit Regression, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

In the first stage the variable of being active on the labor market is analyzed. In the second stage the analysis of being self-employed is performed. Two exclusionary variables are used in the first stage: First the age of the household in which an individual currently lives. People not active in the labor market could tend to live in older facilities because of a more affordable rent or their housing is assigned to them by the social welfare office in Germany. Another variable measures if people receive a pension. People not active on the labor market might receive such a payment more often than people active on the labor market, e.g. as part of a vocational disability pension. There is no indication available that entrepreneurs are more likely to receive a pension during their working age than people working in dependent work or vice versa. As both dependent variables (being disabled and being active on the labor market) are binary a probit model was estimated. The Wald-Test indicates that all three models –similar to the ones tested in Table 4- are significant. In the first stage, the status of being disabled lowers the chance of being employed in all three models. Similar to the non-Heckman-model the chance of being self-employed for younger disabled individuals in the second stage is ceteris paribus weaker compared to their non-disabled peers. All the results are highly

significant at the one percent level. Further, the exclusionary variables in the first model prove to be significant. The additional analysis therefore indicates that the former results found in Table 4 are not caused by a sample bias. As the coefficients of a probit-regression are based on different assumptions than the odds ratios of a logistic regression, no further classification of the strengths of the effects in the different approaches can be made. A similar Heckman-model for older individuals was estimated as well. The coherent Wald-Test indicates that all three models are significant. The results indicate a negative effect of being disabled in all three models on the likelihood of an individual being active on the labor market in the first stage and being self-employed in the second stage. All results are significant for a one percent level. Therefore, it is unlikely that the results for older individuals found in Table 5 are caused by a selection bias. This strengthens the robustness of the results found in Table 4 and 5.

3.7 Discussion and implications

Theoretical and empirical implications

The analyses indicate that disabled people in Germany are ceteris paribus significantly less likely to become entrepreneurs than are non-disabled individuals. These results stay true across different measures of disability. Further, a disability mitigates the chance of younger people in the age group of 25 to 44 years old at the beginning of their career as well as the likelihood of becoming an entrepreneur for older people in the age group of 45 to 64. Based on an Oaxaca-Blinder decomposition these effects cannot be explained by different endowments within the groups, e.g. disabled individuals are more likely to be male. In contrast, the difference would be greater if disabled and non-disabled individuals would share the same characteristic traits. In both cohorts (2009 and 2013) only a small amount of the existing difference can be attributed to a different set of characteristic traits within the respective subgroup. These results indicate mediating effects outside of the included variables, which further cannot be explained by cyclical fluctuations. Therefore, a disability gap in Germany considering entrepreneurial choice does exist.

Based on representative data this study establishes a negative link between a personal trait, disability, and the likelihood of becoming an entrepreneur in the specific national, institutional context of Germany. It furthers the discussion on the influence of societal institutions on the likelihood of hindering or enabling marginalized individuals becoming entrepreneurs. With respect to the German context, the study shows that the potential of disabled individuals to become entrepreneurs might not be realized due to existing labour market institutions. While these institutional settings might be able to bring disabled people into the employed labour market, they not supporting them like in other countries to join self-employment with the same chance or effort (Balcazar, Kuchak, Dimpfl, Sariepella & Alvarado 2014; Maritz & LaFerriere 2016).

The sample of our study only includes individuals who are either eligible or entitled to receive labor market relevant compensations by the German federal authorities. Those compensations could be an explanation for the behavior of the regarded individuals, as most of those benefits favor workers in dependent work, e.g. by offering severely disabled workers additional paid leave, job protection and tax advantages. Pagán (2009) on the contrary uses a disability definition based on the self-assessment of an individual, which holds across different countries, but is not a selective indicator to identify individuals actually being able to get specific compensations.

Disabled and non-disabled individuals seem to be influenced by different factors in their decision to become self-employed. Older disabled people with no formal qualifications, and therefore an additional smaller chance to participate in the labor market, are even less likely to be an entrepreneur than disabled people with a vocational qualification in STEM. A result that is exactly the opposite regarding their non-disabled younger peers, indicating that necessity entrepreneurship, which is more likely to be associated with low formal qualification, might not be a prime objective for people with no formal qualifications and without a disability. Younger disabled people with no formal qualification might instead opt for other alternatives available, like working in a sheltered workshop. Comparing severely disabled people to all disabled people this study found several unique effects, e.g. the effect

of gender on the chance of older severely disabled individuals in 2009 and younger severely disabled individuals in 2013 is the smallest in all regarded subgroups in each cohort.

There are important implications emanating from this study. The number of startups and self-employed people in Germany has been declining in the last few years (Suprinovič & Norkina, 2015) and assisting marginalized groups could be a counteraction to this development. The average amount of people with disabilities in their respective age group strongly increases with age but is still just slightly more than five percent at the higher end of the regarded spectrum of younger people in this study. The non-realized entrepreneurial activities of young people with disabilities might hence not be crucial for the German labor market. Activating young people with disabilities for entrepreneurship could be part of a broader strategy to empower individuals with disabilities to have a rewarding professional life. Therefore, existing benefits that help people with disabilities to stay active in the labor market should not be abolished, even if they prevent entrepreneurial activities. On the contrary, more benefits for self-employment should be established (see i.e. Maritz & LaFerriere, 2016; Balcazar et al., 2014) e.g. to possibility combine self-employment and an activity in a sheltered workshop without losing the related benefits of the later activity. Tax advantages might help to increase the rate of disabled entrepreneurs. Moreover, promoting peer and role models (Halabisky, 2014) might show disabled individuals that in every age group and in different situations, this occupational choice is a possibility and might be a success, offering a fulfilled life. Further qualitative studies on successful founders could offer evidence-based solutions.

Adequate educational opportunities could also assist people with disabilities to choose the most fitting employment situation. As Callahan, Shumpert & Mast (2002) note, entrepreneurship might not be the right solution for everyone with a disability wishing to participate in the regular labor market. While access to entrepreneurship should be promoted, it should not be forced upon people with disabilities. Younger people might profit from an enhanced entrepreneurial education in special schools, e.g. the option to shadow disabled entrepreneurs that

could act as a positive role model. In general, the school education for the young disabled should not stop after the first-degree level along with the support measures. Every disabled young individual wanting and able to finish secondary education should be supported. Still, more data is needed to identify the particular conditions under which entrepreneurship is a preferable choice for a disabled young professional compared to working in dependent employment. Future studies should therefore have a closer look at the early occupational intentions of disabled individuals.

Entrepreneurial education could also provide further options for older people, e.g. people who cannot stay in their current job due to health problems and have to train for another job, should be counseled for fitting opportunities in entrepreneurship by the Federal Employment Agency.

The local Chambers of Commerce could organize workshops that specifically target entrepreneurial opportunities for people with disabilities. Focusing on older disabled people is important, as they comprise a larger portion of their respective age group, bringing in more experience and business ideas due to their former career.

Those individuals still taking part in the labor market are more likely to be an entrepreneur than their younger peers. A blind spot of this study are those older individuals heading out of the labor market before their retirement age as Pagán-Rodríguez (2012) demonstrates with the SHARE dataset, transitions from self-employment out of labor are more common in disabled individuals aged 50 or more in comparison to their non-disabled peers. He argues that self-employment might act as bridge for older disabled individuals, who are not able to cope with their current job but might still want to stay active in the labor market. Currently the compensations available to disabled individuals are not tailored to differentiating the needs of disabled people in different age groups. Identifying those specific needs could be another interesting study approach.

Limitations and further research

In our analyses we differentiate between different grades of disability to look at the possible influence of existing compensations on the choice of an individual being self-employed. An important restriction lies in the fact that the dataset lacks information about the type of disability, so that the effects of unique disabilities, like cerebral palsy, are not considered. Just as the studies of Pagán (2009), Renko et al. (2015) and Maritz & LaFerriere (2016) also do not work with quantitative datasets containing this additional information, this limitation does not weaken our results or usefulness for comparing the German situation to that of other countries.

An alternative approach could be that the grade of disability is to some extent measuring the amount of restrictions an individual face in his or her life. Therefore, individuals with a high grade of disability would more likely have a specific set of skills that enables them to cope with certain situations but might fail in other contexts. In an empirical study exploring Lazear's (2004, p. 211) jack-of-all-trades-theory, that "entrepreneurs are generalists who are good at a variety of skills", Backes-Gellner & Moog (2013) discover that individuals with a more balanced set of human and social capital are more likely to have entrepreneurial intentions than individuals with a more specific set. While the authors focus on work experience and academic skills to operationalize human capital, Becker (1962) includes health as a facet of human capital. Individuals with more restrictions in health could therefore be theoretically less likely to have entrepreneurial intentions. On the other hand, the entrepreneur and founder of Virgin Records Richard Branson cites his dyslexia as a main driver for his entrepreneurial success, as he achieved to learn the skill of delegation to equalize his individual weaknesses and further gained an advantage as he used easily understandable communication (Egan, 2015). Branson is not the only entrepreneur confronting learning difficulties (Smith, 2008). The causal relation between affected skills by a disability and entrepreneurial intentions could be ambiguous.

Furthermore, using a cross section approach limits the scope of analysis to a singular point in time and neglects possible developments over a longer period of

time, e.g. entrepreneurs, who have been successful for a long time are more likely to be included in the dataset than entrepreneurs, who fail after a short period of time. Entrepreneurs with disabilities might still face barriers on the labor market (Caldwell, Parker Harris, & Renko, 2016) and therefore could be less likely to succeed in the medium or long run than non-disabled entrepreneurs. Finally, reviewing the results, one has to take into consideration that the Mikrozensus does not contain information about personality traits of individuals. Certain personality traits, e.g. singular traits of the five-factor-model like high levels of extraversion (Caliendo, Fossen, & Kritikos, 2012) or low levels of neuroticism (Zhao & Seibert, 2006) are more likely to be correlated with entrepreneurship and might influence the decision of individuals to become an entrepreneur and maintain also this position. The onset of a chronic disease might change the affected individual's personality in related characteristics such as lowering extraversion (Jokela, Hakulinen, Singh-Manoux, & Kivimäki, 2014). Further, being disabled might also negatively influence self-confidence needed to achieve entrepreneurial success due to third persons, e.g. family members or friends, providing advice to seek out other options (Mayhew, 2009). On the other hand, some personality traits that might favor entrepreneurship could be more prevalent in people with mental disabilities, e.g. high creativity might help nascent entrepreneurs to spot market niches and to promote their products, as creativity is a common side effect of bipolar disorder or depression (Freeman et al., 2018).

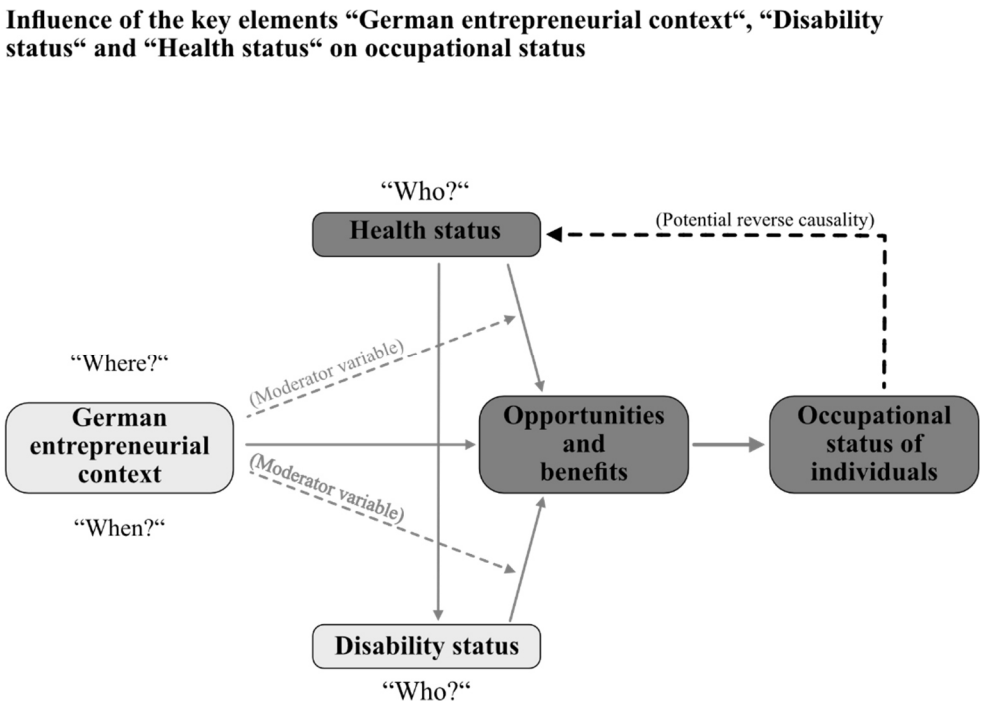
Thus, personality traits might have an important effect this paper could not incorporate.

However, regardless of this and the mentioned limitations the paper delivers interesting and new contributions highlighting the importance of context in analyzing the occupational choice of disabled individuals regarding entrepreneurship in a specific country context.

The following second paper of the PhD thesis at hand will provide a different perspective (Figure 5). As prior discussed, the Mikrozensus dataset offers no information concerning the "health status" of an individual apart from the resulting

"disability status" recognized by the state. The "health status" of an individual on its own might have a singular effect on the "opportunities and benefits" and the resulting "occupational status of individuals" (Shepherd & Patzelt, 2017). As the "health status" might be influenced by a variety of factors, one factor, that has gained recognition in the last years in entrepreneurship research (Wiklund et al., 2018), is chosen as a focus point: Mental illness. Mental illness as a concept could not only influence the "occupational status of individuals" but entrepreneurial work itself could have a potential reverse causality on the "health status" of individuals (Shepherd, 2019). While the "German entrepreneurial context" is part of the regarded picture, it is not as central as in the first paper, as research from a variety of national contexts is shown and discussed. Some of the regarded studies also use "disability" and "illness" as exchangeable terms, but no studies offer an assessment of recognized mental disabilities in the German context.

Figure 5: Main regarded (potential) interdependencies of the second paper



Paper 2: Entrepreneurship and mental illness: a multi-layered relationship

Abstract:

Recent coverage after the suicides of prominent entrepreneurs was based on the narrative that entrepreneurship worsens or causes mental illnesses through work related factors like stress and uncertainty. But could entrepreneurship also be a preferable choice for mentally ill and disabled individuals in the first place? This study provides a review of current literature concerning incentives and barriers for mentally ill and disabled individuals to choose entrepreneurship. As a first step, the dominant social definition of disability and the implications of using this approach in the context of mental illness and entrepreneurship are discussed. In the following, related studies are separately clustered at an individual and a societal level. A specific focus is made on studies related to the situation of mentally ill and disabled individuals in Germany. The results indicate that the entrepreneurial journey of an individual with a mental disability could be influenced by a variety of factors: On the one hand, an entrepreneurial activity could provide them benefits, although some benefits are not specific for (mentally) disabled individuals. On the other hand, most barriers are specific. Societal stigma could act as an incentive or a barrier to enter entrepreneurship. Proposals for further research conclude the study.

4.1 Introduction

Entrepreneurs play a critical part in the value-added process of their business, e.g. by setting the policy for further development adequately using and expanding the assets of their company (Dollinger, 2008) or by acting as a representative of their company to stakeholders (Petkova, Rindova & Gupta, 2008) and building and sustaining network contacts (Witt, 2004). In family businesses, entrepreneurs embody to a certain degree an ongoing tradition of merits and are therefore a living symbol of the trust connected to their company by customers and society (Bertrand & Schoar, 2006). Hence, it is not surprising that the personal attributes of an entrepreneur have been a frequent theme in entrepreneurial research (Parker, 2009; Simoes et al., 2015). But not every attribute has received the same interest, partly because some of them are latent, as they cannot be directly observed.

A distinguished example are mental illnesses and mental disabilities, conditions that have gathered increasing media attention in the last few years, partly due to the suicide of prominent entrepreneurs like Austen Heinz, Kate Spade and Ilya Zhitomirskiy (Altucher, 2016; Bruder, 2014; Carson, 2015; Gourguechon, 2018; Harris, 2018; Morin, 2015; Shandrow, 2015). Personal branding, which can be done by a variety of communication channels, from traditionally building networks using conferences up to writing a blog, is a crucial part of entrepreneurial activity (Raftari & Amiri, 2014). In small and medium enterprises, the brand of a company might be knotted to the personal brand of an entrepreneur (Razeghi, Roosta, Gharache & Alemtabriz, 2016). As entrepreneurs are well known to the public for this reason, the suicide of an entrepreneur could ceteris paribus gain increased interest compared to individuals from other professions. But the fundamental idea behind the coverage is that entrepreneurship itself is linked to circumstances and situations that might induce or worsen mental illnesses. Individual factors include: Debt and uncertainty about the future prospects of your company (Bruder, 2014; Morin, 2015), spending your time on work-related issues and neglecting leisure, being stressed (Altucher, 2016; Morin; 2015), and especially the need to impress others and hide your own vulnerability (Bruder, 2014; Carson 2015; Shandrow, 2015). These demands and situations could provoke a variety of mental health illnesses

and disabilities like anxieties, depressions, or addictions. Indeed, some studies suggest a connection between entrepreneurship and mental illness and disability. In a quantitative study, based on an online survey, entrepreneurs were more likely to self-report mental illnesses than their peers in a comparison group. Including the personal health history and the personal history of close family members, an occurrence of 72 percent in the subgroup of entrepreneurial participants was found (Freeman et al., 2018). Data from representative surveys for the United States of America indicate that individuals with mental impairments are significantly more likely to be part-time employees or self-employed than individuals with no disabilities, even if the rate is still lower compared to individuals with sensory or mobility impairments (Schur, 2003). This could be a first hint regarding the possible effect that being an entrepreneur might worsen a developing mentally illness or disability. In this vein but simultaneously showing that also other employment groups might suffer from this, are some results from an empirical study by Witters et al. (2012) indicating that entrepreneurs are experiencing significantly higher stress levels than individuals in other professions (by undertaking only a binary distinction between entrepreneurs and individuals from all other professions in the US) – a factor that strongly influences mental health and disability (Techniker Krankenkasse, 2016). In contrast, a study based on German data (Schaarschmidt & Fischer, 2001) associates increased mental health risks with a variety of other professions like being a teacher or a doctor. With respect to stress, a quantitative study based on Dutch data by Gorgievski, Bakker and Schaufeli (2010) offers the differentiated result that entrepreneurs report more stress concerning the quantity of their work, but they do not react more compulsively than their employed peers. Thus, stress as a potential driver in worsening mental illness is not really delivering consistent results. Hence, there is first evidence, that working as an entrepreneur might evoke the development of mental illness and disability over time. But none of these mentioned studies checked for the starting point of an existing mental disability, to specify if it started after choosing the profession or had been there before. Also, research on information on how much time did pass between the transition to entrepreneurship and an onset of mental health issues is lacking. Therefore, an important causal relationship has not been analyzed so far.

This leads to the other stream of research literature, which offers the idea, that individuals with mental illness and disability might choose to become entrepreneur in the first place (Doyel, 2002; Ostrow, Smith & Penney; 2018), because it might fit their individual needs. E.g. there is widespread evidence that many mental illnesses are intermittent (Burchardt, 2000; Rogers & Pilgrim, 2010). Affected individuals may find themselves in the unique situation that the quantity of their input and the quality of their output vary sharply on a daily basis, forcing them to look for suitable working environments, including self-employment which could offer an adequate amount of flexibility (Burchardt, 2000). Stuart (2006) elaborates that the disclosure of a mental disability in the working place might offer an individual protection against discrimination and access to several supporting systems. Those potential benefits however are accompanied with several risks like missing a promotion. An entrepreneur could potentially install an adequate working culture without having to disclose his or her condition.

To wrap up this first discussion: Even if entrepreneurship might be a favorable occupational option for mentally ill and disabled individuals, existing mental disabilities before entering entrepreneurship could still be worsened by this choice. Then again, entrepreneurial working conditions could also be a way of an individual to cope with his or her situation. Therefore, this study does not focus on mental health problems as a potential (fatal) outcome of entrepreneurial working conditions. Rather the aim of the following chapters is to use existing literature to provide an overview of potential reasons for individuals with a mental illness or disability to choose or avoid entrepreneurship. As a first step, the next chapter contains a critical discussion concerning existing definitions of mental illness and disability.

