Social Enterprises: Growth, Financing, and Intellectual Property Rights

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DISSERTATION

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Preface

The past 3.5 years of this dissertation have been a formative time for me that I will certainly look back on fondly at any time. Besides the valuable insights into how international research projects contribute to incremental progress on a global scale, it was above all the people who accompanied me that made this time so unique. Therefore, I would like to use the following sections of this foreword to express my gratitude to these people.

First of all, I would like to thank my supervisor Jörn Block, who gave me the opportunity to carry out this dissertation and supported me intensively during the whole time. Without his valuable advice, it would never have been possible for me to get such in-depth insights in our field of research. His enthusiasm in conducting rigorous research projects always motivated me and helped me to stay on the right track. I am very happy and thankful that I had the chance to become a part of his research team and I am grateful for all I learned from him over the years. I hope that our collaboration will continue on future research projects.

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Furthermore, I would like to thank all my other colleagues who have supported me in this dissertation. Among them, I would like to thank especially Walter for his tireless support, his friendship, and his outstanding humor. I will always remember with a smile the time we spent together in the office. In addition, I would like to extend special thanks to Tom for his assistance with the programming challenges in several of my research projects, as well as for all the valuable time we spent together. Many more colleagues from our chair contributed significantly to this work. Therefore, I want to say thank you to Adrian, Anna, Arezou, Barbara, Carlos, Christian, Christopher, Claudia, Darius, Felix, Florian, Lena, Marius, Matthias, Narmeen, Pascal, Patrick, Paulina, René, Silke, Sylvia, and Valerie. Working with you has always been a great pleasure and I am sure we will stay in touch in the future. Finally, I would like to thank all the other colleagues with whom I worked in the past years at Trier University and outside.

In this paragraph, I would like to thank my friends who always were a source of motivation, inspiration, and support during the past 3.5 years. In particular, I would like to thank Florian, Joscha, Luisa, and Valentin for the precious time, conversations, and common activities, which gave me a great balance at all times. I would also like to thank Ingeborg, Matthias and Robin for the deep friendship that has united us since our time together in Finland. In the end, special thanks goes to my dear friends from Reil and Traben-Trarbach, from the university group “Evolutionäre Humanisten Trier”, from our study-climbing group, as well as my bandmates who have all enriched me personally.

Above all, I am extremely grateful to my family for the unwavering support they provide me at every stage of my life. Thank you, Karen and Nikolaus, for being such incredibly positive, humorous, and caring parents and thank you Jakob for being such a great, creative, and motivating brother. Finally, I would like to express my deepest gratitude to my beloved girlfriend Verena. I am infinitely grateful for the time we spent together and the way you always encouraged and loved me. This dissertation is dedicated to you.

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List of abbreviations

EUIPO	European Union Intellectual Property Office
EVPA	European Venture Philanthropy Association
GIIN	Global Impact Investing Network
IP	Intellectual property
IPR	Intellectual property right
NGO	Non-governmental organization
RQ	Research question
SDG	Sustainable Development Goal
SE	Social enterprise
SII	Social impact incubator
SME	Small and medium-sized enterprise
SVC	Social venture capital (fund), social venture capitalist
VC	Venture capital (fund), venture capitalist
WISE	Work integrated social enterprise

Zusammenfassung

Zeitgleich mit stetig wachsenden gesellschaftlichen Herausforderungen haben im vergangenen Jahrzehnt Sozialunternehmen stark an Bedeutung gewonnen. Sozialunternehmen verfolgen das Ziel, mit unternehmerischen Mitteln gesellschaftliche Probleme zu lösen. Da der Fokus von Sozialunternehmen nicht hauptsächlich auf der eigenen Gewinnmaximierung liegt, haben sie oftmals Probleme, geeignete Unternehmensfinanzierungen zu erhalten und Wachstumspotenziale zu verwirklichen. Zur Erlangung eines tiefergehenden Verständnisses des Phänomens der Sozialunternehmen untersucht der erste Teil dieser Dissertation anhand von zwei Studien auf der Basis eines Experiments das Entscheidungsverhalten der Investoren von Sozialunternehmen. Der zweite Teil erörtert auf der Basis von zwei quantitativ empirischen Studien, inwiefern die Registrierung von Markenrechten sich zur Messung sozialer Innovationen eignet und mit finanziellem und sozialem Wachstum von sozialen Startups in Verbindung steht.

Nachdem Kapitel 1 die Motivation und den Aufbau dieser Dissertation präsentiert, untersucht Kapitel 2 das Entscheidungsverhalten von Impact-Investoren. Der von diesen Investoren verfolgte Investmentansatz „Impact Investing“ geht über eine reine Orientierung an Renditen hinaus. Anhand eines Experiments mit 179 Impact Investoren, die insgesamt 4.296 Investitionsentscheidungen getroffen haben, identifiziert eine Conjoint-Studie deren wichtigste Entscheidungskriterien bei der Auswahl der Sozialunternehmen: die Authentizität des Gründerteams, die Wichtigkeit des gesellschaftlichen Problems und die finanzielle Tragfähigkeit des Geschäftsmodells. Weiterhin zeigen die Ergebnisse, dass die Impact-Investorenlandschaft im DACH-Raum sehr heterogen ist und sich diese Heterogenität in den Entscheidungskriterien unterschiedlicher Typen von Impact Investoren widerspiegelt.

Kapitel 3 analysiert mit dem Fokus auf sozialen Inkubatoren eine weitere spezifische Gruppe von Unterstützern von Sozialunternehmen. Mittels eines Conjoint-Experiments betrachtet dieses Kapitel die Motive und Entscheidungskriterien der Inkubatoren bei der Auswahl von Sozialunternehmen sowie die von ihnen angebotenen Formen der nichtfinanziellen Unterstützung. Die Ergebnisse zeigen, dass die Motive von sozialen Inkubatoren bei der Unterstützung von Sozialunternehmen unter anderem gesellschaftlicher, finanzieller oder reputationsbezogener Natur sind. Diese Vielfalt in den Motiven der Inkubatoren spiegelt sich auch darin wider, dass die Wichtigkeit der einzelnen Entscheidungskriterien unter den Inkubatoren verschieden bewertet wird. Die Ergebnisse aus Kapitel 3 zeigen auch, dass soziale Inkubatoren im Anschluss an eine Unterstützung ihre ausgewählten Sozialunternehmen mit Netzwerken, individuellen Beratungen oder der Bereitstellung von Arbeitsplätzen unterstützen.

Kapitel 4 erörtert, inwiefern Markenregistrierungen zur Messung von sozialen Innovationen dienen können. Basierend auf einer Textanalyse der Webseiten von 925 Sozialunternehmen (> 35.000 Unterseiten) werden in einem ersten Schritt vier Dimensionen sozialer Innovationen (Innovations-, Impact-, Finanz- und Skalierbarkeitsdimension) ermittelt. Darauf aufbauend betrachtet dieses Kapitel, wie verschiedene Markencharakteristiken mit den Dimensionen sozialer Innovationen zusammenhängen. Die Ergebnisse zeigen, dass insbesondere die Anzahl an registrierten Marken als Indikator für soziale Innovationen (alle Dimensionen) dient. Weiterhin spielt die geografische Reichweite der registrierten Marken eine wichtige Rolle. Während die Anzahl an Marken mit einem internationalen Schutzrecht nicht in Verbindung mit den Dimensionen von sozialen Innovationen steht, dient die Anzahl an registrierten Marken mit einem nationalen Schutzrecht als Indikator für alle vier Dimensionen. Andere Markencharakteristiken (z. B. die Markenbreite oder produktbezogene Marken) korrelieren meist mit der Innovations-, Impact- und Skalierbarkeitsdimension von sozialen Innovationen, jedoch nicht mit der finanziellen Dimension.

Während Kapitel 4 die Relevanz von Marken für die Messung von sozialen Innovationen betrachtet, untersucht Kapitel 5 den Einfluss von Markenregistrierungen in frühen Unternehmensphasen auf die weitere Entwicklung der hybriden Ergebnisse von sozialen Startups. Im Detail argumentiert Kapitel 5, dass sowohl die Registrierung von Marken an sich als auch deren verschiedene Charakteristiken unterschiedlich mit den sozialen und ökonomischen Ergebnissen von sozialen Startups in Verbindung stehen. Anhand eines Datensatzes von 485 Sozialunternehmen zeigen die Analysen aus Kapitel 5, dass soziale Startups mit einer registrierten Marke

ein vergleichsweise höheres Mitarbeiterwachstum aufweisen und einen größeren gesellschaftlichen Beitrag leisten. Außerdem veranschaulicht das Kapitel die größere Bedeutung national geschützter Marken im Vergleich zu international geschützten Marken in Bezug auf das Mitarbeiterwachstum der sozialen Startups.

Die Ergebnisse dieser Dissertation weiten die Forschung im Social Entrepreneurship-Bereich weiter aus und bieten zahlreiche Implikationen für die Praxis. Kapitel 2 und 3 vergrößern das Verständnis über die Eigenschaften von nichtfinanziellen und finanziellen Unterstützungsorganisationen von Sozialunternehmen. Dies ermöglicht Sozialunternehmen unter anderem eine spezifischere Vorbereitung innerhalb von Bewerbungsprozessen um externe Unterstützung. Im zweiten Teil der Dissertation werden mit der Untersuchung von Marken erstmalig geistige Eigentumsrechte von Sozialunternehmen im Detail erforscht. Die Erkenntnisse aus den Kapiteln 4 und 5 helfen Social Entrepreneurs schließlich dabei, die Bedeutung von Markenanmeldungen für die weitere eigene Unternehmensentwicklung besser zu beurteilen.

