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Human capital, Institutional Environment and Social Entrepreneurship

A multilevel analysis of determinants for social entrepreneurship across 21 European countries

by

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Abstract

European policymakers are increasingly interested in encouraging and supporting social entrepreneurship. Addressing the goal, this thesis analyses the relationship between human capital and an individual's propensity for social entrepreneurship in European countries. Additionally, it is investigated how institutional environment moderates this relationship. Utilising a dataset of the Global Entrepreneurship Monitor (GEM) from 2015, a multilevel logistic model is applied. Comparing an individual's propensity for social against commercial entrepreneurship in a European context, the results show that: (1) Higher education has a positive relationship with the propensity to engage in social entrepreneurship, whereas (2) entrepreneurial skills are negatively correlated with social entrepreneurship. (3) Characteristics of the institutional environment can positively or negatively moderate the relationship between an individual's endowment with human capital and the propensity for social entrepreneurship. These findings imply that European policymakers should encourage the acquirement of and create opportunities for tertiary education. Further, it is recommended to introduce a greater focus on the social and environmental objective within programmes that develop entrepreneurial skills. Also, policymakers may pursue policies that increase the ease of doing business.

Keywords: Social Entrepreneurship, Human Capital, Institutional Environment, Europe, Global Entrepreneurship Monitor, Multilevel Modelling

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1 Introduction

The world is facing societal and environmental challenges, such as increasing CO_2 emissions, inequality, overconsumption and poverty (United Nations, 2020). This calls for innovative solutions. Thus, there is a need for social entrepreneurs that tackle these problems by starting a business. They act locally, but the impact may have a global reach (Santos, 2012). While social entrepreneurs have numerous shared attributes with commercial entrepreneurs, they substantially differ in the primary goal of their venture: the former aim to create societal and environmental value, whereas the latter have the primary objective of generating profit (Mair & Marti, 2006; Zahra et al., 2009).

It is therefore of rising interest to policymakers to support the emergence of social entrepreneurs within Europe. In 2011, the Social Business Initiative (SBI) was launched by the European Commission with the purpose of understanding the state of social ventures across Europe, but also identifying drivers of social entrepreneurship and aspects of the institutional environment that enable the emergence of social entrepreneurs. Targeting the European countries plus Switzerland, studies of the SBI reveal a rapidly developing and increasingly diverse landscape of social enterprises. Many countries within the scope of these studies just recently incorporated strategies and introduced policies aimed at supporting social entrepreneurship (Borzaga et al., 2020). However, the research on social entrepreneurship emerged recently and is still scarce, whereas commercial entrepreneurship is well studied (Short, Moss, & Lumpkin, 2009).

Due to the scarcity of comparative cross-country data on social entrepreneurship, empirical research on the individual- and macro-level determinants of social entrepreneurship remains exiguous. Nevertheless, studies investigating determinants of entry into social entrepreneurship in a global context identified the importance of individual factors, such as human capital (Estrin, Mickiewicz, & Stephan, 2016; Sahasranamam et al., 2021). Generally, human capital is proxied by educational attainment. However, Squicciarini and Voigtländer (2015) argue that education alone does not lead to entrepreneurial activity. Within human capital theory, Becker (1964) refers to two types of human capital, namely general and specific human capital. The former is typically acquired through formal education and valuable across a variety of contexts. The latter relates to specific skills and knowledge that is only useful in a particular context, for instance entrepreneurship (Unger et al., 2011). Estrin, Mickiewicz, and Stephan (2016) argue that general and specific human capital influence an individual's likelihood to engage in social entrepreneurship variously, thus, reinforce the importance of the distinction between these types of human capital in the context of entrepreneurial research. Also,

factors of the institutional environment were underlined (Brieger & De Clercq, 2019; Hörisch, Kollat, & Brieger, 2017; Stephan, Uhlaner, & Stride, 2015).

In essence, extant literature draws a general picture of how individual factors and characteristics of the institutional environment relate to an individual's propensity to engage in social entrepreneurship across countries globally. As European countries increasingly prioritise the development of the social entrepreneurial landscape, the need emerges to investigate the determinants of an individual's propensity in a similar supranational context in order to appropriately guide policies within this particular environment (Borzaga et al., 2020). In addition, the heterogeneous relationship between general as well as specific human capital and an individual's propensity to engage in social entrepreneurship across different institutional environments remains underexplored (Estrin, Mickiewicz, & Stephan, 2016).

This thesis fills these gaps by empirically investigating whether and to which extent and individual's endowment with human capital relates to the propensity for social relative to commercial entrepreneurship. Further, it is explored how institutional environment, in which an individual is embedded, moderates this relationship. This thesis draws on human capital and institutional theory and builds on findings of Estrin, Mickiewicz, and Stephan (2016) and Sahasranamam et al. (2021). Accordingly, the following two research questions will be addressed:

RQ 1 How does general and entrepreneurial human capital relate to an individual's propensity to engage in social compared to commercial entrepreneurship?

RQ 2 How does institutional environment moderate the relationship between human capital and an individual's propensity to engage in social entrepreneurship?

In order to investigate these questions, four groups of hypotheses are derived based on theories and findings of extant literature. Addressing the first research question, human capital theory is considered. Relatively high educational attainment is hypothesised to positively relate to an individual's propensity for social relative to commercial entrepreneurship (H1a), whereas the existence of entrepreneurial skills negatively correlates with the propensity to engage in social entrepreneurship (H1b). Connecting human capital and institutional theory, the remaining three groups of hypotheses relate to how various aspects of institutional environment moderate the relationship between human capital and social entrepreneurship.

The research questions and derived hypotheses encompass characteristics on two levels, relating to the individual as well as institutional environment.[1] Thus, the hypotheses

[1] Note that institutional environment is operationalised on the country level (see Section 2.1.3). Following the convention within entrepreneurial research, the terms "institutional environment", "national context" and "institutions" will be applied interchangeably.

are tested by applying multilevel logistic regression models to cross-national data of countries within Europe[2] from 2015, which is comprised of large-scale, population-representative survey data on entrepreneurship collected by the Global Entrepreneurship Monitor (GEM) as well as country-level indicators from varying sources.

Hence, the overarching contribution of this thesis to the body of social entrepreneurial research is tripartite. First, this thesis further broadens the understanding of the importance of human capital for and in the context of social entrepreneurship in Europe by exploring the relationship with an individual's propensity for social entrepreneurship. Further, a more extensive and topical dataset is used than in precursory studies (Estrin, Mickiewicz, & Stephan, 2016; Sahasranamam et al., 2021). The relevance of separately investigating the differential relation of general and specific human capital to social entrepreneurship is highlighted, which has implications beyond the field of entrepreneurial research. Second, this thesis considers the moderating role of the regulatory, cognitive and normative dimension of the institutional environment as conceptualised by Scott (2013), whereas comparable studies often focus on one dimension. Therefore, this thesis provides a more holistic view of the institutional contexts that moderate the relationship between individual factors and an individual's propensity for social entrepreneurship, while comparing it to the substantial literature of individual and institutional factors that determine commercial entrepreneurial entry. Third, by focusing on countries on the European continent and therefore investigating a group of countries with a combined supranational governance (except for Switzerland) and assumed similarities, the implications of this thesis are of particular interest for European policymakers. The findings of the analysis contribute to a greater understanding of the importance of human capital and identify enabling institutional factors for social entrepreneurship, hence, guide policies that aim to encourage social entrepreneurship within Europe.

The remainder of this thesis is structured as follows: chapter 2 discusses theoretical aspects of (social) entrepreneurship, human capital and institutional environment. Building on this theoretical background, hypotheses are developed that investigate the relationship between human capital and social entrepreneurship, as well as the moderating role of institutional environment. Chapter 3 describes the data sources and variables that are used throughout the analysis. Chapter 4 then elucidates the methodology, which is followed by a discussion of the results of the analysis and main findings in chapter 5. Finally, chapter 6 concludes this thesis by summarising and discussing the main findings, limitations and policy implications.

[2] The following European countries plus Switzerland are included in the GEM dataset from 2015 and therefore in the analysis: Belgium, Bulgaria, Croatia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Macedonia, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

2 Literature Review

Within this chapter, relevant theory regarding social entrepreneurship and the determinants are discussed. First, key terms and concepts are defined. Second, the theoretical framework for the analysis is established and testable hypotheses are derived, supported by empirical evidence from prior studies. Last, the conceptual framework is summarised.

2.1 Definitions and Background

2.1.1 Entrepreneurship

Defining entrepreneurship is challenging since no common definition of the term exists (Davidsson, 2004). Gartner (1985) sees entrepreneurship as the creation of new businesses. Similarly, Lumpkin and Dess (1996) define it as a new entry. Another definition on the business-level perspective is proposed by Lee, Peng, and Song (2013): entrepreneurship is the introduction of a novel combination of resources, i.e. an innovation (see Schumpeter, 1934), to the market and can be done by either an existing firm or a new entrant. Stephan and Uhlaner (2010) however approach the term from an individual-level perspective and define entrepreneurship as the choice of occupation to be self-employed. Some keywords emerge from these manifold definitions, namely the creation of a new business, innovation, value creation and pursuing an opportunity (Morris, Lewis, & Sexton, 1994). Often, entrepreneurship is connected to economic development (Kirzner, 1973).

For the sake of simplicity and in accordance with relevant literature (e.g. Bosma et al., 2020; Estrin, Mickiewicz, & Stephan, 2016; Unger et al., 2011), Gartner (1985)'s broad definition of entrepreneurship as new business creation is henceforth applied within this thesis. Conceptual differences between terms related to entrepreneurial activity have to be noted: typically, entrepreneurship denotes a behaviour or process, whereas an entrepreneur refers to the founder of an enterprise. A newly established business or start-up then describes the tangible outcome resulting from the entrepreneurial process (Mair & Marti, 2006). There are several stages of business development within the entrepreneurial process, which Figure 1 illustrates. These run from the phase of conception over the establishment of a new firm to the mature phase. The discontinuation of a business is also included, since this offers numerous opportunities to the entrepreneur, for example to start another business, share his knowledge and experiences or choose the outside option of re-entering employment. The total early-

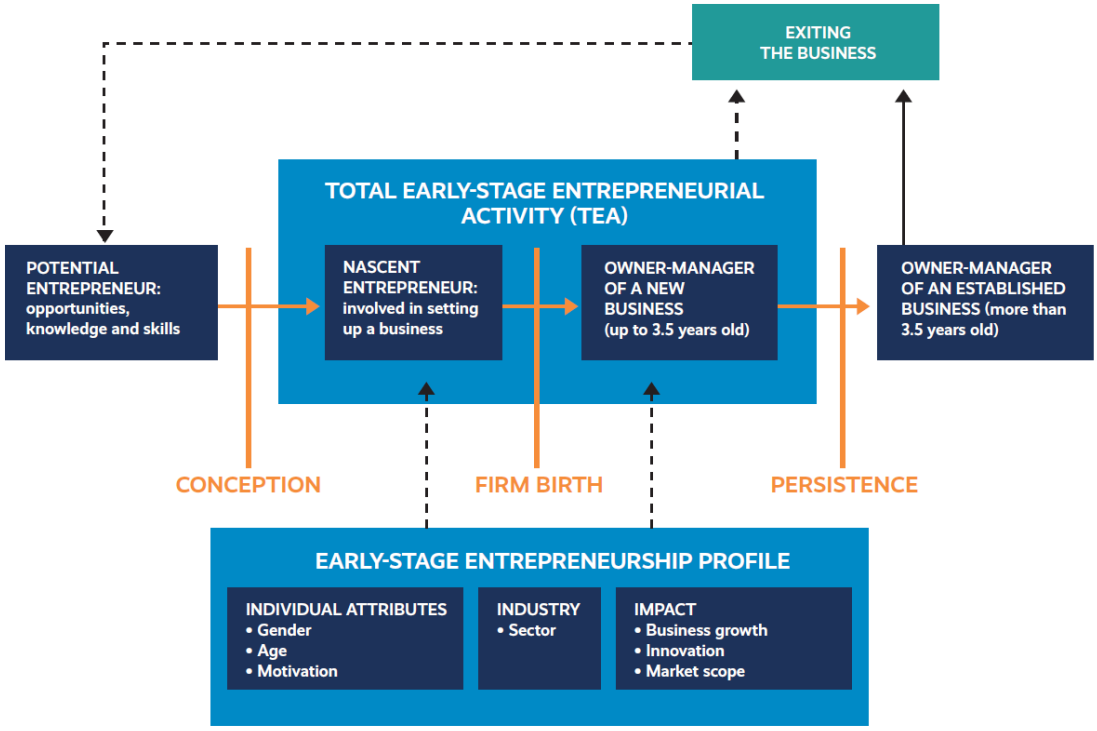

Figure 1: The Stages of Entrepreneurial Activity (Bosma et al., 2020, p.26)

stage entrepreneurial activity (TEA) is most important throughout this thesis, which includes both individuals that are in the process of starting a business (nascent entrepreneurs) and individuals who are running a new business, which is less than 3.5 years old (new business owners) (Bosma et al., 2020).

Social Entrepreneurship

Entrepreneurial activity can loosely be divided into social and commercial entrepreneurship, although this distinction is rather continuous. Enterprises usually have both economic and social characteristics, but can be distinguished through their primary objective (Austin, Stevenson, & Wei–Skillern, 2006). Both forms of entrepreneurship have several characteristics in common, such as their innovativeness, riskiness and reliance on financial capital (Estrin, Mickiewicz, & Stephan, 2013).

Social entrepreneurship describes the practice of establishing a new business, which combines the creation of social and economic values. Although the concept was proposed in the 80s and gained rising interest in recent years, the definition and frontiers remain fuzzy (Mair & Marti, 2006; Portales, 2019). While some see social enterprises as non-profit organisations (Austin, Stevenson, & Wei–Skillern, 2006), others view it as a means to solve social and environmental problems, as well as to initiate social transformation (Alvord, Brown, & Letts, 2004) and can indeed be operated on a for-profit basis (Dees, 2007; Mair & Marti, 2006). Social entrepreneurs primarily aim

to generate social value rather than solely accumulating economic wealth (Austin, Stevenson, & Wei–Skillern, 2006), seizing opportunities and using resources provided by the environment (Portales, 2019). Characteristic for their activity is innovativeness and the novelty of their enterprise or practice (Austin, Stevenson, & Wei–Skillern, 2006), providing services or goods that are not addressed or provided by the market and government (Estrin, Mickiewicz, & Stephan, 2016). The special topic survey of the GEM 2015 defines a social entrepreneur as "an individual who is starting or currently leading any kind of activity or initiative that has a particularly social, environmental or community objective" (Bosma et al., 2016, p.2). Accordingly, and due to the restrictions of the data, this broad definition is applied throughout the thesis.

In contrast, commercial entrepreneurs aim to maximise private welfare by identifying and seizing a market opportunity (Estrin, Mickiewicz, & Stephan, 2016). Therefore, a new business is established with the main objective of generating profit (Austin, Stevenson, & Wei–Skillern, 2006; Mair & Marti, 2006). The for-profit objective however does not prevent a commercial enterprise from generating social value (Austin, Stevenson, & Wei–Skillern, 2006). Due to the positive impact on economic growth, enabling factors for commercial entrepreneurship have attracted the attention of scholars in the recent years and therefore been well researched (e.g. De Clercq, Lim, & Oh, 2013; Estrin, Mickiewicz, & Stephan, 2013; Unger et al., 2011).

The main differences between social and commercial entrepreneurship are therefore the priority and motivation of the entrepreneur: while commercial entrepreneurs establish a business with the main objective of generating and maximising profit, social entrepreneurs seek to create social value, which however does not prevent them from earning a profit (Mair & Marti, 2006; Zahra et al., 2009). Further, the goals and impact of these entrepreneurs differ. A commercial entrepreneur seeks to gain a greater market presence and assert themselves against their competitors with the result of satisfying a market need. A social entrepreneur in contrast strives to involve more and more actors in order to raise attention for a specific problem that the business tries to address. His success is then not solely measured in monetary, but rather focuses on social values (Portales, 2019). However, the sought-after impact being social value creation complicates the measurement of success (Mair & Marti, 2006). In addition, social entrepreneurial activity has the potential to generate bottom-up social change due the positive externalities that are generated throughout the process (Santos, 2012). Despite these differences, social and commercial entrepreneurship have many common aspects, for example use similar resources from their environment, and ultimately benefit from each other (Estrin, Mickiewicz, & Stephan, 2016). This highlights the connectivity of an entrepreneur with the environment, which will be further expanded upon in Section 2.1.3.

2.1.2 Human Capital

Human capital typically refers to the education, skills, knowledge and experience of a person (Brieger & De Clercq, 2019; Unger et al., 2011). This intangible resource enables an individual to acquire knowledge quickly (Lazear, 2005), identify and utilise opportunities (Davidsson & Honig, 2003; Unger et al., 2011) and adapt easily to new situations (Lazear, 2005). Therefore, it can be seen as the most valuable form of capital (Marshall, 2009).

This paper draws on human capital theory, which initially aimed to explain different economic outcomes through varying educational attainment as well as skills and knowledge (Becker, 1964). Becker (1964) differentiates between general and specific human capital. General human capital is typically acquired through formal education (Lazear, 2005; Sahasranamam et al., 2021) and work experience (Canavati et al., 2021).[3] However, Squicciarini and Voigtländer (2015) hypothesise that, while general education enhances the productivity of an individual and is therefore crucial for the long-term success of a venture (Unger et al., 2011), it does not lead to entrepreneurial activity. Their findings restate the importance of distinguishing between the two forms of human capital when investigating determinants of entrepreneurship entry.

Specific human capital refers to knowledge and skills that are specific to an occupation, industry, firm or task (Becker, 1964) and therefore not easily transferable to other contexts (Rauch & Rijsdijk, 2013). One domain of specific human capital is entrepreneurial human capital. This relates to specific skills that are needed to start and run a business (Unger et al., 2011). Entrepreneurial competence is gained through experiences within a previous start-up or knowing entrepreneurs and enables an individual to for example identify and seize opportunities or needs, set up a business plan and solve problems along the start-up process (Estrin, Mickiewicz, & Stephan, 2016). While general human capital is valuable both in paid and self-employment, entrepreneurial human capital may not matter for employment (Rauch & Rijsdijk, 2013).