4.2 Divergent physical conditions of entrepreneurs – chances and limitations in current definitions

Making a distinction between disability, illness and personality trait can be difficult, as these terms might be ambiguous and not distinguishable from each other. In disability studies, a shift from one definition -the medical model- to another - the

social model - has taken place (Metzler, Moog & Audretsch, 2020). The medical model links the disadvantages an individual has in society to malfunctioning structures found in his or her body and mind and identifies a disability as an outcome of these structures. For example, a person challenged with autism might be disabled at the working place because he or she cannot properly identify the emotions expressed by the body language (Peterson, Slaughter & Brownell, 2015) of his or her coworkers and therefore has problems integrating into the team. Doctors should try to heal the defective structures, if possible, and therefore indirectly eradicate linked disadvantages (Lightfoot, 2009). Doctors can identify defective structures based on reference frameworks (World Health Organisation, 1992). The social model changes the perspective and tries to identify potential barriers that disable individuals to equally participate in society. Those barriers in combination with altered structures within the body or mind of an individual create a situation in which an individual is disabled (UN General Assembly, 2006). Following the social model of disability, a person with autism might be challenged in personal interaction at his or her place of employment because his or her managers believe that all their employees are able to correctly identify the body language of their co-workers and react to it accordingly. This wrong perception of alleged normalcy prohibits adequate training and might therefore lead to the disablement of a person with autism at the working place.

Collective structures might unintentionally or intentionally discriminate individuals in a society and therefore create “disability”. This idea follows partially Marxist tradition (Oliver, 1990) that individualism is associated with a capitalist society and seen as a vital part of the system. Even proposing that people with different impairments could find themselves in different situations on the labor market is an assumption that supporters of a pure social model of disability might disagree, arguing that the chances of an individual are hardly defined by his or her individual characteristics but first and foremost by society (Priestley, 2003). These ideas further to some point the work of Thomas Szasz (1960), who argues that mentally ill individuals are evaluated on a foundation of (ill-)conceived normalcy. He compares the treatment of existing discrepancies from presumed normalcy by

modern psychiatry to the attempts to cure society from demons and witches in earlier ages. In his opinion, the term mental illness should be considered a myth. Rather, such individuals are disabled due to being not able to cope with their life in society. However, Szasz (1960) and his peers originating from the anti-psychiatry movement did neither include nor pioneer the aspect of the marginalization of mentally disabled individuals by an oppressing society (Beresford, 2004). Earlier work by advocates of the social model of disability barely touched mental disability. Relevant discussion points include the civil rights of individuals with mental disabilities and their exclusion from societal environments like education, employment, up to recreation (Mulvany, 2000). The assumption that disabled entrepreneurs are disadvantaged individuals facing societal oppression can be challenged. A capitalist is defined by Marx not primarily by the ownership of capital but by employing laborers using it, making an entrepreneur, who is not merely self-employed, a capitalist per definition and therefore part of the dominant class in capitalist societies. Although there is a restriction on this argument as Marx lived in an era when professionals in management control, who organize labor but have no connection to capital, did not exist (Taymans, 1951).

Relying on the self-assessment of an individual to judge his or her situation has its own challenges. There is a possibility that individuals will not give a clear and honest answer on their experience, as they might want to distance themselves from socially undesirable traits and present a positive image of themselves in regard to the expectations of the researchers (Nederhof, 1985). In the context of mental illnesses and related social stigma (Angermeyer et al., 2013), entrepreneurs could hide their condition and symptoms for a reason. Contrary to this argument, individuals could also actively aim for being defined as disabled. In view of the specific situation of post-traumatic stress disorder, Summerfield (2001) argues that being diagnosed with a mental illness offers an individual a state of victimhood that enables him or her to receive social benefits. This argument fits an illness that is mainly associated with soldiers quite well, as they could be confronted with stigma based on their (former) profession and additional psychic discomfort from challenges like having trouble reintegrating in society. Entrepreneurs, as previously

argued, are not disadvantaged by their profession. It is therefore doubtful, if they could potentially present themselves as victims of psychic discomfort caused by society to gain advantages.

Self-reports of individuals with a mental illness or disability might also be deluded caused by the mental illness itself if an individual might not be able to judge his or her performance objectively. As an example, individuals with bipolar disorder suffer from severe mood swings, that can be often accompanied with psychotic symptoms (Anderson, Haddad & Scott, 2012; Johnson, Madole & Freeman, 2018). Affected individuals could also have a more negative self-image caused by self-stigma due to their mental illness, as Corrigan (2004) postulates. An entrepreneur with a long-term depression might be able to do a splendid daily job but could still have a negative self-image. Entrepreneurs might also not see the whole picture of their performance. Employees surrounding entrepreneurs might not tell him or her of a negative performance or unusual behavior due to politeness and a tendency to show deference to a person possessing more authority at the working place (Holmes & Stubbe, 2003). Therefore, the direct effect of a mental impairment on entrepreneurship can be partially measured by self-assessment at best.

Regarding the cases of Germany (Metzler, Moog & Audretsch, 2020) and Great Britain (Beresford, Nettle & Perring, 2010), medical professionals and social policy law makers primarily refer to the medical model to decide on assistance and compensations (although this has changed in Germany starting from the first January of 2018 (BAR, 2018)). Thus, to discuss this research question it is currently necessary to include the medical model as a basis to analyze societal influences, although the existence of a mental impairments itself is to some degree related to the self-assessment of an individual based on his or her communication, as many cases of mental impairments lack clear physical signs (Rogers & Pilgrim, 2010).

A disability is therefore in this study operationalized as a chronic or long-term impairment of an individual that alter his or her chances of participation in society including the labor market. Society might decide to ignore, compensate, or restrict affected individuals.

4.3 Prevalence of and societal attitude towards mental illness in Germany

Before arguing on individual and societal barriers and incentives mentally ill entrepreneurs in specific might face, it is helpful to consider the occurrence of and mindset towards mental illness in general within a society. In the following paragraphs data from Germany shall serve as an example.

In a representative study for the German population between 18- and 79-years, 27.7 percent of all participants reported a mental health problem in the last 12 months. Mental health problems were most prevalent in the subgroup of individuals ranging from 18 to 34 years, a subgroup that is likely to be active on the labor market (Jacobi et al., 2014). A study for the 27 states of European Union by Wittchen et al. (2011) found an even higher prevalence of 38.2 percent of all participants experiencing a mental health problem. Some differences in respect to the prevalence of specific illnesses were found for Eastern Europe, which the authors attribute to a higher consumption rate of alcohol. Interestingly, less than a third of all individuals reporting mental illnesses received medical treatment: This result indicates that the demand for mental health care is higher than the supply by society.

This high prevalence of mental illnesses is unfortunately not matched by an adequate level of acceptance in society. A representative study of the German population demonstrates the commonly held position that the therapy of mental health conditions (e.g. schizophrenia) should be less supported monetarily by the public than the therapy of physical conditions (e.g. cancer). Furthermore, a certain number of people would like to keep their social distance and avoid individuals suffering from mental illnesses. 4 out of 10 persons would not rent a room to a person diagnosed with depression and 6 out of 10 persons would not rent a room to a person diagnosed with schizophrenia (Schomerus et al., 2006). In a comparative longitudinal study by Angermeyer et al. (2013), using data from 1990 and 2011, participants expressed an increasing desire to socially distance themselves from people with schizophrenia and had an ongoing desire to distance themselves from people with a major depression. As an example, just 18 percent of all participants would recommend working with an individual suffering from major depression.

These results indicate that in Germany, despite severe efforts by experts and the state, stigma against mentally ill and disabled individuals still exists.

4.4 A literature review on individual and societal factors that influence the choice of individuals with mental illness on becoming an entrepreneur

In the sense of giving an overview of the research topic existing literature is thoroughly examined. The analysis illustrates challenges, gaps, and limitations to current research in the area, too. As this paper is part of a longer series of research papers illustrating the situation of disabled entrepreneurs in Germany, a special focus on the German context and its potential influences is set. The cumulated results serve as the basis of an integrated model on the occupational choice of mentally ill individuals in chapter 4.5.

4.4.1 Societal barriers for people with mental illness to work as an entrepreneur:

Existing discrimination might weaken the desire of mentally ill individuals to enter and their chance to succeed in entrepreneurship in a variety of ways, two examples are presented in the next sections.

First, discrimination could influence the interactions that mentally ill individuals have with existing institutions and consequently restrict their opportunities in entrepreneurship. For example, in Germany, there are separated special schools for young individuals, who need support in their social and emotional development, during their primary and secondary education. The target group of these schools has a large overlap with young individuals suffering from a mental illness (Ahrbeck, 2017). Educational researchers have argued that by separating disabled individuals from the rest of their peers, they are disadvantaged as their separated learning environment limits their variety of social interaction (Autorengruppe Bildungsberichterstattung, 2014). Social skills and especially the ability to positively interact with a range of people with varying traits can help entrepreneurs to enhance their social capital and gain an advantage at the acquisition of customers or new capital (Baron & Markman, 2000). The separation of (mentally) ill

individuals from their peers at an early stage of their personal development might therefore have a lasting effect on their likelihood of being successful if they enter entrepreneurship in their adulthood. Germany is heading towards a system, in which children and youths with disabilities or chronic health related problems have the right to visit -and receive personal assistance in- a regular school, although the state of implementation varies sharply between the different federal states (Klemm, 2018).

Another example for societal barriers to entrepreneurship regarding institutions are compensations (severely) disabled individuals, who are recognized by the state, are eligible to receive in Germany. These compensations, like extended job protection and additional paid leave, are not based on discrimination but aim to counteract existing discrimination and disadvantages on the labor market (FMLS, 2019; Metzler, Moog & Audretsch, 2020; Steinbach et al., 2010). Using a multivariate analysis with representative data from 2009 and 2013, Metzler, Moog & Audretsch (2020) found that disabled persons eligible to compensations in Germany were less likely than their non-disabled peers to be self-employed. An explanation for this gap could be that available compensations are more adapted to dependent employees than for entrepreneurs and therefore influence the advantages an individual associates with entrepreneurship (Segal, 2005). Although no specific compensation for mentally disabled individuals are available (FMLS, 2018), the amount of mentally disabled individuals in Germany has risen in the past years (Statistisches Bundesamt, 2018). This fact indicates that mentally ill individuals are effectively seeking to gain a disability status and enjoy the merits associated with it.

Furthermore, disabled people, who are recognized by the state, can receive loans and interest subsidies to start their own business. Those benefits however require certain premises, including personal (e.g. being endurable) and professional qualities required for the selected job (having a related qualification and / or appropriate working experience) (Steinbach et al., 2010). Although this process is standardized for people with different conditions, the symptoms of some mental illnesses and disabilities could potentially affect it, e.g. having severe behavioral

problems that could negatively influence interpersonal relations (Aktion Psychisch Kranke e. V., 2004). However, no related research is available.

Second, discrimination could also influence the process of starting and maintaining a business. With regard to the role of discrimination in maintaining a business, Caldwell et al. (2016, p. 218) interviewed "key stakeholders from policy, disability, and business fields". The interviewed expressed the concern that disabled entrepreneurs, who are responsible for their own businesses are often not deemed to be able to succeed. Individuals might internalize this negative view. In a study by Mayhew (2009) a lack of confidence was the central problem for entrepreneurs with mental health problems. The author postulates that this phenomenon was on the one hand induced by society at large but on the other hand also by friends and family of the disabled individuals. This assumption is based on qualitative interviews with individuals representing organizations involved in the support of people with disabilities and/or organizations involved in the support of businesses in a specific region in England. Kirkwood (2009a) illustrates based on qualitative interviews with female entrepreneurs in New Zealand that a lack of self-confidence might even affect the maintenance of a business. However, the author does not distinguish between disabled and non-disabled individuals.

Due to the negative impact of discrimination, mentally ill entrepreneurs facing stigma might stay silent about their condition. Individuals with chronic diseases might try to pass as healthy if the occurring symptoms are manageable (Clair, Beatty & Maclean, 2005). Hiding a disability might be a way of separating the individual identity and the image of him or herself an individual wants to present to a third person, as societal pressure might incent disabled individuals to focus on their normalcy and hide differences from others (Gill, 1997). As Caldwell et al. (2016) conclude, acknowledging having a disability and further having a business identity as an entrepreneur might not instigate individuals to identify or present themselves as disabled entrepreneurs. Hiding a mental illness might however led to disadvantages in daily business life. Two potential consequences are briefly discussed in the next paragraphs.

First, a study of Newheiser & Baretto (2014) indicates that hiding a mental illness could negatively affect interpersonal relationships. Individuals with a mental illness history were asked during an experiment to either reveal or hid their conditions to non-stigmatized individuals during a conversation. Partners with individuals who hid their condition reported a lesser amount of experienced intimacy during the conversation. As a limitation it must be noted that the sample is rather small, and the professions of the disabled participants are not stated. As mentioned earlier the ability to get along with different kinds of people has a positive influence on the business prospects of entrepreneurs (Baron & Markman, 2000). Therefore, entrepreneurs hiding their disability could potentially have disadvantages forming relationships with their clients, which might reduce their entrepreneurial success.

Second, avoiding stigma might restrict the opportunities to gain working experiences that are advantageous for a later entrepreneurial career. Mentally ill and disabled individuals could shy away from working in small companies with a tightly knit group and instead choose working environments in large companies that potentially provide more anonymity and opportunities to hide their condition. As Werner and Moog (2009) argue, individuals working in small and medium enterprises profit from a working environment that is associated with an autonomous working style and other conditions related to entrepreneurial work. Adequate working experiences might change the utility function of an individual make him more or less likely to be self-employed.

Hence, looking at the distribution of mentally disabled people in small businesses could be a possible proxy for determining their likelihood to choose entrepreneurship. Representative surveys of companies in Germany indicate that mentally disabled apprentices (Metzler et al., 2015) and mentally disabled employees (Metzler, Jansen & Kurtenacker, 2020) are less likely to be found in small and medium companies than in large companies. The proportional difference of the amount of small firms, that have at least one mentally disabled employee, compared to the amount of large companies, that have at least one mentally disabled employee, is the biggest for all types of disability (Metzler, Jansen & Kurtenacker,

2020). Consequently, for Germany, hiding their condition, could cost mentally disabled individuals opportunities in entrepreneurial learning.

4.4.2 Societal incentives for people with mental illness to work as an entrepreneur:

First, mentally ill individuals might have fewer job opportunities in dependent work and therefore turn to entrepreneurship as a favorable substitute (Pagán-Rodríguez, 2011; Ostrow et al., 2018b). Miller & Le Breton-Miller (2017, pp. 8-9) summarize entrepreneurs originating from disadvantaged communities as "underdog entrepreneurs" and remark that these individuals, among others, have a lack of other job possibilities in common. Empirical studies using the British Life Opportunities Survey and the British Labor Force Survey indicate that individuals having mental health problems, limited mobility or behavioral problems are less likely to have a job (Berthoud, 2014; Meager & Higgins, 2011). Thus, having no other alternative to participate in the labor market could be a relevant push-factor for entrepreneurship for people with mental illnesses or disabilities. Regarding the case of Britain, an analysis of the Labor Force Survey indicates that self-employed women state more mental health challenges than their employed peers (Boylan & Burchardt, 2002).

Although in some countries, like Germany, people with severe (mental) disabilities have access to sheltered workshops as an alternative working opportunity (Wissenschaftliche Dienste Deutscher Bundestag, 2016b), it is doubtful that such a last resort is seen as an adequate alternative. Working in a sheltered workshop can potentially be the cause for further possible stigma, as the offered jobs provide low income and are traditionally linked to individuals with intellectual disabilities. Data from Germany suggests that people with mental illnesses or disabilities are more likely to opt out of sheltered workshops and attain jobs at the regular labor market than people with other types of disability (Detmar et al., 2008).

Second, individuals with a mental illness might not have the same opportunities in personal development as a business person in dependent work compared to

entrepreneurship: As Maslow (1998) argues, individuals occasionally enjoy challenges and alterations in their daily work, so they can gain further skills to improve themselves and avoid being bored with their work. He believes that people aim for the opportunity of being able to try things out and in the process being allowed to make mistakes. Mentally ill individuals are potentially marginalized and have fewer opportunities to prove themselves and advance in dependent work. Their superiors and coworkers might see them as more unreliable, misjudge their ability to cope with stress or underestimate their overall abilities in comparison with other professionals (Russinova, Griffin, Bloch & Wewiorski, 2011; Scheid, 2005). Doyel (2002) enhances these thoughts and postulates that entrepreneurship could be an adequate way to fulfill this intrinsic motivation for the disabled, particularly arguing on her own experience as a disabled entrepreneur. She anecdotally retells her individual goals to choose entrepreneurship, including the desire to grow as a person and be able to work out challenging situations in daily business. Shaheen (2016) also notes the possibility of personal development: Being an entrepreneur offers a way out of government aid and is associated with controlling one's business life. Therefore, mentally disabled people also might change the way they think about themselves: Not as dependent and passive receivers of care provided by a third party, but as self-dependent and active busines persons. A changing self-perception might also positively influence the way others perceive the mentally disabled individuals.

The first and second argument can also be combined: A literature review of sixteen longitudinal studies demonstrated that unemployed individuals with mental health challenges can improve their mental well-being by getting a job (Murphy & Athanasou, 1999). Nikolova (2019) provides empirical insights that unemployed individuals might in fact experience self-assessed mental health gains by switching to entrepreneurship. She mentions three possible reasons for this phenomenon including being able to avoid the societal shame of being out of work and experiencing an improvement in self-perception. It is reasonable to see entrepreneurship as an improvement in societal status compared to unemployment. In a quantitative representative survey in 2015, 77 percent of all German

participants and 66 of all participants originating from the United States of America stated that founders of a company were at least as recognized in society as dependent workers (AXA, 2015).

However, in a literature review, Wiklund et al. (2018) postulate that more research is needed to illustrate how entrepreneurship, as a type of employment, influences positive emotions that might potentially weaken the consequences of existing mental illnesses. The authors furthermore investigate the idea that entrepreneurship might also lessen negative emotions and thereby have a curating positive effect on the disease itself. A study by Beumer (2019) based on biographic interviews of older entrepreneurs in Germany hints that starting a business late in a professional career might be at least connected with the wish to overcome or heal existing mental conflicts.

Third and last, societal expectations within the entrepreneurial community could be at least partially favorable for the mentally ill. De Clercq & Honig (2011) postulate that current entrepreneurs could expect disadvantaged individuals entering entrepreneurship to challenge and enhance the entrepreneurial field in respect to their individual situation, e.g. by adapting an existing product to the needs of their peers. While the authors argue that these expectations could benefit affected individuals by providing opportunities, these opportunities are restricted by similar expectations to follow established beliefs and processes defined by the advantaged majority. Following this expectations, a (mental) disability might influence the motives to join entrepreneurship and hence the product or respectively the service offered (Kašperová et al., 2018). Unique situations mentally ill individuals find themselves in, could be a further valuable resource to create products for a specific market niche. E.g. discussions with other mentally ill people in a peer support group could provide knowledge that a current product or service does not fit the specific needs of mentally ill people and therefore plant the idea to start a business.

4.4.3 Individual barriers for people with mental illness to work as an entrepreneur

First, mental disabilities and illnesses could directly influence entrepreneurial performance. Hessels et al. (2018) remark that the current state of research regarding a possible connection is inadequate, but all in all indicates a negative influence. For the case of depression, the authors provide empirical evidence for a significant positive impact on an individual's decision to leave entrepreneurship. The authors provide a variety of explanations, including the challenge of having to work for long-hours to succeed in entrepreneurship, which might turn out to be difficult for individuals with depression. Using the Socio-Econonomic Panel Hatak & Zhou (2019) calculate that a positive self-assessed mental health of an entrepreneur has a positive effect on his or her annual revenue indicating that mental health challenges might evocate disadvantages in daily business.

Depending on the consequences of a specific condition, further specific effects might occur in different stages of the entrepreneurial process. As an example, individuals being under medical treatment due to bipolar disease may suffer relapses, when their established daily routine is broken (Frank, Gonzales & Fagiolini, 2006). This could in theory influence situations in which a nascent entrepreneur has to cope with changes in his and her life, e.g. when an individual plans to start academic entrepreneurial studies at a university in another town. The onset of a (mental) disability could also destroy the established balance of existing entrepreneurial careers. Potential evidence for this effect can be found in a study by Pagán-Rodríguez (2012). He examined an example of older European individuals using data from 2004 and 2007 concerning their continuing participation on the labor market. His results indicate that individuals, who were disabled and self-employed were more likely to maintain this status three years afterwards than individuals who experienced a change in their disability status. People who were non-disabled and self-employed in 2004 were more likely to retire in 2007.