Chapter 1

Introduction

The introduction of this dissertation proceeds as follows: Section 1.1 presents the motivation behind this thesis. Section 1.2 describes the structure and data of this thesis, and Section 1.3 outlines the research questions explored in the following chapters.

1.1 Motivation

The establishment of new social enterprises (SEs) has significantly increased over the previous decade. As societal problems (e.g., the climate crisis) have spread, entrepreneurs around the world have created new ventures whose goals are not merely of a financial nature. Consequently, SEs address social and economic objectives and thereby contribute to the attainment of the Sustainable Development Goals (SDGs) (e.g., Arena et al., 2018; Battilana & Lee, 2014; Wry & York, 2017). For example, Oatly is an SE that was established to tackle climate issues in the dairy industry. In recent years, Oatly has become one of the world's leading dairy substitute product company, prompting the company to go public in 2021. At the same time, Oatly contributes to CO2 reduction in the dairy industry, as its products emit approximately 70 percent less CO2 than conventional dairy products (Oatly, 2021). Oatly's example demonstrates that SEs are able to achieve both social and economic objectives simultaneously. Nevertheless, due to their hybrid features, SEs must tackle unique challenges in different company development stages (e.g., Hynes, 2009). Only if SEs manage to overcome these challenges are they able to grow their ventures and achieve their desired impact.

To date, only little research has quantitatively investigated the growth of SEs (e.g., Battilana et al., 2015; Kachlami et al., 2020). Although social entrepreneurship is a recent phenomenon, more than a lack of sufficient data complicates the growth analysis of ventures from this field. Regarding the achievement of social goals, measurement problems complicate growth studies (e.g., Molecke & Pinkse, 2017; Rawhouser et al., 2019). Furthermore, growth for SEs always involves tension due to SEs' hybrid objectives and thus differs significantly from that of traditional firms (e.g., Battilana & Lee, 2014; Smith & Besharov, 2019). Because of the tensions that exist between SEs' hybrid objectives, SEs face dual growth barriers. For example, the receipt of financial resources can affect the business models of SEs differently than those of traditional companies, which results in specific challenges. Overall, SEs have difficulties finding appropriate external resources (e.g., Hynes, 2009), which can lead to growth barriers. Therefore, it is necessary to better understand SE investors to provide valuable advice to SEs, such as guidance on how to deal with such investors in specific situations.

SEs often face resource constraints due to their primary focus on a social mission (e.g., Austin et al., 2006; Desa & Basu, 2013). However, resource mobilizations are essential for every entrepreneur (e.g., Block et al., 2021c; Hsu, 2008; Shane & Venkataraman, 2000) and of particular importance in helping SEs scale both their social and economic impact (e.g., Bacq & Eddleston, 2018; Block et al., 2020). To secure external resources that are often scarce in this

field (e.g., Seelos & Mair, 2005), SEs engage with different types of stakeholders (e.g., governments, investors, or nongovernmental organizations (NGOs)). Such forms of external support can be divided into financial, nonfinancial, or hybrid types. Depending on the type of SE concerned and its stage of development, different types of external resources are appropriate.

In 2007, impact investing emerged to provide SEs with urgently needed financial resources (Rodin & Brandenburg, 2014). The goals of impact investors are to achieve both financial and social returns (Brest & Born, 2013; Harji & Jackson, 2012). Currently, the market for impact investments includes over 1,700 organizations that manage more than 700 billion USD (Global Impact Investing Network (GIIN), 2020). The rise of this new type of investor that provides SEs with equity and debt funding as well as donations has led to growing scholarly interest (Barber et al., 2021; Bugg-Levine & Emerson, 2011; Chowdhry et al., 2019). While prior research has investigated the investment process of traditional venture funders in great detail (e.g., Bernstein et al., 2017; Block et al., 2019; Gompers et al., 2020a; Kaplan & Strömberg, 2004), there is little evidence on the financing process of impact investors. New insights in this field are therefore particularly important to enable SEs to become more successful in the search for external financing, to enable impact investors to make better decisions and to provide additional guidance to policy-makers on expanding this ecosystem.

In addition to financial resources, nonfinancial resources are essential for the development of SEs. Particularly in early venturing phases, SEs profit from nonfinancial support (e.g., Cheah et al., 2019a; Rey-Martí et al., 2016). This is the case because SEs often focus heavily on the achievement of a social mission and neglect financial sustainability, which they must also achieve for their ventures to survive (e.g., Siegner et al., 2018; Smith et al., 2013). Therefore, various types of business development training may help SEs build a solid foundation for both facets of their businesses. For example, social impact incubators (SIIs) have been established globally to meet needs for nonfinancial support of the increasing number of SEs. Initial studies have aimed to explore this new type of organization; however, thus far, there is still a need to foster knowledge on SIIs' motives, supporting activities, and selection processes. With regard to the latter, specific characteristics of SEs are needed to attract external support.

Prior research shows that intellectual property rights (IPRs) play a pivotal role in the acquisition of financial or nonfinancial resources and in the resulting growth of companies (e.g., Block et al., 2014; Engel & Keilbach, 2007). For instance, prior studies show that patenting increases the profitability, survival, and innovativeness of new ventures (e.g., Farre-Mensa et al., 2020; Gaulé, 2018; Helmers & Rogers, 2011). To date, however, there is a knowledge gap

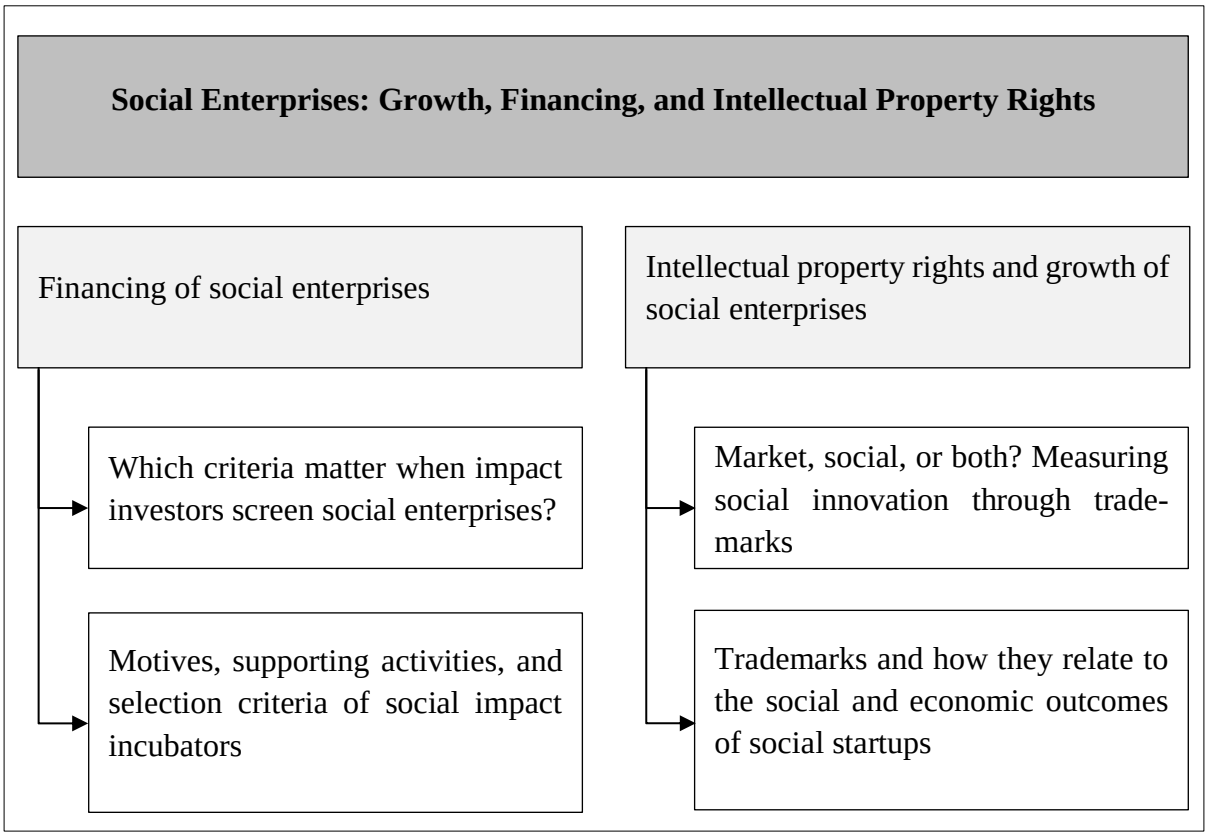
about how SEs use and profit from IPRs. Due to the hybrid objectives of SEs, their IPRs are likely to differ from those of traditional companies. Furthermore, the relevance of various IPRs may differ between SEs and traditional companies, as SEs frequently engage in the service sector. Therefore, trademarks instead of patents might be crucial for SEs to protect their social innovation. To expand the scope of social entrepreneurship, it is also fundamental to understand how IPRs relate to the social and economic outcomes of SEs.

Inspired by this multitude of research opportunities, I aim to contribute to a clearer understanding of social entrepreneurship to enable SEs to operate better in their field. Therefore, this thesis addresses how the financing peculiarities of impact investors and SIIs, as well as the use of IPRs by SEs, contribute to the growth of SEs.

1.2 Structure and data of this dissertation

This dissertation discusses four quantitative empirical studies. Two of these studies (Chapters 2 and 3) investigate the financing of different types of SE investors, while the other two studies explore how IPRs relate to the social innovation and hybrid growth of social startups. Specifically, Chapter 2 explores investment criteria of impact investors and compares different types of investors (donors, equity impact investors, and debt impact investors). Chapter 3 analyses the motives, supporting activities, and decision criteria of SIIs. Chapters 4 and 5 address the IPRs of social startups. While Chapter 4 demonstrates how trademarks indicate social innovations by SEs, Chapter 5 investigates the relevance of trademarks to their social and economic growth. Figure 1.1 provides an overview of the structure of this thesis.