2.1.3 Embeddedness in the Environment

The basic principle of the institutional theory is that the actions of individuals and businesses are embedded in and therefore influenced by their environment (Sambharya & Musteen, 2014), which is illustrated by Figure 2. Thus, incorporating institutional theory into (social) entrepreneurial research seems imperative (Bruton, Ahlstrom, & Li, 2010). An institutional environment is comprised of formal rules and regulations

[3] Since general human capital is commonly proxied by educational attainment, these terms will be used rather interchangeably within this thesis. However, it is noted that general human capital exceeds the knowledge and skills acquired through formal education.

that are explicitly enforced by the government as well as informal, socially constructed norms that are complied with implicitly (North, 1990). Scott (2013) divides the institutional environment into three dimensions: regulatory, cognitive and normative. The regulatory pillar relates to formal regulations and rules that can be enforced by law, whereas the normative pillar refers to socially constructed norms and values that guide behaviours of individuals and organisations. The cognitive pillar then represents culturally and rather subjectively constructed rules. According to Bruton, Ahlstrom, and Li (2010), the cognitive pillar of the institutional environment is of increasing importance for entrepreneurship, since the cultural milieu influences the acceptance and encouragement of entrepreneurship and shapes the propensity for social and entrepreneurial values.

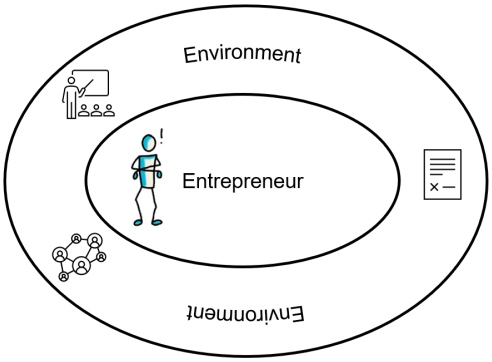

Figure 2: Entrepreneur embedded in the Environment (Own Graphic)

An institutional environment can be conceptualised on different levels, ranging from local and regional to national and supranational. For this thesis, an entrepreneur's environment denotes the national institutional context which determines the entry into social entrepreneurship and influences the entrepreneurial process. Further, Scott (2013)'s three-dimensional distinction of the institutional environment into regulatory, cognitive and normative is adopted (Lim, Oh, & De Clercq, 2016).

2.2 Theoretical Framework

2.2.1 The Occupational Choice

The theoretical framework of this thesis builds upon the occupational choice, which is determined by opportunity costs. Assuming that individuals strive to maximise their utility, the returns on their investment in human capital determine the choice of occupation (Davidsson & Honig, 2003; Unger et al., 2011). For instance, an individual that is faced with the decision to choose between paid employment and entrepreneurship may choose the latter. Then, the tangible as well as intangible returns on human capital that could possibly be gained through employment represent the opportunity costs of deciding for entrepreneurship (Cassar, 2006). In this example, an individual gains greater utility from starting a business than working for an employer, thus, the possible gains from choosing entrepreneurship exceed the opportunity costs given by employment.

While there is an outside option to enter paid employment as discussed in the example above, this thesis focuses on an individual's decision between social and commercial entrepreneurship. Hence, following the approach of Estrin, Mickiewicz, and Stephan (2016), the relationship between general as well as entrepreneurial human capital and an individual's entrepreneurial occupational choice is studied.

2.2.2 Human Capital and Social Entrepreneurship

Previous studies suggest that a broad knowledge base is beneficial for both an individual's propensity for entrepreneurship (e.g. Block, Hoogerheide, & Thurik, 2013; Estrin, Mickiewicz, & Stephan, 2016; Sahasranamam et al., 2021; Van der Sluis, Van Praag, & Vijverberg, 2008) and the performance of a new business (Rauch & Rijsdijk, 2013; Unger et al., 2011). Comparing social with commercial entrepreneurship, Estrin, Mickiewicz, and Stephan (2016) argue however that the former requires a broader knowledge base and different preferences than the latter. The relative productivity of a certain kind of human capital may differ. Thus, the magnitude of the relationship between general or entrepreneurial human capital on the realised return varies between social and commercial entrepreneurship. Estrin, Mickiewicz, and Stephan (2016) further suggest that both an individual's values and abilities are reflected in their human capital characteristics. Therefore, these characteristics drive the occupational choice between social and commercial entrepreneurship, since they indicate a person's values and the relative return rates on human capital.

Estrin, Mickiewicz, and Stephan (2016) investigated the correlation of educational attainment and entrepreneurial knowledge as proxies for general and specific human capital with an individual's propensity for social compared to commercial entrepreneurship using global cross-country data of the GEM from 2009. Their results suggest that a higher educational attainment increases the likelihood of an individual to engage in social relative to commercial entrepreneurship. On the other hand, an individual with entrepreneurial human capital is more likely to enter into commercial relative to social entrepreneurship. In order to examine the relevance of general and entrepreneurial human capital in a European context using a more recent dataset, hypotheses 1a and 1b were derived accordingly.

Relationship between General Human Capital and Social Entrepreneurship
There is some evidence for the relationship between general human capital and entry into social entrepreneurship. It is argued that education equips individuals with the ability to identify and exploit opportunities (Unger et al., 2011), but also to acquire new knowledge easily as well as to overcome challenges (Lazear, 2005). Thus, economic approaches using the GEM dataset from 2009 found that general human capital is

an important driver of entry into social entrepreneurship. For instance, Estrin, Mickiewicz, and Stephan (2016) identified that higher educational attainment increases an individual's propensity for social entrepreneurship, which is confirmed by the findings of Brieger and De Clercq (2019) and Sahasranamam et al. (2021). Further, the GEM special topic report on social entrepreneurship indicates a positive association (Bosma et al., 2016).

In addition to the ability effects of general human capital, which are well-established and discussed within economic approaches, Estrin, Mickiewicz, and Stephan (2016) propose to consider the motivation-shaping effects as suggested by psychological approaches to human capital. Education in general and higher education in particular has a bifold socialising effect. As highlighted by economic approaches, it builds the ability to think critically and independently (Estrin, Mickiewicz, & Stephan, 2016). Moreover, scholars found that higher education shapes preferences and motivations of individuals towards pro-social behaviours since it sensitises individuals for others' needs (Inglehart et al., 2018). Therefore, education can serve as a source of social orientation and influence decisions, consumption and ethical attitudes (e.g. Furrer et al., 2010; Ng & Burke, 2010), inducing a "pro-social bias" (Nga & Shamuganathan, 2010).

The evidence of the effect of educational attainment on an individual's likelihood to become a commercial entrepreneur is mixed. While some studies do not find a relationship between general human capital and one's entry into commercial entrepreneurship (Van der Sluis, Van Praag, & Vijverberg, 2008), most scholars detect a positive association (Block, Hoogerheide, & Thurik, 2013; Canavati et al., 2021; Parker, 2011). However, Van der Sluis, Van Praag, and Vijverberg (2008) suggest that the opportunity costs of the outside option need to be taken into account, since the economic returns on general human capital potentially realised in employment are increasing with years of schooling or degree. In addition, employment is less risky than entrepreneurship. Therefore, individuals with a tertiary degree may prefer employment over commercial entrepreneurship, but not necessarily over social entrepreneurship

Thus, synthesising findings from prior studies and theories, it is suggested that education, more specifically, tertiary education, plays a more important role for the propensity to engage in social compared to commercial entrepreneurship. Higher educational attainment builds a broad knowledge base, which enables individuals to identify and seize opportunities as well as to think independently and creatively. Educational attainment therefore develops skills that are beneficial for both social and commercial entrepreneurship. Yet, education is further theorised to shape an individual's values, attitudes and preferences, so that an individual with tertiary education rather aspires to create societal values (Stephan, Uhlaner, & Stride, 2015), which may no coincide with the for-profit intention of commercial entrepreneurship (Lukes & Stephan, 2012).

Conjointly, inferences from the human capital theory and the psychological implications of education suggest that general human capital has a positive relationship with and individual's propensity for both social and commercial entrepreneurship. Yet, individuals with a tertiary degree favour the former due to the adoption of and preference for social and environmental values.

> **Hypothesis 1a:** *Individuals with greater general human capital, i.e. higher educational attainment, have a higher propensity for social compared to commercial entrepreneurship.*

Relationship between Specific Human Capital and Social Entrepreneurship
While some scholars do not distinguish between the effects of general and specific human capital (e.g. Brieger & De Clercq, 2019; Sahasranamam & Nandakumar, 2020), a different reasoning applies to the latter. Specific human capital, conceptualised in this thesis as entrepreneurial skills and knowledge, is important for both social and commercial entrepreneurship, while it does not matter for paid employment. Therefore, an individual with entrepreneurial human capital deciding between paid employment and entrepreneurship is more likely to choose the latter, if the returns from entrepreneurship are greater than the opportunity costs, i.e. the possible obtainable market wage. While high educational attainment may raise the opportunity costs, since it opens up the possibility for a high wage in employment, an individual with entrepreneurial skills may have lower opportunity costs, ceteribus paribus (Estrin, Mickiewicz, & Stephan, 2016).

Adding the choice between social and commercial entrepreneurship to this model, the opportunity costs of the former versus the latter need to be taken into account. Due to the fact that social entrepreneurs synergise commercial with social goals, they require additional human capital compared to commercial entrepreneurs, which relates to the creation of social and environmental value (Stephan et al., 2016). This often results from an individual's endowment with general human capital and is therefore captured by it. Hence, entrepreneurial human capital may influence the occupational choice towards social entrepreneurship less but play a more important role for the choice to enter commercial entrepreneurship (Estrin, Mickiewicz, & Stephan, 2016). Relatively speaking, general human capital plays a greater role for the occupational choice of social entrepreneurship, while entrepreneurial human capital has a stronger impact on the occupational choice of commercial entrepreneurship (Unger et al., 2011). In addition, prior research suggests that in the process of acquiring business skills, the social and environmental orientation of individuals declines (Hesselbarth & Schaltegger, 2014; Hörisch, Kollat, & Brieger, 2017; Lenox & York, 2011).

As a result, an individual endowed with entrepreneurial skills has a higher propensity for entrepreneurship compared to employment but may be less likely to choose social over commercial entrepreneurship.

Hypothesis 1b: *Individuals with entrepreneurial human capital have a lower propensity for social compared to commercial entrepreneurship.*

2.2.3 The Moderating Role of Institutional Environment

Previous studies suggest that the national institutional environment, in which an individual is embedded, moderates the relationship between individual-level factors and an individual's propensity for social entrepreneurship (e.g Brieger et al., 2020; Estrin, Mickiewicz, & Stephan, 2016; Hoogendoorn, 2016; Hörisch, Kollat, & Brieger, 2017; Sahasranamam & Nandakumar, 2020; Stephan, Uhlaner, & Stride, 2015; Unger et al., 2011). North (1990) and Baumol (1996) emphasise the role of institutional environment for individual choices, since they determine both opportunity costs and potential individual returns (Estrin, Mickiewicz, & Stephan, 2016). For example, if the rule of law is strong and protects the appropriable returns from human capital via entrepreneurship, the institutional environment may positively influence an individual's propensity for entrepreneurship over paid employment given a fixed level of human capital (Arenius & Minniti, 2005). Further, a country's educational system may steer individuals towards entrepreneurship if it encourages skills and resources needed for starting a business or promotes entrepreneurship as a career path (De Clercq, Lim, & Oh, 2013; Hechavarria & Ingram, 2019; Lim, Oh, & De Clercq, 2016). Moreover, a country's culture can shape norms and values connected to (social) entrepreneurship (Autio, Pathak, & Wennberg, 2013).

However, do certain regulatory, cognitive and normative aspects of the national institutional environment encourage or rather discourage social entrepreneurship? How do they moderate an individual's endowment with human capital and the propensity to engage in social entrepreneurship? Leaning on Scott (2013)'s conceptualisation of institutional environment, three groups of hypotheses are derived in the following, each relating to one dimension of the environment.

Regulatory Dimension: Business Friendliness

Within the regulatory dimension of a country's institutional environment, the legislative context of starting and leading a business is considered to moderate the relationship between an individual's endowment with human capital and the propensity for social entrepreneurship. This includes the level of bureaucracy (Hörisch, Kollat, & Brieger, 2017), taxes, access to credits, strength of property rights (Estrin, Mickiewicz, & Stephan, 2013) and likewise. In order to establish a business, an entrepreneur has to

overcome several challenges connected to bureaucracy, commercial law and financing, which require some experience and knowledge. Research found that compared to commercial entrepreneurs, social entrepreneurs often lack these skills (Hesselbarth & Schaltegger, 2014; Lenox & York, 2011). Therefore, evidence suggests that they are relatively more likely to be discouraged to start a new business if the regulatory environment rather hinders than facilitates entrepreneurship (Hörisch, Kollat, & Brieger, 2017). In addition, a high-quality regulatory environment is found to be connected to certain cultural aspects as well as socioeconomic development (Brieger et al., 2020).

Within a regulatory environment that facilitates entrepreneurship and does not require great entrepreneurial knowledge in order to start a venture, the importance of general human capital is emphasised. As discussed earlier, it enables an individual to acquire the knowledge needed to overcome regulatory hurdles and bureaucratic challenges. In line with extant literature (e.g. Brieger et al., 2020; Estrin, Mickiewicz, & Stephan, 2013; Hörisch, Kollat, & Brieger, 2017), it is therefore suggested that a business-friendly national context positively moderates the relationship between general human capital and an individual's propensity to engage in social entrepreneurship.

> **Hypothesis 2a:** *Business-friendly regulations positively moderate the relationship between an individual's endowment with general human capital and social entrepreneurship.*

In turn, within a business-friendly regulatory environment, entrepreneurial human capital may result in higher monetary returns from commercial entrepreneurship due to the easiness of doing business, hence, raising the opportunity costs of choosing social entrepreneurship. Subsequently, the individual returns on social entrepreneurship may be higher as well. However, connecting the increased monetary incentive to a decreased social and environmental consciousness of individuals with business skills (Hesselbarth & Schaltegger, 2014; Lenox & York, 2011), it is proposed that a business-friendly regulatory environment negatively connects an individual's endowment with entrepreneurial human capital and the propensity to engage in social entrepreneurship.

> **Hypothesis 2b:** *Business-friendly regulations negatively moderate the relationship between an individual's endowment with entrepreneurial human capital and social entrepreneurship.*

Cognitive Dimension: Entrepreneurial Education

Within the cognitive dimension of the national institutional environment, the nationally shared knowledge base regarding entrepreneurship is considered to moderate the relationship between an individual's endowment with human capital and the propensity for social entrepreneurship. The perception of the orientation of a country's educational

system towards entrepreneurship, or entrepreneurial education in short,[4] influences entrepreneurial attitudes, knowledge and aspirations (De Clercq, Lim, & Oh, 2013). In the broad definition, entrepreneurial education aims to build knowledge and skills connected to starting a business, which can range from enhancing creativity, initiative and self-sufficiency over raising awareness for the career choice of entrepreneurship to explicitly preparing individuals for starting and growing a venture (Global Entrepreneurship Monitor, 2015b; Martinez et al., 2010). Previous literature found a direct connection between entrepreneurial education and an individual's engagement in entrepreneurship generally, such that if a country's educational system focuses the attention on the preparation for and development of entrepreneurship-specific skills, individuals have a higher propensity for entrepreneurship in general (De Clercq, Lim, & Oh, 2013; Honig, 2004; Lim, Oh, & De Clercq, 2016). However, evidence remains scarce (Martinez et al., 2010).

As far as known to the author, no research specifically investigated a relationship between entrepreneurial education and an individual's propensity to engage in social entrepreneurship or the moderating role of entrepreneurial education for the relationship between individual factors and social entrepreneurship. Yet, applying knowledge and hypotheses from mentioned studies, it is expected that a high emphasis on entrepreneurial education within a country's educational system negatively moderates the relationship between human capital and an individual's propensity to engage in social entrepreneurship for three reasons. First, it is suggested that the acquisition of business skills results in a decline in social and environmental consciousness (Hesselbarth & Schaltegger, 2014; Hörisch, Kollat, & Brieger, 2017; Lenox & York, 2011). Second, according to Estrin, Mickiewicz, and Stephan (2016), individuals endowed with the skills and knowledge required to start a business are more likely to start a venture that is primarily aimed at generating revenue. Third, while entrepreneurial education equips students with both personality traits and entrepreneurial knowledge beneficial for the process of starting a business, there is no particular social or environmental aspect to it (Martinez et al., 2010). Thus, an individual with high educational attainment embedded in a national environment with relatively high entrepreneurial education may have a lower propensity for social compared to commercial entrepreneurship.

> **Hypothesis 3a:** *The entrepreneurial orientation of a country's educational system negatively moderates the relationship between an individual's endowment with general human capital and social entrepreneurship.*

[4] It is noted that entrepreneurial education describes a narrower concept than the orientation of the educational system towards entrepreneurship. However, the interchangeable use of these terms within this thesis follows the convention of the GEM and contributes to conciseness.

In contrast, in a national environment with relatively high entrepreneurial education, the importance of entrepreneurial human capital for the choice between social and commercial entrepreneurship may be diminished. This is due to the fact that all individuals within this environment have access to the same entrepreneurial resources. Therefore, the relationship between entrepreneurial human capital and an individual's propensity for social entrepreneurship may be positively moderated by entrepreneurial education.

> **Hypothesis 3b:** *The entrepreneurial orientation of a country's educational system positively moderates the relationship between an individual's endowment with entrepreneurial human capital and social entrepreneurship.*

Normative Dimension: Culture

Within the normative dimension of the national institutional environment, a country's cultural context is shown to to moderate the relationship between an individual's endowment with human capital and the propensity for social entrepreneurship (e.g. Brieger & De Clercq, 2019; Hoogendoorn, 2016; Pathak & Muralidharan, 2016; Sahasranamam et al., 2021). Culture provides individuals with guidance for interpersonal interactions in both their personal and professional lives (North, 1990), but also shapes ethical attitudes, behaviour and decisions by creating a value system (Brieger & De Clercq, 2019). Building on the cultural dimensions as identified by Hofstede (2001), Brieger and De Clercq (2019) and Sahasranamam et al. (2021) show that certain cultural contexts moderate the relationship between an individual's endowment with human capital and the propensity for social entrepreneurship. In this thesis, the focus lies on one of Hofstede (2001)'s cultural dimensions, namely the individualism-collectivism dimension of the national cultural environment, which describes "the relationship between the individual and the collectivity" (Hofstede, 2001, p.210). In countries with a rather individualistic culture, individuals tend to prioritise personal over collective interests and emphasise their independence (Weaver, 2001), whereas individuals embedded in a national context with a rather collectivist culture work towards in-group goals ahead of personal interests (Brieger & De Clercq, 2019).