Second, many empirical studies have shown that personality traits of affected individuals are a prominent predictor of entrepreneurial activity. A well-established

model of personality traits is the five-factor model consisting of extraversion, neuroticism, openness to experience, agreeableness, and conscientiousness (O´Connor, 2002). Looking at laid-off managers in the United States, Wooten, Timmerman and Folger (1999) found that those managers who started a business venture of their own were more emotionally stable (meaning less neurotic) compared to those finding another job in dependent work. This echoes the result of Witters et al. (2012) that entrepreneurs face more stress in their daily work life than individuals in other professions. Additionally, personality traits might also have an influence on other outcomes after the initial creation of one´s business, with extraversion being a significantly positive predictor of overall entrepreneurial success (Leutner, Ahmetoglu, Akhtar & Chamorro-Premuzic, 2014).

A restriction in the results of most studies lies in the fact that the measurement of personality traits at one point in time is used to predict or explain an incident at a different point in time. In econometric analyses personality traits – defined by Boyce, Wood and Powdthavee (2013, pp. 287-288) "as the psychological aspect of a person that is carried from one situation to another" - are often assumed to be fixed and unalterable, although there is evidence for the contrary (Boyce et al., 2013). A possible catalyst for change could be the start of a chronic disease. Doing a meta-analysis of four cohort studies Jokela et al. (2014) found a decrease in four dimensions of the five-factor model, including extraversion, after the onset of a chronic disease. These findings hold true after controlling for an effect regarding the increasing age of individuals. However, the authors only include individuals with physical diseases like cancer or the aftermaths of a stroke in their analysis and provide no data concerning mental diseases. Malouff, Thorsteinsson and Schutte (2004) performed a meta-analysis of 33 papers on the relationship of clinical disorders and the five-factor model. The papers were selected using keywords like anxiety, exhibitionism, or schizophrenia – conditions that could be primarily associated with mental health problems. The authors conclude that "the overall results of the meta-analysis show that across all the studies symptoms of various clinical disorders were associated with a typical Five-Factor profile of high Neuroticism, low Conscientiousness, low Agreeableness, and low Extraversion"

(Malouff et al., 2004, p. 110). Linking these findings to the correlations found between occupational choice and personality traits, one could argue that the onset of a chronic illness could lower the chance of an affected individual to choose entrepreneurship.

Third and last, finding advice how to enter entrepreneurship and achieving success as an entrepreneur might turn out to be more difficult. Following the research of Vygotsky (1981), one could argue that there is a difference in the quality and quantity of work that an individual can do alone and with the support of an experienced other person. Logically, a nascent entrepreneur might benefit from the guidance and instructions of an experienced entrepreneur as he or she offers information to foster learning processes. At least in the first stages of a start-up individuals usually have to deal with related challenges on their own, unless the person is raised in a family owning a business and in that process profits from unique benefits like firm-specific knowledge (Sirmon & Hitt, 2003) or is under the guidance of an experienced entrepreneur (like an older family member in family businesses) and gradually switches roles from being a mere helper to being the primary decision maker in an enterprise (Handler, 1990). Such a role model could offer individuals a chance to critically review and enhance their own cognitive processes by observing his or her entrepreneurial actions, assuming that learning is a process that can take place in social interactions independent of punishing or rewarding and thereby enforcing an individual (Bagheri, 2016; Bandura, 1986; Halabisky, 2014). However, it is possible that cognitive strategies modelled on observing role models might not work for mentally ill (nascent) entrepreneurs in a similar entrepreneurial situation, as these acquired strategies might not include the specifics an individual with a mental illness might need or be able to act on, e.g. people with autism might recognize that it is a sign of openness and basis for building trust to look a trading partner in the eye, but might still not be able to do so in a comfortable way (Peterson et al., 2015).

4.4.4 Individual incentives for people with mental illness to work as an entrepreneur

First, mental disabilities and illnesses could come along with attributes that positively influence entrepreneurial performance. Freeman et al. (2018) argue on the basis of a literature review that creativity is a common feature correlated with several mental illnesses, but also a decisive factor for entrepreneurial achievement as the prime mover in a market has a higher chance of succeeding. The authors not only found a higher number of associated mental disorders like ADHD or bipolar disorder, in a sample of entrepreneurs compared to a comparison group consisting of individuals from other professions, but also a higher number of asymptomatic entrepreneurs having a mental illness history in the family compared to individuals from other professions. "Cognitive, affective and behavioral propensities" (Freeman et al., 2018, p. 336) associated with certain diseases could strengthen the occupational choice of an individual in favor of entrepreneurship. Various research with respect to the favorable influence of singular mental illnesses can be found. For example, for Attention Deficit and Hyperactivity Disorder (ADHD): Verheul et al. (2015) found a positive correlation of students with ADHD-like behavior and entrepreneurial intentions, as affected individuals lean towards making more risky decisions. Based on fourteen qualitative interviews of entrepreneurs with ADHD, Wiklund, Patzelt & Dimow (2016) discuss the potential advantages of impulsive behavior, associated with ADHD, in making entrepreneurial decisions. Yu et al. (2019) discovered an indirect fostering connection between certain ADHD symptoms and firm performance in two sample of entrepreneurs.

Second, people with specific personality disorders could enjoy entrepreneurial working duties that people without their condition might find stressful. A prominent example is the dark triad. This model distinguishes between three personal traits "narcissism", "psychopathy" and "Machiavellianism". The first two personality traits are based on personality disorders, while individuals with the later trait "are cynical, unprincipled, believe in interpersonal manipulation as the key for life success, and behave accordingly" (Furnham, Richards & Paulhus, 2013, p. 201). The dark triad demonstrates potential links between those three personality traits.

Individuals, who have a higher score in one attribute, also have a greater chance to obtain a higher score on the other ones (McHoskey, Worzel & Szyarto, 1998; Paulhus & Williams, 2002). Kramer, Cesinger, Schwarzinger and Gelléri (2011) found a positive correlation of entrepreneurial intention and "narcissism" as well as a positive correlation of entrepreneurial intention and "psychopathy", but as the authors used a sample of students for their analyses, implications of their study are limited. In a study combining a sample of entrepreneurial students and two samples of workers and managers from a financial institution and public organization, "narcissism" was found to be more common in a sample of entrepreneurial students and was connected to other vital attributes seen as advantageous for entrepreneurial work, like general self-efficacy (Mathieu & St-Jean, 2013). Contrary to these results, focusing on "psychopathy", Akhtar, Ahmetoglu & Chamorro-Premuzic (2013) found vague evidence of a possible relation between "psychopathy" and entrepreneurial activity. The results indicate that the concept of "primary psychopathy", which consists of facets in interpersonal relationships (e.g. being very superficial) and shallow affects (e.g. lack of empathy or guilt), is a negative predictor for an activity in social entrepreneurship. A study by Hmieleski & Lerner (2016) illustrates that entrepreneurial intentions of affected individuals could also be overshadowed by the conditions of the dark triad. The authors distinguish between unproductive (e.g. maximizing profit, while being aware that such a strategy might endanger the comfort of their employees) and productive motives (e.g. improving the lives of their customers through their products) for entrepreneurship. Using a sample of undergraduate and MBA students, their analysis indicates a positive correlation between high levels of "Machiavellianism" or "psychopathy" and unproductive motives. "Narcissism" in turn was correlated with productive motives.

Third, personality traits induced by negative experiences due to mental illness might match the demands of entrepreneurial work. If parents with mental illnesses have a different approach to raising their children, mental illnesses might affect the abilities and personality traits of a future entrepreneur not only by nature but also by nurture. Freeman, Johnson, Staudenmaier & Zisser (2015) discuss this

possibility in a prior version of their published peer-review article (Freeman et al., 2018) and mention the potential relationship that experiencing hardship in upbringing could be a root of later strength in maturity. This line of thought is slightly similar to the argument of Miller & Le Breton-Miller (2017) that individuals who have faced disappointments and challenges in their daily life are also more likely to have the strict work discipline needed in the first years of the establishment of a business.

Fourth and last, choosing self-employment could also provide working environments that lack certain situations mentally disabled individuals might find challenging as a result of their condition: E.g. mentally disabled employees are likely to have interpersonal problems with their superiors and coworkers (Aktion Psychisch Kranke e. V., 2004). Furthermore, affected individuals could also fear that they might not be able to fulfill the expectations of their employer or their coworkers (Seyd et al., 2009) and therefore might try to get rid of other persons judging their work. However, the cited authors do not propose entrepreneurship as a possible solution for these situations. Doyel (2002) notes that entrepreneurship might offer disabled individuals the chance to hire the right staff and build an adequate culture that fits their specific needs. Empirical evidence for this hypothesis can be found in a study by Ostrow et al. (2018a). The authors reviewed for a sample of 60 self-employed individuals in the United States with a mental disability, that 48 percent of the interviewed reported negative experiences with managers and 38 percent with team members in their former careers as employed. Over 80 percent of the self-employed reported “status and self-confidence” as a reason to choose self-employment. Hence, self-employment can indeed be a possible solution for avoiding or solving interpersonal challenges for the mentally ill.

4.5 A model on the occupational choice of mentally ill individuals in entrepreneurship

Based on the central ideas of the prior sub-chapters 4.4.1 to 4.4.4, this chapter offers an overview how the occupational choice of mentally ill individuals might be influenced by societal and individual factors.

In a first step studies on barriers and incentives at a societal level are collected and discussed.

The underlying theme of chapter 4.4.1 are barriers for mentally ill (nascent) entrepreneurs created by society. Those barriers are based on discrimination which can affect the dealings of mentally ill individuals with institutions. In the educational context, mentally ill pupils visit special schools and have less contact with youths with other disabilities or without disabilities (Ahrbeck, 2017; Klemm, 2018). This segregated school system could negatively influence their ability to interact with other individuals (Autorengruppe Bildungsberichterstattung, 2014) and thereby lower their social capital helpful for a future entrepreneurial career (Baron & Markman, 2000). Working-related compensations also give (mentally) disabled individuals a special status on the labor market (FMLS, 2019; Metzler, Moog & Audretsch, 2020; Steinbach et al., 2010). However, those compensations are designed in a way that they might act as barriers for entering and staying in entrepreneurship (Metzler, Moog & Audretsch, 2020). While Germany does support nascent entrepreneurs with a disability (Steinbach et al., 2010), the requirements to receive public support could be problematic for mentally disabled individuals challenged in social interactions.

Discrimination might also affect processes relevant in starting and maintaining a business. Skepticism about their abilities by society (Caldwell et al., 2016) could lower the self-confidence of mentally ill entrepreneurs (Mayhew, 2009) and compromise their success (Kirkwood, 2009a). Mentally ill entrepreneurs might hide their disability to avoid discrimination (Clair et al., 2005; Gill, 1997). Being not open about your condition might result in conversations with reduced intimacy (Newheiser & Baretto, 2014), which could turn to be problematic for building professional relationships. Trying to hide your condition might also incent mentally ill individuals to avoid small and medium enterprises (Metzler et al., 2015; Metzler, Jansen & Kurtenacker, 2020) and look for a more anonymous working place, thereby missing out on chances of entrepreneurial learning (Werner & Moog, 2009).

Chapter 4.4.2 illustrates societal factors that might influence mentally ill individuals to head for entrepreneurship. Participating on the labor market might prove to be more difficult for mentally ill individuals, compared to other individuals with disabilities and people without disabilities, if they are looking for a position in dependent work (Berthoud, 2014; Meager & Higgins, 2011). Self-employment can be an attractive alternative (Pagán-Rodríguez, 2011; Ostrow, 2018b). Individuals have a desire to be challenged in their work and experience growth in their personal and professional skills (Maslow, 1998). Mentally disabled individuals might not always receive a decent chance to achieve these goals in dependent work (Russinova et al., 2011; Scheid, 2005), but can decide to join entrepreneurship for personal development (Doeyl, 2002; Shaheen, 2016). The same effect can hold true for unemployed individuals (Murphy & Athanasou, 1999; Nikolova, 2019). Society might expect that disabled entrepreneurs create products and services for their peers (De Clercq & Honig, 2011), which is a chance as their unique experiences offer them ideas and opportunities to develop them (Kašperová et al., 2018).

In the next step barriers, and incentives, which are based at an individual level, are discussed.

As seen in chapter 4.4.3, the factors within an individual with a mental illness or disability might turn out to be barriers. A positive self-assessed health has a significantly positive effect on the monetary outcome of entrepreneurial activities (Hatak & Zhou, 2019). Specific individual challenges, like depressions, might even induce entrepreneurial exit (Hessels, 2018). Furthermore, the onset of a (mental) illness (Jokela et al., 2014; Mahlouf et al., 2004) could negatively influence personality traits like extraversion that are positively correlated to entrepreneurial success (Leutner et al., 2014). Having a mental disability might also prevent (nascent) entrepreneurs from effectively seeking and using the help of other experienced peers. While mentors can be helpful for disabled entrepreneurs (Maritz & LaFerriere, 2016; Parker Harris et al., 2013), the specificity of the consequences of mental disabilities could make it difficult to successfully copy entrepreneurial behavior and strategies.

Finally, the studies discussed in chapter 4.4.4 show incentives for entrepreneurship that could lie within a mentally ill individual. Mental illnesses are associated with favorable attributes like creativity that might turn out to be useful in entrepreneurial ventures (Freeman et al., 2018). Specific personality disorders in connection with the dark triad incent individuals to enter entrepreneurship (Kramer et al., 2011; Mathieu & St-Jean, 2013). Furthermore, studies highlight positive influences of the symptoms of individual illnesses like ADHD (Verheul et al., 2015; Wiklund et al., 2016; Yu et al., 2019). Challenges and hardships that mentally ill individuals might experience could also give them the "right" personality to succeed in entrepreneurial work (Freeman et al., 2015; Miller & Le Breton-Miller, 2017). Finally, the mentally ill might experience difficulties with their managers and coworkers (Aktion Psychisch Kranke e. V., 2004; Ostrow et al., 2018a; Seyd et al., 2009). Self-employment can be a viable option for a sensible working environment without those difficulties (Doyel, 2002; Ostrow et al., 2018a).

The following table 13 summarizes the individual results of each factor.

Table 13 A model on the occupational choice of mentally ill individuals in entrepreneurship

Societal barriers	**Societal incentives**
Discrimination potentially negatively influences …	Restricted working opportunities in dependent work concerning …
a.) Interacting with institutions in education and on the labor market b.) Starting and maintaining a business	a) finding a job b) achieving personal professional development
Hiding mental illness to avoid stigma might cause …	Advantageous entrepreneurial working opportunities that …
a.) increased social distance and an impairment of social interactions b) decreased entrepreneurial learning opportunities based on working experience	a) might help mentally disabled individuals by improving their emotions b) are tailored for the non-disabled society but offer unique opportunities for disabled individuals
Individual barriers	**Individual incentives**
Mental illnesses might have negative consequences on entrepreneurial functioning	Personality traits influenced by certain mental illnesses might suit the demands of entrepreneurial work
Personality traits influenced by certain mental illnesses might not suit the demands of entrepreneurial work	Specific personality disorders might make entrepreneurial work enjoyable
Individuality of health-related challenges might make it difficult to find a suitable mentor	Personality traits influenced by negative experience due to mental illness might suit the demands of entrepreneurial work
	Individuals can avoid uncomfortable situations in employed work by choosing entrepreneurship

4.6 Conclusion and further research

The aim of this study was to provide a literature review on possible incentives and barriers for mentally disabled individuals on an individual and societal level for entering entrepreneurship. Individuals with a mental illness or disability might find various benefits in and due to entrepreneurial work, as the discussed studies show. There is also initial evidence, that certain mental illnesses might change personal attributes in favor of a career in entrepreneurship. These results do not generally support the narrative of "entrepreneurship as a potential force for good" (Wiklund, Wright & Zahra, 2019, p. 422), but indicate that the situation of entrepreneurs is influenced by a multitude of individual and societal factors. Concerning the later, this paper does not agree with the line of thought that societal influences do generally restrict individuals with impairments in respect to their mental health in entrepreneurship. Rather, the proposition is that societies generate barriers but also incentives for affected individuals aiming to opt for and stay active in entrepreneurship.

However, there are major limitations as most examined studies concentrate only on one specification of mental illnesses, neglect potential cross cultural differences, and/or omit the possible effects of the beginning of a disability at different times in the entrepreneurial process. This study therefore echoes the arguments of Ostrow et al. (2018b) and Wiklund et al. (2019) that more research on the role of the mentally ill in entrepreneurship is needed. Still, the results raise some doubts on the reporting that entrepreneurial activity itself might be a one-way-street that following might result in acquiring a mental illness. Rather, a multicausal approach to analyze the underlying effects in choosing and maintaining a business seems to be more promising. Moreover, panel data with the starting point of a (chronic) mental illness or disability could help to figure out the effects.

At least for the case of Germany, this slightly ambiguous image cannot easily be improved by quantitative statistics, as few representative datasets containing the type of disability, its onset and the job status of an individual are available. Comparing the success of mentally disabled entrepreneurs to mentally non-disabled

entrepreneurs might prove to be difficult. Defining normalcy itself is highly speculative (Szasz, 1960). Being discontinuous, hard to define and occurring in various shapes, as the presented research in this study has shown, mental disability is an ambiguous construct that might prove difficult to simplify in a binary distinction, even if suitable representative panel data for different instances in time would be available.

On the other hand, quantitative research could focus on the individual level and the consequences of specific illnesses on (nascent) entrepreneurs. For example, for the case of bipolar disorder, Johnson et al. (2018, p. 21) identified "16 traits that have been found to relate to mania risk and/or entrepreneurship" in current research literature. But only four of those traits turned out to be distinctively connected to (nascent) entrepreneurs in an empirical analysis. Replicating such studies from other countries, could offer insights if the German societal influences might have an impact on the perception of specific mental illnesses and its consequences on entrepreneurship. As Stephan (2018) comments on her findings in a literature review: Differences across countries do exist, but the reasons behind differences in the mental health of entrepreneurs remain uncertain.

Alternatively, a qualitative research approach could be pursued. Including the individual´s situation in the analysis might provide additional insights, as the barriers people with different disabilities face might vary in different entrepreneurial situations, e.g. in establishing and maintaining communication channels with customers (Vaziri et al., 2014). An entrepreneur with restrictions in his or her physical functioning, who is in the process of establishing a local restaurant with a small staff, might face different barriers than an entrepreneur managing an established medium sized company battling with a long-term depression. Looking at individual characteristics like age, sex or gender could also provide crucial information for a broader social analysis. Following the social model of disability, people might be marginalized in more than one way and analyzing the specific situation of a female disabled entrepreneur would hence differ from an analysis of a male disabled entrepreneur (Pagán-Rodríguez, 2012).

To examine potential motives for choosing entrepreneurship on a more personal level, it would be interesting to inquire mentally disabled entrepreneurs, who had no mental disability before their entrepreneurial activity, what motivated them to enter a career as entrepreneur in the first place and what reasons now incent them to uphold their career choice. However, as their occupational choice is already made, people could tend to justify their actions. This restriction could possibly be overcome by also including interviews with the employees of an entrepreneur as well as relevant clients and other shareholders.

An alternative method could be to ask students in special schools about potential benefits they associate with working as an entrepreneur and which factors might detain them from following such a career. Their answers could be compared to students without a mental impairment in special schools as well as in regular schools. This method could provide first indications, if people with mental illnesses and disabilities see entrepreneurship as a potential career choice before joining the labor market. The first entrepreneurial willingness to become an entrepreneur is a possible sign that an individual might indeed choose an entrepreneurial career in the future (Backes-Gellner & Moog, 2013).

Finally focusing on mental health as a singular predictor for entrepreneurship could turn out be insufficient, as individuals could face challenges at different levels: E.g. as severely mentally disabled individuals are more likely to be females than males (Statistisches Bundesamt, 2014) and females are generally less likely to be entrepreneurs than males in Germany (Wagner, 2007), the situation of the female entrepreneur with a mental health problem might vastly differ from her male peer. Differences in the cause and effects of hardship on entrepreneurship are critical and a worthwhile topic for additional research (Maalaoui, Ratten, Heilbrunn, Brannback & Kraus, 2020).