Figure 1.1. Structure of the dissertation



In accordance with the two-part structure of this dissertation, the data used in the chapters were collected and utilized. Therefore, Chapters 2 and 3 are based on the same experiment conducted with different types of SE investors.[1] Specifically, Chapter 2 examines different types of impact investors who participated in the experiment, and Chapter 3 focuses on SIIs. To investigate the research questions of Chapters 4 and 5, a sample of 1,089 SEs was collected using a three-pronged approach to obtain a representative sample of German SEs. However, the sample used in Chapter 4 had to be reduced due to SEs having insufficient company websites or no website at all or too few employees, resulting in a sample of 925 German SEs. Finally, Chapter 5 excludes SEs that are not startups and those not reporting certain company information (e.g., the number of employees). Thus, this chapter analyzes 485 German social startups. Table 1.1 provides an overview of the samples studied in each chapter of this dissertation.

[1] More information on the conjoint experiment is provided in the following chapters and the appendix.

Table 1.1. Investigated samples of this thesis

Research question	Data collection	Study group	Sample size
Chapter 2	• Computerized search strategy applied using social network platforms • Manual search of impact investor, SII and SE websites	Impact investors	N = 179
Chapter 3		Social impact incubators	N = 71
Chapter 4	• Members of German organizations for the promotion of social entrepreneurship • Selection of specific legal forms via the Orbis database (Bureau van Dijk)	German SEs that provide company information on their websites	N = 925
Chapter 5	• Investment portfolios of German impact investing organizations that are members of the European Venture Philanthropy Association (EVPA)	Social startups founded between 2000 and 2017	N = 485

1.3 Chapter outlines

1.3.1 Financing of social enterprises

Chapter 2: *Which criteria matter when impact investors screen social enterprises?*

Together with the global increase in the number of SEs, impact investing has strongly grown in importance (e.g., Firzli, 2017; Spiess-Knafl & Scheck, 2017; Watts & Scales, 2020; Wood et al., 2013). Impact investors' goal is to achieve both social impact and economic returns. Specifically, they aim for market-rate returns (e.g., Barber et al., 2021; Phillips & Johnson, 2021) through investments in SEs that achieve environmental or social value in a society (e.g., Agrawal & Hockerts, 2021; Alijani & Karyotis, 2019; Hebb, 2013). Therefore, impact investors need to use different selection processes than, for example, those of traditional venture capital (VC) investors. To date, however, research lacks an understanding of impact investor selection processes and of how different types of impact investors differ in this regard. To address this gap, Chapter 2 investigates the screening criteria of impact investors, compares three types of investors and addresses the following research questions:

RQ 1: *Which screening criteria do impact investors use, what is their relative importance, and how do they differ between different types of impact investors?*

A multimethod design based on qualitative interviews and a choice-based conjoint experiment is used in Chapter 2 to answer our research questions. Overall, Chapter 2 shows the results of 12 interviews and 4,296 investment decisions of 179 impact investors who invest directly in SEs. After assessing the screening criteria of impact investors as a whole group, the chapter examines the differences between the three types of impact investors.

Chapter 3: *Motives, supporting activities, and selection criteria of social impact incubators: An experimental conjoint study*

SIIs help SEs overcome early-stage barriers and have emerged globally in recent years. In addition to the traditional value-added services that business incubators offer their participants, SIIs foster social innovations of SEs (e.g., Almeida et al., 2012; Cui et al., 2017; Nicolopoulou et al., 2017). Thus, SIIs aim to support SEs in developing business models that are, on the one hand, financially sustainable and, on the other hand, have a scalable impact on societal issues (e.g., Etzkowitz et al., 2005; Sansone et al., 2020). However, thus far, we know little about this new type of business incubator. While research has started to investigate the impact of SIIs on the development of social innovations in a society, there is a need to understand more about their motives, supporting activities, and selection processes. Therefore, Chapter 3 investigates the following research questions:

RQ 2: *What are the motives and supporting activities of SIIs? Which selection criteria do SIIs use in their decision-making processes, what is their relative importance, and how heterogeneous are SIIs with regard to their selection criteria?*

To address these questions, an explorative method is used in Chapter 3. More specifically, this chapter is based on the same dataset as that used in Chapter 2, consisting of interview data and the results of a conjoint experiment. However, the focus of this chapter is on SIIs. After deriving several important selection criteria from interviews and prior research, the importance of each SII selection criterion is examined. Furthermore, this chapter explores different motives and supporting activities of SIIs. Based on a sample of SII decision-makers, Chapter 3 finally investigates the relationship between motives and selection processes of SIIs from the DACH region (i.e., Germany, Austria, and Switzerland). The findings contribute to prior research in three ways.

1.3.2 Intellectual property rights and the growth of social enterprises

Chapter 4: *Market, social, or both? Measuring social innovation through trademarks*

Social innovations help SEs achieve their hybrid objectives (e.g., Defourny & Nyssens, 2013; Leadbeater, 2007; Vézina et al., 2019). Since solving societal issues is one of these objectives (e.g., Defourny & Kim, 2011; Mendell, 2010; Sepulveda, 2015), social innovations are currently on the various agendas of national governments (e.g., Biggs et al., 2010; Goldsmith, 2010; Hillgren et al., 2011). To enable the identification of social innovations for stakeholders of SEs, some research projects have recently started to investigate ways to measure social innovation (e.g., Akgüç, 2020; Andries et al., 2019; Phillips et al., 2019). However, due to the multidimensional structure of social innovation, indicators of traditional innovation are not (always) applicable. For example, with regard to IPRs, Krlev et al. (2014) argue that patents do not fit the context of social innovation. Therefore, trademarks might play a special role. Thus far, the existing pool of studies lacks a deeper understanding of the relationship between trademarks and social innovation. Chapter 4 addresses this gap by investigating the following research question:

RQ 3: *How can social innovations by SEs be measured through trademarks?*

Chapter 4 addresses this research question based on a sample of 925 SEs. To measure the four dimensions of social innovation (innovation, social impact, financial, and scalability), a web crawler is used to examine the websites of the studied SEs. As a result, over 35,000 subpages are analyzed in this chapter. Subsequently, trademark data from the German Patent and Trade Mark Office as well as company-specific data are merged with data on the dimensions of social innovation. Seemingly unrelated regressions explore the relationship between several trademark characteristics and the dimensions of social innovation.

Chapter 5: *Trademarks and how they relate to the social and economic outcomes of social startups*

Trademarks are important IPRs for startups (e.g., Block et al., 2014; Flikkema et al., 2019). Furthermore, prior research shows that the service industry (e.g., Gotsch & Hipp, 2012; Flikkema et al., 2014; Schmoch & Gauch, 2009) especially benefits from the protection and signaling value of trademarks. Furthermore, Stoneman (2010) argues that trademarks can serve

to indicate soft innovation in service industries. Since SEs are often part of these industries and less likely to develop patentable products (e.g., Gray et al., 2003; Mancino & Thomas, 2005), trademarks might play a pivotal role for them. Although numerous studies on the typology of social entrepreneurship identify social innovation as a core element, little knowledge exists on how SEs protect their innovations. In particular, trademarks as a specific type of IPR have been neglected by prior research to date. Chapter 5 aims to fill this gap by addressing the following research question:

RQ 4: *How do early trademark registrations relate to the social and economic outcomes of social startups?*

To answer this research question, a sample of 485 German social startups was examined. More specifically, Chapter 5 investigates how social startups' trademarking behavior in the first three years of operations relates to their social and economic outcomes. It is assumed that early trademark registrations increase the likelihood of strong social and economic outcomes due to IPR signaling and protection value. Furthermore, different types of trademarks might also relate differently to the social and economic outcomes of social startups.

Chapter 6: *Conclusion*

The last chapter of this dissertation briefly summarizes the main results of each chapter. Furthermore, Chapter 6 discusses implications for theory and practice, explores the limitations of this thesis and suggests avenues for further research.

Chapter 2

Which criteria matter when impact investors screen social enterprises?

Impact investors pursue both financial and social goals and have become an important source of funding for social enterprises. Our study assesses impact investor criteria when screening social enterprises. Applying an experimental conjoint analysis to a sample of 179 impact investors, we find that the three most important criteria are the authenticity of the founding team, the importance of the societal problem targeted by the venture, and the venture's financial sustainability. We then compare the importance of these screening criteria across different types of impact investors (i.e., donors, equity investors, and debt investors). We find that donors pay more attention to the importance of the societal problem and less attention to financial sustainability than do equity and debt investors. Additionally, equity investors place a higher value on the large-scale implementation of the social project than do debt investors. We contribute to the nascent literature on impact investing by documenting how impact investors make investment decisions and by providing a nuanced view of different investor types active in this novel market. Practical implications exist for both impact investors and social enterprises.

This chapter is based on

Block, J. H., Hirschmann, M., & Fisch, C. (2021). Which criteria matter when impact investors screen social enterprises?. *Journal of Corporate Finance*, 66, 101813.