When comparing social with commercial entrepreneurs, Austin, Stevenson, and Wei–Skillern (2006) find that the former rather rely on support, knowledge and trust from the collective. There is evidence that their access to finance and talented employees is comparatively limited (Bacq & Janssen, 2011). Therefore, social entrepreneurs are more likely to gain support, thrive and succeed in relatively collectivist cultures (Pathak & Muralidharan, 2016). In addition and as discussed earlier, social entrepreneurs emphasise social returns, whereas commercial entrepreneurs tend to be more interested in economic returns (Mair & Marti, 2006; Zahra et al., 2009). Brieger and De Clercq (2019) and Sahasranamam et al. (2021) support these notions with empirical evidence. They

find that individuals endowed with relatively high general human capital embedded in individualistic cultures tend to have a lower propensity for social entrepreneurship than in collectivist cultures.

Based on the evidence of Brieger and De Clercq (2019) and Sahasranamam et al. (2021) as well as the differential goals and needs of social and commercial entrepreneurs, it is hypothesised that a relatively individualistic culture negatively moderates the relationship between an individual's endowment with general as well as entrepreneurial human capital and the propensity for social entrepreneurship.

Hypothesis 4a: *An individualistic culture negatively moderates the relationship between an individual's endowment with general human capital and social entrepreneurship.*

Hypothesis 4b: *An individualistic culture negatively moderates the relationship between an individual's endowment with entrepreneurial human capital and social entrepreneurship.*

2.2.4 Conceptual Framework

Based on the theories and evidence presented above, Figure 3 summarises the conceptual framework and constitutive hypotheses. The framework corresponds to the respective research questions, thus, encompasses both the individual- and country-level.

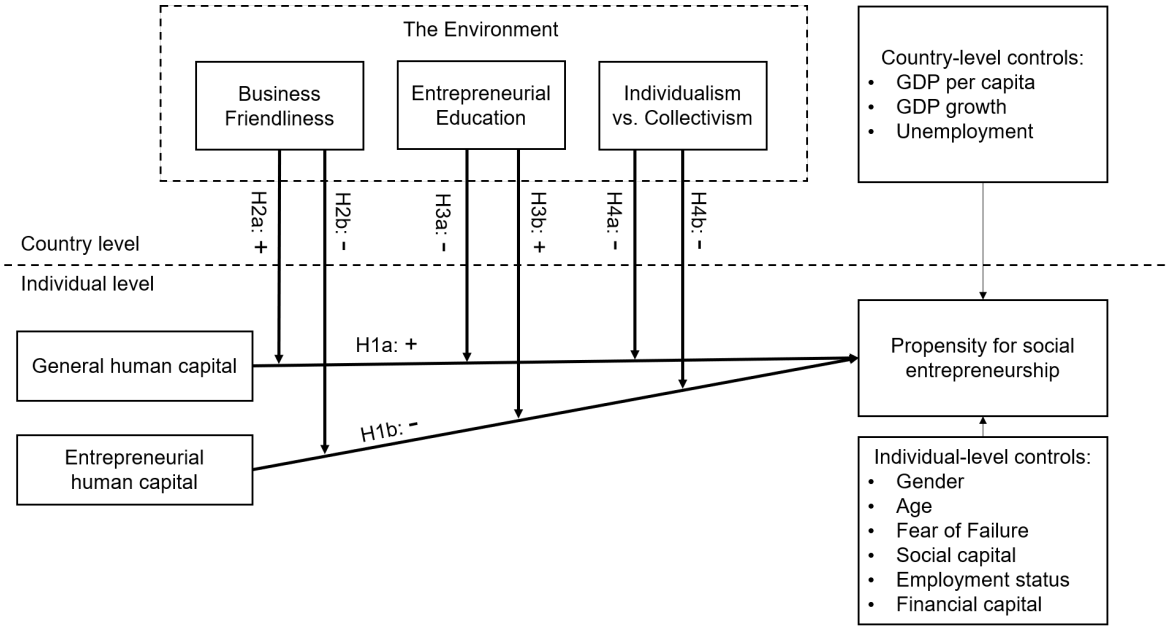

FIGURE 3: CONCEPTUAL FRAMEWORK (OWN GRAPHIC)

Relating to the direction of the hypothesised effects, plus (+) indicates a positive effect; minus (-) indicates a negative effect.

In contrast to previous studies that investigate the relationship between individual- as well as country-level factors and an individual's propensity for social entrepreneurship using survey data from the GEM, this thesis focuses on the geographical region of Europe. A map of countries included in the analysis is illustrated in Figure 4.

The recent rise of interest among European policymakers to support and enable social entrepreneurship as well as the increasing number of social enterprises makes it an interesting geographical target for social entrepreneurial research (Borzaga et al., 2020). European countries do not only have the same or a similar supranational governance (in the case of Switzerland), they are also part of a singular market with high frequency trade. It can therefore be assumed that there exist interdependencies between these geographically and regulatory close countries which serve as a source of inspiration and innovation. Further, social entrepreneurs within Europe have access to shared resources (European Commission, 2021). For these reasons, the chosen countries within this thesis are to a certain degree comparable. In order to identify suitable policies to encourage social entrepreneurship in Europe, it is important to specifically centre the research around this supranational context. Thus, this thesis focuses the analysis on the wide range of European countries plus Switzerland offered by the GEM survey from 2015. The importance of this focus on Europe is affirmed by efforts of the social business initiative (SBI) to increase the visibility of social entrepreneurship, alleviate the obtainment of funding and create an environment that is friendlier for social ventures (European Commission, 2021).

Figure 4: Map of Countries included in this Thesis (Own Graphic)

3 Data

This chapter gives an overview of the data that is used to test the hypotheses. First, the data sources are presented, followed by the operationalisation of the individual- and country-level variables as well as the controls. Finally, the reliability of the data is assessed.

3.1 Data Sources

This thesis primarily relies on individual-level data from the Adult Population Survey of the Global Entrepreneurship Monitor (GEM APS) in 2015 (Global Entrepreneurship Monitor, 2015a). The GEM program is the largest longitudinal research project gathering and providing survey data on entrepreneurship. Since 1999, the GEM provides individual- and national level data from around 50 countries annually (Bosma et al., 2020). The explicit objective of the GEM is to enable multidimensional cross-country analyses of entrepreneurship (Lepoutre et al., 2013). The Adult Population Survey includes a minimum of 2,000 randomly selected individuals within the working-age population from each country and is therefore nationally representative according to the GEM. While most research on entrepreneurship focuses on quantitative measures like the number of new enterprises, the GEM APS offers the possibility for people-centric research, since the focus lies on an individual's motivation, perception and attitudes towards entrepreneurship. Yet, it therefore also relies on the truthfulness of respondents about their involvement in the entrepreneurial process, which is encouraged by anonymity (Bosma et al., 2020). In order to ensure the comparability across countries, the same measurement approach is used in every participating country. During a yearly collection phase between May and August, participants are interviewed in their national language over the phone or face-to-face. The records are then translated back to English, harmonised over all participating countries and weighted according to the national population (Lepoutre et al., 2013). In total, the individual-level dataset of the GEM APS 2015 offers 181,281 observations from of adults in 60 countries.

Every year, a different special topic is added to the questionnaire, such as entrepreneurial financing, women in entrepreneurship or entrepreneurial employees (Global Entrepreneurship Monitor, 2021). In the years 2009 and 2015, the GEM added a special topic on social entrepreneurship, surveying characteristics, motivations and attitudes of social entrepreneurs (Bosma et al., 2016). Several scholars utilised the 2009 dataset to investigate determinants on both the individual- and macro-level that influence a person's likelihood to enter social entrepreneurship (e.g Estrin, Mickiewicz, & Stephan,

2013, 2016; Hoogendoorn, 2016; Sahasranamam et al., 2021; Stephan, Uhlaner, & Stride, 2015), environmental orientation (Hörisch, Kollat, & Brieger, 2017) or social value creation goals (Brieger et al., 2020; Brieger & De Clercq, 2019). While the 2015 survey uses the same methodology, the scope of this study is larger and follow-up questions differ slightly. Still, the definition of a social entrepreneur as discussed earlier remains the same, thus ensuring the comparability of research using the second GEM dataset including social entrepreneurship with earlier studies (Bosma et al., 2016).

Additional Sources

In order to investigate the moderating role of institutional environment in the European context, additional country-level variables are obtained from different sources. Firstly, the GEM National Expert Survey (NES) (Global Entrepreneurship Monitor, 2015b) offers an annual study of the national environments in which individuals start entrepreneurial processes (Global Entrepreneurship Monitor, 2021). This survey interviews experts on several components of a nation's entrepreneurial environment, such as policies, taxes, financing, perception of the entrepreneurial orientation of a country's educational system as well as cultural and social norms. For this cause, a Likert scale between 1 and 9 is used, with 1 denoting highly insufficient and 9 highly sufficient (Kelley, Singer, & Herrington, 2016). Per country, a minimum of 36 experts are selected and questioned by the national GEM team (Bosma et al., 2020). In 2015, 2,548 experts from 62 countries completed this survey.

Secondly, this thesis follows Brieger and De Clercq (2019) and Sahasranamam et al. (2021) in using the cultural dimension scores by Hofstede (2001) in order to quantify a country's cultural context. There are three reasons for this decision. First, Hofstede (2001)'s cultural value scores are the most influential, widely used and validated measures for a nation's culture. Second, this dataset is the most extensive and includes scores for every country within this thesis, except for Macedonia. Third, Hofstede (2001)'s business related orientation of the values fits the topic of entrepreneurship.

Lastly, the World Bank database serves as a source for further country-level indices and controls.

In order to match the GEM APS survey with the obtained country-level data, it is first limited to European countries. Then, the observations are restricted to the working-age population between the age of 18 to 64 years. Taken together, the constructed dataset offers 73,033 observations from 21 European countries, including 7,646 early-stage entrepreneurs.

3.2 Variables

3.2.1 Dependent Variable

The dependent variable is entry into social versus commercial entrepreneurship. It is binary coded, with commercial entrepreneurship entry being the baseline category. Entry into commercial entrepreneurship is based on several questions from the GEM APS survey and includes individuals that are currently involved in the process of starting a new business and owners/managers of businesses that are up to 42 months old.[5] Entry into social entrepreneurship is based on the question "Are you, alone or with others, currently trying to start or currently leading any kind of activity that has a social, environmental or community objective?". If an individual responded affirmative, the dependent variable takes the value 1. Hence, this variable captures early-stage entrepreneurship, i.e. nascent and young entrepreneurs. The national level of social and commercial entrepreneurship can be seen in Figure 7 as well as in Table C.1 in Appendix C. The final data for the main results contains a sample of 7,646 nascent and young entrepreneurs in Europe, 3,368 of them being social entrepreneurs. The computed levels of total early-stage entrepreneurial activity (TEA) are in line with reported numbers in the 2015/2016 global report of the GEM (Kelley, Singer, & Herrington, 2016).

3.2.2 Measures of Human Capital

The individual-level explanatory variables are comprised of general and entrepreneurial human capital. Both measures are taken from the GEM APS survey.

General Human Capital

There are several approaches to measure general human capital (United Nations, 2016), however, it is typically measured in educational attainment due to the simplicity and availability of data (e.g. Becker, 1964; Unger et al., 2011). Previous scholars identified tertiary education as the most important level of education in relation to the propensity for social entrepreneurship (Brieger & De Clercq, 2019; Sahasranamam et al., 2021), since it is not mandatory and therefore associated with a conscious choice (Estrin, Mickiewicz, & Stephan, 2016). Further, Van Praag, van Witteloostuijn, and van der Sluis (2013) associate it with an individual's ability to identify and seize opportunities. General human capital is therefore split into four categories that capture the highest level of education. The categories indicate whether an individual has primary, some secondary, completed secondary or completed tertiary education (Brieger & De Clercq,

[5] Note that individuals are included that are just in the process of establishing a business, meaning that they may be unemployed.

2019; Estrin, Mickiewicz, & Stephan, 2016; Hechavarria et al., 2017; Sahasranamam et al., 2021). In all European countries, primary and at least lower secondary education is compulsory (European Commission, 2019), hence, individuals with only primary education can be assumed to be dropouts or migrants. Therefore, the reference category for the analysis is chosen to be completed secondary education, which is deemed most appropriate to primarily investigate the relationship between tertiary education and the propensity for social entrepreneurship.

Entrepreneurial Human Capital

Entrepreneurial human capital is operationalised as a binary variable that takes the value 1 if an individual responded affirmatively to the question "Do you have the knowledge, skill and experience required to start a new business?" (De Clercq, Lim, & Oh, 2013; Sahasranamam et al., 2021). If a respondent negated this question, the variable takes the value 0, which is the reference category for the analysis. It should be noted that this measure is based on the subjective assessment of a respondent's personal skills. However, for starting a business, it can be deemed more important that entrepreneurs are confident in their skills, even if these are objectively not sufficient for the process.

3.2.3 Measures of Institutional Environment

Variables characterising institutional environment are incorporated according to the three dimensions discussed in Section 2.2.3. Business friendliness describes the regulatory aspect of the environment. Entrepreneurial education and individualism relate to cognitive and normative aspects, respectively. These variables are taken from different sources for the year 2015 and are further described in the following.

Business Friendliness

Firstly, the general context in which entrepreneurs start their business is operationalised as business friendliness. Following Hörisch, Kollat, and Brieger (2017), this variable is the ease of doing business index obtained from the doing business report 2016 (World Bank, 2015). This index captures the regulatory environment for businesses in a country, including the regulations for starting a business, property rights, taxes, enforcement of contracts, credits, trade and protection of investors. The scale ranges from 0 to 100, with a high score indicating that governments created a regulatory environment that facilitates market interaction, as well as the establishment and management of businesses (World Bank, 2015). Table C.1 in Appendix C shows that among the European countries included in the analysis, the United Kingdom, Sweden and Finland perform relatively well in terms of the ease of doing business rankings, whereas Luxembourg, Greece and Italy perform relatively bad.

Entrepreneurial Education

Secondly, the perception of the entrepreneurial education is an index derived from the information given by several questions of GEM's NES (De Clercq, Lim, & Oh, 2013; Hechavarria & Ingram, 2019; Levie & Autio, 2008; Lim, Oh, & De Clercq, 2016). Based on the response of national experts to 6 questions regarding the entrepreneurial orientation of primary, secondary and tertiary education, the sum of Likert scale item responses between 1 and 9 is calculated for all experts in the 62 countries included in the GEM NES. For an overview over the questions and the Likert scale, see Appendix A. Table C.1 in Appendix C shows that Switzerland has the highest entrepreneurial education among the countries in the dataset, followed by the Netherlands and Portugal, while Croatia, Poland and Germany have the lowest entrepreneurial education. Nevertheless, the state of entrepreneurial education is overall relatively low in the European countries. The Cronbach's alpha equals 0.88, indicating a relatively high internal consistency.[6] Hence, the computed index represents the expert's opinion on the entrepreneurial education of a country relatively well.

It is noted that the Likert scale is an ordinal concept, which however is treated as a cardinal concept with assumed equidistant intervals – a common methodology among scholars. This approach is heavily debated, yet, there are many advantages to it, for example the application of arithmetic operations like computing the mean. While the original Likert scale as developed by Likert (1932) takes 5 values, the NES offers a 9-point Likert scale for the questions regarding entrepreneurial education. It can be argued that increasing the number of scale points results in a closer resemblance to an interval scale and increases the validity of the cardinal approach to a Likert scale (Joshi et al., 2015; Wu & Leung, 2017). Instead of computing the arithmetic mean for deriving an aggregate scale, a factor analysis may be preferred (Batterton & Hale, 2017; Jöreskog & Moustaki, 2001). However, it yields similar results as computing the arithmetic mean. Since previous scholars in entrepreneurial research (e.g. De Clercq, Lim, & Oh, 2013; Hechavarria & Ingram, 2019; Levie & Autio, 2008; Lim, Oh, & De Clercq, 2016) and the GEM (Bosma et al., 2020) have used the arithmetic mean in order to derive a composite measure of a country's entrepreneurial education, the 9-point Likert scale is treated as a cardinal concept, whereas the shortcomings of this approach are considered.

[6] Cronbach's Alpha is a measure developed by Cronbach (1951) to estimate the internal consistency of a computed score or index, i.e. measures how good the set of variables summarise the underlying construct. It can take values between 0 and 1, a higher score indicating a higher internal validity. Generally, a value over 0.7 is an acceptable level of internal consistency (Taber, 2018; Tavakol & Dennick, 2011).

Individualism

Lastly, a country's culture regarding the level of individualism versus collectivism is measured with one of Hofstede (2001)'s country-level scores (Brieger & De Clercq, 2019; Sahasranamam et al., 2021). Beugelsdijk, Maseland, and Van Hoorn (2015) argue that these scores based on extensive survey data are relatively stable over time and therefore still valid for current research. A country's individualism score ranges between 1 and 100, the former indicating a highly collectivist country, whereas the latter denotes a highly individualistic country. Within the European countries, Portugal, Slovenia and Bulgaria have a relatively collectivist culture, while the United Kingdom, Hungary and the Netherlands have a rather individualistic culture. Hofstede (2001) did not survey the culture regarding individualism versus collectivism in Macedonia, which leads to the exclusion of the observations from the country in some models.