The paper at hand focuses on specific factors that might influence the decision of mentally ill and disabled individuals. But some factors might influence disabled as well as non-disabled individuals and prevent entrepreneurial activity. As an example, if entrepreneurship or the basic promise of making profit is considered

evil by the dominant religion of a society, both groups will be affected, assuming that religious tendencies are equally spread (Sarasvathy, 2004). Moreover, societal development could prevent individuals without a disability from choosing entrepreneurship, while providing opportunities for disadvantaged entrepreneurs. For example, ongoing low levels of unemployment could prevent individuals from entering entrepreneurship out of necessity as there are more rewarding job opportunities as a dependent worker (Segal et al., 2005). But entrepreneurs with (mental) disabilities might not have similar opportunities to work as a dependent worker (Berthoud, 2014; Meager & Higgins, 2011) due to stigma (Angermeyer et al., 2013). A lack of competitors might even help them in expanding their business. More research on situations with ambiguous influences is needed.

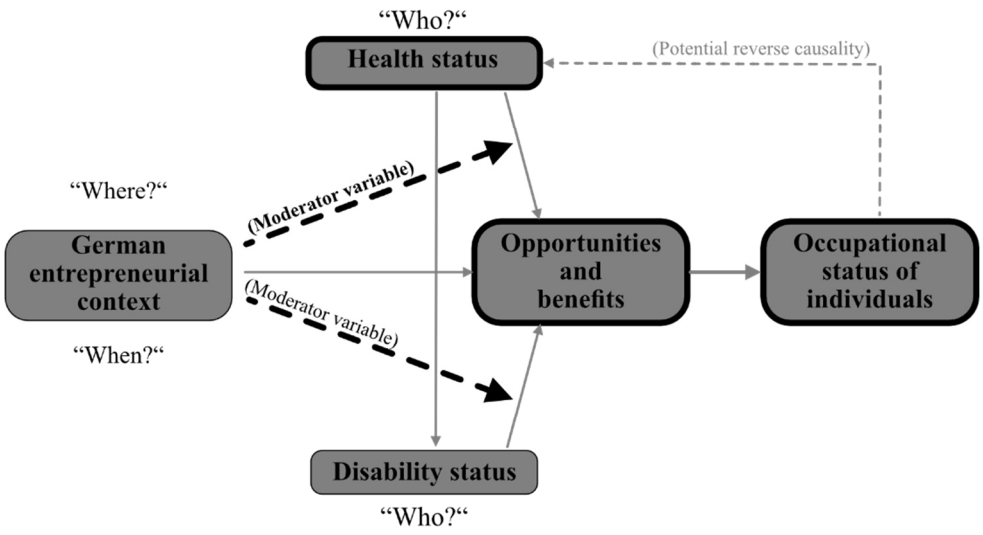
One basic assumption of the present study is that discrimination against mentally ill and disabled individuals in Germany exists, which is based on studies of the population (Angermeyer et al., 2013; Schomerus et al., 2006). But this assumption can be challenged and expanded. Currently, there is no quantitative study about the attitude of German entrepreneurs towards their mentally disabled employees, available. Scheid (2005) finds existing stigma and barriers in a sample of 117 American company representatives but she also cites singular voices stating that a working environment suitable to the needs of mentally ill employees might actually be a good thing, as their condition is widespread. Replicating such as study might be helpful to gain insights how discrimination at the working place works and to identify strategies to overcome it. Those strategies could also help mentally disabled entrepreneurs.

Finding the right evidence to offer help is an ongoing crucial task: If entrepreneurship might particularly appeal to individuals with (specific) mental illnesses and disabilities, support systems should be developed and implemented in a way that prevent a worsening of existing conditions and assist entrepreneurs in keeping a sound mental health (Shepherd & Patzelt, 2017). Subsequently, these arrangements could create new chances for nascent entrepreneurs to fulfill their entrepreneurial ambitions and in this process, help alter the underlying narrative of mental illness in society. Prospectively, mental illness might not merely be seen as

a sad and unfortunate fate that comes along with potential stigma and restricted opportunities in society, but also as a condition that could help individuals to create something exceptional: Their own company.

The final and third paper of this PhD thesis combines the perspectives of the first and second paper (Figure 6), but shifts the perspective concerning the "health status" part. It does not regard the potential reverse causality the "occupational status of individuals" might have on the "health status" of an individual, as the results of the literature review in the second paper show no clear preference for this path. The third paper focuses on the function of the "German entrepreneurial context" as a potential moderator variable in quantitative analyses concerning "the opportunities and beliefs" and the resulting "occupational choice of individuals". The first paper already indicates a significant negative effect of an existing "disability status" on "occupational status" concerning entrepreneurship. The third paper tries to recreate this result using an alternative dataset and further enhances the argument by simultaneously analyzing the role of "health status". Concerning "occupational status of individuals" - the whole transition process in and out of entrepreneurship is considered.

Figure 6: Main regarded (potential) interdependencies of the third paper



Paper 3: The influence of disability and health self-perception on entering and leaving self-employment

Abstract:

Using data from the Socio-Economic Panel (SOEP) waves between 1994 and 2016, this study analyzes the influence of disability and health status on the likelihood of 25 to 64-year-old individuals in Germany to join or leave self-employment. The variable "disability" is based on the medical examination by professionals, while the assessment of the quality of an individual´s health and his or her satisfaction with it is based on self-assessment.

While health and disability status in theory might seem similar, the effects of each variable seem to differ in Germany: Logistic regressions illustrate that the process of entering entrepreneurship is not significantly influenced by the disability status of an individual, but rather by his or her health characteristics. These results indicate that nascent entrepreneurs in Germany need a certain amount of health capital to start a business. On the contrary, individuals leaving entrepreneurship are significantly and positively influenced by the disability status and not by their health characteristics. These results might indicate that disabled entrepreneurs in Germany are challenged in maintaining their business, not due to health satisfaction, but due to other context factors.

5.1 Introduction

Being an entrepreneur offers a variety of personal advantages. In most European countries being more satisfied with one´s working life compared to individuals being employed is one of them (Schneck, 2014). Marginalized individuals in the labor market - like people with disabilities - often report less job satisfaction than individuals not belonging to these groups (Pagán & Malo, 2009). This discrepancy could incent affected individuals to choose entrepreneurship to redress the balance. In a static perspective, Metzler, Moog & Audretsch (2020) found a significant negative effect of an existing disability on the likelihood of a person being self-employed in Germany. The authors argue that this effect might be caused by specific compensations provided by the German federal government like extended job protection. These compensations could also play a role in the process of entering self-employment and leaving it.

An alternative or complementary explanation to the influence of compensations on the intention to become an entrepreneur as a disabled individual could be the health status itself. Haan & Myck (2009) argue that the official definition of disability is too narrow as it neglects a good amount of health problems. García-Gómez, Jones & Rice (2010) postulate that research on health is needed to create effective labor market strategies that avoid the negative effects disability benefits did cause on employment. Thus, too often health and disability are analyzed in their impact on individuals becoming or staying self-employed, separately, or the two aspects are defined as meaning the same, which holds not true.

Thus, this paper does want to shed light and make a contribution to current research in the following three regards:

a) It will show the single effect of a disability on the decision of individuals to start, stay or quit being self-employed,
b) The health effect will be checked separately as well to cover former results on this issue, and finally

c) The two effects will be tested jointly to see if in future studies both concepts could be used as one explanation or if future research has to explicitly split the two concepts to get more in-depth results.

To get results and insights to these research questions, the article has the following structure: In the research background the connections between health, entrepreneurship and related factors are illustrated. Based on this argumentation, research questions with corresponding null hypotheses are build. As a next step, the paper includes an empirical analysis of the influence of disability and health characteristics on the likelihood of an individual in Germany to enter self-employment as well as the likelihood of being self-employed and leaving self-employment. For the first time the article uses the same dataset -the German Socio-Economic Panel- for all research questions and therefore offers a consistent review of the German situation. The paper concludes with a summary of the results, a notion of the limitations of the analyses and ideas for further research.

5.2 Research background

Health and human capital

The influence of human capital on entrepreneurial intentions and success is well researched. Moog (2002) for example uses a sample of 910 startups in Germany to analyze the effect of the human capital endowment of an individual on his or her likelihood to succeed as a founder. The author finds several positive effects, e.g. the years of education had a positive impact on the jobs a founder created in the regarded time frame of 1992 to 1997. However, no information on the health or disability status of the regarded founders is given.

In contrast to this missing approach, in human capital theory, health is regarded as part of the resources a person has control over since birth and can invest in over his or her lifetime – as a sub-category of human capital (Becker, 2007). Due to aging the health of an individual diminishes, but it can be increased by individual investments, e.g. by spending money on medical care or exercising. Health is therefore neither seen as exogenous nor as a fixed variable (Grossman, 1972).

Mushkin (1962) does not regard health as a factor independent of the actual conditions found on a labor market. In case of low labor market participation due to high unemployment in a society, getting rid of a crippling disease might ceteris paribus not guarantee that a cured individual is able to get a job. However, a certain level of health can be a precondition for participating in the labor market. Health may also influence the productivity of an individual (Mushkin, 1962). Hatak & Zhou (2019) link the health of an entrepreneur as part of his or her human capital to entrepreneurial success. Therefore, analyzing health as a factor influencing entrepreneurship in general and additionally entrepreneurial entry and exit in particular seems a reasonable decision.

Health and entrepreneurship

In sum, the health of entrepreneurs has been a sparsely regarded topic until recent years in academic research according to Torrès and Thurik (2019). The authors propose the explanation that research in the past has looked primarily at the health of employees and illness as a sign of weakness did not fit the dominating narrative regarding entrepreneurship.

Concerning entrepreneurial entry**,** the influence of health is an inadequately represented research topic (Simoes et al., 2015).

Indications that a sound health might foster entrepreneurial intentions can be found in a study of Razgallah, Maalaoui, Carsrud, Brännback and Germon (2017): Based on the quantitative analysis of responses of 212 participants from organizations for the disabled in France, the authors conclude the insight that a positive self-perceived health is significantly positively correlated with higher entrepreneurial intentions. This effect is stronger in the regarded female sub-population. For Germany, the results of Fossen & König (2017) illustrate a similar effect for choosing to enter entrepreneurship. Individuals changing their status from employment to self-employment in Germany do significantly less likely self-report poor health than people maintaining their employed position. The authors explain the effect with possible higher liabilities existing in entrepreneurial work, but do not link the results

to possible differences in human capital endowment, as they focus on the impact of the German health insurance system on the likelihood on entering entrepreneurship.

Switching to self-employment can have positive effects on health itself, as Nikolova (2019) illustrates with an empirical analyses of SOEP data: Individuals switching from unemployment to entrepreneurship achieve advantages in their mental but not physical wellbeing, while individuals switching from an employed position to a self-employed position achieves advantages in both categories. Conditions found in entrepreneurial work could also turn out to be favorable in comparison to employed work as a study by Zissimopoulos & Karoly (2007) indicates. The authors analyzed a sample of older Americans in the representative Health and Retirement Study data waves from 1992 to 2000. The results show that males and females reporting a health condition limiting their work were significantly more likely to change to self-employment than their peers lacking such a condition. Males and females reporting a fair or poor health status, without experiencing limitations in their work, were not significantly more likely to change to self-employment than their peers reporting a good health status.

In case of being an entrepreneur, health differentials for German entrepreneurs and non-entrepreneurs can be found in a study by Stephan & Roesler (2010). The authors used data from the representative German National Health Survey cohort of 1998 to compare the health of entrepreneurs and non-entrepreneurs in Germany, while holding several demographic variables constant. Data for somatic diseases was created using self-assessments of individuals and external validation by trained physicians, while mental diseases were assessed by clinical interviews carried out by medical professionals. In both cases entrepreneurs were less likely to be affected.

Empirical studies from other countries offer varying results. Rietveld, Van Kippersluis and Thurik (2010) analyzed a representative sample of older Americans in the age group of 50 years to 65 years and conclude that self-employed individuals are healthier than employed individuals. The authors remark that a selection effect might be the cause of this correlation: Unhealthy people avoid, healthy people are attracted to entrepreneurship. Gonçalves & Martins (2018) use a longitudinal

approach based on the administrative data of a representative Portuguese sample. The authors conclude that the chance of a self-employed individual taking a sick day or being hospitalized is lower compared to wage workers. The effects hold true using controls for reverse causality. Finally, a recent study by Bencsik & Chuluun (2019) based on a large sample of more than 600.000 responses from the United States concludes that the self-employed self-report a state of lower physical health and additional health problems than the employed.

Concerning entrepreneurial exit, few data is available. Pagán-Rodríguez (2012) works with two waves of the European SHARE dataset to illustrate that a disability has a significant positive effect for older individuals to leave entrepreneurship within a three-year period in comparison to non-disabled individuals. The author uses a question of the SHARE dataset that summarizes long-term "health problems", "disabilities" "illnesses" and "infirmities" (Pagán-Rodríguez, 2012, p. 84). No specific result for Germany is given. Analyzing the job transitions of older individuals in Britain, the results of Parker & Rougier (2007), indicate that deficits in health do not hasten switching from self-employment into retirement but prevent employed workers from switching into self-employment. This could be an indication that the self-employed are more resilient and used to difficult working conditions. For depression as a singular illness Hessels et al. (2018) show with representative Australian data a positive influence of a worsening depression on entrepreneurial exit. The authors link the consequences of depression to a possible decreased physical strength of individuals and thereby decreased health status in general.

Health and disability status

In Germany disability status is granted by the pension office. The issued degree of disability is based on restrictions individuals face in their daily life due to an insufficient health (FMLS, 2019). Haan & Myck (2009) propose that the disability status has a more permanent effect than the health status of an individual. According to SOEP data more individuals in Germany with a severe disability state that they have an insufficient health than individuals without such a severe disability (Jansen & Metzler, 2019). Interestingly, although the participants of Razgallah et al. (2017)

were members of an organization for the disabled, on average they had a positive self-image concerning their health. Deviations between the image of oneself and the image from an outside perspective could exist. Individuals might be caught in an egocentric bias, which was originally discovered by Ross & Sicoly (1979), overvaluing their own perception. The healthy individuals of a society could associate negative attributes to the characteristic of being different from a perceived physical or mental norm and stigmatize individuals not fitting that schema (e.g. Susman, 1994; Campbell, 2009). The societal perceived norm regarding entrepreneurship might exclude individuals reporting a diminishing health or disability. Based on a literature review Kašperová & Kitching (2014) postulate that the body of an entrepreneur is generally not described on an individual level with a variety of different characteristics but generally the image of the able-bodied entrepreneur is set as the precondition.

Health and the German context

The overall mixed results of current research can partly be explained by different data and research-designs (Simoes et al., 2015), but different context could also play a role as self-assessment of health could potentially differ between ethnic groups (Giuntella & Mazzonna, 2015). An indication that the effects of self-reported health and objective health indicators, like the body mass index or measured grip strength, on the labor market situations of an individual do not deviate in Germany can be found in the study of Kalwij & Vermeulen (2008). Using the SHARE dataset, the authors analyzed 11 European countries to examine the influence of health on labor market participation in the subgroup of individuals ranging from 50 to 64 years. The difference of participation in the labor market between individuals reporting to possess a sound health and individuals reporting to possess a bad health ceteris paribus was 28.8 percent for males and 11.8 percent for females in Germany. Adding objective health indicators mitigates the marginal effect of self-reported health, but only the marginal effect of one objective health indicator proofs to be significant. Therefore, self-reported health seems to be a valid predictor for the chances of labor participation in Germany.

Kühn, Dudel, Vogt & Oksuzyan (2019) used the SOEP waves from 1990 to 2013 to illustrate that the satisfaction with health varies across demographics, regions, and time in Germany. The authors also found a strong correlation between the self-assessments of health and health satisfaction. Correlations between the self-reported health and a majority of self-reported diseases were also found in a study of Goldberg, Guéguen, Schmaus, Nakache and Goldberg (2001) looking at a French sample of middle-aged men and women between 1991 and 1996. The dataset did not include an external validation of a self-reported disease by medical professionals. Objective health indicators like the average amount of sick days for employed individuals due to different types of illnesses like mental disorders or respiratory diseases (Rennert, Kliner & Wilhelmi, 2014) or the average life expectancy (Statistisches Bundesamt, 2016b) also vary across Germany. The legislation concerning disability is primarily regulated on a federal level (Metzler, Moog & Audretsch, 2020), but the participation of people with disabilities on the labor market varies sharply on a regional level (Metzler & Werner, 2017).

Health and disability and demographic variables

Health characteristics may also be influenced by other demographic variables. Grossman (1972, p. 225) regards the level of education of an individual as the most important "environmental variable" to determine the performance of producing health capital. In a literature review of prior and current theoretical and empirical studies on the link of mental health and education, Graeber (2017) identifies two possible mechanisms how both concepts might influence each other: First, individuals might have less or more resources to spend on their individual health production (e.g. having personal contacts with doctors or being able to afford costs for medical care) due to their position in society based on their education. Second, changes in the behavior of an individual might be based on knowledge gained through education to adapt his or her lifestyle to avoid harmful effects on health. A formal qualification can be the result of the investment of an individual in his or her human capital (Becker, 1962). This interconnection shows once again the importance of regarding health not only as a medical condition, but also as part of the human capital (Becker, 2007).

Matching SOEP data with regional labor market information drawn from the INKAR dataset provided by the German Federal Office for Building and Regional Planning, Giuntella & Mazzonna (2015) analyzed differences in the health of natives and migrants. Upon arrival in Germany migrant males are healthier than their native counterparts, but their health mitigates faster in following years. The authors link this effect to the high physical demands found in blue collar jobs in which migrants are employed disproportionately high. The authors further describe disability as an outcome of health. Descriptive statistics indicate that migrant females were on average less likely to be disabled and were less likely to face severe health limitations than their native peers. No significant differences can be found for their male counterparts.

Studies further indicate that married people are healthier in respect to their self-reported health (Rohrer, Bernard, Zhang, Rasmussen & Woroncow, 2008) and concerning objective health indicators like lower cortisol levels in comparison to individuals who either were married before or never married at all (Chin, Murphy, Janicki-Deverts & Cohen, 2017). The influence of gender is also relevant. Males are more likely to be disabled than females in Germany (Statistisches Bundesamt, 2018), but also self-report higher satisfaction with their health (Kühn et al., 2019). Entrepreneurial research predominantly states that females are less likely to be entrepreneurs than males. An often-mentioned cause for this phenomenon is a difference in risk attitude (Wagner, 2007).

Health and disability and personality traits

Persons with insufficient health could potentially be more risk averse. Schurer (2015) uses the SOEP to compare the influence of several self-reported diseases to illustrate that individuals who suffer from depression in all age groups are more risk averse than people without this condition. The influence of the readiness to assume risk on the likelihood of choosing entrepreneurship and staying in the profession has been the subject of a variety of studies. Caliendo et al. (2009) compared individuals participating in the SOEP survey in 2004 and 2005. For the whole sample, as well as a subgroup of individuals leaving regular employment for self-

employment, the results show that individuals reporting a higher readiness to take risks are more likely to become self-employed. The effect of the readiness to assume risk on becoming and staying self-employed might differ. Brachert, Hyll & Sadrieh (2020) identified that higher tendencies towards taking risk are reported by individuals entering self-employment compared to individuals being employed or unemployed. Additionally, individuals are even more likely to take risks after their transition to self-employment.

Additional variables on attitude could influence the relation of disability, health and self-employment. A prior study with SOEP data by Brenke (2015) indicates that in 2013 self-employed individuals had slightly more job satisfaction than employed individuals in Germany. The author further finds that the levels of job satisfaction in Germany have been stable for a long period of time. Using data from the European Social Survey Schneck (2014) also notes that self-employed individuals have more job satisfaction than their employed peers in Germany. Neither information on the "disability status" nor on "self-assessed health" can be found in these studies. Analyzing data from the European Household Panel Pagán and Malo (2009) state that disabled individuals on average have a higher mean of overall pleasure with their work than their non-disabled peers. Based on a T-test analysis, the found differential is significant at a five percent level. This effect holds true for males and females. The authors further determined that a stable tenure and job security are highly correlated with job satisfaction for disabled individuals. There is a restriction in respect that the data the authors analyzed originates from Spain, a country where the agreements of the German social partners naturally do not apply and available compensations for disabled individuals may differ. Additionally, using multivariate analyses the authors discovered that possessing a sound health has a positive influence on job satisfaction for non-disabled and to a lesser degree for disabled workers. The authors build their definition of disability on an item that also includes "chronic physical or mental health" challenges and "illnesses" (Pagán & Malo, 2009, p. 57), thereby mixing the concepts of "health" and "disability". Torrès & Thurik (2019) comment that the positive and negative effects of entrepreneurship concerning health may change in different stages of the business.