2.1 Introduction

Impact investors pursue financial and social goals. Similar to traditional investors, impact investors aim for market-rate financial returns through the provision of financial assets (e.g., Brest & Born, 2013; Louche et al., 2012). However, in addition to these financial goals, impact investors aim for a positive environmental or social impact of their investment (e.g., Brest & Born, 2013; Harji & Jackson, 2012). Impact investing has grown in importance, and impact investors are an increasingly important source of funding for SEs (e.g., Geczy et al., 2019; The Economist, 2017). Since the advent of impact investing in 2007 (Rodin & Brandenburg, 2014), the market has grown to include 1,340 impact investment organizations, with USD 502 billion in assets worldwide (GIIN, 2019a). In addition, the increasing importance of impact investing has been accompanied by a surge in scholarly interest (e.g., Barber et al., 2021; Bugg-Levine & Emerson, 2011; Chowdhry et al., 2019).

Thus far, however, we know little about the investment process of impact investors. In particular, we do not know which criteria matter when impact investors screen SEs. This is an important gap in the literature that needs to be closed because SEs looking for funding require knowledge about the criteria they should focus on when applying for funding from impact investors. Since the goals of traditional investors differ from those of impact investors, the investment selection processes and the screening criteria of impact investors and traditional investors likely differ as well (e.g., Chowdhry et al., 2019; Hartzmark & Sussmann, 2018). Hence, the findings of the established literature on the screening criteria of traditional entrepreneurial finance investors (e.g., Block et al., 2019; Gompers et al., 2020a; Kaplan & Strömberg, 2004) cannot be applied to the context of impact investing. To close this gap in the literature, our study assesses the following three research questions: Which screening criteria do impact investors use, what is their relative importance, and how do they differ between different types of impact investors?

We use a multimethod design to investigate these research questions. First, we conduct 12 qualitative interviews with experts to identify impact investors' most important screening criteria. These criteria relate to the social impact (i.e., the importance of the societal problem that is addressed by the SE and the large-scale implementation of the solution), the founding team (i.e., authenticity and professional background), and the business (i.e., financial sustainability, degree of innovation, and proof of concept) of the SE.[2] Based on these screening criteria,

[2] The screening criteria used in this study are described in detail in Table 5.

we then conduct a conjoint experiment to quantitatively assess which of these criteria are most important for impact investors. Our conjoint experiment covers 4,296 investment decisions made by 179 impact investors who invest directly in SEs.

We find that the authenticity of the founding team, the importance of the societal problem, and financial sustainability are the most important screening criteria for investors. The least important criterion is the professional background of the founding team. Hence, our results show that impact investors generally consider a mixed set of attributes when screening investment targets and making investment decisions. Focusing on differences between different types of impact investors, we show that purely philanthropic impact investors who provide SEs with donations differ in their selection processes compared to equity and debt investors. For example, donors attach a higher weight to the importance of the addressed societal problem and less importance to financial sustainability. Comparing the screening criteria of equity and debt impact investors, we find that equity investors place more importance on SEs' scalability.

We contribute to different strands of the entrepreneurial finance literature. First, we contribute to the small but growing literature on impact investing (e.g., Barber et al., 2021; Chowdhry et al., 2019; Geczy et al., 2019). Prior research is silent regarding the investment process of impact investors. Based on an experiment with a tightly controlled information environment, we identify how much importance impact investors assign to each investment criterion. Our study provides an important first step towards a better understanding of the screening and investment criteria of impact investors when selecting SEs for their portfolio. In this way, our study is not only of theoretical importance but also has practical implications for both impact investing organizations and SEs that are looking for funding. In addition to comparing the importance of particular screening criteria, our study also sheds light on the heterogeneity that exists within the group of impact investors. Equity providers, debt providers, and donors differ as investors and attach different weights to specific screening criteria reflecting differences in their investment goals. By focusing on this within-group heterogeneity, our study connects to prior research on the screening process of debt and equity investors (e.g., Berger & Udell, 1998; Mason & Stark, 2004; Ueda, 2004).

Second, our study contributes to the entrepreneurial finance literature that assesses the importance of both the funding team and its characteristics for attracting funding from entrepreneurial finance investors (e.g., Bernstein et al., 2017; Block et al., 2019; Gompers et al., 2020a; Kaplan & Strömberg, 2004). Our results provide a mixed picture. While the authenticity

of the founding team is critical for the impact investors in our sample, the professional background of the founding team is of low importance. This finding seems to be unique to the context of impact investing and is especially intriguing since prior research has found the professional background of the funding team to be an important criterion of VC investors (e.g., Franke et al., 2008). In this way, our study connects to the ongoing discussion of whether it is the 'horse' or the 'jockey' that matters when applying for funding with risk capital investors (e.g., Block et al., 2019; Kaplan et al., 2009). Specifically, we extend this debate to the context of impact investing and show that a cut-and-dry answer about the importance of the funding team in contrast to business and social impact characteristics is difficult to make.

Finally, our study has practical implications for the group of impact investors and for SEs that seek funding. An understanding of impact investors' screening criteria enables impact investors to benchmark themselves against both the industry as a whole and important subgroups. Also, our results support SEs in their search for funding from impact investors by identifying the key attributes of their projects that should be highlighted in an application process, particularly in the early stages of the fundraising process. Furthermore, our results provide tips on how SEs can adjust and customize their applications for different types of impact investors. For example, SEs seeking funding from an equity impact investor should emphasize their financial sustainability, whereas SEs seeking funding from donors should emphasize the importance of the social problem.

2.2 Conceptual background

2.2.1 Venture philanthropy and impact investing

The concept of venture philanthropy encompasses investments that seek to achieve social goals by fostering socially-oriented organizations (e.g., Bugg-Levine & Emerson, 2011). It distinguishes itself from conventional philanthropy by going beyond the mere allocation of donations. Venture philanthropists are active investors who provide grants as well as high-engagement, long-term, nonfinancial support to their portfolio companies (e.g., Grossman et al., 2013; Letts et al., 1997). This nonfinancial support leads to a more intense relationship with funded organizations compared to that of traditional philanthropy (Van Sylke & Newman, 2006). Examples of major venture philanthropy organizations are the Bill and Melinda Gates Foundation and the Keywell Foundation.

Impact investing is a domain of venture philanthropy that is closely connected to traditional venture finance (e.g., Geczy et al., 2019; Grossman et al., 2013). Similar to traditional

investors, impact investors provide various types of capital and funding (e.g., Barber et al., 2021; Gray et al., 2015). Channels of impact capital include, for example, impact investment funds, social banks, or crowdfunding platforms (Social Impact Investment Taskforce, 2014). Furthermore, impact investors resemble traditional investors with regard to their financial return expectations and their investment selection process and by providing value-added services and access to networks to their portfolio companies (e.g., Brest & Born, 2013; Gordon, 2014).

2.2.2 Goals and types of impact investors

Despite these similarities, the goals of impact investors and traditional investors differ. In particular, impact investments strive to create a social or environmental impact in addition to seeking financial returns (e.g., Chowdhry et al., 2019; Lee et al., 2020).[3] For example, impact investors often invest in sectors that address global challenges, such as those that aim to reduce poverty or mitigate climate change (e.g., Gray et al., 2015; Geczy et al., 2019). Therefore, impact investors do not solely assess the potential financial return of portfolio ventures but also consider the social impact resulting from their investments. Prior research has also shown that impact investors are willing to sacrifice financial returns to achieve social objectives (e.g., Chowdhry et al., 2019). This further distinguishes them from traditional investors, who are predominantly interested in financial returns.

Like traditional investors, impact investors are a heterogeneous group of investors who provide a wide range of investment types (Bugg-Levine & Emerson, 2011). The GIIN (2019b) classifies different types of impact investments in a return-rate spectrum that ranges from "below market" to "market rate". Regarding the different forms of capital invested, impact investors can be subclassified as investors who provide equity, debt, and donations. This heterogeneity likely influences the screening process of these investors. Indeed, prior research on traditional investors has shown that debt investors, equity investors, and other types of investors differ significantly in their selection processes (e.g., Block et al., 2019; Lerner et al. 2007). We extend these findings to the heterogeneous field of impact investors since each impact investor type has distinctive return expectations and obligations for portfolio companies, which are likely reflected in their screening criteria.

[3] Due to the active searching by impact investors for positive changes, they also differ from socially responsible investors. Socially responsible investors initially try to do no harm with their investments and therefore exclude negatively connotated sectors (e.g., Galema et al., 2008; Hong & Kostovetsky, 2012; Renneboog et al., 2008; Riedl & Smeets, 2017).

Equity investors are the most popular impact investor type and primarily invest through impact investment funds that seek market-rate returns. These funds typically provide portfolio companies with equity and comprise entities such as VC or growth equity funds (e.g., Barber et al., 2021; Bugg-Levine & Emerson, 2011). Equity investors have a clear financial interest since their objective is to achieve market-rate financial returns through exit proceeds similar to traditional VC funding (e.g., Barber et al., 2021; Brest & Born, 2013; Gray et al., 2015).

Debt investors provide debt to portfolio companies. Typically, social banks grant this type of impact investment to SEs. Since the financial crisis, these financial institutions have grown strongly worldwide. Other impact investors of this type are foundations or public institutions. For example, the Calvert Foundation offers debt financing to nonprofits or small businesses in underserved communities (Brest & Born, 2013). Although debt investors seek financial returns, their investments are often characterized by below-market return expectations (Brest & Born, 2013).

Donors provide SEs with philanthropic donations or grants. Many SEs need this funding type to survive (Bugg-Levine et al., 2012). Philanthropic donations are provided mainly by governments, foundations, or philanthropists. Impact investors of this type are not concerned with market returns but rather concentrate on social goals. Thus, they are particularly attractive to SEs that are fully committed to the social goals of their hybrid organization (Chowdhry et al., 2019).