3.2.4 Control Variables

Individual-level Controls

On the individual level, it is controlled for gender, age, fear of failure, knowing an entrepreneur, employment status and household income, which are taken from the GEM APS survey. Prior research found empirical evidence for the influence of an entrepreneur's gender on social value creation goals, i.e. propensity for social entrepreneurship. Compared to men, women tend to have a stronger orientation towards social relative to commercial entrepreneurship, since they typically emphasise social over monetary values (Garcia-Lomas & Gabaldon, 2020; Hechavarria et al., 2017). Therefore, gender is included as a dummy variable, taking the values 0 and 1 if an individual identifies as male and female, respectively. In addition, age plays a sizeable role for an individual's propensity for social entrepreneurship. Brieger et al. (2020) observe a U-shaped relationship between age and the propensity for social entrepreneurship, meaning that the orientation toward social entrepreneurship is higher for both younger and older entrepreneurs. Therefore, an individual's age is included in the analysis.

Further, fear of failure is coded 1 if an individual answered affirmative to the question "Would fear of failure prevent you from starting a business?" and 0 otherwise. It reflects an individual's risk aversion, i.e. whether a prospective entrepreneur emphasises the potential losses over potential gains (Estrin, Mickiewicz, & Stephan, 2016). Renko (2013) finds that the risk of failure is higher for nascent social relative to commercial entrepreneurs, whereas the ramifications of failure may be greater for the latter. Following Estrin, Mickiewicz, and Stephan (2016), fear of failure may result in a higher likelihood to enter into social relative to commercial entrepreneurship. In addition, if an individual knows an entrepreneur, it may influence the propensity for entrepreneurship

in general by serving as a role model or source of advice (Arenius & Minniti, 2005). Knowing an entrepreneur may steer the choice of the individual to social or commercial entrepreneurship, depending on the type of venture that the entrepreneur is involved in. Estrin, Mickiewicz, and Stephan (2016) suggest that individuals who have contact with an entrepreneur may favour engaging in commercial entrepreneurship, yet, the prevalence rate of social entrepreneurs is relatively high within European countries (cf. Figure 7). In order to control for and test this predication, the variable "knows entrepreneur" takes the value 1 if the individual knows an entrepreneur and 0 otherwise. Moreover, an individual that is not currently in employment may be more likely to start an enterprise with a social, environmental or community objective. Following prior studies, it is thus controlled for an individual's work status, which is coded 1 if the respondent currently is in employment and 0 otherwise (Arenius & Minniti, 2005; Brieger et al., 2020; Estrin, Mickiewicz, & Stephan, 2016). It is to note however that individuals currently in the process of starting a business may be unemployed. Lastly, an individual's personal financial capital is important for starting a business, since personal assets are especially important in the early stages due to the obstacles to secure funding. While financial capital is important for both social and commercial entrepreneurs, the former rely more on their own capital due to the limited sources of funding (Sahasranamam & Nandakumar, 2020). Whether an individual's household income belongs to the lower (reference category), middle or upper 33% income group is included as a control variable.

Country-level Controls

In addition to individual-level controls, GDP per capita in current US$, GDP growth and the national unemployment rate are included as country-level control variables in order to mitigate omitted variable bias. These variables are taken from the World Bank database for the year 2015. Hoogendoorn (2016) find evidence for the positive relation between a country's income level and the prevalence rate of social entrepreneurship, proxied by GDP per capita. It is further controlled for the expansion of a country's economy by including the GDP growth in percent compared to the previous year. Lastly, a country's unemployment rate represents the state of a country's labour market, thus, serves as a measure for the opportunity costs of choosing entrepreneurship (Estrin, Mickiewicz, & Stephan, 2016). A low unemployment rate may steer an individual's choice towards commercial entrepreneurship since the potential gains are higher compared to social entrepreneurship and can therefore compete with high opportunity costs.

Table 1: Summary Statistics

Variable	Description	Mean	S. D.
Dependent variable			
Social Entrepreneur	1 if social, 0 if commercial entrepreneur	0.44	0.5
Measures of human capital			
Education:	Highest degree (reference category: secondary)		
Primary	1 if primary education, 0 otherwise	0.06	0.23
Some Secondary	1 if incomplete secondary education, 0 otherwise	0.18	0.39
Secondary	1 if complete secondary education, 0 otherwise	0.40	0.49
Tertiary	1 if complete tertiary education, 0 otherwise	0.36	0.48
Entrepreneurial skills	1 if skills for starting a business, 0 otherwise	0.44	0.5
Measures of institutional environment			
Business friendliness	Ease of doing business (regulatory environment)	76.36	3.68
Entrepreneurial education	Entrepreneurial orientation of a country's educational system	3.99	0.59
Individualism	Level of individualistic (high values) vs. collectivist culture (low values)	59.42	17.22
Individual-level control variables			
Gender	1 if female, 0 if male	0.5	0.5
Age	Current age in years	41.8	13.09
Fear of failure	1 if fear of failure prevented start-up, 0 otherwise	0.46	0.5
Knows entrepreneur	1 if individual knows an entrepreneur, 0 otherwise	0.33	0.47
Work status	1 if in employment, 0 otherwise	0.68	0.46
Household income:	Income percentile (baseline category: low income)		
Low income	1 if low household income, 0 otherwise	0.51	0.5
Middle income	1 if middle household income, 0 otherwise	0.24	0.43
High income	1 if upper household income, 0 otherwise	0.25	0.43
Country-level control variables			
GDP per capita	GDP per capita in current US $	32,637	19,560
GDP growth	Growth of GDP per capita relative to 2014	3.41	3.71
Unemployment	Share of unemployed in working-age population	13.71	7.42

Note: age and country-level variables are reported with their values before z-standardisation.

3.2.5 Summary Statistics

The summary statistics of the variables operationalised above are depicted in Table 1. Further, an overview of the countries and their stages of development, as well as country-level summary statistics of the explanatory variables are presented in Table C.1 in Appendix C.

To improve comparability and alleviate interpretation, non dummy-coded variables, namely country-level variables and age, are z-standardised for the analysis, using the following formula (Blanche et al., 2006):

$$x^*_{ij} = \frac{(x_{ij} - \mathrm{m})}{\mathrm{sd}} \tag{1}$$

where x^*_{ij} denotes the z-standardised value for individual i in country j and x_{ij} is the item response sum.[7] m and sd denote the mean and standard deviation across the countries included in the analysis, respectively. Then, the overall mean is zero and the variance one. This reduces multicollinearity between the predictor variables (Blanche et al., 2006). Yet, these variables are reported with their initial values in Tables 1 and C.1 in Appendix C.

3.3 Reliability of the Data

To date, the GEM APS study serves as the only source of large scale, cross-sectional, harmonised data on social entrepreneurship (Bosma et al., 2016; Lepoutre et al., 2013). There are efforts to collect cross-country data exclusively focused on the topic of social entrepreneurship in a predominantly European context through the SEFORIS survey (Huysentruyt et al., 2016), which could be used for more in-depth studies on social entrepreneurs in the future. Generally, the GEM is frequently validated and used by researchers to investigate determinants of entrepreneurship across the globe (e.g. Bosma, 2013; De Clercq, Lim, & Oh, 2013; Estrin, Mickiewicz, & Stephan, 2013; Wong, Ho, & Autio, 2005).

However, there are several limitations and potential biases to the dataset. For example, the variables used for the analysis are mostly limited to binary coding due to the yes/no responses to questions capturing measures like the dependent variable, as well as entrepreneurial skills, fear of failure and knowing an entrepreneur. In addition, variables sourced from the GEM dataset are based on subjective assessments of a respondent's personal characteristics. Therefore, the GEM relies on the truthfulness of the respondents (Bosma et al., 2016) and may suffer from social desirability bias (Nederhof, 1985). Hence, the inclusion of objective and more fine-grained measures

[7] For country-level variables i takes the value 0.

could be preferred. Further, the definition of a social entrepreneur is chosen to be broad, leading to a large number of individuals identifying themselves as social entrepreneurs, whereas their venture may only have a minor social, environmental or community objective, or be differently interpreted across countries. Another limitation of the used dataset is that it only includes observations from the year 2015. Yet, a longitudinal design presumably doesn't change the results of this thesis due to the nature of the investigated determinants: human capital is acquired in the past and institutional environment is rather inelastic in the short term.

The GEM NES is not without limitations due to the inclusion of a restricted amount of selected experts, leading to potential selection bias as well as the computation of an index based on subjective opinions. For this thesis however, the subjective assessment of a country's cognitive dimension of the institutional environment is more fitting than an objective measure. The use of Likert scales within the GEM NES makes it prone to extreme or moderate response bias as well as acquiescence bias (Taras, Rowney, & Steel, 2009). However, Reynolds et al. (2005) argue that the measurement scales and questions within GEM's NES are validated and standardised.

It is acknowledged that Hofstede (2001)'s cultural scores are not free from limitations, also due to the difficulty of measuring culture (Taras, Rowney, & Steel, 2009). It is frequently criticised that Hofstede (2001)'s cultural values framework is based on a sample of employees merely from the organisation IBM, who may not represent the broader population. In addition, the cultural value scores may be outdated to some extent and therefore not reflect a country's current culture. For a further discussion of potential limitations, see Beugelsdijk, Maseland, and Van Hoorn (2015), McSweeney (2009), and Taras, Rowney, and Steel (2009). Despite these shortcomings, Hofstede (2001)'s cultural framework holds strong validity within the literature and is frequently utilised in cross-country studies (Beugelsdijk, Maseland, & Van Hoorn, 2015).

The World Bank database is routinely used among researchers and therefore assumed to be a reliable source. While there still exists the possibility of biases as well as measurement errors, it is refrained from a discussion of potential limitations.

4 Methodology

This chapter elucidates the methodology used for the analysis. First, the necessity of multilevel and logistic modelling is discussed, followed by the specification of the random intercept multilevel logistic model with a fixed slope. Next, the model is extended with random slopes and re-specified using the latent-response formulation. Finally, tests for the necessity of multilevel modelling are explicated. Additional resources regarding the methodology can be found in Appendix B.

4.1 Necessity of the Multilevel Logistic Approach

4.1.1 Multilevel Modelling

To avoid fallacies and statistical issues of mono-level approaches as discussed in Appendix B.1, multilevel modelling is favoured over a mono-level approach for a dataset that includes both macro- and micro-units with a meaningful relationship (Snijders & Bosker, 2011). Multilevel analysis refers to a methodology used when the data structure as well as the research questions include two or more types of units or levels, such as countries (macro-level) and their inhabitants (micro-level). The micro-level is fully nested in the macro-level, so that it can be expected that the latter serves as a source of variability within the former (Snijders & Bosker, 2011). Here, both within- and between-group differences are analysed conjointly (Snijders & Bosker, 2011), without (dis)aggregating the information of variables on different levels (De Leeuw, Meijer, & Goldstein, 2008).

Translated to the data used within this thesis, in which the propensity for social entrepreneurship (dependent variable) of an individual (level one) nested within the institutional environment operationalised as the national context of a country (level two) is investigated, between-country differences can be expected. The underlying assumption of the multilevel approach is that the propensity for social entrepreneurship of individuals tends to vary depending on the country (Snijders & Bosker, 2011). Further, these effects are not completely captured by a mono-level model, raising the necessity for a multilevel model. This assumption can be veri- or falsified by looking at two statistics: the likelihood ratio test (LR test) statistic and the intraclass correlation (ICC) (Robson & Pevalin, 2015), which are discussed in detail in Section 4.3

4.1.2 Logarithmic Modelling

The use of a multilevel model for the nature of the GEM data and derived hypothesis seems imperative. Another important issue is to determine which type of regression model is most suitable for modelling the propensity for social entrepreneurship. The dependent variable entry into social versus commercial entrepreneurship is binary, i.e. can either take a value of 0 or 1. Thus, a logistic regression model is appropriate (Sommet & Morselli, 2017). The logistic regression predicts the conditional probability of the dependent outcome variable to take the value 1, given certain values of the predictor variables (Rabe-Hesketh & Skrondal, 2008; Sommet & Morselli, 2017). The logistic function describes an s-shaped curve, which represents the relationship between the conditional probability for the dependent variable to take the value 1 and the predictor variable(s), which may be difficult to interpret. Hence, a logit transformation of the logistic regression function can facilitate the reading of the results. The econometric model used within this thesis then predicts "the logit of the conditional probability that the outcome variable equals one given the values on predictor variables over the probability that is equals zero" (Sommet & Morselli, 2017, p.205), also referred to as log-odds.

4.1.3 Interpretation of the Estimates

The multilevel logistic regression model estimates an intercept, which represents the baseline log-odds of entering into social compared to commercial entrepreneurship. As it is shown in the following section, the intercept is the grand average of the log-odds for all individuals in all countries when all predictors take the value 0, also called a fixed intercept. To obtain the odds of entry into social relative to commercial entrepreneurship, the intercept can be exponentiated. The model also estimates coefficients, which indicate the change in log-odds of an individual from the baseline odds when a given variable increases by 1 unit, ceteribus paribus. However, the interpretation of these log-odds is counterintuitive. Therefore, a common interpretation of the results is in terms of odds-ratios, which can be calculated by exponentiating the coefficients. The odds-ratio expresses how many times more likely an individual is to enter social rather than commercial entrepreneurship given a one unit increase in a predictor, ceteribus paribus. The percentage change in the odds can be obtained by subtracting 1 from the odds-ratio and multiplying the result by 100% (Rabe-Hesketh & Skrondal, 2008). An econometric explanation of odds, probability and odds-ratios is given in Appendix B.2.

To facilitate the reading of the results, odds (intercept) and odds-ratios (coefficients) rather than log-odds are portrayed, a common practice in the literature. The intercept

then reports the baseline odds of entering social instead of commercial entrepreneurship when all predictors take the value 0. For the sake of interpretation, it is therefore important that all variables take a meaningful interpretable value at 0. This is achieved by $z-$standardising the non-dummy variables, meaning that when these variables takes the value 0, they are at their means. The coefficients then give the change in odds, or odds-ratios, for a 1 unit change in the predictor (Rabe-Hesketh & Skrondal, 2008). An odds-ratio greater than 1 (OR $>$ 1) increases an individual's odds of entering social over commercial entrepreneurship, while an odds-ratio lower than 1 (OR $<$ 1) decreases an individual's odds of entering social entrepreneurship and subsequently increases an individual's likelihood to enter commercial entrepreneurship (Estrin, Mickiewicz, & Stephan, 2016).

As discussed in the following section, the intercept may vary from country to country. To obtain the estimated conditional odds and finally the baseline probability for an individual to enter social entrepreneurship in a particular country, the country-specific random effects can be predicted, which are expressed in odds.

4.2 Model Specification

Random Intercept Multilevel Logistic Model

As established, a logistic multilevel model is used within this thesis. In addition, the intercept is allowed to vary by country, leading to a random effect. Let Y_{ij} denote the binary outcome variable indicating entry into social or commercial entrepreneurship of individual i in country j. Let x_{kij} and z_{mj} denote the k-th ($k \in K$) individual-level and m-th ($m \in M$) country-level predictor variable as operationalised in Section 3.2. Using the two-stage formulation from Raudenbush and Bryk (2002), the structural level-1 model of the random intercept multilevel logistic regression model can be written as (adapted from Rabe-Hesketh & Skrondal, 2008):

$$\text{Logit}(P(Y_{ij} = 1)) = \alpha_{0j} + \sum_{k=1}^{K} \beta_k x_{kij} + \sum_{m=1}^{M} \delta_m z_{mj}, \tag{2}$$

where α_{0j} denotes an intercept. β_k are the K coefficients to be estimated for the individual-level predictors, while δ_m are the M coefficients to be estimated for the country-level predictors

Then, the intercept α_{0j} is specified in the level-2 model as (Rabe-Hesketh & Skrondal, 2008):

$$\alpha_{0j} = \gamma_{00} + u_{0j}, \tag{3}$$

where γ_{00} denotes the fixed intercept that indicates the grand mean of the log-odds for

all individuals within the sample. u_{0j} is a random intercept or residual, which indicates the country-specific deviation from the log-odds as given by the fixed intercept. The logic behind the two components of the intercept is illustrated in Figure 5. However, the random intercepts need to be predicted separately, since the regression model only reports the variance of the random intercepts $var(u_{0j})$. The Null-Model estimates these two components of the intercept (Sommet & Morselli, 2017).

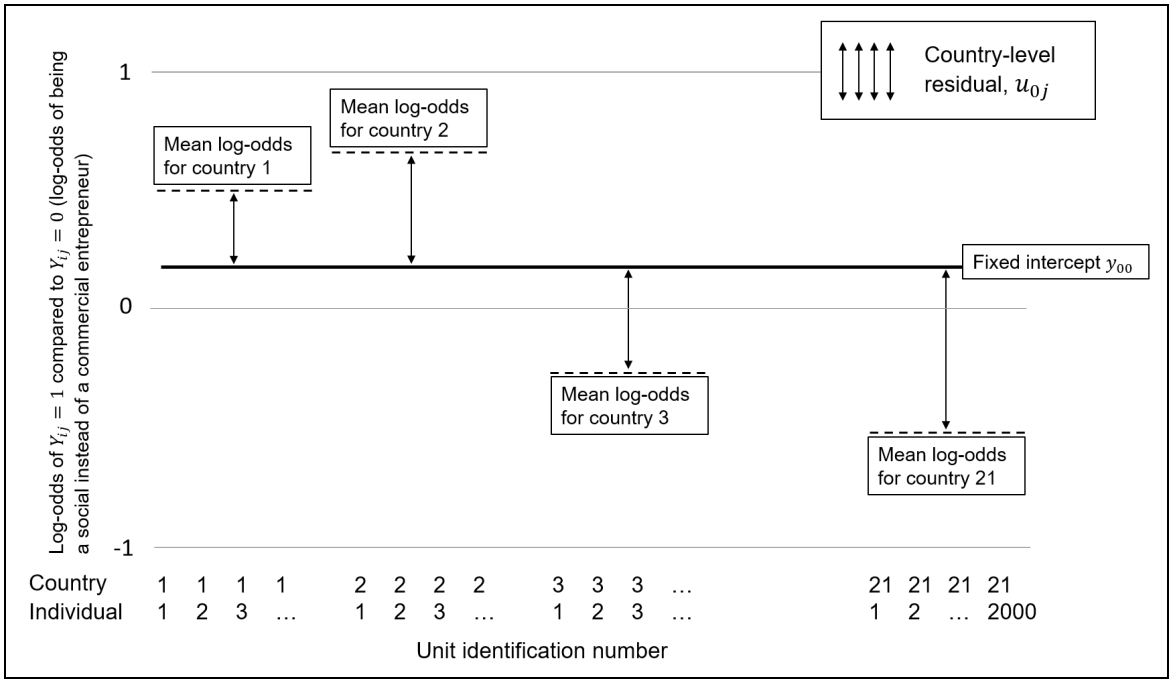

FIGURE 5: ILLUSTRATION OF A GIVEN FIXED INTERCEPT AND COUNTRY-LEVEL RESIDUAL (OWN GRAPHIC BASED ON SOMMET AND MORSELLI (2017, P.208))

Substituting α_{0j} in the level-1 structural model with the level-2 model and adding interaction effects between N ($n \in N$) selected individual-level and M country-level variables, the final model can be written as (Rabe-Hesketh & Skrondal, 2008):

$$\text{Logit}(P(Y_{ij} = 1)) = \gamma_{00} + u_{0j} + \sum_{k=1}^{K} \beta_k x_{kij} + \sum_{m=1}^{M} \delta_m z_{mj} + \sum_{n=1}^{N} \sum_{m=1}^{M} \theta_{nm} x_{nij} \times z_{mj} \quad (4)$$

where θ_{nm} are the $N \times M$ interaction coefficients to be estimated. This model serves as the basis for the main results. As noted earlier, the tables do not portray the log-odds, which are computed by the models as specified above, but rather the exponentiated intercept and coefficients, i.e. the odds and odds-ratios. Further, the random effects are predicted.