The SOEP dataset however has few to no indicators to describe the nature of the business and the risks and opportunities entrepreneurs face. Job satisfaction therefore acts as a latent variable to measure those circumstances.

Concerning Germany, Stephan & Roesler (2010) conclude that entrepreneurs report a significantly higher life satisfaction than their employed peers, unlike in the United States where the effect is reverse (Bencsik & Chuluun, 2019). Bencsik & Chuluun (2019) state that Europeans face a more benevolent context with respect to the benefits provided by the state. Furthermore, in Germany health has a positive impact on the life satisfaction of entrepreneurs (Hatak & Zhou, 2019), contrary to the onset of a disability (Infurna & Wiest, 2016). Being unsatisfied with your free time, e.g. because of a high number of working hours, might also be related to health if an individual has an inadequate amount of time to engage in recreational activities (Berniell & Bietenbeck, 2017).

5.3 Research questions

The presented literature gives an overview of the connection between health and entrepreneurship, disability and relevant demographics. In several empirical studies (Giuntella & Mazzonna, 2015; Pagán & Malo, 2009; Pagán-Rodríguez, 2012) "health" and "disability" are measured as sub-categories of the respective other concept. In this study, the influence of both concepts shall be examined with separate items to test the influence of each concept ceteris paribus on the likelihood of individuals entering, staying in or leaving entrepreneurship. This shall be done first in separate models for disability and health status and second in a combined model.

Considering the submitted arguments, three research questions shall be addressed within this study:

Research Question 1: Do disability or health characteristics significantly influence individuals in Germany in being self-employed in separate models?

The first null hypothesis (1a) is based on the study of Metzler, Moog & Audretsch (2020) and states that a significant negative effect of a disability on the likelihood

of being self-employed in Germany will be found. The second null hypothesis (1b) is based on the study of Stephan & Roesler (2010) and states that a significant negative effect of health on the likelihood of being self-employed in Germany can also be established.

Research Question 2: Do disability and health characteristics significantly influence individuals in Germany in being self-employed in a combined model?

For the null hypothesis (2a) no previous literature can be cited. Consequently, the null hypothesis states that health and disability will have no significant influence on the likelihood of being self-employed in a combined model.

Research Question 3: Do disability or health characteristics significantly influence individuals in Germany to enter self-employment in separate models?

Both hypotheses are based on the study of Fossen & König (2017).

The first null hypothesis (3a) states that a significant negative effect of disability on the likelihood of entering self-employment in Germany will be found. The second null hypothesis (3b) states that a significant negative effect of health on the likelihood of being self-employed in Germany will be found.

Research Question 4: Do disability and health characteristics significantly influence individuals in Germany to enter self-employment in a combined model?

The null hypothesis (4a) is also based on the study of Fossen & König (2017). It states that the significant negative effects of each concept on the likelihood of entering self-employment will hold true in a combined model.

Research Question 5: Do disability or health characteristics significantly influence individuals in Germany to leave self-employment in separate models?

The first null hypothesis (5a) is based on the study of Pagán-Rodríguez (2012) and states that a significant negative effect of disability on the likelihood of leaving self-employment in Germany will be found. For the second null hypothesis (5b) no previous literature can be cited. Hence, health is assumed to have no significant influence on the likelihood of leaving self-employment.

Research Question 6: Do disability or health characteristics significantly influence individuals in Germany to leave self-employment in a combined model?

For the null hypotheses (6a) no previous literature can be cited. It is therefore assumed that health and disability will have no significant influence on the likelihood of leaving self-employment in a combined model.

5.4 Empirical study design

Data/sample

Possible datasets for this study had to include a variety of items on the status of an individual on the German labor market, being self-employed or employed. Additionally, the dataset should include items on the health and disability status of an individual. To further look at status changes of individuals a dataset is required that contains panel data of repeated measurements of individuals for a longer period. The data should further be representative for the German working population. The German Socio-Economic Panel (in the following abbreviated SOEP) fulfills these methodic requirements. In 2013 the SOEP was the foundation for the first report on the participation of people with health restrictions in their daily life in Germany, which was conducted by the Federal Ministry of Labor and Social Affairs (FMLS, 2013). The dataset is therefore also a valid choice for looking at the subject in terms of content. The SOEP offers data for western German households starting from 1984 up to 2016. Additionally, data for households from eastern Germany starting after the unification in 1990 up to 2016 is available. The dataset is maintained by the German Institute for Economic Research located in Berlin. Data can be freely accessed by researchers employed by universities or private and public research institutions. For the whole of Germany, the dataset can be considered representative (DIW Berlin, 2016; Wagner, Frick & Schupp, 2007), although a regional representative analysis for individual federal states of Germany might not work for certain waves (DIW Berlin, n.d.). The interviews are conducted by the pollster Kantar Public, formerly known as TNS Infratest (Zweck & Glemser, 2018). Individuals in the age spectrum of 25 to 64 years are included in the analysis. Descriptions in this study concerning the questions are based on the SOEP 2015 wave (TNS Infratest Sozialforschung, 2015) and may slightly vary across the regarded waves.

To compare the influence of the different independent variables on the dependent variables and to test the hypotheses and to generate answers to the research questions, a time span is used in which for each independent and dependent variable information is available. Therefore, this study looks at the SOEP waves from 1994 to 2016. The tables 26 to 28 in the Appendix B offer an overview of the distribution of available cases found in a specific SOEP wave for each dependent variable of interest.

Operationalization

Dependent variables of interest:

Being self-employed: The variable is measured by the question "What is your current occupational status?" (TNS Infratest Sozialforschung, 2015, p. 53). There are five comprehensive categories of answers: "Self-employed", "Blue-collar worker", "White-collar worker", "Civil servant" and "Apprentice / trainee / intern". In each category various further answers are possible to specify the occupation; three out of four sub answers available in the category "self-employed" are summarized for this study: "Self-employed farmers", "Freelance professional, Self-employed academic" and "Other self-employed". Individuals stating the answer "family member working for self-employed relative" (TNS Infratest Sozialforschung, 2015, p. 53) are not considered as self-employed, as they are not responsible for the decisions and terms of their own business. For the three regarded categories the number of employed individuals can be specified in three possible sizes. However, due to a lack of cases, this distinction is not used for this study. Individuals in other mentioned categories are summarized as "not self-employed".

Entering self-employment: A status change to self-employment indicates that an individual either has another occupation or is unemployed in the current period und changes his or her status to being self-employed one year later. Individuals, who are either in retirement or are currently not participating in the labor market in the current period, are excluded. This is done to sharpen the analysis and exclude unusual cases.

Leaving self-employment: A status change leaving self-employment indicates that an individual is self-employed in the current period und changes his or her status to dependent work, unemployment, retirement or pursuing no gainful occupation one year later. This broad approach is used to include the situation of older individuals in the analysis, who might use self-employment as a bridge to continue being active on the labor market before entering retirement (Pagán-Rodríguez, 2012).

Independent variables of interest:

Health: The SOEP offers two self-assessments measurements concerning the health of an individual:

The **quality of health** is measured by the question "How would you describe your current health?" (TNS Infratest Sozialforschung, 2015, p. 65). Five answers are possible: "Bad", "poor", "satisfactory", "good" and "very good". Individuals stating that their current health is bad, or poor are categorized as possessing a "deficient health". Individuals stating that their current health is satisfactory are categorized as possessing an "average health". Individuals stating that their current health is good or very good are categorized as possessing a "sound health".

The **satisfaction of health** is measured by the question "How satisfied are you with your health?" (TNS Infratest Sozialforschung, 2015, p. 41) on a scale from zero indicating "completely dissatisfied" to ten indicating "completely satisfied".

Being disabled / medical definition: The variable is measured by the question "Have you been officially assessed as being severely disabled … or partially incapable of work … for medical reasons?" (TNS Infratest Sozialforschung, 2015, p. 65). A follow up question asks the participants to specify the degree of disability or reduction in earning capacity.

Control variables concerning demographics:

To generate non-biased results in the best possible way the empirics include well accepted and tested control variables probably having an impact on self-

employment like gender, age, education level and some further personal characteristics, as explained in the following:

Sex (regarding relevance see Jones & Latreille, 2011; Pagán, 2009)**:** The SOEP offers information about the biological gender. Respondents can either choose "male" or "female".

Being Married (Chin et al., 2017, Rohrer et al., 2008)**:** Individuals stating that they are either married or participate in a registered same-sex partnership are summarized in one category indicating "yes". Individuals, who are single, divorced or widowed, are summarized in a second category indicating "no".

Having children under 16 (Joona, 2017; Patrick, Stephens & Weinstein, 2016)**:** Participants are asked to state the year of birth of each child.

Formal qualification (Metzler, Moog & Audretsch, 2020): The variable is measured by the question "What type of a degree / certificate / diploma did you obtain?" (TNS Infratest Sozialforschung, 2015, p. 46) with a variety of options. Two categories are summarized for this study: First, a category encompassing all individuals who either obtained a vocational degree (e.g. by finishing an apprenticeship in the German dual education system) or an academic degree (e.g. by obtaining a master´s degree at a university) and second, a category of all individuals who did not obtain a degree. Due to the small number of people with severe disabilities obtaining an academic degree and the high number of people within this group having no formal qualification in Germany (Metzler, 2013) no further distinction between academic and vocational degree is made.

Migration background (Giuntella & Mazzonna, 2015; Struminskaya, 2011) - the variable is measured by two questions (TNS Infratest Sozialforschung, 2015, p. 71)**:**

1. "Have you had German citizenship since birth or did you acquire it at a later date?"
2. "Were both of your parents born in Germany?"

A distinction between two categories is used – individuals having a migration background who did not move to Germany by themselves and individuals having a migration background who did.

Age (Kautonen et al., 2014; Kühn et al., 2019)**:** The age of an individual and his or her age squared are used as control variables. No individuals younger than 25 are regarded in this study, as these individuals might still be in their early phases of building a career. No individuals older than 64 years are regarded to exclude individuals, who do not face the choice of being employed or unemployed but are more likely in a situation where they are getting a pension and can work part time.

Place of Residence (Kühn et al., 2019): The federal state of Germany ("Bundesland"), where the individuals live, is used as a control variable. Like in Metzler, Moog & Audretsch (2020) no separate sub-analysis on a regional level can be conducted due to an insufficient number of available cases.

Control variables concerning attitude:

Satisfaction with life (Hatak & Zhou, 2019) / **job** (Pagán & Malo, 2009) **/ leisure time** (Van der Zwan, Hessels & Rietveld, 2018)**:** All variables are measured on a scale between 0 indicating "completely dissatisfied" to 10 indicating "completely satisfied".

Readiness to assume risk (Brachert et al., 2020, Caliendo et al., 2009)**:** The variable is measured by the question "Are you generally a person who is willing to take risks or do you try to avoid taking risks?" (TNS Infratest Sozialforschung, 2015, p. 42) on a scale of zero indicating "risk averse" to ten indicating "fully prepared to take risks".

Table 29 in the Appendix shows the pair-wise-correlation between independent variables and the control variables, additionally information about the significance level for each pair is provided.

5.5 Results of the econometric analyses

To illustrate the German situation of people being self-employed, as well as entering and leaving self-employment, in a first step, descriptive analyses are performed. Table 14 illustrate the percentage of individuals in all available SOEP waves, who are either disabled with a grade of at least 30, possess a deficient health or were below average health in different entrepreneurial states. The results for leaving and entering self-employment give the result of an individual in the year before making the transition.

Table 14: Characteristics concerning disability and health

	Disabled	Possessing a deficient self-assessed quality of health:	Individuals with below average satisfaction with health
Self-employed	3,66%	10,70%	12,03%
Non-self-employed	6,92%	13,47%	14,06%
Going to enter self-employment	4,03%	10,60%	12,75%
Not going to enter self-employment	6,54%	12,75%	13,53%
Going to leave self-employment	3,68%	12,75%	13,32%
Not going to leave self-employment	3,36%	10,02%	11,46%

Note: Own calculation with SOEP waves from 1994 to 2016, weighted, only individuals between 25 and 64 years, in relation to the number of individuals found in each group

The descriptive weighted analyses indicate that there is a different distribution of disability and health characteristics for each regarded group. Self-employed individuals report a lower percentage of disability as well as a lower percentage of a deficient quality or a below average satisfaction with health than non-self-employed individuals. Individuals going to enter self-employment are less likely to be disabled, less likely to have a deficient quality or a below average satisfaction

with health than individuals not going to enter self-employment. Individuals going to leave self-employment are more likely to have a disability, a deficient quality or a below average satisfaction with health than individuals not going to leave self-employment. The non-self-employed have the highest rates of disability, deficient quality, and below average satisfaction with health in all regarded groups. The descriptive results give first hints and indicate that not only the state of being self-employed might be influenced by disability and health but also the process of joining or leaving self-employment.

In the following, multivariate logistic regression analyses are executed to get a closer look at the research questions if disability status and / or health characteristics have a significant negative or positive influence on individuals to belong to a certain group. The time span and the used independent and control variables stay the same, the dependent variable changes. Similar to Metzler, Moog & Audretsch (2020), odds ratios are used to illustrate the results of the logistic regression analyses. Hence, a value of less than one indicates a negative influence, a value of one equals a neutral influence and a value bigger than one signals a positive influence (Szumilas, 2010). In a first step, the state of being self-employed is used as a dependent variable.

Table 15: The influence of disability and self-assessed health on being self-employed

Dependent Variable: Being self-employed (yes=1 / no=0), only employed persons between 25-64 years

	Model A: Disability	Model B: Quality of health	Model C: Satisfaction with health	Model D: Combined model
Independent variables of interest:				
Being disabled	0.49***(0.07)	-	-	0.52***(0.08)
Quality of health (reference category: sound health):				
Average quality of health	-	0.79***(0.04)	-	0.87**(0.05)
Deficient health	-	0.68***(0.06)	-	0.81**(0.07)
Satisfaction with health (reference category: high satisfaction):				

Average satisfaction with health	-	-	0.78***(0.04)	0.86***(0.05)
Below average satisfaction with health	-	-	0.71***(0.06)	0.88(0.08)
Personal characteristics:				
Having a formal qualification	1.23(0.16)	1.24(0.16)	1.25*(0.16)	1.22(0.16)
Gender	0.69***(0.05)	0.70***(0.05)	0.70***(0.05)	0.69***(0.05)
No children under 16 years	0.77***(0.00)	0.77***(0.05)	0.77***(0.00)	0.78***(0.00)
Being Married	0.87(0.07)	0.88(0.07)	0.88(0.07)	0.88(0.07)
Migration background (no personal experience)	0.98(0.15)	0.97(0.14)	0.96(0.14)	0.97(0.14)
Migration background (personal experience)	0.84*(0.09)	0.81*(0.09)	0.81**(0.09)	0.81**(0.09)
Age	1.04***(0.00)	1.04***(0.00)	1.03***(0.00)	1.04***(0.00)
Attitude:				
Being satisfied with life (reference category: high satisfaction)				
Average satisfaction with life	1.05(0.05)	1.10**(0.05)	1.11**(0.06)	1.13**(0.06)
Below average satisfaction with life	1.19*(0.11)	1.28***(0.11)	1.26***(0.11)	1.32***(0.12)
Being satisfied with work (reference category: high satisfaction)				
Average satisfaction with work	0.74***(0.03)	0.75***(0.04)	0.76***(0.04)	0.76***(0.04)
Below average satisfaction with work	0.56***(0.05)	0.58***(0.05)	0.59***(0.05)	0.60***(0.05)
Being satisfied with leisure time (reference category: high satisfaction)				
Average satisfaction with leisure time	1.32***(0.07)	1.35***(0.07)	1.37***(0.07)	1.36***(0.07)

Below average satisfaction with leisure time	2.49***(0.19)	2.60***(0.20)	2.65***(0.20)	2.61***(0.20)
Readiness to assume risk:				
Average risk friendly:	0.51***(0.03)	0.51***(0.03)	0.52***(0.03)	0.52***(0.03)
Below average risk friendly:	0.35***(0.03)	0.35***(0.03)	0.35***(0.03)	0.35***(0.03)
Further controls: Place of residence				
R^2	0.0601	0.0589	0.0589	0.0619

Note: Own calculation with SOEP 1994 to 2016 data, Logistic regression with Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, weighted, clustered standard errors in brackets

The regression models in Table 15 illustrate that being disabled in Model A (0,49), having a deficient quality of health in Model B (0,68) and having a below average satisfaction with health in Model C (0,71) ceteris paribus have a significant negative influence at a one percent level for individuals in the years 1994 to 2016 on their chance of being self-employed. Concerning quality of health in Model B, even stating to have an average quality of health significantly decreases the chance of being self-employed compared to a sound health (0,79). The same holds true for individuals in Model C with an average satisfaction with health compared to individuals with a high satisfaction (0,87). In a combined model D, the significant negative effects for being disabled (0,52) and having a deficient health (0,81) hold true, although the latter is only significant at a five percent level. Keeping in mind that the status of being disabled by medical examinations grants unique compensations for an individual and the status of having a poor health by self-assessment does not, this result is not surprising. On the basis of consistent results in both respective models, the first research question can be answered: People with disabilities or a deficient health are significantly less likely to be entrepreneurs in the regarded timeframe than people without a disability and people with a sound health. The null hypotheses hold true in both cases for the first research question (1a, 1b). The null hypotheses for the second research question (2a) has to be rejected, as the effects are constant in Model D. Therefore, it is likely that the disability status indeed has a unique effect apart from the health status of the individual, e.g. by offering the individual unique compensation assisting him or her

in participating on the labor market, as Metzler, Moog & Audretsch (2020) postulated.

Looking at personal characteristics, females are significantly less likely to be entrepreneurs than their male counterparts at a one percent level in all models. This result falls in line with the predominant position of research on occupational choice in entrepreneurship (Welter et al., 2019). Continuous negative significant effects on being an entrepreneur can also be found for living without children under 16 years in one´s household and having a migration background with personal experience. Both results echo to some point the results of Struminskaya (2011) and are coherent with the results of Metzler, Moog & Audretsch (2020) for older individuals. Except for satisfaction with life, all variables concerning attitude in all models show additional significant effects at a one percent level. Individuals with a high satisfaction with their work were more likely to be an entrepreneur than people with a moderate or a below average satisfaction with their work. A result consistent with prior empirical research of Benz & Frey (2008) on the situation in Germany and 22 other countries. Further, individuals with a high satisfaction with their leisure time were less likely to be an entrepreneur than people with a moderate or a below average satisfaction with leisure time. Van der Zwan et al. (2018) comment that entrepreneurs in Germany gain job satisfaction at the cost of losing satisfaction with their spare time. Finally, individuals with a high tendency to assume risk were more likely to be an entrepreneur than people with a moderate or a below average tendency to assume risk. Brachert et al. (2020) conclude that self-employment may strengthen risk-taking tendencies.

In conclusion, the first three models show that using either the disability status or the health status as the main independent variable of interest does not change the direction of the significant effects of typical influencing variables from other studies.

In the subsequent second regression analyses the state of entering entrepreneurship in the next period is used as dependent variable.