2.2.3 Selection process and screening criteria in impact investing

The selection process is of major importance for the long-term success of venture finance investors (Gompers et al., 2020a). In the initial screening stage of the selection process, investment opportunities are evaluated based on a diverse set of criteria (e.g., Hall & Hofer, 1993; Warnick et al., 2018). The initial screening decision is typically very fast (e.g., Cumming et al., 2010; Fried & Hisrich, 1994; Zacharakis & Meyer, 2000), while the subsequent due diligence phase takes months (e.g., Cumming & Zambelli, 2017; Gompers et al., 2020a). Gompers et al. (2016) argue that for every hundred opportunities, only 15 pass the initial screening stage and are thus evaluated more deeply. Therefore, the main task in the initial screening phase is to identify "investment-ready" ventures based on several screening criteria (e.g., Hall & Hofer, 1993; Mason & Harrison, 2004). Often, business plans are used to screen investment opportunities in the first step (Fried & Hisrich, 1994). Therefore, prior research has investigated which investment criteria are most relevant to venture finance investors when screening a business

plan (e.g., Gompers et al., 2020a; Kaplan & Strömberg, 2004; Zacharakis & Meyer, 2000). These criteria vary across investor types (e.g., Block et al., 2019; Lerner et al. 2007; Ueda, 2004). For example, Gompers et al. (2020a) suggest that the management team is of major relevance in a selection process of VCs, whereas Block et al. (2019) indicate that it is less important to leveraged buyout funds.

The structure of the investment process of impact investors is similar to that of traditional venture finance investors (e.g., VCs) (Miller & Wesley, 2010). Impact investors usually screen a large number of investment opportunities to identify a small number of ventures for further consideration. However, the investment criteria of impact investors partly differ from those of traditional investors since they follow not only financial but also social objectives (Chowdhry et al., 2019; Hartzmark & Sussmann, 2018). Impact investors' goal of having a social impact through their investments is reflected in their selection process. Thus, while the team-related criteria and business-related criteria between venture finance investors and impact investors might overlap (e.g., the professional background of a team or profitability) (e.g., Gompers et al., 2020a; Kaplan & Strömberg, 2001), the social impact-related criteria represent a particularity of impact investors (Miller & Wesley, 2010). Due to the even more diverse set of relevant selection criteria, a recent study by Lee et al. (2020) shows that impact investors face particular challenges in their decision-making, and the authors identify the need for further empirical research to better understand the selection processes of impact investors. For example, there is a gap of knowledge regarding how specific investment criteria might be more or less important to impact investors compared to traditional venture finance investors. Since Barber et al. (2021) show that impact investors are accepting lower IRRs, business-related criteria might therefore also be of less importance for them. Furthermore, GIIN's investor survey (2018) indicates that the amount of high-quality investment opportunities is limited, which emphasizes the need to identify promising portfolio companies in the initial screening decision.

2.3 Hypotheses

2.3.1 The importance of specific investment criteria

Against this background, we investigate the investment criteria of impact investors in the initial screening phase. Since impact investors (and their portfolio ventures) pursue a hybrid goal set, we argue that these hybrid goals are reflected in their investment criteria, and we distinguish between social impact, founding team, and business criteria.

Social impact criteria

Impact investors aim to address societal issues and strive for societal impact with their investments. Thus, the societal impact of their portfolio ventures is an important precondition for achieving their own impact. However, the societal impact of investment opportunities differs because not all SEs that are considered potential investments have the same potential to create societal impact (e.g., Zahra et al., 2009). For example, an SE promoting musical education in a specific region arguably has a lower societal impact than an SE that addresses climate change or global poverty. Accordingly, prior research has shown that the importance of the societal problem addressed by the SE leads to a higher level of attention from stakeholders (Zahra et al., 2008). Thus, we postulate the following hypothesis:

H1a: Impact investors are more likely to select an SE that addresses a highly important societal problem than an SE that addresses a societal problem of medium or low importance.

The scalability of an SE determines the societal impact that can be achieved. The different forms of social scalability have received ample attention in prior research (e.g., Bloom & Chatterji, 2009; Dees et al., 2004; Shepherd & Patzelt, 2020; Tracey & Jarvis, 2007; Zahra et al., 2009). This research shows that societal needs can be regional, national, or even global. Hence, the potential to scale the societal impact of an SE from a regional level to a global level may be an important criterion for impact investors (e.g., Grossman et al. 2013). Thus, the following hypothesis should apply:

H1b: Impact investors are more likely to select an SE with a high degree of scalability than an SE with a medium or low degree of scalability.

Founding team criteria

Prior research on entrepreneurial finance documents that investors consider management team characteristics as important investment criteria (e.g., Gompers et al., 2020a; Kaplan & Strömberg, 2004). Typically, the characteristics considered refer to the management team's experience or educational background. For SEs, an important founding team characteristic is the authenticity with which a founding team pursues its idea. In our case, authenticity refers to how

credible a founding team is in solving a certain societal problem. An explanation for the importance of authenticity is that authenticity often correlates with passion in the context of SEs (e.g., Radoynovska & King, 2019), which is an important motivational driver of venture success that investors typically seek in founding teams (e.g., Chen et al., 2009). Additionally, authenticity is an important prerequisite that helps ventures obtain commitment from other stakeholders, such as employees or customers (e.g., Radoynovska & King, 2019), thereby leading to growth. Indeed, prior research has shown that a lack of authenticity can impede SE growth (e.g., Davies et al., 2019). Being an authentic founder sends a strong and difficult to imitate signal to impact investors. Based on these arguments, we suggest the following hypothesis:

H2a: Impact investors are more likely to select an SE which has a highly authentic founding team than an SE with a medium or low authentic founding team.

The educational background of SE founders varies greatly. In addition to educational backgrounds in a technical field or business, many social entrepreneurs have an educational background that is based in a social sector. This is the case because many social entrepreneurs identify their business opportunities through their own personal experiences (e.g., Renko, 2013; Yitshaki & Kropp, 2016). We shall argue that impact investors attribute more industry or field experience to social entrepreneurs with an education based in a social sector and trust them to be better able to identify important societal problems and build an impactful social venture. We propose the following hypothesis:

H2b: Impact investors are more likely to select an SE that has a founding team with an educational background in a social sector compared to an SE that has a founding team with a business or technical educational background.

Business criteria

In addition to social impact goals, impact investors also pursue financial goals. Hence, SEs need to build a financially sustainable business model. This is especially important due to the threat of grant and donation dependency, which SEs need to avoid (e.g., Chell, 2007). In line with this argument, earlier research in entrepreneurial finance has shown that economic or business criteria generally constitute important investment criteria (e.g., Block et al., 2019; Gompers et al., 2020a). Therefore, we argue that impact investors also look for investments that can demonstrate financial sustainability, and we suggest the following hypothesis:

H3a: Impact investors are more likely to select an SE that has a high degree of financial sustainability than an SE with a medium or low degree of financial sustainability.

Innovation is an important characteristic of SEs. Almost by definition, SEs strive to solve societal problems in a new way. Prior research by Grossman et al. (2013) notes that venture philanthropists support SEs that use innovations to break outdated patterns and achieve social change. We argue that this preference for innovative solutions also applies to impact investors and expect that a higher degree of innovativeness increases the likelihood of an investment by an impact investor. This leads us to our next hypothesis:

H3b: Impact investors are more likely to select an SE that has a high degree of innovation than an SE with a medium or low degree of innovation.

Due to their hybrid goals, SEs often have complex business models, which creates uncertainty. Hybrid business models can lead to contradictions and create tensions within the organization (Smith et al., 2013). Like all investors, impact investors aim to reduce their investment risk and, ceteris paribus, would like to invest in SEs with low levels of uncertainty. Achieving a proof of concept reduces this uncertainty and marks an important milestone for an SE, as it indicates that both financial and social objectives can be aligned and long-term impact can be achieved. Thus, we hypothesize the following:

H3c: Impact investors are more likely to select an SE that can provide a proof of concept than an SE that cannot provide a proof of concept.

2.3.2 Differences across different types of impact investors

As mentioned above, the group of impact investors is very heterogeneous and consists of many different types. We distinguish between equity investors, debt investors, and donors. These investor types differ in their financial return expectations and the importance attached to social impact. We, therefore, assume that these differences are already reflected in the screening criteria of impact investors. This is in line with previous research, which shows that the diverse goals of investors are reflected in their decision-making and in the criteria used (Block et al., 2019). Equity and debt impact investors will emphasize business criteria as they also expect a financial return (rather than only a social impact) for their investment. Donors, in turn, do not expect a financial return for their investment but pursue primarily social goals. Accordingly,

we expect donors to put comparatively more weight on social impact criteria and less weight on business criteria compared to equity and debt impact investors. Hence, the following two hypotheses should apply:

H4a: In contrast to donors, equity and debt impact investors put more weight on business criteria.

H4b: In contrast to donors, equity and debt investors put less weight on social impact criteria.

2.4 Research design

2.4.1 Data and sample

To assess impact investors' screening criteria, we conducted a survey-based conjoint analysis. To construct our sample, we identified impact investors in the central European DACH region (Germany, Austria, and Switzerland) in two steps. First, we conducted a computerized search strategy since an established database of impact investors does not exist. Using the keywords "impact investing", "social investing", "philanthropic investing" and "social entrepreneurship", we identified impact investors from the social network platforms LinkedIn and XING (which is a German professional social networking site). We provided the impact investors with individual links to our experiment and survey[4]. In this step, we identified 763 individuals (67.6%) for our sample population. In the second step, we identified an additional set of 366 (32.4%) investors through a manual search of impact investors' and SEs' websites. As an incentive for participation, we donated 10 EUR from each participant to an SE (e.g., Africa GreenTec).[5] In total, we were able to identify a population of 1,129 impact investors, out of which 179[6] (response rate = 11.4%) participated in our experiment.