Adding Random Slopes

The model specification for the main results has an intercept that varies by country, but the slope is fixed, i.e. the fitted lines run parallel. However, for further robustness and sensitivity checks, the random intercept multilevel logistic regression model as given by Equation 2 can be extended with a random slope, allowing the effect of the predictor and outcome variable to differ for each country. Interaction effects can be added trivially. Then, the random intercept multilevel logistic model with random slopes is written as (adapted from Snijders & Bosker, 2011):

$$\text{Logit}(P(Y_{ij}=1)) = \gamma_{00} + u_{0j} + \sum_{k=1}^{K} \beta_k x_{kij} + \sum_{m=1}^{M} \delta_m z_{mj} + \sum_{k=1}^{K} u_{kj} x_{kij} + \sum_{m=1}^{M} u_{mj} z_{mj} \quad (5)$$

where β_k and δ_m remain fixed slopes to be estimated and u_{kj} and u_{mj} are the random slopes to be estimated. The random slopes follow the same logic as the random intercepts u_{0j}: u_{kj} and u_{mj} are the residuals or difference in slope between the fixed slope and the actual slope for a particular country for every predictor variable. Again, the model estimates the variance of the country-specific slopes.

Latent-Response Formulation

An interesting aspect of the logistic regression model for dichotomous response variables is that it can be equivalently viewed as a latent-response model, also called threshold model. One can assume that a latent continuous variable Y_{ij}^* underlying the observed binary outcome variable Y_{ij} exists, which measures the propensity to engage in social entrepreneurship. If the latent response is greater than zero, a one is observed in the measured variable (Rabe-Hesketh & Skrondal, 2008; Snijders & Bosker, 2011). Therefore, the binary response variable Y_{ij} can be determined by Y_{ij}^* via the following threshold model (Rabe-Hesketh & Skrondal, 2008, p.521):

$$Y_{ij} = \begin{cases} 1 & \text{if } Y_{ij}^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (6)$$

The existence of a latent variable in the case of the propensity for social entrepreneurship is feasible since individuals can be assumed to have a lower or greater propensity. Then, a linear regression model can be specified modelling the latent response variable Y_{ij}^* (adapted from Rabe-Hesketh & Skrondal, 2008):

$$Y_{ij}^* = \gamma_{00} + u_{0j} + \sum_{k=1}^{K} \beta_k x_{kij} + \sum_{m=1}^{M} \delta_m z_{mj} + \sum_{n=1}^{N} \sum_{m=1}^{M} \theta_k m x_{nij} \times z_{mj} + \epsilon_{ij} \quad (7)$$

where ϵ_{ij} is an error term.

4.3 Tests for the Necessity of Multilevel Modelling

In order to test if a multilevel model is necessary, two statistics can be computed: the likelihood ratio test (LR-test) and the intraclass correlation coefficient (ICC) (Robson & Pevalin, 2015). The former is a general test for the deviance between the data and statistical model. It is commonly used to compare models that are fitted to one dataset. Comparing a multilevel logistic regression to a logistic regression model, the Null-Hypothesis is that no significant difference between these models exists. If the p-value is smaller than 0.05, the Null-Hypothesis can be rejected, hence, there is a significant difference and the multilevel model is favoured. Similarly, fixed versus random slope models can be compared (Snijders & Bosker, 2011).

The ICC measures how much of the variation in the outcome variable is explained by between-country differences. In order to calculate the ICC, the individual between-country variance τ^2 is divided by the total variance of the outcome $var(Y_{ij})$. The total variance equals the sum of the individual between-country variance τ^2 and the individual within-group variance σ^2. Thus, the ICC can be calculated using the following formula (Snijders & Bosker, 2011, p.39):

$$ICC = \frac{\tau^2}{\tau^2 + \sigma^2} \tag{8}$$

Generally, the ICC can take values between 0 and 1, with higher values indicating that more of the variance in the outcome can be attributed to between-country differences. According to Hox, Moerbeek, and Van de Schoot (2017), the use of a multilevel model is advised for an ICC of 0.1 and above, whereas Heck, Thomas, and Tabata (2013) name values above 0.05. Musca et al. (2011) advise on applying multilevel modelling on hierarchical data even if the ICC is very small, since using an OLS regression may lead to an increased risk of rejecting a true Null-Hypothesis (Type I error) in this case.

5 Results

This chapter presents and discusses the results of the analysis. First, descriptive statistics of the key variables are displayed. Then, the main results are highlighted, followed by the robustness checks. Last, a discussion of the findings as well as their limitations is given.

5.1 Descriptive Statistics

In 2015, the rate of social entrepreneurs in the European countries included in the GEM dataset ranges from 1.5% (Greece) to 16% (Hungary), with the average being 6.3% (see Figure 6). Compared to other global regions, the prevalence rate of social entrepreneurs in the US and Australia is the highest with 11%, followed by Sub-Saharan Africa with 9%, Europe, Latin America, North Africa and South-East Asia (Bosma et al., 2016). However, the type of social enterprises differs between these regions. While the prevalence of social entrepreneurs is comparably high in Sub-Saharan Africa, the social

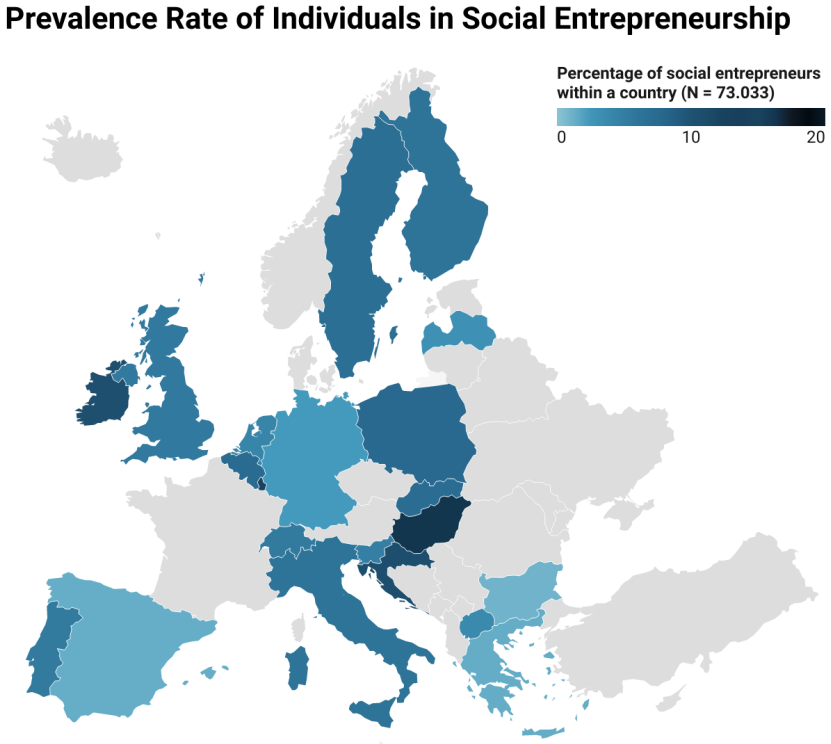

Figure 6: Prevalence Rate of Social Entrepreneurs in European Countries within the GEM Dataset from 2015 (Own Graphic)[8]

[8] Link to an interactive map: https://datawrapper.dwcdn.net/V9SPO/3/

ventures are generally operating on a small-scale. In contrast, social enterprises in the US and Australia as well as Europe are rather characterised by high conversion rates from the early to established phase of a venture, a comparably large-scale orientation and greater success rates (Bosma et al., 2016).

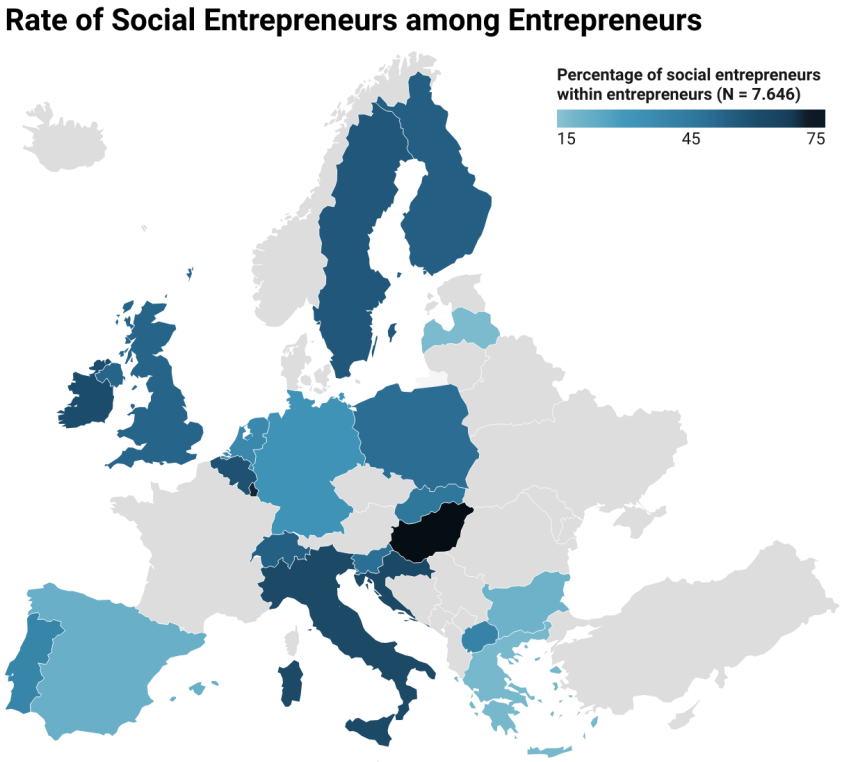

FIGURE 7: SOCIAL VERSUS COMMERCIAL ENTREPRENEURS (OWN GRAPHIC)[9]

Figure 7 shows the rate of social entrepreneurs among all entrepreneurs in each country. Table C.1 in Appendix C expresses the means of the main variables by country. From this overview, it can be seen that in 2015, close to half of all early-stage entrepreneurs in Europe chose to start a venture with a social, environmental or community objective.[10] It is noteworthy that most European countries within this analysis are categorised as innovation-driven, whereas some are in the efficiency-driven stage of development[11] (Bosma et al., 2016)(see Table C.1 in Appendix C). As a result, the findings from the analysis of European countries are not generaliseable to factor-driven countries. However, the aim of this thesis is to make inferences about the determinants of an individual's propensity for social entrepreneurship within Europe. Thus, it can be assumed that the findings are applicable to European countries classified as innovation-driven and contingently to efficiency-driven economies.

[9] Link to an interactive map: https://datawrapper.dwcdn.net/kSmU9/1/
[10] The definition of a social entrepreneur is deliberately chosen to be broad (see Section 2.1.1).
[11] Schwab and Sala-i-Martin (2015) classify countries into three groups of economic development: factor-, efficiency- and innovation-driven.

Table C.2 in Appendix C then presents the pairwise correlation between the variables used within the analysis. Naturally, the measures of general human capital are correlated. A relatively high bivariate relationship emerges between individualism and business friendliness as well as entrepreneurial education. Further, GDP growth and unemployment rate are negatively correlated, however, as they only serve as control variables and are not used for hypothesis testing, they are included in the model specification regardless.

5.2 Results of the Multilevel Logistic Regression

Table 2 reports the results of the main five multilevel logistic regression models,[12] with the dependent variable being entry into social versus commercial entrepreneurship. The full table, additionally reporting the coefficients of the controls, can be found in Table D.1 in Appendix D. The Null-Model (not reported) only includes the fixed and random effects. Model 1 then adds the individual-level predictors, therefore serves as the basis for testing H1a and H1b. Model 2 further contains country-level predictors that measure institutional environment. Model 3 additionally reports interaction effects between measures of higher education as well as entrepreneurial skill and the measures of institutional environment. Finally, in Model 4 and 5, the full set of controls is added to Model 2 and 3, respectively. These models are based on 7.646 entrepreneurs that are nested within 21 countries, whereas some missing values result in a smaller sample of minimum 6.916 entrepreneurs nested within 20 countries. The predicted random effects for each country are reported in Table 3.

The Null-model is used to assess whether multilevel modelling is necessary. The ICC equals 0.130, which exceeds the threshold of 0.05 (Heck, Thomas, & Tabata, 2013) and 0.10 (Hox, Moerbeek, & Van de Schoot, 2017), respectively. In addition, the likelihood ratio test comparing a single-level logistic regression model without the random intercept component with the multilevel logistic model computes $\chi^2(1) = 868$ with a p-value of 0.00. Both tests indicate substantial individual-level variations between clusters, thus, support the necessity of multilevel modelling.

The intercepts of the unconditional models without controls (Model 1, 2 & 3) are computed to be approximately 1.76, expressed in odds. That is, when all predictors take the value zero, i.e. non-dummy variables are at their mean, a baseline individual[13] across all European countries is 1.76 times more likely to enter social than commercial

[12] The estimates are computed with a maximum likelihood approach using the *melogit* command in STATA 16.1

[13] The baseline individual within the unconditional models has completed secondary education and no entrepreneurial skills. It is embedded in an institutional environment where the business friendliness is 76.36, entrepreneurial education 3.99 and individualism 59.42.

Table 2: Multilevel Analysis of the Determinants for Engagement in Social Compared to Commercial Entrepreneurship

	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed Intercept	1.750***	1.772***	1.762***	2.341***	2.361***
	(0.284)	(0.282)	(0.281)	(0.424)	(0.426)
Measures of human capital					
Primary	1.354**	1.337**	1.312*	1.326*	1.303*
	(0.191)	(0.194)	(0.192)	(0.205)	(0.203)
Some Secondary	0.989	0.982	0.961	0.970	0.945
	(0.094)	(0.094)	(0.093)	(0.098)	(0.096)
Tertiary	1.533***	1.524***	1.523***	1.540***	1.539***
	(0.092)	(0.093)	(0.093)	(0.100)	(0.101)
Entrepreneurial skills	0.257***	0.252***	0.253***	0.299***	0.299***
	(0.016)	(0.016)	(0.016)	(0.020)	(0.021)
Measures of institutional environment					
Business friendliness		0.893	0.851	0.848	0.814
		(0.130)	(0.133)	(0.103)	(0.109)
Entrepreneurial education		0.882	0.897	0.821*	0.835
		(0.108)	(0.118)	(0.085)	(0.096)
Individualism		1.303*	1.376**	1.010	1.062
		(0.192)	(0.216)	(0.125)	(0.145)
Interaction effects					
Tertiary × Business friendliness			1.213***		1.230***
			(0.070)		(0.075)
Entrepreneurial skills × Business friendliness			0.929		0.911
			(0.059)		(0.061)
Tertiary × Entrepreneurial education			0.940		0.925
			(0.049)		(0.051)
Entrepreneurial skills × Entrepreneurial education			1.019		1.027
			(0.060)		(0.064)
Tertiary × Individualism			0.896*		0.896*
			(0.055)		(0.057)
Entrepreneurial skills × Individualism			0.987		0.991
			(0.067)		(0.071)
Controls‡				✓	✓
Observations	7441	7260	7260	6916	6916
No. of countries	21	20	20	20	20
Var(random intercept)	0.462	0.406	0.405	0.209	0.206
Intraclass correlation	0.123	0.110	0.110	0.060	0.059
AIC	8790	8548	8547	7877	7875
Log likelihood	-4389	-4265	-4258	-3919	-3912
LR-test vs. logistic (p-value)	0.00	0.00	0.00	0.00	0.00

Intercept reported in odds, coefficients in odds-ratios; * $p<0.1$ ** $p<0.05$ *** $p<0.01$; standard errors in parentheses; ‡controls are gender, age, fear of failure, work status, household income, GDP per capita, GDP growth and unemployment; the full table is reported in Table D.1 in Appendix D

Table 3: Predicted Random Effects for the Main Models

Country	Model 1	Model 2	Model 3	Model 4	Model 5
Greece	-1.32	-1.25	-1.22	-0.57	-0.55
Netherlands	-0.24	-0.28	-0.38	-0.02	-0.12
Belgium	0.32	0.03	0.11	-0.04	0.04
Spain	-0.98	-0.91	-0.91	-0.14	-0.15
Hungary	1.01	0.45	0.46	0.46	0.48
Italy	0.67	0.24	0.17	0.42	0.36
Switzerland	0.13	0.31	0.32	-0.07	-0.05
United Kingdom	0.11	-0.01	0.02	0.18	0.21
Sweden	0.24	0.16	0.17	0.09	0.09
Poland	0.26	0.09	0.09	-0.01	-0.01
Germany	-0.53	-0.68	-0.69	-0.98	-0.99
Portugal	-0.16	0.60	0.60	0.59	0.60
Luxembourg	0.98	0.84	0.86	0.01	0.01
Ireland	0.49	0.48	0.48	0.01	0.00
Finland	0.26	0.35	0.36	0.46	0.46
Bulgaria	-0.88	-0.65	-0.65	-0.61	-0.60
Latvia	-1.28	-1.24	-1.23	-0.74	-0.72
Croatia	0.81	0.83	0.82	0.69	0.67
Slovenia	0.17	0.50	0.46	0.07	0.04
Macedonia	-0.15	.	.	.	.
Slovakia	0.11	0.17	0.18	0.22	0.23

Note: random intercepts for each country are expressed in odds

entrepreneurship. Expressed in probability, the baseline European entrepreneur chooses to enter social entrepreneurship with a probability of about ($\frac{1.76}{1+1.76} = 0.64$) 64% and commercial entrepreneurship with a probability of 36%. Including the predicted random effects for a given country as reported in Table 3, the baseline odds of an individual within a specific country can be computed. For instance, the baseline entrepreneur in Sweden has baseline odds of ($1.76 + 0.16 =$) 1.92 or a probability of 66% to choose social entrepreneurship. Overall, the variance of the random intercepts is 0.4. The conditional models including a set of individual-level and country-level controls (Model 4 & 5) estimate baseline odds of approximately 2.35, translating to a probability of 72% to engage in social entrepreneurship. When including the controls and therefore accounting for some differences between countries, the random intercepts indicate a smaller variance of 0.2 between countries within the conditional models.