Table 16: The influence of disability and self-assessed health on entering entrepreneurship

Dependent Variable: Entering self-employment (yes=1 / no=0), only employed persons between 25-64 years

	Model A: Disability	Model B: Quality of health	Model C: Satisfaction with health	Model D: Combined model
Independent variables of interest:				
Being disabled	0.88(0.16)	-	-	0.95(0.17)
Quality of health (reference category: sound health):				
Average quality of health	-	0.78***(0.07)	-	0.84*(0.08)
Deficient health	-	0.75**(0.10)	-	0.79(0.12)
Satisfaction with health (reference category: high satisfaction):				
Average satisfaction with health	-	-	0.78***(0.07)	0.85*(0.08)
Below average satisfaction with health	-	-	0.80*(0.10)	0.94(0.14)
Personal characteristics:				
Having a formal qualification	1.03(0.14)	1.02(0.14)	1.03(0.14)	1.02(0.14)
Gender	1.07(0.08)	1.08(0.08)	1.07(0.08)	1.07(0.08)
No children under 16 years	0.84**(0.07)	0.84**(0.07)	0.84**(0.07)	0.84**(0.07)
Being Married	0.96(0.09)	0.97(0.09)	0.97(0.09)	0.97(0.09)
Migration background (no personal experience)	1.09(0.17)	1.09(0.17)	1.08(0.16)	1.09(0.17)
Migration background (personal experience)	1.10(0.13)	1.11(0.13)	1.10(0.13)	1.10(0.13)
Age	0.99*(0.00)	0.99(0.00)	0.99(0.00)	0.99(0.00)
Attitude:				
Being satisfied with life (reference category: high satisfaction)				

Average satisfaction with life	0.93(0.08)	0.98(0.08)	0.98(0.08)	1.00(0.09)
Below average satisfaction with life	0.95(0.15)	1.04(0.17)	1.01(0.16)	1.05(0.17)
Being satisfied with work (reference category: high satisfaction)				
Average satisfaction with work	0.89(0.07)	0.90(0.08)	0.92(0.08)	0.92(0.08)
Below average satisfaction with work	1.39***(0.16)	1.44***(0.17)	1.44***(0.17)	1.46***(0.17)
Being satisfied with leisure time (reference category: high satisfaction)				
Average satisfaction with leisure time	1.05(0.09)	1.06(0.09)	1.07(0.09)	1.08(0.09)
Below average satisfaction with leisure time	1.33***(0.14)	1.37***(0.15)	1.37***(0.15)	1.38***(0.15)
Readiness to assume risk:				
Average risk friendly:	0.57***(0.06)	0.57***(0.06)	0.57***(0.06)	0.57***(0.06)
Below average risk friendly:	0.37***(0.04)	0.37***(0.04)	0.37***(0.04)	0.37***(0.04)
Further controls: Place of residence				
R^2	0.0193	0.0203	0.0202	0.0207

Note: Own calculation with SOEP 1994 to 2016 data, Logistic regression with Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, clustered standard errors in brackets

A disability has ceteris paribus no significant influence on the likelihood of an individual entering entrepreneurship in the following period (Model A). Having an average quality of health (0,78) or having a deficient health (0,75) significantly decreases the chance of entering entrepreneurship in the following period in comparison to having a sound health on a one percent level and respectively a five percent level (Model B). Finally, stating an average satisfaction with health (0,78) or a below average satisfaction with health (0,80) decreases the chance of entering entrepreneurship in the following period on a one and respectively a ten percent

level. In the combined regression analysis (Model D), the direction of the odds ratios concerning health hold true, but only the effects concerning average quality of and satisfaction with health stay significant at a ten percent level. Therefore, the first hypothesis of the third research question (3a) und the null hypothesis of the fourth research question (4a) must be rejected as no significant influence for disability is found in the compiled models. On the contrary, the second null hypothesis of the third research question (3b) holds true as insufficient health turns out to be a significant negative predictor for entering self-employment.

Concerning personal characteristics, a constant significant negative effect at a five percent level of having no children under 16 years on the likelihood of entering entrepreneurship is found in all four models. Similar to this effect, Joona (2017) observes for females in Sweden a higher transitions rate into entrepreneurship for individuals having children compared to individuals having no children. Regarding attitude, a lower readiness to assume risk has a significant negative influence at a one percent level and a below average satisfaction with leisure time also has a significant positive influence at a one percent level on entering entrepreneurship. Caliendo et al. (2009) and Brachert et al. (2020) found similar results in respect to risk attitudes. Leisure and work satisfaction both influence life satisfaction. To increase one aspect, an individual has to invest time – hours spent on work or hours spent on leisure. Entrepreneurship is associated with high job satisfaction (Van der Zwan et al., 2018). While the scale of individuals with an initial high satisfaction with leisure time and low satisfaction with their work might balance themselves out, the same could not hold true for individuals having a low satisfaction in both aspects. They might therefore be more likely to enter entrepreneurship.

The direction of the influence of the majority these variables on entering and being an entrepreneur stays the same. As an exception, the direction of the effect of satisfaction with work differs: A below satisfaction with work has a significantly positive influence on entering entrepreneurship in the next period. This effect is coherent with Van der Zwan et al. (2018) findings that individuals switching to self-

employment experience an increase in job satisfaction in the first years after the transition.

In the third and final regression analyses the state of leaving entrepreneurship in the next period is used as dependent variable.

Table 17: The influence of disability and self-assessed health on leaving entrepreneurship

Dependent Variable: Leaving self-employment (yes=1 / no=0), only employed persons between 25-64 years

	Model A: Disability	Model B: Quality of health	Model C: Satisfaction with health	Model D: Combined model
Independent variables of interest:				
Being disabled	2.02***(0.41)	-	-	1.99***(0.42)
Quality of health (reference category: sound health):				
Average quality of health	-	0.91(0.08)	-	0.87(0.09)
Deficient health	-	1.26*(0.16)	-	1.27(0.21)
Satisfaction with health (reference category: high satisfaction):				
Average satisfaction with health	-	-	1.08(0.09)	1.11(0.11)
Below average satisfaction with health	-	-	1.02(0.13)	0.84(0.15)
Personal characteristics:				
Having a formal qualification	0.65***(0.09)	0.65***(0.09)	0.65***(0.09)	0.65***(0.09)
Gender	1.84***(0.16)	1.84***(0.16)	1.84***(0.16)	1.84***(0.16)
No children under 16 years	0.78***(0.07)	0.79**(0.07)	0.79***(0.07)	0.78***(0.07)
Being Married	0.97(0.09)	0.98(0.09)	0.98(0.09)	0.98(0.09)
Migration background (no personal experience)	1.50**(0.24)	1.51***(0.24)	1.52***(0.24)	1.50**(0.24)

Migration background (personal experience)	1.32**(0.17)	1.31**(0.17)	1.33**(0.17)	1.31**(0.17)
Age	0.96***(0.01)	0.97***(0.01)	0.97***(0.01)	0.96***(0.01)
Attitude:				
Being satisfied with life (reference category: high satisfaction)				
Average satisfaction with life	1.09(0.10)	1.09(0.10)	1.08(0.10)	1.08(0.10)
Below average satisfaction with life	1.63***(0.25)	1.59***(0.25)	1.66***(0.26)	1.63***(0.26)
Being satisfied with work (reference category: high satisfaction)				
Average satisfaction with work	1.36***(0.12)	1.36***(0.12)	1.34***(0.12)	1.35***(0.12)
Below average satisfaction with work	2.47***(0.32)	2.43***(0.31)	2.47***(0.32)	2.52***(0.33)
Being satisfied with leisure time (reference category: high satisfaction)				
Average satisfaction with leisure time	0.80**(0.07)	0.80**(0.07)	0.80**(0.07)	0.80**(0.07)
Below average satisfaction with leisure time	0.67***(0.07)	0.67***(0.07)	0.66***(0.07)	0.67***(0.07)
Readiness to assume risk:				
Average risk friendly:	0.78**(0.08)	0.79**(0.08)	0.78**(0.08)	0.79**(0.08)
Below average risk friendly:	0.85(0.09)	0.85(0.10)	0.85(0.09)	0.85(0.10)
Further controls: Place of residence				
R^2	0.0564	0.0552	0.0541	0.0578

Note: Own calculation with SOEP 1994 to 2016 data, Logistic regression with Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, clustered standard errors in brackets

Stating to have a disability has ceteris paribus a positive influence at a one percent level (2,02) on the likelihood of an individual leaving entrepreneurship in the following period (Model A). Having a deficient health (1,26) significantly increases

the chance of leaving entrepreneurship in the following period in comparison to having a sound health, but the effect is only significant at a ten percent level (Model B). An average satisfaction with health or a below average satisfaction with health does not significantly influence the chance of leaving entrepreneurship in the following period in comparison to possessing a high satisfaction with health (Model C). In the combined regression analysis (Model D) the direction, the strength and significance of the odds ratio for disability hold true, indicating that there is a unique effect of disability on individuals to leave entrepreneurship. No significant effect for health characteristics is found. In conclusion, the first and second null hypotheses (5a, 5b) for the fifth research question and the null hypothesis for the sixth research (6a) question holds true.

Regarding demographics a variety of significant effects can be found. Individuals possessing a migration background and females are significantly more likely to leave entrepreneurship compared to their counterparts. Joona (2010) finds a similar effect for the subgroup of non-western immigrants in Sweden compared to natives. She mentions differences in entrepreneurial motives and business sectors as a possible explanation. Regarding gender, Hsu, Wiklund, Anderson and Coffey (2016) suggest that females are more likely than males to have intentions to leave entrepreneurship if a conflict to balance out work and family life exists. Having no children under 16 years living in your household significantly decreases the chance of leaving entrepreneurship. This differs from Millán, Congregado and Román (2012), who found no significant impact of dependent children in the household on the likelihood of exiting entrepreneurship.

The significant negative effect of formal qualification on leaving self-employment in Table 17 is stronger than the positive and partially significant effect of a formal qualification on being self-employed in Table 15. The effect holds true for all four models. A positive effect of formal human capital on entrepreneurial survival in a European context is also found in the study of Millán et al. (2012). However, different to this study, the authors do merely base their analysis on the highest achieved academic certificate. Regarding attitude, the effects of satisfaction with work and satisfaction with leisure time are significant at a one percent level. Their

direction is reverse compared to the analyses of being self-employed. As higher job satisfaction is a typical benefit of being an entrepreneur (Benz & Frey, 2008) it seems logical for individuals lacking this experience to leave entrepreneurship. On the contrary, being less satisfied with your spare time might be a typical cost of entrepreneurship (Van der Zwan et al., 2018) and could thus be accepted by those wishing to continue the profession.

All in all, the effects of the control variables on the likelihood of individuals being an entrepreneur on entering or leaving entrepreneurship are consistent with current research literature, strengthening the robustness of the analyses.

5.6 Conclusion

Looking at the time span from 1994 to 2016, disabled individuals are significantly less likely to be self-employed and more likely to leave self-employment than individuals lacking this status. On the contrary, the process of entering entrepreneurship does not seem to be influenced by disability, but rather by the quality and the satisfaction with health. While insufficient health characteristics also significantly negative influence the likelihood of an individual being self-employed, its influence on leaving self-employment is weak and restricted to the quality of health. Therefore, health and disability seem to have a different effect on the occupational choice regarding entrepreneurship in different stages. The variables are not interchangeable. The results of Metzler, Moog & Audretsch (2020) that a specific negative effect on the chance of an individual being self-employed might be caused by relevant compensations available at certain grades of disability cannot be rejected. Health on the other hand cannot be merely regarded as a sub-effect of disability. In a literature review, Simoes et al. (2015) derive that the decisions of individuals with inadequate health on entering entrepreneurship might also be influenced by the fact that health related benefits provided by the state are less tailored for entrepreneurship than for being employed. While this is a good explanation for the influence of “disability” on entrepreneurship, health seems to have an additional effect as the mentioned compensations are not provided based on self-assessment of one´s individual health.

The study therefore offers a novel contribution to current research in entrepreneurship literature, as the concepts of "disability" and "health" are defined in the research background and empirically tested in independent and joined regression models concerning the occupational choice of German disabled individuals. "Disability" and "health" should not only be considered as related but different concepts on a theoretical level, the distinction must be made on an empirical level – at least for the German context.

Concerning a possible distinctive effect of quality of and satisfaction with health concerning entrepreneurship few can be said. Both variables are highly intercorrelated. In two out of three regression models both variables result in the same effects concerning direction, although the quality of health proves to be a more significant predictor for being self-employed and leaving self-employment.

The results in the current analysis indicate that individuals reporting a below average satisfaction with their work are more likely to enter entrepreneurship, strengthening the argument that disadvantaged individuals could indeed find a more satisfying working life in entrepreneurship (Doyel, 2002). But then again, other results concerning satisfaction with life itself or leisure time paint a more ambiguous picture of entrepreneurship as a potential neutralizer of societal marginalization.

As the results show that individuals with an insufficient health tend to avoid entering entrepreneurship, health programs targeting (nascent) entrepreneurs, e.g. courses aimed to learn relaxing techniques, could potentially help disabled and non-disabled entrepreneurs to start and maintain their own business. But even the best prevention might not be sufficient to avoid all serious sicknesses. Employed individuals with health problems can potentially more easily take a long sick-leave, while such a step might seriously endanger entrepreneurs. Their time might either be determined to work themselves instead of making a doctor appointment or a cost argument might stand behind this. Research to identify and examine possible ways out of this dilemma is to be encouraged.

Limitations and further research

The illustrated analyses face several restrictions that shall be shortly discussed.

This paper extends existing quantitative research using regression analyses with varying definitions of disability and health. This method relies on the assumption that an effect can be distinguished ceteris paribus using a similar set of variables for all individuals. However, the occupational choice of an older disabled ethnic German male might be influenced by other factors than the decision of a young disabled female with a migration background. Therefore, qualitative studies for subgroups might offer additional insights. Concerning qualitative studies, it might also prove worthwhile to look at the situation of entrepreneurs, who have a chronic illness or disability with either permanent or changing effects on health. The SOEP measures the quality and satisfaction with health at one point within a year, but individuals with certain illnesses might experience different incidences within a year. It would furthermore be interesting to see how entrepreneurs with insufficient health react in a crisis to take the argument of Torrès & Thurik (2019) into consideration that entrepreneurship itself might influence health and that this influence might change over time.

There are also alternative quantitative approaches possible using SOEP data. Defining "Health x Disability" as an interaction term could potentially determine the joined effect on the occupational choice of disabled individuals that exceeds the singular effect of these variables. A potential challenge in the used dataset is the high and significant correlation of the variables at hand (Table 29). In respect to changes concerning disability and / or health status of an individual further quantitative analyses might provide helpful. An event history analysis could be used to illustrate how many entrepreneurs decline under a certain threshold value concerning their self-assessment of health within a certain pre-determined period. Alternatively, the amount of "surviving" entrepreneurs with a disability within a certain pre-determined period could be analyzed. A restriction for both approaches is the relatively small number of cases available (Tables 26-28).

The analyses at hand use the SOEP dataset and therefore offer a typical set of moderation and control variables concerning demographics and attitudes of individuals. However, other datasets might be available in the future that could provide further insights. E.g. the SOEP dataset offers few to no data on entrepreneurial activity itself, e.g. turnover or acquired customers within a year. Such a business centered approach could provide insights into the processes behind the decisions for staying an entrepreneur or leaving entrepreneurship.

Another methodological challenge consists in the notion that poor health of an individual could be the result of a certain type of employment and not a potential cause for choosing and maintaining a certain type of employment. A poor health status could further lead to a recognition of an individual of being disabled. Building on a SOEP analysis of the 1984 to 2009 waves Ravesteijn, van Kippersluis and van Doorslaer (2013) argue that high job-related physical demands and low job control (majorly found in blue-collar jobs) lower the self-reported health of individuals in Germany. The effect is stronger for older subgroups.

No information describing the cause of the disability of an individual is available in either the Mikrozensus or the SOEP. Looking at official statistics, in the years 2009, 2011, 2013 and 2015 less than 2 percent of all recognized severely disabled individuals in Germany stated that the cause of their disability was either a work accident or a vocational disease (Statistisches Bundesamt, 2018). Therefore, a direct causal effect of either being employed or self-employed on the likelihood of being disabled seems unlikely in a vast majority of cases.

As priorly mentioned health can be influenced by investments (Becker, 2007; Grossman, 1972). Thus, it would be of deep interest to get insights how self-employed and non-self-employed deal with these investments in their health capital, like treatments, prophylaxes, investing in organizing an adequate work life balance etc. and what influence different existing schedules might have on entrepreneurial entry and exit.

Even taking into account these limitations, the current study delivers new insights on how health and disability as separately regarded concepts influence the decision to become, to stay and to leave self-employment.

6. Summary of the main findings

In sum, the results of the papers in this PhD thesis show that in Germany the labor market as well as the occupational choice situation of disabled individuals concerning entrepreneurship is different from the situation of non-disabled individuals. Moreover, the analyses offer insights and contributions to research in this field, that the general situation regarding entrepreneurship and disabled individuals is significantly different compared to other European and Non-European countries. Therefore, context does matter.

This PhD thesis discusses these issues first in the introduction and defines the research contribution and motivation followed by an in-depth literature analysis and theoretical model (chapter 1 and 2).

A first insight regarding the different context of disabled individuals in Germany is established in chapter 3, as the first paper of this cumulated dissertation. Here, the impact of being disabled on becoming entrepreneur is discussed in a more general approach. Based on logistic regressions a significant negative influence of a disability on the likelihood of being self-employed is estimated. This result holds true for two different age groups, two cohorts of trend data, as well as for different grades of disability. Robustness checks illustrate the stability of the results. On top, a variation within the regarded groups concerning characteristics like age or gender does not influence the results. An Oaxaca-Blinder decomposition rather indicates that the difference between the (severely) disabled and non-severely disabled individuals in entrepreneurial activity is even larger. Hence, it is likely that a disability gap concerning entrepreneurship does exist in Germany. These results differ from Pagán´s study (2009) and highlight the importance of using a disability definition that is connected to the regional context. This is definitely the case in Germany, where the analysis of the context shows, that individuals are strongly affected by getting access to very specific benefits as (severely) disabled individuals. These benefits seem to influence especially disabled individuals in favor of being an employee and potentially seem to create obstacles for becoming self-employed. Thus, if Germany wants to get more of these hidden entrepreneurs,

the existing benefits should not be cancelled, but very specific additional instruments should be established to enhance the willingness and ability of disabled individuals to be more open in their decision to become self-employed or not.

The next chapter 4 focusses on a more conceptual level on a missing variable of the quantitative analyses – the type of disability. Following the recent reports of suicides among well-known entrepreneurs, the study aims to identify barriers and benefits for mentally disabled individuals in entrepreneurship. To do so, the current predominant definition of disability, the social model, is critically analyzed for its limitations and chances concerning mental illness. Subsequent, a literature review clusters recent studies concerning mental health and mental disabilities, with a focus on Germany, into four categories. A clear narrative cannot be established. Societal influences like existing stigma and the current education system might primarily hinder, and existing unemployment might foster entrepreneurship. Individual influences concerning the type of mental illness, e.g. personality traits like "psychopathy", could support and hinder entrepreneurship. But there might also be comprehensive influences that further creativity and other traits highly useful in entrepreneurship. Thus, this paper reveals, that to do research on disability, it is essential to look carefully at the definitions and rules of how disability has to be defined. Furthermore, the different kinds of mental -or physical- disability deliver contributing results in a context related research.

Finally, chapter 5 enhances the prior discussion. The analyses here distinguish between "disability status" and "self-assessed health" and additionally between the status of being an entrepreneur and the process of joining or leaving entrepreneurship. The panel dataset SOEP is used for this approach that is different compared to the first paper. The applied distinctions do not change the main finding of chapter 3 – disability still has a significant negative effect on entrepreneurial activities of disabled individuals in Germany. But there are further effects to be observed: Joining entrepreneurship seems to be significantly negatively influenced by health, as is the status of being an entrepreneur. Leaving entrepreneurship on the other hand is connected to having a disability. Although they are correlated with

each other, the impacts of “health” and “disability status” on entrepreneurship do deviate in Germany.

The dissertation offers several unique contributions. Enhancing the results of Pagán´s (2009) and Renko et al. (2015) less context specific empirical studies for Europe and the United States, the first and to a lesser degree the third study offer a context specific quantitative analysis concerning entrepreneurial activities of disabled individuals in Germany. The results of the first paper illustrate small representative quantitative differences between two age groups of disabled individuals concerning their realization of entrepreneurial motivation, partially strengthening Győri et al. (2019) argument that the age at which an individual acquires his or her disability status could influence his or her entrepreneurial motivation.

The second paper discusses the fickle nature of entrepreneurial mental health. It is a call for caution that the type of disability, which is rarely available in quantitative datasets, could also influence the occupational choice of an entrepreneur – thereby echoing and enhancing the argument of Wiklund et al. (2018). The second paper includes an original model on the occupational choice of mentally ill individuals distinguishing between societal and individual factors. These conceptual insights contribute to the research on reasons for disabled individuals for choosing (Maritz & LaFerriere, 2016) and barriers for avoiding (Dhar & Farzana, 2017) entrepreneurship.

The third paper further distinguishes between the influences of “disability” and “health” on entrepreneurial activity, highlighting the importance of separately regarding those concepts in quantitative analysis and avoiding using them as synonyms. Except for the study Fossen & Koenig (2017), which has a different focus, such a distinction is not common in entrepreneurship research concerning occupational choice in the German context. Complementary to Fossen & Koenig (2017) the third paper not only offers empirical based results for entering entrepreneurship but also novel insights in the role of these concepts for staying in it and leaving it.

In sum, quantitative analyses seem to be a valid approach to illustrate entrepreneurial activities of disabled individuals, but it should preferably be done context-dependent and transparent in its limitations.