We conducted several tests to assess the representativeness of our sample. First, we compared the gender, age, and educational level of our respondents with those of the nonrespondents. For the nonrespondents, we collected information for all variables manually. The results of the nonrespondents' test are displayed in Table 2.1, which reports the mean values of both

[4] The translated survey is included in the Appendix.

[5] Information about the donations was provided on the introductory page of the experiment.

[6] Compared with previous conjoint studies, the sample size of our experiment is appropriate (e.g., Franke et al., 2006, 2008; Shepherd & Zacharakis, 2002). Particularly, the high amount of observations (4,296), due to the amount of decisions that had to be taken by each participants, further strengthens the reliability our results.

populations and a z-test for equality of proportions. No statistically significant differences emerge across our variables, which suggests that no major differences exist between the respondents and the nonrespondents. Furthermore, we considered listed members of the EVPA in our experiment. In total, 45 respondents in our final sample work for EVPA organizations. These employees represent 17 of the 31 EVPA member organizations located in the DACH region (54.8%). The remaining participants originate from other organizations that invest in SEs, such as the Purpose Foundation, GLS Bank, or Invest in Visions.

Table 2.1. Assessment of a potential nonresponse bias and equality of distribution

To assess whether a nonresponse bias potentially influences our results, we compare non-respondents of our sample (N=950) to our final sample (N=179) along with several characteristics. Because of missing values for the variables age and level of education, the sample of non-respondents is reduced to N=486. The first column reports the mean values in the initial population. The second column reports the mean values of our final sample. The third column reports the difference between the mean values along with the significance of z-tests for proportions. The final column the statistics of a two-sided Kolmogorov-Smirnov test for equality of distribution. Significant values indicate statistically significant differences.

* < 0.10, ** p < 0.05, *** p < 0.01.

Variable	***(1) Non-respondents (N = 478)***	***(2) Final sample (N = 179)***	***(1) vs. (2)***	***Kolmogorov-Smirnov test***
Gender				
Male	0.508	0.581	0.072	-
Age				
< 30	0.165	0.263	0.098	-
30 – 40	0.453	0.397	-0.056	-
40 – 50	0.243	0.223	-0.019	-
> 50	0.140	0.117	-0.023	-
Level of education				
High school graduation	0.023	0.045	0.022	-
Bachelor degree	0.138	0.117	-0.021	-
Master degree	0.677	0.670	-0.007	-
PhD	0.160	0.162	0.002	-
Age (categorical)	2.351	2.207	-	-0.102*
Level of education (categorical)	4.987	4.939	-	-0.031

Furthermore, we conducted a late-response bias test to determine whether the early respondents differed from the late respondents (Graham & Harvey, 2001). We assessed this bias by splitting our sample into two samples—the first half of the respondents (N = 90) and the second half (N = 89)—and we compared the mean values of their individual characteristics using a z-test. Table 2.2 shows the results. In summary, we find no statistically significant differences between the characteristics of early and late respondents; thus, a late-response bias is unlikely.

Table 2.2. Assessment of a potential late-response bias

To assess whether our results are affected by a late-response bias, we compare the first half of our respondents (N = 90) to the second half of our respondents (N = 89) along with their individual characteristics. The first column reports the mean values in the first half of the participants. The second column reports the mean values of the second half of the participants. The last column reports the difference between the mean values along with the significance of z-tests for proportions. All variables are defined in Table 2.3. P-values are reported in brackets in the last column.

Variable	***(1) First half (N = 90)***	***(2) Second half (N = 89)***	***(1) vs. (2)***
Gender			
Male	0.656	0.517	0.139 (0.353)
Age			
< 30	0.267	0.270	-0.003 (0.984)
30 – 40	0.411	0.371	0.040 (0.787)
40 – 50	0.244	0.202	0.042 (0.778)
> 50	0.078	0.157	-0.080 (0.595)
Level of education			
High school graduation	0.044	0.056	-0.012 (0.937)
Bachelor degree	0.100	0.157	-0.057 (0.702)
Master degree	0.644	0.674	-0.030 (0.842)
PhD	0.200	0.112	0.088 (0.558)
Educational background			
Business/economics	0.556	0.629	-0.074 (0.622)
Natural sciences	0.067	0.101	-0.034 (0.818)
Social sciences	0.300	0.202	0.098 (0.513)
Entrepreneurial experience	0.344	0.382	-0.038 (0.802)
Type of investment			
Donations	0.689	0.607	0.082 (0.491)
Equity	0.344	0.404	-0.060 (0.688)
Debt	0.267	0.348	-0.082 (0.585)

2.4.2 Descriptive statistics

Each participant filled out a questionnaire containing individual-level and organizational-level questions. The following subsections report the descriptive statistics for our sample and explore the particularities of the different impact investor types (i.e., donors, equity investors, and debt investors). Table 2.3 shows the descriptive statistics and describes each variable.

Regarding individual-level characteristics, the impact investors in our sample are mostly male (59%), between 30 and 40 years old and have a master's degree. This is in line with the results of Lee et al. (2020), who report that their impact investors are mostly male (60–70%), have the same age range and have a high level of education. Furthermore, the average impact investor in our sample made between 5 and 10 investment decisions, and more than half of the respondents (57%) had entrepreneurship experience.

Regarding organizational-level characteristics, Table 2.3 shows that the majority of impact investor organizations (56%) see impact investments as their core business and are mostly motivated by stakeholders' expectations. Additionally, the startup stage is the most common investment phase (68%), and most impact investor companies focus on environmental-oriented or education-oriented SEs.

Table 2.3. Descriptive statistics and definitions of the variables

This table provides an overview of the full sample used in our analysis and displays descriptive statistics along with variable definitions. Panel A describes variables related to characteristics of the individual impact investor. Panel B describes variables related to characteristics of the impact investment organization. Panel C describes variables related to characteristics of the social ventures.

Panel A: Characteristics of the individual impact investor					
Variable	*Mean*	*S.D.*	*Min.*	*Max*	*Description*
Male	0.59	-	0	1	Participant's gender (dummy; 1 = male, 0 = female)
Age	3.19	0.96	1	5	Participant's age (categorical; 1 < 20, 2 = 20–29, 3 = 30–39, 4 = 40–49, 5 > 49)
Level of education	3.91	0.73	1	5	Participant's level of education (categorical; 1 = less than high school graduation, 2 = high school graduation, 3 = bachelor degree, 4 = master degree, 5 = PhD)
Education: business/ economics	0.59	-	0	1	Participant has an educational background in business or economics (dummy; 1 = yes, 0 = no)
Education: humanities	0.22	-	0	1	Participant has an educational background in humanities (dummy; 1 = yes, 0 = no)
Education: social sciences	0.25	-	0	1	Participant has an educational background in social science (dummy; 1 = yes, 0 = no)
Entrepreneurial experience	0.57	-	0	1	Participant has experience as an entrepreneur (dummy; 1 = yes, 0 = no)
Experience as investor	3.75	1.75	1	5	Participant's experience as an investor (categorical; 0 = No decision made, 1 = 1 decision made, 2 = 2–4 decision made, 3 = 5–10 decision made, 4 > 10 decision made)
Panel B: Characteristics of the impact investment organization					
Variable	*Mean*	*S.D.*	*Min.*	*Max*	*Description*
Number of employees	2.43	2.43	1	5	Impact investor company's number of employees (categorical; 1 < 10; 2 = 10–49, 3 = 50–99, 4 = 100–249, 5 > 249)
Impact investing as core activity	0.56	-	0	1	Impact investing is the main activity of the impact investor company (dummy; 1 = yes, 0 = no)
Investment type: Equity	0.37	-	0	1	Impact investor company invests with equity (dummy; 1 = yes, 0 = no)
Investment type: Debt	0.31	-	0	1	Impact investor company invests with debt (dummy; 1 = yes, 0 = no)
Investment type: Donations	0.65	-	0	1	Impact investor company provides donations to portfolio companies (dummy; 1 = yes, 0 = no)
Motive: Stakeholder expectations	3.34	1.05	1	5	Impact investor company opinion on stakeholder expectations (ordinal; 1 = unimportant , 5 = very important)
Motive: Financial interests	2.68	1.17	1	5	Impact investor company opinion on financial interests (ordinal; 1 = unimportant , 5 = very important)
Motive: Reputation	3.25	0.99	1	5	Impact investor company opinion on reputation (ordinal; 1 = unimportant , 5 = very important)
Motive: Employer Branding	2.82	1.03	1	5	Impact investor company opinion on employer branding (ordinal; 1 = unimportant , 5 = very important)
Stage of development: Idea development	0.48	-	0	1	Impact investor company invests in the idea development stage (dummy; 1 = yes, 0 = no)
Stage of development: Seed stage	0.53	-	0	1	Impact investor company invests in the seed stage (dummy; 1 = yes, 0 = no)
Stage of development: Startup stage	0.68	-	0	1	Impact investor company invests in the startup stage (dummy; 1 = yes, 0 = no)
Stage of development: Expansion stage	0.47	-	0	1	Impact investor company invests in the expansion stage (dummy; 1 = yes, 0 = no)
Stage of development: Establishment stage	0.27	-	0	1	Impact investor company invests in the establishment stage (dummy; 1 = yes, 0 = no)
Stage of development: Exit stage	0.03	-	0	1	Impact investor company invests in the exit stage (dummy; 1 = yes, 0 = no)
Social area: Environment	0.67	-	0	1	Impact investor company focuses on environmental-oriented companies (dummy; 1 = yes, 0 = no)
Social area: Health	0.36	-	0	1	Impact investor company focuses on health-oriented companies (dummy; 1 = yes, 0 = no)
Social area: Poverty reduction	0.41	-	0	1	Impact investor company focuses on poverty reduction-oriented companies (dummy; 1 = yes, 0 = no)
Social area: Education	0.57	-	1	1	Impact investor company focuses on education-oriented companies (dummy; 1 = yes, 0 = no)
Social area: Social inclusion	0.44	-	0	1	Impact investor company focuses on social inclusion-oriented companies (dummy; 1 = yes, 0 = no)
Social area: Others	0.08	-	0	1	Impact investor company focuses on other- companies (dummy; 1 = yes, 0 = no)

Table 2.4 shows an initial comparison of the impact investor types based on the variables described in Table 2.3. Table 2.4 reports the mean values of our full sample (N = 179) in comparison to the mean values of each investor type. The brackets behind the mean values (+/-) indicate the results of a t-test that shows whether the respective mean values of a certain impact investor type are significantly larger (+) or smaller (-) than the respective mean values of the full sample. The final column demonstrates the results of an analysis of variance (ANOVA), which indicates statistically significant differences across the three groups of impact investors.