Relationship between Human Capital and Social Entrepreneurship

The results of Model 1 provide statistically significant support for H1a. Compared to completed secondary education, both primary (OR = 1.354, $p < 0.01$) and tertiary education (OR = 1.533, $p < 0.05$) have a positive correlation with an individual's propensity for social relative to commercial entrepreneurship. Compared to an individual with secondary education, an individual with tertiary education has $((1.533 - 1) \times 100\% =)$ 53.3% higher odds, or a probability of $(64\% \times 1.533 =)$ 98%, to choose social over commercial entrepreneurship, keeping everything else constant. Having some secondary education does not have a significantly different relationship with the propensity for social entrepreneurship than completed secondary education.

Further, Model 1 provides highly significant evidence for H1b. A negative relationship between entrepreneurial skills and an individual's propensity for social entrepreneurship (OR = 0.257, $p < 0.01$) is evident. Therefore, an individual with entrepreneurial human capital has a $((0.257 - 1) \times 100\% =)$ 74.3% decrease in the baseline odds of choosing social over commercial entrepreneurship, resulting in a probability of $(64\% \times 0.257 =)$ 16.4%, ceteribus paribus.

Further adding the country-level predictors, interaction effects and controls does not change these findings, yet, the significance of the coefficient for primary education decreases.

The Moderating Role of Institutional Environment

In order to assess the moderating role of institutional environment for the relationship between human capital and social entrepreneurship, the interaction effects reported in Model 3 are evaluated. While the exponentiated coefficients of the variables depict the odds-ratio of a one unit change in a covariate, the exponentiated coefficients of interaction effects are interpreted as an odds ratio ratio (ORR), which is the ratio of odds ratios for the interacting variables. Still, the interpretation follows the same logic as for odds-ratios.

The results of Model 3 provide statistically significant support for H2a, but not for H2b. A higher level of business friendliness positively moderates an individual's propensity for social compared to commercial entrepreneurship (ORR = 1.213, $p < 0.01$). When including all controls in Model 5, the positive effect slightly increases. The unconditional (Model 3) and conditional (Model 5) interaction effect between business friendliness and tertiary education is illustrated in Figure 8. The probability to enter social over commercial entrepreneurship decreases when the degree of business friendliness increases for an individual with up to secondary education. In contrast, for an individual with completed tertiary education, a higher degree of business friendliness tends to magnify the positive correlation between tertiary education and the probability

to enter social over commercial entrepreneurship (unconditional model), accounting for other factors however makes this relationship inelastic to the level of business friendliness (conditional model).

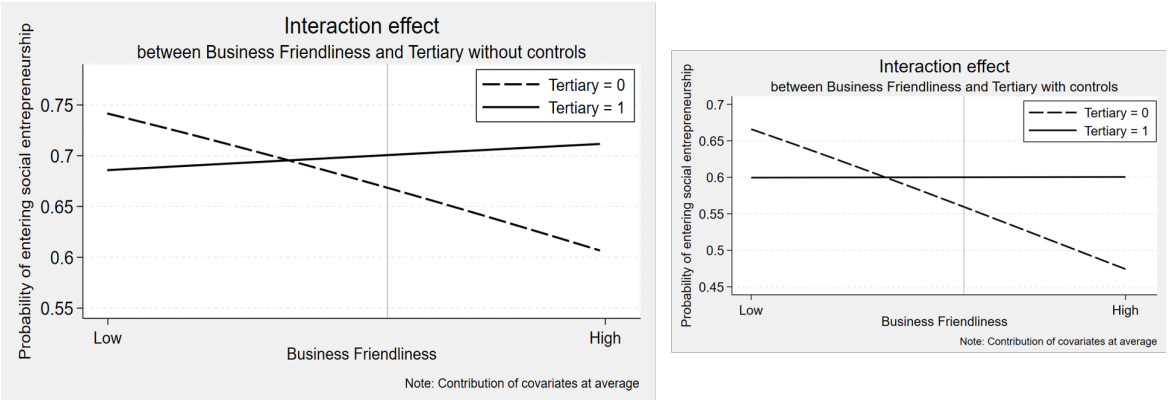

FIGURE 8: INTERACTION EFFECTS BETWEEN BUSINESS FRIENDLINESS AND TERTIARY WITHOUT (LEFT) AND WITH (RIGHT) CONTROLS (OWN GRAPHIC)

The models do not support H3a and H3b. While Model 4 computes an overall negative relationship between the level of entrepreneurial education and an individual's propensity to engage in social compared to commercial entrepreneurship (OR = 0.821, $p < 0.1$), the coefficients of the interaction terms remain statistically insignificant.

H4a is supported by Model 3 and 5, whereas no evidence is found for H4b. In a country with higher levels of individualism, individuals with tertiary education are less likely to choose social over commercial entrepreneurship compared to the baseline odds (ORR = 0.896, $p < 0.1$). Figure 9 illustrates the interaction effect between individualism and tertiary education. For individuals with up to secondary education, the probability to enter social entrepreneurship is lower in a rather collectivist culture compared to a higher probability to enter social entrepreneurship in a rather individualistic culture. For individuals with tertiary education, this positive correlation is slightly decreased.

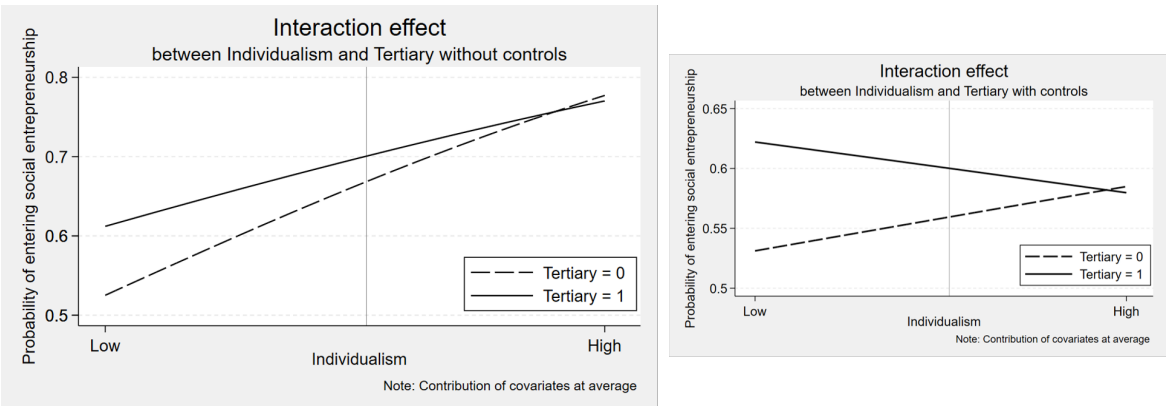

FIGURE 9: INTERACTION EFFECTS BETWEEN INDIVIDUALISM AND TERTIARY WITHOUT (LEFT) AND WITH (RIGHT) CONTROLS (OWN GRAPHIC)

In contrast to the unconditional relationship, accounting for additional factors leads to a decrease in an individual's probability to enter social entrepreneurship with gradually higher levels of individualism.

Further Noteworthy Results

The full results including coefficients of the controls can be found in Table D.1 in Appendix D. The individual-level controls indicate the expected signs while being statistically significant except for household income. Compared to male, being female increases the propensity to engage in social relative to commercial entrepreneurship. Rising age seems to have a positive relationship with the propensity for social entrepreneurship compared to the average age of 41.8 years. Fear of failure leads to a higher propensity for social compared to commercial entrepreneurship, whereas knowing an entrepreneur has a stronger positive effect on commercial compared to social entrepreneurship. Being in employment decreases an individual's propensity for social entrepreneurship. Within the country-level controls, only the unemployment rate shows a statistically significant effect and negatively influences the propensity for social entrepreneurship.

Splitting the sample into five age groups, the coefficients and significance levels slightly differ for individuals within a particular age group (see Table D.5 in Appendix D). Confirming the findings of Brieger et al. (2020), the fixed intercepts indicate a U-shaped relationship between entry into social entrepreneurship and age, with the youngest (18-24) and oldest (55-64) respondents having the highest propensity to engage in social relative to commercial entrepreneurship. Compared to completed secondary education, primary education only shows a significant positive sign for the individuals within the age of 35-44 and 55-64. The positive correlation between tertiary education and social entrepreneurship remains highly significant for all age groups except for the youngest. It is noteworthy that entrepreneurial skills have a milder negative correlation with an individual' propensity for social entrepreneurship within the oldest age group. Further, while business friendliness has a significant negative effect on the propensity to engage in social entrepreneurship for 45-54 year old individuals (OR = 0.632, $p < 0.05$), it positively moderates the relationship between entrepreneurial human capital and entry into social entrepreneurship (ORR = 1.311, $p < 0.1$), conditionally refuting H2b for this age group. Similarly, H4b is contradicted for individuals between the age of 35-44. Here, individualism positively moderates the relationship between entrepreneurial human capital and the propensity for social entrepreneurship (ORR = 1.352, $p < 0.1$). In contrast, some evidence is found for H3b. For individuals between the age of 25-34, entrepreneurial education negatively moderates the relationship between human capital and the propensity to engage in social entrepreneurship (ORR = 0.789, $p < 0.05$).

Hitherto, the findings are based on a binary outcome variable that only takes an individual's decision between social and commercial entrepreneurship into account. However, the GEM dataset also offers observations of individuals that are in employment, i.e. have chosen to not enter entrepreneurship. Including the whole sample (N = 73.033), additional multilevel multinomial logistic regressions are run, replicating the model specifications of Table 2 (see Table D.6 in Appendix D). Here, the dependent variable has three possible outcomes: no entry into entrepreneurship (reference category), entry into commercial entrepreneurship and entry into social entrepreneurship. These results show similar patterns regarding the hypotheses. Contrasted to no entry, primary and some secondary relative to completed secondary education are negatively correlated with entry into entrepreneurship in general. Tertiary education is positively correlated with both the entry into social (Model 1: OR = 2.031, $p < 0.01$) and commercial entrepreneurship (Model 1: OR = 1.188, $p < 0.01$), however, the positive relationship is stronger for the former. Entrepreneurial human capital positively correlates with entry into both social (Model 1: OR = 2.159, $p < 0.01$) and commercial (Model 1: OR = 9.065, $p < 0.01$) entrepreneurship, yet, has a stronger positive relationship with the latter. The interaction effects show no difference in the direction of the effect or significance level except for the interaction between entrepreneurial human capital and individualism. Model 5 indicates that the degree of individualism negatively moderates the relationship between an individual's propensity for social entrepreneurship and entrepreneurial human capital (ORR = 0.928, $p < 0.1$). Contrasted to no entry, some controls show interesting signs compared to Table D.1, yet, the result patterns between commercial and social entry remain.

5.3 Robustness Checks

A number of robustness checks is conducted which generally support the main findings and ensure the reliability of the analysis. First, the specifications in Table 2 are replicated with survey weights (see Table D.2 in Appendix D). Overall, the interpretation of the results remains, whereas the coefficient for primary lost the statistical significance.

Second, random slopes for some predictor variables are added to the specification of Model 5 from Table 2 as described in Equation 5 (see Table D.3 in Appendix D). Convergence was not achieved for all variables, therefore, one by one, a random slope for some secondary, tertiary, entrepreneurial skills and entrepreneurial education is added. The likelihood ratio test indicates that only the model including a random slope for entrepreneurial education provides a better fit to the used dataset. Further, the variance of the random slopes is relatively small and insignificant except for entrepreneurial education (Var(random slope) = 0.115, $p < 0.1$). Here, the variance of the random intercepts decreases notably.

Third, the main specification including all predictors, interaction effects and controls, is replicated using the latent-response formulation of Equation 7 (see Table D.4 in Appendix D).[14] The interpretation remains unchanged.

Fourth, the results of Model 5 in Table 2 are replicated using a different indicator for entrepreneurial human capital (see Table D.4 in Appendix D). Instead of an individual's self assessment of his entrepreneurial skills, an objective measure of entrepreneurial experience is taken. Here, the variable for entrepreneurial skills takes the value 1 if an individual responded affirmatively to the question "Have you, in the past 12 months, sold, shut down, discontinued or quit a business you owned and managed, any form of self-employment, or selling goods or services to anyone?" and 0 otherwise. While a milder negative relationship with an individual's propensity for social over commercial entrepreneurship is indicated when using the objective measure of entrepreneurial skills, the coefficients are not statistically significant.

Fifth, replicating Model 5 from Table 2 again, an alternative measure for business friendliness is used. Applying the index of economic freedom from The Heritage Foundation (2015), the estimates are very similar to the main results and the significance levels remain unchanged (see Table D.4 in Appendix D).

Sixth, two additional control variables are used to augment the model specification of Model 5 in Table 2 (see Table D.4 in Appendix D). The first additional control measures a respondent's perception of opportunities for starting a business in the next six months, while the second one inquires the opinion on the status of successful entrepreneurs within a respondent's country. Both variables are dummy coded, with a value of 1 indicating the perception of good opportunities and a high perceived status of successful entrepreneurs, respectively. As expected, perceived good opportunities for starting a business negatively correlate with the propensity for social compared to commercial entrepreneurship (OR = 0.812, $p < 0.01$), whereas a perceived high status positively relates to it (OR = 1.113, $p < 0.1$). Generally, the inclusion of additional controls does not change the result patterns and significance levels except for primary education.

Seventh, Model 5 in Table 2 is replicated for each age group separately in order to investigate the differential correlation of the covariates with an individual's propensity for social entrepreneurship within various age groups (see Table D.5 in Appendix D). Generally, these results resemble the ones of Model 5, yet, several coefficients differ for some age groups, which is discussed in detail earlier.

[14] For a latent-response formulation of a multilevel logistic model, the *gllamm* command is used in STATA 16.1 (Rabe-Hesketh & Skrondal, 2008).

Finally, the main specifications are replicated using multilevel multinomial logistic regression models, as elucidated in the previous section (see Table D.6 in Appendix D). Wald tests to obtain the differences between the coefficients for social and commercial entrepreneurship indicate an unchanged significance pattern compared to the coefficients reported in Table 2.

Overall, these robustness checks confirm the main findings. Yet, the results of some specifications suggest that the positive relationship between primary education and social entrepreneurship is not statistically significant. Further, the propensity for social relative to commercial entrepreneurship differs by age group, reinstating the importance of including age as a control variable.

6 Conclusion

6.1 Discussion

This thesis addressed the relationship between human capital and an individual's propensity for social entrepreneurship in a European context. Additionally, it was explored how factors of the institutional environment moderated this relationship. Applying a multilevel approach, the following two research questions were investigated:

RQ 1 How does general and entrepreneurial human capital relate to an individual's propensity to engage in social compared to commercial entrepreneurship?

RQ 2 How does institutional environment moderate the relationship between human capital and an individual's propensity to engage in social entrepreneurship?

For this purpose, a cross-country dataset of the Global Entrepreneurship Monitor from the year 2015 was used, which provided individual-level survey data on social entrepreneurship from 21 European countries. Further country-level data was obtained from varying sources. To analyse the research questions, four groups of hypotheses were derived accordingly and thoroughly tested using multilevel logistic regression models. This approach allowed for separately analysing the relationship between individual- and country-level factors and the propensity for social entrepreneurship. As policymakers within Europe increasingly focus their efforts on encouraging social entrepreneurship, findings of this analysis can steer their endeavours in the relevant direction.

Firstly, this thesis investigated the relationship between general human capital and an individual's propensity for social relative to commercial entrepreneurship in the context of Europe. It is shown that the endowment with tertiary education is positively correlated with the propensity to engage in social entrepreneurship. This finding is consistent with results obtained in global studies, such as Brieger and De Clercq (2019) and Estrin, Mickiewicz, and Stephan (2016). Sahasranamam et al. (2021) on the other hand found a positive correlation with the propensity for social entrepreneurship of both a secondary or higher degree. However, these authors observe a weaker positive relationship. Thus, the comparison with similar studies in the global context indicates that tertiary education may have a stronger positive impact on the propensity for social entrepreneurship in Europe. It may be concluded that the ability and socialising effects of general human capital are more pronounced in European countries. Yet, it is to note that the authors set primary or up to secondary education as the reference category, which influences the coefficient for higher education. As a result, the findings from this thesis regarding measures of general human capital are not directly comparable.

Secondly, the relationship between entrepreneurial human capital and social entrepreneurship was observed. The results of the analysis highlight that the propensity for social relative to commercial entrepreneurship is drastically diminished if an individual possesses entrepreneurial skills. These findings coincide with Estrin, Mickiewicz, and Stephan (2016) as well as Sahasranamam et al. (2021). Yet, the authors observed a less negative link in the global context. These results confirm the assumption that entrepreneurial skills are more valuable in commercial enterprises, thus, raising the opportunity costs of choosing social entrepreneurship. Further, when acquiring business skills, some social and environmental consciousness may be lost.