In this sense, this dissertation can give entrepreneurial researchers original impulses to (empirically) examine the situation of disabled or other marginalized (nascent) entrepreneurs in other countries. The dissertation further contributes a variety of policy-implications to promote entrepreneurship tailored for the German context, similar to Maritz & LaFerriere (2016) proposals for the Australian and Bhuvaneswari & Natarajan (2016) proposals for the (South) Indian context.

All studies establish that the current situation for disabled individuals becoming, being and staying self-employed in Germany is challenging. Context can be ambiguous, "individuals may experience it as asset and liability" (Welter, 2011, pp. 165-166). In Germany, concerning entrepreneurship, the latter seems to be the case.

6.1 Theoretical implications

The empirical studies contribute to the literature concerning context in entrepreneurship, especially the specific context of disabled people in Germany.

The results of the first and to a smaller part of the third paper enhance the discussion concerning benefits provided by the government that might influence the occupational choice of individuals (García-Gómez et al., 2010; Martínez-León et al., 2019; Pagán-Rodríguez, 2011; Shaheen., 2016). The laws behind benefits for disabled individuals in Germany act as institutions that do lower or increase the costs of an activity (Boettke & Coyne, 2009). In Germany, the existing institutions do not directly increase the costs of entrepreneurship as an occupational choice, but they do decrease the cost of choosing regular employment. The opportunity costs of entrepreneurship (Simoes et al., 2015) for disabled individuals therefore increase and possibly seem to be too high for disabled individuals to overcome. Thus, disabled individuals have to be even more risk friendly or even more pushed into entrepreneurship due to circumstances like not finding an adequate job or payment to decide in favor of entrepreneurship.

These results also enhance the discussion concerning push- and pull-factors for entrepreneurship. Both theoretical assumptions are not exclusive but complimentary (Gilad & Levine, 1986). As Győri et al. (2019, p. 362) note „disability literature and entrepreneurial literature are not fully integrated" regarding the topic of entrepreneurial motivation. Existing disability benefits in Germany could specifically influence the process of comparing "the desirability of self-employment with the desirability of working for others" (Segal et al., 2005, p. 47). Push- and pull-factors might therefore vary for different sub-groups. Disability -like gender (Kirkwood, 2009b)- might be a variable to include in models on entrepreneurial motivation. Context might moderate the effect. E.g. in a society like Germany, with high employment rates (Eurostat, 2019) and existing sheltered workshops for disabled individuals with no other alternatives (Detmar et al., 2008), the overall push-effect of disability on entrepreneurship as a chance to stay active on the labor market (Pagán-Rodríguez, 2011) could be weaker. The reverse effect might even occur, when disabled individuals - as established in Chapter 5 - potentially are leaving entrepreneurship to get access to disability benefits that might enable them to continue their working life in dependent work. Concerning all individuals, the SOEP analyses reveal that a below average satisfaction with their current work as an entrepreneur has a positive significant influence on leaving entrepreneurship. So, an alternative or complementing assumption could be that the benefits available for work as an employee in Germany in general, like financial security due to labor agreements, are pull-factors towards dependent employment for some individuals. As Metzger (2015, p. 3) puts it "being employed has (too many) advantages". This does not imply that the German government should change the existing support measure for disabled individuals to enter the labor market as employees, but politicians should be aware that this specific group could create more entrepreneurial ideas and innovation if supported on that edge of the labor market as well in a specific way, fitting to their individual needs and context.

The second paper adds also to the narrative of mental disability perceived by society. As Charlton (2000, p. 97) notes: "There is a hierarchy of disability. This hierarchy extends across continents and zones of economic development. It breaks down like this: people with mental disabilities and those perceived as having mental

disabilities have the most difficult lives." This hierarchy might however not work within entrepreneurship, as a mental disability could provide unique benefits for being an entrepreneur. A growing number of peer-reviewed research papers done by entrepreneurship scholars in recent years illustrates this link for different mental diseases (Uribe-Toril, Ruiz-Real, Ceresia, & Valenciano, 2019). The fact of mental illnesses being invisible (Charlton, 2000) might further enable entrepreneurs to hide their disability and therefore avoid possible discrimination, although doing so has probably negative business consequences (Newheiser & Baretto, 2014).

The third paper enhances the studies of health as part of human capital (Becker, 2007) and in particular the role that health has as a part of human capital needed for entrepreneurial success (Hatak & Zhou, 2019). A negative self-assessed quality of health has a peculiar significant negative effect on the likelihood of being an entrepreneur in Germany. Therefore, entrepreneurial health -at least for Germany- itself can be viewed as a good with benefits and costs, that are independent of disability benefits provided by the institutions within a society.

The presented studies also contribute to the theory of disability as a process beyond the impairment of individuals provided by supporters of the social model of disability (Barnes & Mercer, 2005; Siminski, 2003). The influence of the status of being disabled does not equal the influence of the status of having a poor quality of health, and therefore likely having at least one impairment, as the societal effects, in this case provided by German laws, do play a part. It is discussable if this societal influence is favorable to disabled individuals in Germany from the perspective of civil rights or another indication of an overlooking society that (un)consciously hinders a portion of their individuals from fulfilling their full potential (Beresford, 2004; Oliver, 1990). Pavey (2006) argues that advocating entrepreneurship as an alternative for disabled individuals also emphasizes capitalist values like personal responsibility, an approach she sees as potentially controversial. As Barnes & Mercer (2005, p. 541) remark "there has been a remarkable consensus across social theory and government policy that paid employment is central to social inclusion". In Germany entrepreneurship is presented as one path to achieve this goal, but it is not a favourable path.

The results of the three studies are also interconnected. Chapter 3 establishes that younger severely disabled individuals are more likely to have no formal qualification, which is partly the case because a good number of them have no school certificate (Klemm, 2009). This low endowment of human capital is accompanied by struggles of (mentally) disabled individuals to gain social capital in an separated school community as argued in Chapter 4. Finally, gaining health capital, which is the topic of Chapter 5, is closely connected to education (Becker, 2007; Graeber, 2017). Health capital (Hatak & Zhou, 2019; Razgallah et al., 2017), human capital (Moog, 2002; Marvel, Davis & Sproul, 2014) and social capital (Baron & Markman, 2000) are all connected to entrepreneurship on their own. For disabled individuals, who had an onset of disability during their childhood or youth, the influence of the German educational system should potentially be viewed as a further negative corresponding factor in relation to their participation on entrepreneurship. Brixiova & Égert (2017) illustrate for low income-countries the need to improve the education system accordingly to institutional reforms to foster entrepreneurship. Germany is not a low-income country, but perhaps a similar mechanism might work to provide chances for its disadvantaged groups within society.

6.2 Managerial and policy implications

The presented studies also contribute to potential approaches that disabled and (yet) non-disabled entrepreneurs could use to maintain or improve their business.

Health has its own importance concerning building a business and staying an entrepreneur. Nikolova (2019) remarks that entrepreneurship itself has a positive effect on the health of German entrepreneurs. However, getting started might prove difficult for individuals with low health. Therefore, nascent entrepreneurs should not only try to find enough financial capital for their business out of their own pockets or from foreign investors, but also try to find enough time to invest in their own health capital. This might prove challenging, as in Europe, the self-employed state that they have less work-life balance than their employed peers, as a quantitative study by Block, Millán, Millán and Moritz (2018) indicates. Additionally, nascent entrepreneurs with lacking health capital might profit from

finding (business) partners, who do not have restrictions associated with certain illnesses. Hatak & Zhou (2019) postulate that at least for mental health problems, the health of a spouse might act as a protection. Visentin, Cleary and Minutillo (2020) argue that the emotional burden of entrepreneurship might indirectly impact family and friends of an entrepreneur, inducing them to assist and support the entrepreneur.

Disability and insufficient health are challenges to entrepreneurs. They therefore should plan cautiously and think in advance about potential changes to their business model and possible solutions if a disability or chronic illness affects them. Such strategies are especially important for senior entrepreneurs. As the analyses of the Mikrozensus indicate, over a fifth of all individuals over 60 years had a recognized disability in 2013. Due to the aging population in Germany (Federal Statistics Office, 2016), a disability will potentially affect even more entrepreneurs in the future. Following Dyer & Handler (1994) owners of existing family businesses can also be regarded entrepreneurs. If a disability and its consequences cannot be overcome or the entrepreneurial environment adapted to it, the situation should be considered a warning sign, that the succession process to the next generation has to be considered. Potential successors should inform themselves about the condition of their predecessors to potentially ease the process. More research is needed to identify factors of success.

Severely disabled individuals in Germany profit from enhanced employment protection (FMLS, 2019). Filippetti & Guy (2020) suggest a negative link between the amount of employment protection existing within a society and the diversity of human capital individuals aim to acquire. High employment protection is associated with a narrow set of knowledge and skills, as individuals are trying to meet the requirements of the present labor market. Lazear (2004, p. 208) assumes that entrepreneurs are “jacks-of-all-trades” and possess a wide area of skills to succeed in their trade. Existing enhanced job protection could therefore incent severely disabled individuals to acquire a set of knowledge and skills that fits their current employment situation but could hinder them from joining entrepreneurship in the future. Nascent entrepreneurs with a severe disability should therefore look

carefully at their current set of knowledge and skills and aim to close existing disparities by investing in a broader set of human capital.

The influence of mental health on entrepreneurship and vice versa has been shown to be a double-edged sword as consequences might be advantageous and problematic. External help by a trained professional could be a crucial aspect for affected entrepreneurs to create a working life that strengthens positive emotions, although more research is required to determine which paths are successful (Wiklund et al., 2018). However, getting qualified medical assistance might prove challenging on its own, as the waiting period between the start of a psychotherapy and the first contact was 19,9 weeks in 2017 in Germany (BPtK, 2018). Entrepreneurs should therefore be honest to themselves and act timely if signs of mental illness arise. To sit out the problem might have lasting negative consequences. Speaking to other affected individuals might likewise turn out to be helpful. In times of digitization such peer groups could also take place virtually (Naslund, Aschbrenner, Marsch & Bartels, 2016).

An open question remains, which strategies and interventions could make the entrepreneurial profession preferable to those disabled Germans, that have good alternative opportunities as employees (Metzler & Werner, 2017) and in the case of the severely disabled have access to sheltered workshops (FMLS 2018, 2019) as a potential alternative.

Regarding disability benefits, it could be helpful to evaluate if disabled entrepreneurs currently use existing benefits and additionally if supplementary benefits that might more adequately fit entrepreneurship could be established. As an example: The enhanced allowance to take five additional days of paid leave, for the severely disabled, might be more beneficial for paid workers as entrepreneurs are more flexible in designing their time schedule themselves (Burchardt, 2000; Doyel, 2002). But then again, assistance could be provided so that disabled entrepreneurs have more free time at hand. Currently, personal assistance is already granted by the state if a disabled individual cannot competitively perform a task, e.g. being unable to read his or her e-mails (FMLS 2018). While state provided

personal assistance in entrepreneurship tasks might be problematic for a number of reasons like liability, the state could provide assistance in compensating part of the wage of an employee or an consultant an entrepreneur uses to assist him or her (Hagner & Davies, 2002) in typical entrepreneurial tasks like accounting (Vaziri et al., 2014). Such an approach would help to strengthen the individual's freedom of decision (Callahan & Mank, 1998).

Further training courses that respect the needs of (nascent) disabled entrepreneurs could be a potential solution to improve entrepreneurial success. A study by Lyons & Zhang (2017) based on Northern American data indicates that entrepreneurial learning programs offer advantages for various disadvantaged groups within society. Anderson & Galloway (2012) looked at the benefits of enterprise training, a method that offers skills related to entrepreneurship but can also be used beyond the creation of a new venture. Trained disabled individuals could be able to raise their social capital and the training might help them overcome some of their disadvantages in society. Maritz & LaFerriere (2016) notion that training could also be provided for employees and business mentors to enhance understanding of impairments and further cooperation. The authors further recommend including advice from experts from organizations for the disabled. Martínez-León et al. (2019) note the possibility of online training courses. Research is needed to adapt this broad existing international narrative to the German context at hand. One approach could be to focus on the "relative merits of self-employment versus working for others" (Segal et al., 2005, p. 54) to foster a realistic entrepreneurial motivation for disabled individuals in Germany.

6.3 Implications for further research and remaining limitations

In the prior chapters limitations of the singular studies, often based on the dataset and research design used, were already discussed. In this subchapter I would like to offer a broader perspective concerning the cumulative evidence of the three papers and further focus on the potential prospective research to be done.

The research at hand is based on entrepreneurs that actively gain the status of being (severely) disabled by opening themselves and their conditions to the state. The

research does not give information about the consequences of entrepreneurs that either a) disclose or b) are open about their disability to their employees. Regarding disability as a hidden identity, both options might have different consequences (Clair et al., 2005). As Caldwell et al. (2016, p. 234) state: “Few examples exist of successful CEOs with disabilities. However, that does not mean that these individuals do not exist, but rather they appear to be actively passing in order to succeed in the business world.” Further, individuals with impairments might not try to gain a disability status at all, as they might be afraid of the discrimination they could face in Germany or other countries as “individuals strive to achieve or to maintain positive social identity” (Tajfel & Turner, 1986, p. 284). This limitation is partly addressed by comparing the influence of “self-assessed health” and “disability status” of individuals on entrepreneurship in Chapter 5.

As priorly discussed in sub-chapter 6.1, the German educational system might detain young Germans, born with a disability or acquiring the status within their childhood, from acquiring a good set of human and social capital required for an entrepreneurial career. Qualitative research of related curricula and quantitative educational assessment of affected pupils could give empirical insights about the current situation. These insights could be an evidence-based starting point for a discussion, if a more challenging approach might be able to promote certain entrepreneurial skills in general or if more flexibility in the choice of courses could provide adequate skills fitting the individual profile of possible future entrepreneurs.

Like female entrepreneurs (Bijedić, Welter & Halabisky, 2016) disabled entrepreneurs could be more likely to start a business in a specific industry as the amount of severely disabled employees varies sharply between different industrial sectors (Bundesagentur für Arbeit, 2019). Therefore, a more macroeconomic approach concerning the challenges and development of specific industries in Germany -and starting a business within those industries- could be a helpful extension to the analyses at hand.

This dissertation has provided a detailed look at the possible impact of disability on entrepreneurship in a specific country. A similar analysis for a country, where disabled individuals are also less likely to be self-employed than individuals without disabilities, could prove useful to illustrate if some of the influences shown for Germany turn out to be stable in varying conditions. For example, is the effect on all subgroups, e.g. based on age, constant? Do "health" and "disability" still have varying effects in different stages of the entrepreneurial journey?

Metzger (2015) lists several reasons of nascent entrepreneurs, who decided not to start a business so far. Do disabled individuals have analogue reasons or do they differ? And what support measures could have changed their occupational choice?

In respect to the regarded age group, which is a vital factor to explain differences between studies (Simoes et al., 2015), the current study looked at those individuals in the working age of 25 years to 64 years. But it would also be interesting to look at differences between disabled and non-disabled students in entrepreneurship university courses in Germany, like Muñoz, Salinero, Peña and de Pablo (2019) did for Spain, or senior entrepreneurs, who are still active past their retirement age. Possibly, personality traits of disabled individuals as a predictor of their entrepreneurial intentions (Castillo & Fischer, 2019) could be studied.

Following the alternative approach of Oliver (1990) disability might not majorly be caused by the conditions within an individual but created by certain structures within society, that oppress the chances and opportunities of individuals. It might be interesting to look at current structures in Germany, e.g. in education and health, that are not tailored to fit the needs of individuals with certain health or disability characteristics. In a second step, existing mismatches in society could be linked to entrepreneurial literature to find possible approaches to foster equal opportunities and set up instruments or measures to overcome those obstacles.

The process of fostering entrepreneurial opportunities for disabled individuals in Germany will most certainly face barriers and challenges on different stages of implementation, although the German economy has - in the case of globalization - proven to be flexible in the recent past (Audretsch & Lehmann, 2015). Identifying

those constraints and trying to find solutions calls for the open-ended testing of possible approaches and an ongoing scientific evaluation (Parker Harris et al., 2014). As this process takes place in a social market economy – it could be valuable to assess the opinions of representatives of labor associations and trade unions as well as associated interest groups. Such an approach would further acknowledge that entrepreneurs are not only influenced by the context at hand but also to some part design the available context (Welter, 2011).

The dissertation focusses on an analysis using studies and approaches from business administration, economics and the social sciences in general. However, a more interdisciplinary approach could also turn out to be worthwhile. E.g. researchers could use content analysis to look at reports from contemporary witnesses of German entrepreneurs in earlier centuries, like Margarete Steiff, as a representative for females and being disabled by polio (Schriftleitung des „Aufstiegs“, 1964), to analyze if there is any notion of disability and additionally analyze the underlying cultural implications. As culture influences the creation of institutions (Hayton et al., 2002), studying the perception of the public and historical developments of culture might give additional insights.

Speaking of interdisciplinarity there is the specific question of gender. All results imply that females are less likely to be entrepreneurs than males. The result is in line with the “taken for granted” context of entrepreneurship research (Welter et al., 2019, p. 320). Concerning disability, in Germany there are slightly more males with a recognized severe disability than females (Statistisches Bundesamt, 2018). However, there is reason to be cautious, as gender differences might exist in some disability types, e.g. the ratio of depressed individuals is higher in females across different countries (World Health Organisation, n.d.). Therefore, talking about the disabled entrepreneur in general could unintentionally neglect the minority perspective of the female disabled entrepreneur and her challenges and chances. Thus, it could be promising to look at this issue more in-depth in the future.

A final limitation lies in the fact that the writer of this PhD-thesis and (co-)author of the included papers is disabled himself and therefore part of the regarded disadvantaged group in Germany. There is an ongoing discussion about the possible

merits and challenges of writing from this perspective. In my research I am affected by my own context (Baker & Welter, 2018). Further, there is the debatable assumption that disabled individuals have unique knowledge about the situation of their peers out of their own experiences (Charlton, 2000). Hence, studies of disabled entrepreneurship researchers could be an interesting research object.

6.4 Conclusion

"Optimism is the faith that leads to achievement; nothing can be done without hope and confidence."

Helen Keller (1903, p. 67)

"It is typical of the entrepreneur 'to find a way.'" (Stevenson & Jarillo, 1990, p. 23). Disabled individuals also want to find a way to overcome their disadvantages in society. Entrepreneurship could be a possible solution for that (Halabisky, 2014). The analyses at hand show that disabled individuals in Germany are less likely to find a way to be an entrepreneur compared to their non-disabled peers, either because they are not willing, as there are better employment paths available, or because those entrepreneurial paths might not be available at all. The German context with its specific benefit laws for disabled employees, like extended job protection, most likely affects individuals in their decisions. But, are their labor market decisions justified? From 2009 to 2018, severely disabled individuals still had a higher unemployment rate than their non-disabled peers in Germany (Bundesagentur für Arbeit, 2018). On the contrary, the rate of nascent entrepreneurs in respect to the whole German population has remained low (Sternberg et al., 2019).

Therefore, from a labor market perspective, fostering entrepreneurial opportunities for the (severely) disabled could improve the lives of affected individuals and help Germany to gain more entrepreneurs. Entrepreneurship is not a universal remedy for non-employed disabled individuals as in any group of people only a certain number within the group will have the necessary motivation to start a business (Cooney, 2008). Finding and supporting the right individuals may not turn out to

be easy however as (severely) disabled individuals turn out to be just as multifaceted as their non-disabled peers: For example, older individuals and younger individuals differ, as do males and females. On the contrary, the negative influence of a disability on the likelihood of individuals being an entrepreneur stays constant – independent of regarded subgroups and operationalizations of disability. These results call for a nuanced and enhanced discussion. Disability could potentially play an important role in analyzing various entrepreneurial subtopics concerning Germany.

Moreover, the analyses of the Socio-Economic Panel illustrate that a disability and an insufficient self-assessed quality of health are not complementary in their effects on the likelihood of individuals of joining or leaving entrepreneurship. A sufficient amount of health capital seems to be a prerequisite for joining entrepreneurship in Germany. Studying the health of entrepreneurs should therefore not be neglected as it was in the past (Torrès and Thurik, 2019). Mental health, although fickle in its definition, could prove to be an interesting factor on its own, as consequences might turn out to be a challenge but also an advantage in being an entrepreneur.