Table 2.4. Descriptive statistics across different types of investors

This table reports differences in the mean values across the different impact investor types included in our sample. While the first column demonstrates the mean values of the full sample (N = 179 individuals), the following columns report descriptive statistics for impact investors providing donations, equity, and debt. Panel A outlines differences across variables related to characteristics of the individual impact investor. Panel B outlines differences across variables related to characteristics of the impact investment organization. The signs in brackets (+/-) demonstrate whether the respective mean value is significantly larger (+) or smaller (-) than the mean value of the remaining sample. We conducted a t-test to calculate the significance for each individual mean value. The final column outlines the significance level obtained from an analysis of variance (ANOVA), indicating statistically significant differences across groups. All variables are defined in Table 2.3. * < 0.10, ** p < 0.05, *** p < 0.01.

Panel A: Characteristics of the individual impact investor

Variable	*Full sample (N = 179)*	*Equity (N = 67)*	*Debt (N = 55)*	*Donations (N = 116)*	*ANOVA*
Male	0.59	0.68 (+)	0.60	0.57	
Age	3.19	3.33	3.21	3.20	
Level of education	4.91	4.93	4.93	4.94	
Education: business/economics	0.59	0.63	0.72 (+)	0.56	*
Education: humanities	0.22	0.15 (-)	0.07 (-)	0.29 (+)	***
Education: social sciences	0.25	0.21	0.18	0.28	
Entrepreneurial experience	0.57	0.69 (+)	0.62	0.54	*
Experience as investor	3.75	3.97 (+)	3.67	3.74	

Panel B: Characteristics of the impact investment organization

Variable	*Full sample (N = 179)*	*Equity (N = 67)*	*Debt (N = 55)*	*Donations (N = 116)*	*ANOVA*
Number of employees	2.43	1.95 (-)	2.44	2.69 (+)	***
Impact investing as core activity	0.44	0.36 (-)	0.27 (-)	0.49 (+)	**
Motive: Stakeholder expectations	3.34	3.36	3.36	3.28	
Motive: Financial interests	2.68	3.14 (+)	3.18 (+)	2.41 (-)	***
Motive: Reputation	3.25	3.28	3.51 (+)	3.21	
Motive: Employer Branding	2.82	2.87	2.91	2.83	
Stage of development: Idea development	0.48	0.34 (-)	0.42	0.52	**
Stage of development: Seed stage	0.53	0.51	0.53	0.55	
Stage of development: Startup stage	0.68	0.67	0.65	0.72 (+)	
Stage of development: Expansion stage	0.47	0.54	0.64 (+)	0.45	**
Stage of development: Establishment stage	0.27	0.25	0.18 (-)	0.32 (+)	
Stage of development: Exit stage	0.03	0.04	0.02	0.04	
Social area: Environment	0.67	0.76 (+)	0.70	0.67	
Social area: Health	0.36	0.42	0.43	0.34	
Social area: Poverty reduction	0.41	0.42	0.53 (+)	0.40	
Social area: Education	0.57	0.47 (-)	0.55	0.63	
Social area: Social inclusion	0.44	0.36	0.40	0.50 (+)	
Social area: Others	0.08	0.03 (-)	0.11	0.08 (+)	*

Equity investors

Our sample contains 67 (37%) impact investors who provide SEs with equity. This investor group differs significantly from the other investor types in many individual and organizational variables. For example, Table 2.4 reports that more equity investors are male, and fewer of them have an educational background in humanities compared to debt investors and donors. Furthermore, we find that 69% of the equity investors have an entrepreneurship background, which is significantly higher compared to the other groups. Furthermore, equity impact investors provide their investees with "smart money". That is, in addition to capital, they typically provide a range of value-adding activities to their portfolio companies. These activities are often based on past entrepreneurial experience (e.g., Sapp & Tiwari, 2004; Sørensen, 2007). Finally, equity investors in our sample have more investment experience as impact investors than do other types of investors.

Regarding organizational characteristics, equity investor organizations are significantly smaller than other investor organizations (i.e., lower number of employees). Additionally, only 36% of the equity investor organizations pursue impact investing as their core activity, which suggests that to most equity investors, impact investing might only be a recently established segment (e.g., Höchstädter & Scheck, 2015) that is treated as a side business. Because equity investors strive for financial returns through exit proceeds (e.g., Brest & Born, 2013; Louche et al., 2012), they have higher financial interests than those of investors without financial objectives. Regarding the stage of development of funded SEs, equity investors differ only in terms of the first stage, "idea development," in the sense that this investor group invests much less in projects that are still outlining their idea. Finally, with an average of 76%, equity investors focus on SEs that tackle environmental issues more often than debt investors and donors. In contrast, they invest less in ventures active in the field of education.

Debt investors

Impact investors who provide SEs with debt represent the smallest group of investors in our sample (N = 55, 31%). Table 2.4 demonstrates that they differ substantially from equity investors and donors. First, individuals in this group more often have an educational background in economics (72%). This result is in line with prior research that suggests that debt investors are more interested than other investors in the financial aspects of a funded venture (e.g., Mason & Stark, 2004) and therefore need to have a more sophisticated understanding of economics.

Debt investors try to achieve financial returns, similar to equity investors. In addition, debt investors rate reputational motives as more important than the other investor groups. Combined with the result that only 27% of the debt investors regard impact investing as their core activity, this suggests that several debt investors began to pursue impact investing as a side business due to reputational reasons. Approximately 53% of the debt investors invest in SEs that try to solve poverty issues, which is significantly higher than the percentage of equity investors and donors. Additionally, 64% of the debt investors in SEs are expanding their businesses. This finding is in line with the findings of previous research, which shows that debt is provided at later stages than equity investments (e.g., Berger & Udell, 1998).

Donors

Our subsample of impact investors who provide investments in the form of donations encompasses 116 individuals (65%). Table 2.4 documents that donors differ substantially from equity and debt investors. Most of these differences occur at the organizational level. Specifically, donors differ with regard to company size, alignment, motives, investment time, and the social area on which they focus. In contrast to other types of impact investors, donors' organizations have more employees on average. Furthermore, 49% of these impact investors state that impact investing is their core business, which is significantly higher than for the other types. Since donors typically do not expect financial returns; their financial motives are weaker than those of equity and debt impact investors who are seeking financial compensation. The donors in our sample tend to invest later than the other groups of investors. Thus, they invest in more ventures that are active in the startup and establishment phase. Finally, donors invest more actively in SEs that operate in the field of social inclusion. On average, half of the donors sampled invest in this field.

2.4.3 Design of the choice-based conjoint experiment

We conducted a survey-based conjoint experiment[7] to quantitatively assess the decision behavior of impact investors. Conjoint analysis has been introduced in the marketing field to assess the relative importance of product attributes (e.g., Green & Srinivasan, 1990). Shepherd and Zacharakis (1999) transferred the experimental design to the assessment of VCs' decision making. Conjoint experiments complement post hoc approaches (e.g., questionnaires or interviews),

[7] The experiment was designed with "Sawtooth". Sawtooth is a widely used tool to conduct and host conjoint analyses (e.g., Lohrke et al., 2010; Orme, 2002). See https://www.sawtoothsoftware.com/.

which have several limitations when analyzing decision behavior (Shepherd & Zacharakis, 2018). For example, post hoc methodologies use past information that can suffer from recall or rationalization biases (Zacharakis & Meyer, 1998). Thus, more valid results can be achieved through conjoint analysis (Franke et al., 2006, 2008). Additionally, conjoint experiments are real-time experiments since information is collected while decisions are being made, whereas other approaches collect data only after this process is complete. Therefore, conjoint studies are more similar to the real decision-making behaviors of investors. Because investment decisions are made holistically by investors (e.g., Dane & Pratt, 2007), conjoint analyses are a useful tool for evaluating these decisions since the investment criteria can be measured conjointly. This situation leads to an accurate representation of investors' decision-making behavior (Block et al., 2019). Hence, every decision for or against an investment involves making trade-offs between different criteria, which can be represented within a conjoint experiment.

In light of these advantages, several studies in entrepreneurial finance have analyzed decision behaviors via conjoint experiments (e.g., Block et al., 2019; Franke et al., 2006, 2008). Moreover, the studies of Bernstein et al. (2017) and Block et al. (2019) show that experiments are gaining increasing popularity within the finance audience over post hoc approaches such as surveys (e.g., Bonini et al., 2018; Gompers et al., 2016, 2020a).

We used a discrete choice-based conjoint (CBC) experiment. Specifically, we asked impact investors to decide between two hypothetical investment opportunities that differ in specific attribute levels (e.g., the authenticity of the founding team, financial sustainability, and the degree of innovation). The idea behind this form of conjoint experiment is that participants (here defined as impact investors) always have to make several choices between two different hypothetical investments. Because our experiment presents hypothetical ventures to respondents, external validity may suffer. We address this issue in detail in the final section.