Overall, the measures for human capital show similar, but more pronounced signs for an individual's propensity to engage in social entrepreneurship in a European compared to a global context. Hence, these results restate the importance of restricting the sample to a specific geographic context in order to guide policies targeted at increasing the number of social entrepreneurs in Europe.

Moving to the second research question, the moderating role of institutional environment was considered. A higher degree of business friendliness was found to positively moderate the relationship between an individual's endowment with general human capital and the propensity to engage in social entrepreneurship. Thus, an individual with higher education tends to have a higher propensity for social entrepreneurship when embedded in a business friendly environment, i.e. is faced with less regulatory hurdles. In contrast, Estrin, Mickiewicz, and Stephan (2016) did not observe a significant moderating effect of a country's regulatory quality on the effects of general human capital. The analysis within this thesis did not reveal a significant moderating role of business friendliness for the correlation between entrepreneurial human capital and social entrepreneurship, whereas Estrin, Mickiewicz, and Stephan (2016) found a significant negative interaction effect. Thus, in European countries, the regulatory dimension influences how individuals use their general, but not their entrepreneurial human capital, whereas in a global context, this significance pattern is inverted. This implies that across a variety of countries globally, the regulatory dimension of the institutional environment can influence the use of entrepreneurial human capital, but not of tertiary education.

Entrepreneurial education did not significantly moderate the relationship between measures of human capital and social entrepreneurship. This may be due to the fact that the level of entrepreneurial education in European countries is overall relatively low. If policymakers put a stronger focus on the entrepreneurial orientation of a nation's educational system, an increased engagement in entrepreneurship generally could be expected, as suggested by the findings of De Clercq, Lim, and Oh (2013) and Lim, Oh, and De Clercq (2016). However, commercial entrepreneurship would be favoured, if

education policies are not also targeted at a greater inclusion and promotion of social as well as environmental objectives (Lawrence, Phillips, & Tracey, 2012).

A negative interaction between individualism and general human capital was found. This indicates that individuals with higher education tend to have a lower propensity for social entrepreneurship when they are embedded in a rather individualistic culture. Surprisingly and conversely, Brieger and De Clercq (2019) observed a positive interaction between individualism and general human capital. However, they coded their variable measuring human capital differently. Sahasranamam et al. (2021) on the other hand did not observe a significant interaction. While Sahasranamam et al. (2021) in turn found a significant negative interaction between individualism and entrepreneurial human capital, the analysis revealed no such significance. Thus, the individualism-collectivism dimension of the institutional environment influences how individuals use their general, but not their entrepreneurial human capital in the countries included in the analysis. In a global context, the evidence for the influence of individualism on the use of general human capital is mixed, whereas it evidently determines an individual's use of entrepreneurial human capital.

In conclusion, this thesis contributes to further decoupling the relationship between human capital and the propensity to engage in social entrepreneurship within European countries. Additionally, it sheds light on the role of regulatory, cognitive and normative factors of the institutional environment in the global region Europe. Yet, even though the interest of researchers and policymakers in identifying determinants for the propensity to engage in social entrepreneurship has grown in the recent decade, the influence of institutional environment remains underexplored. Thus, a continued need to further study the moderating role of institutional environment on the relationship between individual factors and social entrepreneurship exists.

6.2 Limitations

Despite the careful selection and treatment of the variables, the thorough analysis of the utilised dataset and the well grounded methodology, there are certain limitations to this thesis. Firstly, the employed dataset gives rise to some potential biases as discussed in Section 3.3. Adding to these, the use of the secondary dataset from the GEM imposes restrictions on the measures of general human capital. Thus, instead of measuring education by years of schooling, the highest obtained degree of an individual has to be used. However, for the purposes of this thesis, this measure may be even more suitable than years of schooling. The reputation effects of schooling and thus the opportunity costs of entering entrepreneurship are rather bound to a certain degree. Further, the comparability across countries is increased. Yet, more fine-grained

measures of general human capital that exceed educational attainment would help to further untangle the relationship between human capital and the propensity for social entrepreneurship. Moreover, the socialising effect of human capital is considered within this thesis. However, it is not possible to control for other explanations of education effects, such as the reflections of ability, persistence, background, well-being and political interest (Emler & Frazer, 1999; Groot & Van Den Brink, 2007). As Block, Hoogerheide, and Thurik (2013) show, education effects on entry into entrepreneurship are amplified when controlling for endogeneity, thus, the observed correlation of general human capital and social entrepreneurship within this thesis may be underestimated.

Secondly, this thesis primarily follows prior studies in investigating correlations, which therefore does not allow for inferences about causality. Due to the cross-sectional nature of the employed dataset, issues about reverse causality may further arise. However, alleviating such concerns, several measures are obtained in the past, such as the measures of human capital, or are rather persistent, such as measures of institutional environment in general.

Thirdly, some scholars may argue that the focus on European countries and thus the restriction to 21 groups reduces the statistical power of the models (Schoeneberger, 2016) as well as the reliability of the country-level estimates (Bryan & Jenkins, 2016). Therefore, an even more extensive dataset of European countries may be favourable for the objective of this thesis.

Lastly, the national level may not be the ideal unit for measuring factors of the institutional environment. For instance, the educational system in Germany greatly differs in each federal state. Thus, it can be assumed that the level of entrepreneurial education depends on the federal state in which an individual enjoyed his education. Additionally, experts from certain regions may be over- or underrepresented, biasing their assessment. Similarly, the regulatory and normative dimension of the institutional environment may be influenced by federal systems or regional differences. For future research, the addition of a regional level to the analysis is preferred.

6.3 Practical Implications

From these findings, several recommendations for European policymakers related to education and institutional environment can be drawn. (1) Firstly, this thesis highlights the importance of higher education for the propensity to engage in social entrepreneurship. Thus, policymakers should direct efforts towards encouraging the acquisition of higher education. For instance, the number of and awareness for tailored higher education programmes can be raised. Additionally, more opportunities could be created by establishing a greater variety of funding options, which especially

benefit economically disadvantaged groups. (2) Secondly, due to the relationship between entrepreneurial human capital and social entrepreneurship, policies aimed at programmes related to establishing entrepreneurial skills should increasingly focus on the inclusion of social and environmental objectives as well as raising awareness for social entrepreneurship. (3) Thirdly, the results offer predictions for the propensity to engage in social entrepreneurship in varying institutional environments. Within Europe, policies targeted at diminishing bureaucratic hurdles and increasing a nations business friendliness can encourage the emergence of social entrepreneurs. Further, the promotion of collectivist values and emphasising the community within a nation leads to a greater consideration for the needs of others and thus to a higher propensity for social entrepreneurship. (4) Fourthly, it is found that women generally have a greater propensity for social entrepreneurship than men. Gender discrimination persisting in the choice of occupation can potentially be reduced by promoting social entrepreneurship as a career choice. (5) Lastly, individuals of both the youngest and oldest age group are more prone to social entrepreneurship. Thus, policies aimed at increasing social and environmental consciousness should specifically target middle-aged people.

6.4 Concluding Remarks

This thesis highlights the importance of higher education for the propensity to engage in social entrepreneurship. The findings emphasise the connection between an individual's endowment with general human capital and social as well as environmental consciousness. Moreover, entrepreneurial human increases the propensity towards entrepreneurship in general. However, without including social and environmental aspects in the process of acquiring entrepreneurial skills, an individual is rather steered away from social entrepreneurship. Additionally, this thesis reinforces the relevance of considering the moderating role of institutional environment when investigating determinants for social entrepreneurship. Further, this thesis points out a continued need for focusing entrepreneurial research on one global area, since the effects of certain factors may vary across continents. For future research, comparative national studies in European countries that investigate regional differences and include both survey as well as statistical data are needed in order to appropriately guide (supra-)national policies. Yet, the availability of more in-depth as well as panel data is needed as the interest in social entrepreneurship continuously increases. Numerous additional possibilities for future research emerge. For instance, the role of differences between regional or federal environments remains underexplored. Also, the ramifications of encouraging socially and economically disadvantaged groups to acquire higher education could be studied. Overall, more research is needed to further untangle the puzzle of determinants for the propensity to engage in social entrepreneurship.

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Appendix

Appendix A: Questions on Entrepreneurial Education in the GEM NES

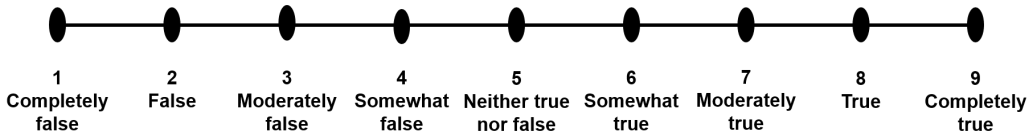

Figure A.1: 9-point Likert Scale in the GEM NES (Own Graphic)

Question 1 In my country, teaching in primary and secondary education encourages creativity, self-sufficiency, and personal initiative.

Question 2 In my country, teaching in primary and secondary education provides adequate instruction in market economic principles.

Question 3 In my country, teaching in primary and secondary education provides adequate attention to entrepreneurship and new firm creation.

Question 4 In my country, colleges and universities provide good and adequate preparation for starting up and growing new firms.

Question 5 In my country, the level of business and management education provide good and adequate preparation for starting up and growing new firms.

Question 6 In my country, the vocational, professional, and continuing education systems provide good and adequate preparation for starting up and growing new firms.

Appendix B

B.1: Problems Arising from Mono-level Approaches to Hierarchical Data

Initially, a discussion of multilevel and mono-level approaches is necessary to answer the central question of why a multilevel approach is preferred over a mono-level analysis for the GEM data. When investigating the relationship between an individual and its environment, reducing the different levels to one common level, i.e. ignoring that the data has a multilevel structure (Snijders & Bosker, 2011), leads to problems of conceptual and statistical nature according to Hox (1995).

The conceptual problems relate to the misinterpretation of correlations when generalising results from one level to another level. Two major errors in causal reasoning can result from combining two or more levels of analyses, namely ecological and atomistic fallacy (Hox, 1995). Ecological fallacy occurs when interpreting aggregated macro-level data on the individual level (Robinson, 1950). For example, when analysing the average relationship between GDP per capita and the rate of social entrepreneurship within a country, it is misleading to generalise this relationship to a specific individual's propensity for social entrepreneurship within the sample, without considering the differential magnitude of this correlation within each country. Atomistic fallacy occurs when inferences from the individual level are generalised to the macro-level (Hox, 1995), which fails to account for the context (Robson & Pevalin, 2015). An example may be that higher educational attainment of an individual corresponds to a higher propensity for social entrepreneurship. However, a policy aiming to increase educational attainment in all countries in order to encourage social entrepreneurship may not reach the desired outcome because the variables describing the environment at the country-level are not considered. The policy may even result in a lower level of social entrepreneurship in countries with certain characteristics, because other options rise in attractiveness.

Problems of statistical nature arise when data from different levels is combined to one common level, but still analysed on several levels. When treating data at the macro level, the aggregation of micro-level observations to the macro-level results in loss of information and statistical power (Hox, 1995), as well as ecological fallacy (Snijders & Bosker, 2011). For example, if the propensity for social entrepreneurship of all individuals from each country would be aggregated to one "national propensity" variable for each country, only the differences between countries of the propensity for social entrepreneurship are represented. Here, individual characteristics are only reported as an average for each unit of the macro-level, leading to spurious correlations (Snijders & Bosker, 2011). By contrast, when treating data at the micro level, the disaggregation of few macro-level (country-level) variables to many individual-level units results in artificially exaggerating the sample size of these macro-level variables since every disaggregated data value is treated as independent information. For instance,

this is the case if no country-level effects are included in the analytical model and therefore assumed to be independent for every individual. Disaggregation then leads to an increased risk of rejecting a true Null-Hypothesis (Type I error) when studying between-group differences, whereas it leads to conservative tests (lower probability of type I error) when analysing within-group differences (Snijders & Bosker, 2011).

B.2: Relationship between Odds, Probability and Odds-Ratios

Assuming that the outcome variable, Y_{ij}, follows a Bernoulli distribution with probability parameter p_{ij}, mathematically expressed as $Y_{ij}|X_{ij}, Z_j \sim Bernoulli(p_{ij})$, where X_{ij} and Z_j are individual and country-level vectors of predictors, respectively. The odds can be defined as the probability, p_{ij}, that individual i in country j enters into social entrepreneurship conditional on predictors over the probability that the individual enters commercial entrepreneurship, (adapted from Rabe-Hesketh & Skrondal, 2008, p.502):

$$\text{Odds}(Y_{ij} = 1|X_{ij}, Z_j) = \frac{\Pr(Y_{ij} = 1|X_{ij}, Z_j)}{\Pr(Y_{ij} = 0|X_{ij}, Z_j)} = \frac{\Pr(Y_{ij} = 1|X_{ij}, Z_j)}{1 - \Pr(Y_{ij} = 1|X_{ij}, Z_j)}$$

The following relationship between odds and probability (pr) results (Rabe-Hesketh & Skrondal, 2008, p. 502):

$$\text{Odds} = \frac{\Pr}{1 - \Pr} \quad \text{and} \quad \Pr = \frac{\text{Odds}}{1 + \text{Odds}}$$

The odds-ratio (OR) is the difference in the log-odds given a one unit increase in a specific predictor, ceteribus paribus, raised to the exponent. The change in the log-odds conditioned on a one unit increase in predictor x_{ij} is computed as a difference between any predictor value $a + 1$ and a:

$$\ln\Big(\text{Odds}(Y_{ij} = 1|x_{ij} = a + 1)\Big) - \ln\Big(\text{Odds}(Y_{ij} = 1|x_{ij} = a)\Big)$$

To obtain the odds-ratio, measuring the change in the odds caused by the one unit increase in the specific predictor, the above statement is raised to the exponent the odds-ratio (OR) is,

$$\begin{aligned}\text{OR} = \exp\Big(\ln\Big(\text{Odds}(Y_{ij} = 1|x_{ij} = a + 1)\Big) - \ln\Big(\text{Odds}(Y_{ij} = 1|x_{ij} = a)\Big)\Big) = \\ = \frac{\text{Odds}(Y_{ij} = 1|x_{ij} = a + 1)}{\text{Odds}(Y_{ij} = 1|x_{ij} = a)} = \exp(Coef) \qquad (9)\end{aligned}$$

Appendix C

Table C.1: Descriptive Statistics for Main Variables by Country

Country	Social Entrepreneurship	Tertiary Education	Entrepreneurial skills	Entrepreneurial education	Business Friendliness	Individualism	Stage
Belgium	0.58	0.52	0.32	4.26	72.5	75	inno
Bulgaria	0.21	0.14	0.35	3.39	73.72	30	eff
Croatia	0.62	0.31	0.52	2.68	72.71	33	eff
Finland	0.54	0.33	0.37	3.97	81.05	63	inno
Germany	0.33	0.44	0.40	3.28	79.87	67	inno
Greece	0.18	0.42	0.47	3.62	68.38	35	inno
Hungary	0.73	0.38	0.38	3.29	72.57	80	eff
Ireland	0.60	0.65	0.45	4.25	79.15	70	inno
Italy	0.61	0.15	0.32	3.65	72.07	76	inno
Latvia	0.18	0.38	0.49	4.64	78.06	70	eff
Luxembourg	0.71	0.48	0.44	4.47	68.31	60	inno
Macedonia	0.40	0.31	0.55	4.17	80.18	-	eff
Netherlands	0.37	0.11	0.45	5.29	75.94	80	inno
Poland	0.49	0.45	0.56	3.18	76.45	60	eff
Portugal	0.40	0.30	0.49	5.17	77.57	27	inno
Slovakia	0.46	0.28	0.52	3.78	75.62	52	inno
Slovenia	0.49	0.44	0.49	3.36	75.62	27	inno
Spain	0.22	0.30	0.44	3.88	75	51	inno
Sweden	0.55	0.46	0.36	3.65	81.72	71	inno
Switzerland	0.49	0.43	0.42	5.52	76.04	68	inno
United Kingdom	0.49	0.46	0.42	4.65	82.46	89	inno

Note: inno = innovation-driven; eff = efficiency-driven

Table C.2: Cross-Correlation Matrix

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Social Entrepreneur	-																	
2	Primary	0.03	-																
3	Some Secondary	-0.03	-0.12	-															
4	Tertiary	0.09	-0.19	-0.35	-														
5	Entrepreneurial skills	-0.29	-0.06	-0.07	0.12	-													
6	Business friendliness	-0.03	0.00	-0.06	0.08	-0.01	-												
7	Entrepreneurial education	-0.04	0.06	0.00	0.02	-0.00	0.27	-											
8	Individualism	0.12	-0.01	-0.01	0.09	-0.04	0.54	0.39	-										
9	Gender	0.11	0.02	0.00	0.02	-0.14	0.00	0.01	0.00	-									
10	Age	0.06	0.09	0.10	-0.02	0.04	-0.03	-0.03	-0.02	0.02	-								
11	Fear of failure	0.14	-0.00	0.02	-0.02	-0.14	-0.07	-0.05	-0.03	0.08	-0.02	-							
12	Knows entrepreneur	-0.14	-0.05	-0.06	0.09	0.22	0.01	-0.02	-0.02	-0.06	-0.09	-0.05	-						
13	Work status	-0.16	-0.09	-0.12	0.19	0.13	0.11	0.07	0.12	-0.11	-0.04	-0.01	0.11	-					
14	Middle income	0.03	-0.05	-0.05	-0.01	-0.00	-0.02	-0.02	0.01	-0.03	0.01	0.02	0.01	0.10	-				
15	High income	-0.01	-0.07	-0.13	0.25	0.10	0.12	0.10	0.15	-0.08	0.02	-0.04	0.08	0.23	-0.32	-			
16	GDP per capita	0.14	-0.04	-0.05	0.12	-0.04	0.15	0.48	0.49	-0.00	-0.01	-0.03	-0.01	0.11	0.02	0.10	-		
17	GDP growth	0.03	-0.01	-0.02	0.06	0.02	0.05	-0.05	-0.04	0.01	-0.01	-0.02	0.02	-0.02	-0.02	-0.01	0.02	-	
18	Unemployment	-0.22	-0.03	0.05	-0.11	0.04	-0.43	-0.22	-0.59	-0.00	0.03	0.02	0.01	-0.20	-0.07	-0.12	-0.50	0.11	-