In the end there might be paths for disabled individuals in Germany to entrepreneurship yet uncovered. Welter et al. (2017) remark

> that entrepreneurship, understood broadly, is heterogeneous, blooming, messy, and a sometimes glorious social tool that is widely available. It is not just a pursuit of heroic "Silicon Valley" entrepreneurs, but it can produce heroes of many kinds: of their own lives, families, communities, and myriad other contexts (Welter et al., 2017, p. 317).

As entrepreneurship scholars we are not heroes for researching the lives of marginalized individuals, but our research could potentially help to create paths to empower marginalized individuals due to entrepreneurial work in Germany and other countries. Therefore, gathering more evidence about disability and entrepreneurship is a worthwhile research agenda and this dissertation is a small step within this ongoing process.

7. References

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8. Appendix

Appendix A (Chapter 3) Multivariate analyses using Mikrozensus 2009 data

Table 18: The influence of disability on being self-employed in younger individuals - 2009

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 25-44 years

	Model A (Disability)	Model B (Severe disability)	Model C (Disability as a continuous variable)
Being disabled	0.376 ***(0.035)	0.327***(0.040)	0.982***(0.002)
Vocational qualifion (reference category: vocational degree in STEM):			
Vocational degree in Economics, Laws or Social Science	0.752***(0.046)	0.752 *** (0.034)	0.753***(0.035)
Vocational degree (other)	1.512***(0.035)	1.517*** (0.046)	1.516*** (0.046)
Academic degree in STEM	1.150 *** (0.042)	1.163 ***(0.042)	1.158 *** (0.042)
Academic degree in Economics, Laws or Social Science	1.621***(0.104)	1.633 *** (0.105)	1.628***(0.104)
Academic degree (other)	2.363 ***(0.088)	2.381 ***(0.088)	2.373*** (0.088)
No formal qualification	1.233***(0.050)	1.236***(0.050)	1.243***(0.050)
Personal characteristics:			
Gender (reference category: male)	0.475***(0.012)	0.476***(0.012)	0.475***(0.012)
Living in a partnership	0.962(0.026)	0.963(0.026)	0.960(0.026)
Parent with children under age 18	1.104***(0.029)	1.104***(0.029)	1.103***(0.029)
Migration background (no personal experience)	1.232***(0.071)	1.226***(0.071)	1.225***(0.071)
Migration background (personal experience)	1.009 (0.034)	1.014(0.034)	1.009(0.034)
Further controls: Personal residence in in a federal state of Germany (16), Age and Age Square			
Pseudo R^2	0.0491	0.0486	0.0492

Note: Own calculation with Mikrozensus 2009 data, weighted, Logistic Regression – **Measured in Odds Ratios**, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets, an odds ratio smaller than 1 indicates a negative effect, a value of 1 indicates a neutral effect, a value larger than 1 indicates a positive effect

Table 19: The influence of disability on being self-employed in older individuals -2009

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 45-64 years

	Model A (Disability)	Model B (Severe disability)	Model C (Disability as a continuous variable)
Being disabled	0.428***(0.019)	0.484***(0.027)	0.985***(0.001)
Vocational qualification (reference category: vocational degree in STEM):			
Vocational degree in Economics, Laws or Social Science	0.900***(0.033)	0.901***(0.033)	0.901***(0.033)
Vocational degree (other)	1.703***(0.046)	1.713***(0.046)	1.711***(0.046)
Academic degree in STEM	1.682***(0.054)	1.729***(0.055)	1.705***(0.054)
Academic degree in Economics, Laws or Social Science	1.673***(0.101)	1.709***(0.103)	1.689***(0.102)
Academic degree (other)	2.785***(0.088)	2.841***(0.089)	2.813***(0.089)
No formal qualification	0.873***(0.035)	0.875***(0.035)	0.880***(0.031)
Personal characteristics:			
Gender (reference category: male)	0.452***(0.010)	0.455***(0.010)	0.452***(0.010)
Living in a partnership	0.903***(0.021)	0.906***(0.021)	0.901***(0.021)
Parent with children under age 18	1.225***(0.031)	1.237***(0.031)	1.231***(0.031)
Migration background (no personal experience)	1.515***(0.205)	1.481***(0.200)	1.485***(0.201)
Migration background (personal experience)	0.812***(0.028)	0.813***(0.027)	0.808***(0.027)
Further controls: Personal residence in in a federal state of Germany (16), Age and Age Square			
Pseudo R^2	0.054	0.051	0.053

Note: Own calculation with Mikrozensus 2009 data, weighted, Logistic Regression – **Measured in Odds Ratios**, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets, an odds ratio smaller than 1 indicates a negative effect, a value of 1 indicates a neutral effect, a value larger than 1 indicates a positive effect

Table 20: The influence of vocational qualifications and personal characteristics on being self-employed in non-disabled and disabled younger individuals - 2009

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 25-44 years

	Group I Non-disabled	**Group II Disabled**
Vocational qualification (reference category: vocational degree in STEM):		
Vocational degree in Healthcare	0.739*** (0.034)	0.918(0.300)
Vocational degree in Economics, Laws or Social Science	1.522***(0.047)	1.367(0.371)
Vocational degree (other)	1.165***(0.042)	1.762 (0.608)
Academic degree in STEM	1.688***(0.108)	1.874 (1.065)
Academic degree in Healthcare	2.453***(0.091)	4.633***(1.532)
Academic degree in Economics, Laws or Social Science	1.269***(0.051)	0.154***(0.073)
Personal characteristics:		
Gender (reference category: male)	0.477***(0.012)	0.498***(0.113)
Living in a partnership	0.929***(0.026)	1.143(0.268)
Parent with children under age 18	1.090***(0.028)	1.165***(0.271)
Migration background (no personal experience)	1.183***(0.069)	1.242(0.701)
Migration background (personal experience)	0.999(0.033)	1.177(0.391)
Age	1.411***(0.041)	0.818(0.217)
Age Square	0.996***(0.000)	1.003(0.004)

Note: Own calculation with Mikrozensus 2009 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Table 21: The influence of vocational qualifications and personal characteristics on being self-employed in non-disabled and disabled older individuals - 2009

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 45-64 years

	Group I Non-disabled	**Group II Disabled**
Vocational qualification (reference category: vocational degree in STEM):		
Vocational degree in Healthcare	0.911**(0.035)	0.951(0.156)
Vocational degree in Economics, Laws or Social Science	1.712***(0.048)	1.820***(0.228)
Vocational degree (other)	1.689***(0.055)	2.046***(0.335)
Academic degree in STEM	1.705***(0.105)	1.583(0.478)
Academic degree in Healthcare	2.800***(0.090)	3.337***(0.506)
Academic degree in Economics, Laws or Social Science	0.919*(0.038)	0.513***(0.094)
Personal characteristics:		
Gender (reference category: male)	0.445***(0.010)	0.575***(0.061)
Living in a partnership	0.885***(0.021)	0.946(0.096)
Parent with children under age 18	1.253***(0.032)	1.279*(0.175)
Migration background (no personal experience)	1.525***(0.215)	1.620(0.794)
Migration background (personal experience)	0.835***(0.028)	0.714*(0.127)
Age	0.631***(0.024)	0.052***(0.090)
Age Square	1.005***(0.000)	1.006***(0.002)

Note: Own calculation with Mikrozensus 2009 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Table 22: The influence of vocational qualifications and personal characteristics on being self-employed in non-severely disabled and severely disabled younger individuals - 2009

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 25-44 years

	Group I Not severely disabled	**Group II Severely Disabled**
Vocational qualification (reference category: vocational degree in STEM):		
Vocational degree in Economics, Laws or Social Science	0.744***(0.034)	0.571(0.291)
Vocational degree (other)	1.525***(0467)	1.304(0.439)
Academic degree in STEM	1.182***(0.427)	0.989(0.508)
Academic degree in Economics, Laws or Social Science	1.693***(0.108)	3.040*(1.837)
Academic degree (other)	2.477***(0.914)	4.292***(1.863)
No formal qualification	1.261***(0.050)	0.138***(0.766)
Personal characteristics:		
Gender (reference category: male)	0.478***(0.012)	0.529**(0.153)
Living in a partnership	0.933**(0.025)	1.000(0.316)
Parent with children under age 18	1.091***(0.282)	1.333(0.434)
Migration background (no personal experience)	1.181**(0.068)	1.365(1.083)
Migration background (personal experience)	1.006(0.033)	1.009(0.483)
Age	1.412***(0.041)	0.073(0.240)
Age Square	0.996***(0.000)	1.005(0.005)

Note: Own calculation with Mikrozensus 2009 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Table 23: The influence of vocational qualifications and personal characteristics on being self-employed in non-severely disabled and severely disabled older individuals - 2009

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 45-64 years

	Group I Not severely disabled	**Group II Severely Disabled**
Vocational qualification (reference category: vocational degree in STEM):		
Vocational degree in Economics, Laws or Social Science	0.915** (0.034)	0.839 (0.181)
Vocational degree (other)	1.717*** (0.047)	2.035*** (0.329)
Academic degree in STEM	1.735*** (0.056)	2.292*** (0.453)
Academic degree in Economics, Laws or Social Science	1.724*** (0.105)	2.090* (0.682)
Academic degree (other)	2.860*** (0.091)	3.403*** (0.646)
No formal qualification	0.920* (0.037)	0.349*** (0.090)
Personal characteristics:		
Gender (reference category: male)	0.448*** (0.010)	0.657*** (0.089)
Living in a partnership	0.888*** (0.021)	0.940 (0.121)
Parent with children under age 18	1.264*** (0.032)	1.184 (0.215)
Migration background (no personal experience)	1.489*** (0.205)	1.485 (0.950)
Migration background (personal experience)	0.832*** (0.028)	0.697 (0.163)
Age	0.635*** (0.024)	0.500*** (0.109)
Age Square	1.005*** (0.000)	1.007*** (0.002)

Note: Own calculation with Mikrozensus 2009 data, weighted, Logistic Regression – Measured in Odds Ratios, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Table 24: An Oaxaca-Blinder decomposition to determine the influence of different endowments of younger non-disabled and disabled individuals on being self-employed - 2009

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 25-44 years

	Model A: 1. Not Disabled 2. Disabled	Model B: 1. Not severely disabled 2. Severely disabled
Unadjusted Difference	0.055***(0.004)	0.061***(0.004)
Cumulated explained difference	-0.007***(0.001)	-0.005***(0.002)
Cumulated unexplained difference	0.062***(0.004)	0.066***(0.005)
Explained part in variables:		
Vocational degree in Economics, Laws or Social Science	0.000(0.000)	-0.000*(0.000)
Vocational degree (other)	0.001***(0.000)	0.001***(0.000)
Academic degree in STEM	0.001***(0.000)	0.001***(0.000)
Academic degree in Economics, Laws or Social Science	0.000***(0.000)	0.000***(0.000)
Academic degree (other)	0.002***(0.000)	0.002***(0.000)
No formal qualification	-0.003***(0.001)	-0.004***(0.001)
Gender	-0.002***(0.001)	-0.002***(0.001)
Living in a partnership	-0.001**(0.000)	-0.001**(0.000)
Parent with children under age 18	0.001***(0.000)	0.001***(0.000)
Age	-0.040***(0.005)	-0.027***(0.005)
Age Square	0.033***(0.004)	0.022***(0.004)
Migration background (no personal experience)	0.000*(0.000)	0.000(0.000)
Migration background (personal experience)	0.000(0.000)	0.000(0.000)
Unexplained part in variables:		
Vocational qualification in Economics, Laws or Social Science	-0.001(0.002)	0.001(0.002)
Vocational qualification (other)	0.001(0.002)	0.001(0.002)
Academic degree in STEM	-0.001(0.001)	0.000(0.000)
Academic degree in Economics, Laws or Social Science	-0.000(0.000)	-0.000(0.000)
Academic degree (other)	-0.001*(0.001)	-0.001(0.001)
No formal qualification	0.030***(0.005)	0.037***(0.005)
Gender	-0.003(0.016)	-0.006(0.016)
Living in a partnership	-0.004(0.005)	-0.001(0.005)

Parent with children under age 18	-0.001(0.004)	-0.002(0.004)
Age	0.975**(0.475)	1.051** (0.475)
Age Square	-0.480*(0.249)	-0.524** (2.49)
Migration background (no personal experience)	-0.000(0.001)	-0.000(0.001)
Migration background (personal experience)	-0.001(0.001)	-0.000(0.001)

Note: Own calculation with Mikrozensus 2009 data, weighted, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Table 25: An Oaxaca-Blinder decomposition to determine the influence of different endowments of older non-disabled and disabled individuals on being self-employed - 2009

Dependent Variable: Being self-employed (yes=1/no=0), only employed persons between 45-64 years

	Model A: 1. Not Disabled 2. Disabled	Model B: 1. Not severely disabled 2. Severely disabled
Unadjusted difference	0.070***(0.003)	0.061***(0.004)
Cumulated explained difference	-0.000(0.001)	-0.001(0.001)
Cumulated unexplained difference	0.071***(0.003)	0.062***(0.004)
Explained part in variables:		
Vocational degree in Economics, Laws or Social Science	0.000 (0.000)	0.000 (0.000)
Vocational degree (other)	0.000 (0.001)	0.001 (0.001)
Academic degree in STEM	0.001 (0.002)	0.001 (0.001)
Academic degree in Economics, Laws or Social Science	0.000 (0.000)	0.000 (0.000)
Academic degree (other)	0.001 (0.002)	0.001 (0.001)
No formal qualification	0.000 (0.001)	0.001 (0.001)
Gender (reference category: male)	-0.001 (0.003)	-0.0012 (0.002)
Living in a partnership	-0.000 (0.001)	-0.001 (0.001)
Parent with children under age 18 (reference category: having no children under 18)	0.001	0.001

	(0.002)	(0.001)
Age	0.029 (0.074)	0.054 (0.046)
Age squared	-0.030 (0.078)	-0.057 (0.048)
Migration background (no personal experience)	-0.000 (0.000)	-0.000 (0.000)
Migration background (personal experience)	-0.000 (0.000)	-0.000 (0.000)
Unexplained part in variables:		
Vocational degree in Economics, Laws or Social Science	-0.000 (0.002)	0.001 (0.002)
Vocational degree (other)	-0.001 (0.002)	-0.002 (0.002)
Academic degree in STEM	-0.001 (0.001)	-0.001 (0.001)
Academic degree in Economics, Laws or Social Science	0.000 (0.000)	-0.000 (0.000)
Academic degree (other)	-0.001 (0.001)	-0.001 (0.001)
No formal qualification	0.008*** (0.003)	0.014*** (0.003)
Gender (reference category: male)	-0.029** (0.006)	-0.040* (0.015)
Living in a partnership	-0.004 (0.006)	-0.003 (0.006)
Parent with children under age 18 (reference category: having no children under 18)	-0.000 (0.002)	0.001 (0.002)
Age	0.834 (0.772)	0.965 (0.887)
Age squared	-0.397 (0.387)	-0.500 (0.443)
Migration background (no personal experience)	-0.000 (0.000)	0.000 (0.000)
Migration background (personal experience)	0.001 (0.002)	0.001 (0.002)

Note: Own calculation with Mikrozensus 2009 data, weighted, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, Standard Error in brackets

Appendix B (Chapter 5)

Table 26: Available cases of entrepreneurs with health restrictions

Wave:	Having a grade of disability of at least 30:	Possessing a deficient self-assessed quality of health:	Possessing a deficient self-assessed satisfaction with health:
1994	14	61	70
1995	12	57	73
1996	17	58	80
1997	17	51	77
1998	16	70	93
1999	22	89	105
2000	33	107	120
2001	26	107	123
2002	42	130	153
2003	43	126	131
2004	41	122	141
2005	41	126	134
2006	49	139	153
2007	46	115	145
2008	39	111	126
2009	44	131	155
2010	47	167	164
2011	51	182	173
2012	50	151	171
2013	66	201	192
2014	52	176	156
2015	48	154	127
2016	45	134	125
Total:	861	2765	2987

Note: Own calculation with SOEP waves from 1994 to 2016, non-weighted, only individuals between 25 and 64 years

Table 27: Available cases of individuals with health restrictions, who will enter entrepreneurship in the next period

	Individuals going to enter self-employment:	Having a grade of disability of at least 30:	Possessing a deficient self-assessed quality of health:	Individuals with below average satisfaction with health:
1994	88	4	12	14
1995	97	1	9	10
1996	67	0	7	5
1997	77	4	15	20
1998	86	3	10	12
1999	78	2	4	4
2000	120	4	9	10
2001	83	4	8	6
2002	141	5	18	25
2003	147	6	11	16
2004	151	8	14	11
2005	151	7	18	13
2006	104	1	7	10
2007	109	4	6	9
2008	107	5	9	11
2009	85	7	9	6
2010	141	1	18	23
2011	146	7	20	20
2013	146	10	15	17
2013	160	8	27	23
2014	123	9	15	16
2015	156	6	18	21
Total:	2,563	106	279	302

Note: Own calculation with SOEP waves from 1994 to 2016, non-weighted, only individuals between 25 and 64 years

Table 28: Available cases of individuals with health restrictions, who will leave entrepreneurship in the next period

	Individuals going to enter self-employment:	Having a grade of disability of at least 30:	Possessing a deficient self-assessed quality of health:	Individuals with below average satisfaction with health:
1994	69	4	13	6
1995	51	0	10	7
1996	56	1	5	7
1997	51	3	3	7
1998	63	0	5	9
1999	67	5	8	10
2000	110	3	11	5
2001	88	1	11	10
2002	103	3	15	18
2003	96	7	11	9
2004	104	4	14	13
2005	89	2	11	12
2006	115	7	14	12
2007	90	6	13	10
2008	93	3	7	11
2009	94	7	16	20
2010	129	4	16	11
2011	137	6	17	12
2013	126	8	21	17
2013	154	8	16	20
2014	134	4	23	17
2015	131	6	20	16
Total:	2,150	92	280	259

Note: Own calculation with SOEP waves from 1994 to 2016, non-weighted, only individuals between 25 and 64 years

Table 29: Pairwise correlation between independent and dependent variables used in the regression analyses:										
	Being disabled	Quality of health	Satisfaction with health	Having a formal qualification	Sex	Children under 16 years	Being married	Migration background (no personal experience)	Migration background (personal experience)	Age
Being disabled	1									
Quality of health	0.3138***	1								
Satisfaction with health	0.2686***	0.6959***	1							
Having a formal qualification	-0.0448***	-0.0837***	-0.0582***	1						
Sex	-0.0283***	0.0338***	0.0081***	-0.0595***	1					
Children under 16 years	0.0344***	0.0244***	0.0352***	0.0702***	-0.0052***	1				
Being married	-0.0048***	0.0209***	0.0125***	-0.0185***	-0.0148***	-0.0387***	1			
Migration background (no personal experience)	-0.01***	-0.0216***	-0.0296***	-0.0241***	0.0021	-0.0125***	-0.0549***	1		
Migration background (personal experience)	-0.0293***	0.0113***	-0.0127***	-0.3331***	-0.0001	-0.1599***	0.1125***	-0.1112***	1	
Age	0.2341***	0.2576***	0.2155***	0.0196***	-0.0186***	0.0877***	0.2264***	-0.1088***	-0.0590***	1

Place of residence	0.0038	0.0208***	0.0248***	0.0486***	0.0009	0.0153***	0.0008	-0.0617***	-0.1032***	0.0221***
Being satisfied with life	0.1326***	0.3725***	0.4238***	-0.0557***	-0.018***	0.0514***	-0.0829***	-0.0149***	-0.0090***	0.0545***
Being satisfied with work	0.0701***	0.269***	0.3564***	-0.0398***	-0.0008***	0.0266***	-0.0287***	-0.0130***	0.0068***	0.0349***
Being satisfied with leisure time	-0.0382***	0.1213***	0.1896***	-0.0011	-0.0104***	-0.0155***	-0.0022	0.0152***	0.0329***	-0.1195***
Readiness to assume risk	0.0342***	0.0717***	0.0812***	-0.0053**	0.1631***	0.0438***	0.0474***	-0.0222***	-0.0068***	0.0689***
	Place of residence	Being satisfied with life	Being satisfied with work	Being satisfied with leisure time	Readiness to assume risk:					
Place of residence	1									
Being satisfied with life	0.0419***	1								
Being satisfied with work	0.0158***	0.3957***	1							
Being satisfied with leisure time	0.0061***	0.2765***	0.2179***	1						
Readiness to assume risk	-0.0163***	0.0874***	0.0668***	0.0153***	1					

Note: Own calculation with SOEP waves from 1994 to 2016, non-weighted, only individuals between 25 and 64 years, *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level