Appendix D

Table D.1: Full Main Results

	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed Intercept	1.750***	1.772***	1.762***	2.341***	2.361***
	(0.284)	(0.282)	(0.281)	(0.424)	(0.426)
Measures of human capital					
Primary	1.354**	1.337**	1.312*	1.326*	1.303*
	(0.191)	(0.194)	(0.192)	(0.205)	(0.203)
Some Secondary	0.989	0.982	0.961	0.970	0.945
	(0.094)	(0.094)	(0.093)	(0.098)	(0.096)
Tertiary	1.533***	1.524***	1.523***	1.540***	1.539***
	(0.092)	(0.093)	(0.093)	(0.100)	(0.101)
Entrepreneurial skills	0.257***	0.252***	0.253***	0.299***	0.299***
	(0.016)	(0.016)	(0.016)	(0.020)	(0.021)
Measures of institutional environment					
Business friendliness		0.893	0.851	0.848	0.814
		(0.130)	(0.133)	(0.103)	(0.109)
Entrepreneurial education		0.882	0.897	0.821*	0.835
		(0.108)	(0.118)	(0.085)	(0.096)
Individualism		1.303*	1.376**	1.010	1.062
		(0.192)	(0.216)	(0.125)	(0.145)
Interaction effects					
Tertiary × Business friendliness			1.213***		1.230***
			(0.070)		(0.075)
Entrepreneurial skills × Business friendliness			0.929		0.911
			(0.059)		(0.061)
Tertiary × Entrepreneurial education			0.940		0.925
			(0.049)		(0.051)
Entrepreneurial skills × Entrepreneurial education			1.019		1.027
			(0.060)		(0.064)
Tertiary × Individualism			0.896*		0.896*
			(0.055)		(0.057)
Entrepreneurial skills × Individualism			0.987		0.991
			(0.067)		(0.071)

Continued: Full Main Results

	Model 1	Model 2	Model 3	Model 4	Model 5
Individual-level controls					
Gender				1.376***	1.368***
				(0.078)	(0.078)
Age				1.120***	1.121***
				(0.034)	(0.035)
Fear of failure				1.455***	1.450***
				(0.087)	(0.087)
Knows entrepreneur				0.723***	0.722***
				(0.042)	(0.042)
Work status				0.411***	0.409***
				(0.034)	(0.034)
Middle income				0.939	0.940
				(0.070)	(0.070)
High income				1.079	1.077
				(0.073)	(0.073)
Country-level controls					
GDP per capita				1.167	1.173
				(0.134)	(0.134)
GDP growth				1.087	1.088
				(0.090)	(0.090)
Unemployment				0.553***	0.556***
				(0.114)	(0.114)
Observations	7441	7260	7260	6916	6916
No. of countries	21	20	20	20	20
Var(random intercept)	0.462	0.406	0.405	0.209	0.206
Intraclass correlation	0.123	0.110	0.110	0.060	0.059
AIC	8790	8548	8547	7877	7875
Log likelihood	-4389	-4265	-4258	-3919	-3912
LR-test vs. logistic (p-value)	0.00	0.00	0.00	0.00	0.00

Intercept reported in odds, coefficients in odds-ratios; * p<0.1 ** p<0.05 *** p<0.01; standard errors in parentheses

Table D.2: Main Results with Survey Weights

	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed Intercept	1.778***	1.806***	1.800***	2.368***	2.379***
	(0.336)	(0.311)	(0.307)	(0.457)	(0.461)
Measures of human capital					
Primary	1.275	1.264	1.250	1.233	1.224
	(0.242)	(0.256)	(0.250)	(0.254)	(0.249)
Some Secondary	1.016	1.008	0.995	0.957	0.943
	(0.188)	(0.188)	(0.182)	(0.151)	(0.141)
Tertiary	1.483***	1.469***	1.476***	1.493***	1.503***
	(0.118)	(0.121)	(0.122)	(0.142)	(0.148)
	(0.190)	(0.203)	(0.199)	(0.214)	(0.211)
Entrepreneurial skills	0.254***	0.249***	0.248***	0.295***	0.293***
	(0.021)	(0.021)	(0.019)	(0.020)	(0.019)
Measures of institutional environment					
Business friendliness		0.892	0.817	0.846	0.782*
		(0.144)	(0.170)	(0.095)	(0.107)
Entrepreneurial education		0.880	0.889	0.810	0.817
		(0.102)	(0.107)	(0.114)	(0.119)
Individualism		1.295*	1.345**	1.004	1.034
		(0.175)	(0.190)	(0.131)	(0.125)
Interaction effects					
Tertiary × Business friendliness			1.226***		1.257***
			(0.086)		(0.088)
Entrepreneurial skills × Business friendliness			0.970		0.940
			(0.113)		(0.098)
Tertiary × Entrepreneurial education			0.940		0.915
			(0.051)		(0.056)
Entrepreneurial skills × Entrepreneurial education			1.029		1.044
			(0.081)		(0.069)
Tertiary × Individualism			0.912*		0.909*
			(0.044)		(0.052)
Entrepreneurial skills × Individualism			0.997		1.008
			(0.088)		(0.082)
Controls‡				✓	✓
No. of countries	21	20	20	20	20
Observations	7441	7260	7260	6916	6916
Var(random intercept)	0.470	0.416	0.415	0.213	0.209
Intraclass correlation	0.125	0.112	0.112	0.061	0.060
AIC	8838	8601	8599	7921	7905
Log likelihood	-4413	-4291	-4285	-3941	-3933
LR-test vs. logistic (p-value)	0.00	0.00	0.00	0.00	0.00

Intercept reported in odds, coefficients in odds-ratios; * p<0.1 ** p<0.05 *** p<0.01; standard errors in parentheses; ‡controls are gender, age, fear of failure, work status, household income, GDP per capita, GDP growth and unemployment

Table D.3: Random Slopes Models

Random slope for:	Some Secondary	Tertiary	Entrepreneurial Skills	Entrepreneurial Education
Fixed Intercept	2.313***	2.397***	2.317***	2.339***
	(0.405)	(0.445)	(0.446)	(0.349)
Measures of human capital				
Primary	1.307*	1.270	1.307*	1.314*
	(0.204)	(0.203)	(0.204)	(0.205)
Some Secondary	0.889	0.931	0.944	0.953
	(0.121)	(0.098)	(0.096)	(0.097)
Tertiary	1.542***	1.517***	1.538***	1.543***
	(0.101)	(0.128)	(0.101)	(0.101)
Entrepreneurial skills	0.299***	0.299***	0.299***	0.299***
	(0.021)	(0.021)	(0.028)	(0.021)
Measures of institutional environment				
Business friendliness	0.873	0.808	0.800	0.892
	(0.116)	(0.111)	(0.115)	(0.095)
Entrepreneurial education	0.824*	0.834	0.822	0.776*
	(0.093)	(0.098)	(0.099)	(0.103)
Individualism	1.094	1.062	1.026	1.093
	(0.146)	(0.150)	(0.154)	(0.147)
Interaction effects				
Tertiary × Business friendliness	1.212***	1.242***	1.226***	1.230***
	(0.077)	(0.096)	(0.075)	(0.075)
Entrepreneurial skills × Business friendliness	0.911	0.915	0.909	0.912
	(0.062)	(0.062)	(0.081)	(0.062)
Tertiary × Entrepreneurial education	0.930	0.913	0.925	0.924
	(0.053)	(0.063)	(0.051)	(0.051)
Entrepreneurial skills × Entrepreneurial education	1.028	1.026	1.041	1.029
	(0.064)	(0.064)	(0.082)	(0.064)
Tertiary × Individualism	0.889*	0.895	0.896*	0.896*
	(0.058)	(0.072)	(0.057)	(0.057)
Entrepreneurial skills × Individualism	0.991	0.990	1.020	0.992
	(0.071)	(0.071)	(0.097)	(0.071)
Controls‡	✓	✓	✓	✓
Observations	6916	6916	6916	6916
Var(random slope)	0.084	0.040	0.061	0.115
Var(random intercept)	0.203	0.222	0.235	0.059
AIC	7875	7876	7872	7867
Intraclass correlation	0.058	0.063	0.067	0.018
Log likelihood	-3911	-3911	-3909	-3906
LR-test vs. fixed slope (p-value)	0.260	0.439	0.057	0.004

Intercept reported in odds, coefficients in odds-ratios; * p<0.1 ** p<0.05 *** p<0.01; standard errors in parentheses; ‡controls are gender, age, fear of failure, work status, household income, GDP per capita, GDP growth and unemployment

Table D.4: Varying Model Specifications

Specification:	Latent-response	Entrepreneurship Experience	Economic Freedom	Additional Controls
Fixed Intercept	2.779***	1.035***	2.271***	2.593***
	(0.310)	(0.179)	(0.423)	(0.500)
Measures of human capital				
Primary	1.333*	1.305*	1.300*	1.225
	(0.205)	(0.196)	(0.201)	(0.211)
Some Secondary	0.953	0.922	0.943	0.831*
	(0.095)	(0.090)	(0.095)	(0.093)
Tertiary	1.554***	1.468***	1.524***	1.388***
	(0.100)	(0.092)	(0.100)	(0.100)
Entrepreneurial skills	0.301***	0.764	0.298***	0.300***
	(0.021)	(0.151)	(0.021)	(0.023)
Measures of institutional environment				
Business friendliness	0.724***	0.772**	0.800	0.831
	(0.050)	(0.097)	(0.159)	(0.114)
Entrepreneurial education	0.889*	0.836*	0.835	0.860
	(0.054)	(0.089)	(0.101)	(0.101)
Individualism	0.958	1.082	1.058	1.062
	(0.068)	(0.137)	(0.152)	(0.148)
Interaction effects				
Tertiary × Business friendliness	1.216***	1.190***	1.269***	1.238***
	(0.072)	(0.068)	(0.117)	(0.085)
Entrepreneurial skills × Business friendliness	0.909	1.086	0.765***	0.876*
	(0.062)	(0.198)	(0.074)	(0.067)
Tertiary × Entrepreneurial education	0.931	0.945	0.875**	0.910
	(0.050)	(0.050)	(0.056)	(0.056)
Entrepreneurial skills × Entrepreneurial education	1.018	1.319	1.116	1.000
	(0.063)	(0.225)	(0.079)	(0.069)
Tertiary × Individualism	0.901*	0.920	0.858**	0.885*
	(0.056)	(0.056)	(0.067)	(0.061)
Entrepreneurial skills × Individualism	0.997	0.739	1.102	1.021
	(0.072)	(0.167)	(0.092)	(0.081)
Additional controls				
Opportunity				0.812***
				(0.053)
Status of the Entrepreneur				1.113*
				(0.074)
Controls	✓	✓	✓	✓
Var(random intercept)	0.345	0.213	0.197	0.198
Observations	6916	6916	6916	5663
AIC	7868.8	8429	7872.2	6440.0
Intraclass Correlation	n.d.	0.0607	0.0565	0.0568
Log likelihood	-3909.4	-4198	-3911.1	-3193.0

Intercept reported in odds, coefficients in odds-ratios; * p<0.1 ** p<0.05 *** p<0.01; standard errors in parentheses; ‡controls are gender, age, fear of failure, work status, household income, GDP per capita, GDP growth and unemployment

Table D.5: Age Groups

Age group:	18–24	25–34	35–44	45–54	55–64
Fixed Intercept	4.544***	1.892**	1.229	1.462	2.482***
	(1.419)	(0.553)	(0.383)	(0.444)	(0.7389)
Measures of human capital					
Primary	0.755	1.439	1.832*	1.371	2.295**
	(0.339)	(0.507)	(0.622)	(0.414)	(0.896)
Some Secondary	0.708	0.955	1.078	1.260	0.966
	(0.190)	(0.219)	(0.231)	(0.248)	(0.272)
Tertiary	1.164	1.464***	1.905***	1.823***	1.680***
	(0.249)	(0.196)	(0.253)	(0.256)	(0.314)
Entrepreneurial skills	0.293***	0.309***	0.230***	0.322***	0.436***
	(0.057)	(0.043)	(0.034)	(0.048)	(0.085)
Measures of institutional environment					
Business friendliness	0.763	0.755	0.903	0.632**	0.831
	(0.165)	(0.148)	(0.169)	(0.124)	(0.156)
Entrepreneurial education	0.789	0.997	0.812	0.904	0.673**
	(0.134)	(0.171)	(0.141)	(0.152)	(0.118)
Individualism	1.199	1.100	0.801	1.224	0.805
	(0.238)	(0.228)	(0.165)	(0.254)	(0.159)
Interaction effects					
Tertiary × Business friendliness	1.459*	1.163	1.203	1.325**	1.397**
	(0.299)	(0.152)	(0.143)	(0.171)	(0.227)
Entrepreneurial skills × Business friendliness	0.834	0.884	0.831	1.311*	0.761
	(0.168)	(0.125)	(0.112)	(0.198)	(0.131)
Tertiary × Entrepreneurial education	1.147	0.789**	0.971	0.969	0.932
	(0.223)	(0.089)	(0.107)	(0.117)	(0.138)
Entrepreneurial skills × Entrepreneurial education	1.056	0.984	0.997	0.840	1.282
	(0.181)	(0.128)	(0.138)	(0.112)	(0.209)
Tertiary × Individualism	0.882	0.988	0.827	0.878	1.075
	(0.191)	(0.123)	(0.104)	(0.124)	(0.193)
Entrepreneurial skills × Individualism	1.030	0.819	1.352*	0.876	1.052
	(0.198)	(0.123)	(0.214)	(0.142)	(0.196)
Controls‡	✓	✓	✓	✓	✓
No. of countries	20	20	20	20	20
Observations	793	1738	1932	1534	919
Var(random intercept)	0.189	0.271	0.237	0.245	0.105
Intraclass correlation	0.0545	0.0760	0.0672	0.0694	0.0310
AIC	918	1994	2088	1854	1084
Log likelihood	-435	-972	-1020	-902	-518
LR-test vs. logistic (p-value)	0.01	0.01	0.00	0.00	0.06

Intercept reported in odds, coefficients in odds-ratios; * p<0.1 ** p<0.05 *** p<0.01; standard errors in parentheses; ‡controls are gender, fear of failure, work status, household income, GDP per capita, GDP growth and unemployment

Table D.6: Multinomial Models

	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent variable: Commercial Entrepreneur (Base: Employed)					
Fixed Intercept	0.018***	0.018***	0.019***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Measures of human capital					
Primary	0.604***	0.598***	0.593***	0.817**	0.813**
	(0.056)	(0.055)	(0.057)	(0.083)	(0.083)
Some Secondary	0.717***	0.715***	0.729***	0.848***	0.852***
	(0.040)	(0.040)	(0.040)	(0.050)	(0.050)
Tertiary	1.188***	1.182***	1.204***	1.123***	1.124***
	(0.044)	(0.043)	(0.045)	(0.045)	(0.045)
Entrepreneurial skills	9.065***	9.064***	9.033***	6.450***	6.476***
	(0.412)	(0.411)	(0.420)	(0.316)	(0.321)
Measures of institutional environment					
Business friendliness		0.944	0.929	0.883	0.829*
		(0.085)	(0.089)	(0.080)	(0.085)
Entrepreneurial education		1.085	1.112	1.087	1.160*
		(0.085)	(0.091)	(0.084)	(0.102)
Individualism			1.047	1.188*	1.148
			(0.101)	(0.109)	(0.119)
Interaction effects					
Tertiary × Business friendliness			0.987		0.965
			(0.038)		(0.042)
Entrepreneurial skills × Business friendliness			1.063		1.109*
			(0.051)		(0.060)
Tertiary × Entrepreneurial education			0.958		0.979
			(0.032)		(0.037)
Entrepreneurial skills × Entrepreneurial education			0.976		0.936
			(0.043)		(0.046)
Tertiary × Individualism			0.960		1.030
			(0.037)		(0.044)
Entrepreneurial skills × Individualism			1.023		1.020
			(0.052)		(0.056)

Continued: Multinomial Models

	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent variable: Social Entrepreneur (Base: Employed)					
Fixed Intercept	0.030***	0.030***	0.028***	0.018***	0.017***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Measures of human capital					
Primary	0.895	0.907	0.873	0.993	0.976
	(0.084)	(0.085)	(0.085)	(0.101)	(0.100)
Some Secondary	0.778***	0.780***	0.747***	0.869**	0.857**
	(0.051)	(0.052)	(0.050)	(0.060)	(0.060)
Tertiary	2.031***	2.047***	2.053***	1.793***	1.824***
	(0.086)	(0.087)	(0.091)	(0.082)	(0.086)
Entrepreneurial skills	2.159***	2.155***	2.256***	1.865***	1.913***
	(0.081)	(0.081)	(0.092)	(0.077)	(0.083)
Measures of institutional environment					
Business friendliness		0.899	0.731***	0.722***	0.649***
		(0.082)	(0.066)	(0.065)	(0.061)
Entrepreneurial education		1.001	0.911	0.907	0.910
		(0.079)	(0.071)	(0.071)	(0.075)
Individualism			1.605***	1.178*	1.254**
			(0.150)	(0.108)	(0.122)
Interaction effects					
Tertiary × Business friendliness			1.184***		1.190***
			(0.047)		(0.046)
Entrepreneurial skills × Business friendliness			1.019		1.017
			(0.039)		(0.039)
Tertiary × Entrepreneurial education			0.993		0.981
			(0.039)		(0.037)
Entrepreneurial skills × Entrepreneurial education			1.011		1.016
			(0.040)		(0.038)
Tertiary × Individualism			0.909**		0.955
			(0.041)		(0.043)
Entrepreneurial skills × Individualism			0.928		0.928*
			(0.043)		(0.042)
Controls‡				✓	✓
Observations	70301	70301	68416	64762	64762
Var(random intercept)	0.190	0.180	0.139	0.120	0.119
AIC	51922	51906	50377	45335	45327
Log likelihood	-25950	-25938	-25160	-22631	-22615

Intercept reported in odds, coefficients in odds-ratios; * p<0.1 ** p<0.05 *** p<0.01; standard errors in parentheses; ‡controls are gender, fear of failure, work status, household income, GDP per capita, GDP growth and unemployment