The experiment was explained to the participants in an introductory slide to ensure that they were evaluating the same SEs during their decision (see the Appendix). For example, prior research has suggested that investors look for a strategic fit between the portfolio company and their investment strategy in early screenings (e.g., Fried & Hisrich, 1994; Gompers et al., 2020a; Zacharakis & Meyer, 2000). Therefore, the introductory slide clarified that the geographical and strategic orientation of each hypothetical venture matches the interests of the investor (Franke et al., 2008). Furthermore, we explained to participants that the experiment addresses the initial preselection of investment opportunities. This clarified that the experiment focuses on the screening stage of the selection process of impact investors. In this initial screening

phase, investors generally assess proposals in a very short time (Hall & Hofer, 1993). Supporting this idea, previous literature has shown that applicants for venture finance have to pass an initial screening followed by months of due diligence, with a low approval rate of approximately 20% of all requests (e.g., Cumming et al., 2010; Fried & Hisrich, 1994; Zacharakis & Meyer, 2000).

The participants in our experiment were forced to make a discrete choice for each investment opportunity (investment: "yes" or "no"). The advantages of this approach are that the investment criteria can be measured conjointly and that investors can be provided with very detailed descriptions of the investment possibilities. As in any conjoint experiment, each participant made a series of decisions on hypothetical investments (14 in our case) based on fixed screening criteria. Next to a description of their task, the information presented to respondents included a description of the seven investment criteria used: (1) the importance of the societal problem, (2) the scalability, (3) the authenticity of the founding team, (4) the professional background of the founding team the importance of the societal problem, (5) the financial sustainability, (6), the degree of innovation, and (7) the proof of concept. Each decision criterion has two or three different attribute levels.

The seven investment criteria were identified through expert interviews with impact investors who had investment experience in all three impact investing areas (donations, equity, and debt). In total, we conducted 12 interviews with decision makers from impact investing organizations located within the DACH region. For our explorative interviews, we selected experts from the impact investing field to obtain initial insights into the impact of investors' investment criteria and selection processes. All the participants hold a high position in their organization and have a high level of knowledge of the field (see the Appendix, Table A.1). We chose this approach because research on the screening criteria of impact investors is still limited. The interviews were conducted until we reached a sufficient number of different views that showed converged agreement between the participants on investment criteria. We used a semistructured interview guideline to give impact investors the possibility to freely answer open-ended questions. The interviews were conducted between November 2017 and March 2018. The interviews were transcribed and coded by two researchers to ensure the reliability of the criteria.

Based on the results of previous research and based on our explorative interviews, we identified a set of investment criteria that have a high level of importance in the selection pro-

cesses of impact investors. Each attribute was explicitly explained by a brief label to the participants (see Table 2.5). The different attribute labels were always visible throughout the experiment by a hover effect. Furthermore, Table 2.5 illustrates the different levels of each attribute as well as our rationale for inclusion. For example, the attribute levels of "financial sustainability" are "low", "medium", and "high". These levels represent the extent to which the social venture will be able to finance itself in the foreseeable future.

Table 2.5. Attributes and levels of the conjoint analysis

Attribute	Levels	Label used in the experiment	Definition and rationale for inclusion
Social impact criteria			
Importance of the societal problem (3 levels – ordinal)	Low Medium High	Describes the relevance and urgency of solving the societal problem	The importance of the societal problem describes the extent of an issue which an SE aims to solve. Thus, next to the attribute scalability this attribute covers the social impact which the SE wants to achieve.
Scalability (3 levels – ordinal)	Low Medium High	Describes the possibility of transfer and large-scale implementation of the project	The scalability covers the social impact the SE wants to achieve. Hence, it shows the extent to which the social project of the SE can be scaled to achieve a greater impact and reach more stakeholders of the social part of the business.
Founding team criteria			
Authenticity of the founding team (3 levels – ordinal)	Low Medium High	Describes the authenticity or credibility of the founders.	Davies et al. (2019) argue that SEs have to maintain identity authenticity; otherwise, barriers to growth could arise. Furthermore, several interview partners mentioned authenticity of the founding team as an important attribute in their screening criteria. It describes how credible the founding team is in solving a certain societal problem. Finally, our attribute encompasses how authentic or credible the founders present their business idea to solve a societal problem.
Professional background of the founding team (3 levels – nominal)	Technical Business Social	Represents the educational and professional background of the founders	Previous literature has shown that the professional background of the founding team influences the selection processes in venture finance (e.g., Franke 2006, 2008; Kaplan & Strömberg, 2004). Therefore, this attribute describes whether the founding team has a technical, social, or business educational and professional background.
Business criteria			
Financial sustainability (3 levels – ordinal)	Low Medium High	Represents the extent to which the SE will be able to finance itself in the foreseeable future	Describes how likely the SE will achieve financial goals in the future and not be dependent on external sources. Because of the hybrid nature of SEs, many of them are dependent on external support over the long term (e.g., Chell, 2007). Therefore, becoming financially sustainable represents a great obstacle they need to overcome.
Degree of innovation (3 levels – ordinal)	Low Medium High	Describes the novelty of the way to solve the societal problem	The innovativeness is an important component of the definition of an SE (e.g., Dart, 2004). It covers how the SE tackles a societal problem in a new way. Social innovation has become a large governmental topic to tackle global problems and achieve the SDGs (Eichler & Schwarz, 2019).
Proof of concept (2 levels – ordinal)	Not provided Provided	Proof of the feasibility of the project	Describes whether a proof of concept is provided for the SEs' business model. Thus, it proofs the feasibility of the social and financial part of the SE.

To ensure that the impact investors could assess the hypothetical investments in SEs holistically, we used a full-profile CBC, which included all attributes listed in Table 2.5 (Franke

et al., 2008). Based on our different attributes and attribute levels, we created a set of 500 unique experimental designs, in which each design presented a unique choice task consisting of different attribute level combinations. In every design, the seven attributes (Table 2.5) were presented to the participants with randomly assigned attribute levels for two different investment opportunities. The impact investors then had to decide in which of the SEs they would like to invest. However, to ensure that the participants were not overwhelmed, we employed a reduced conjoint design (Chrzan & Orme, 2000), which prevents participants from facing too many different task decisions. Thus, every participant had to make 14 decisions, which included 12 randomly assigned tasks and two fixed tasks that were hold constant across all participants. "Fixed tasks" serve as a proxy to estimate the test-retest reliability of respondents' choices. In line with previous research, the average response time for a choice task was 23 seconds, although the first task per respondent took over a minute (Johnson & Orme, 1996).

Since CBC studies are based on a specific order of investment criteria, they can suffer from diverse order effects (e.g., Block et al., 2019; Chrzan, 1994). To account for these effects, we employed three different tests. First, to account for biases due to the order of choice tasks, we randomly ordered the choice tasks within each of the 500 different experimental designs. Second, the two investment opportunities within the 500 designs were also randomly ordered within each choice task to overcome negative order of options effects. Third, to avoid an impact of the order of attributes within one respective choice task, we randomly crossed the presented order of attributes to the participants but kept it stable for each respective participant. This approach eliminated the effect in which the attribute presented at the top of the list achieves the highest individual importance. Furthermore, we conducted a pretest with 12 impact investors and four researchers to ensure the face validity of our experimental design (complexity, attributes, and number of choices).

We analyzed the relative importance of impact investors' investment criteria by applying a multilevel logistic regression. The individual decisions (investment: "yes" or "no") therefore served as our binary dependent variable, and the attribute levels represented our independent variables. Because we have two levels in our data, we conducted a multilevel regression, which allowed us to nest each participant (first level) with multiple decision observations (second level) (Auguinis et al., 2013). This step was necessary because the two levels cannot be treated as unconnected and independent. We estimate the following regression equation:

$$\log\left(\frac{\varphi_{ij}}{1-\varphi_{ij}}\right) = \beta_{0j} + \beta_{ij}x_{ij}$$

$$\text{with } \beta_{ij} = \gamma_{i0} + u_{ij}$$

In this equation φ_{ij} represents the probability of a positive decision that is conditional on β_j, for the choice i for respondent j. x_{ij} represents the independent variables x for the choice i for respondent j. In the base models (Table 2.6), the independent variables are the attributes used in the conjoint experiment that were displayed to the participants (see Table 2.5). One attribute is used as a benchmark category.

The multilevel analysis enabled us to also assess cross-level interaction effects when the observations of investment decisions were nested. Finally, we conducted multiple subsample analyses to compare the different types of impact investors.

2.5 Results and discussion

2.5.1 Relative importance of impact investors' investment criteria

Table 2.6 shows the results of our clustered multilevel regression analysis. While Model 1 shows the results of our full sample of impact investors, Models 2–4 present the results of each respective type of impact investor. The log-odds coefficients illustrate the importance that impact investors attach to each investment attribute or attribute level.

Model 1 assesses the relative importance of the respective investment attribute levels. To enable a more accessible comparison between the screening criteria and their perceived importance, we estimate the relative importance of each attribute by zero-centering the utility values to reach 100 as the sum of all importance values (e.g., Block et al., 2019; Franke et al., 2008). Figure 2.1 displays the relative importance of each investment criterion. The higher the value of an investment criterion is, the higher its impact on the decision of an impact investor. For example, the two most important investment criteria (i.e., authenticity of the founding team and importance of the societal problem) explain almost 50% of the impact investors' decisions. Thus, the opportunity for an SE to be selected by an impact investor increases if an SE demonstrates high values in these two investment criteria.

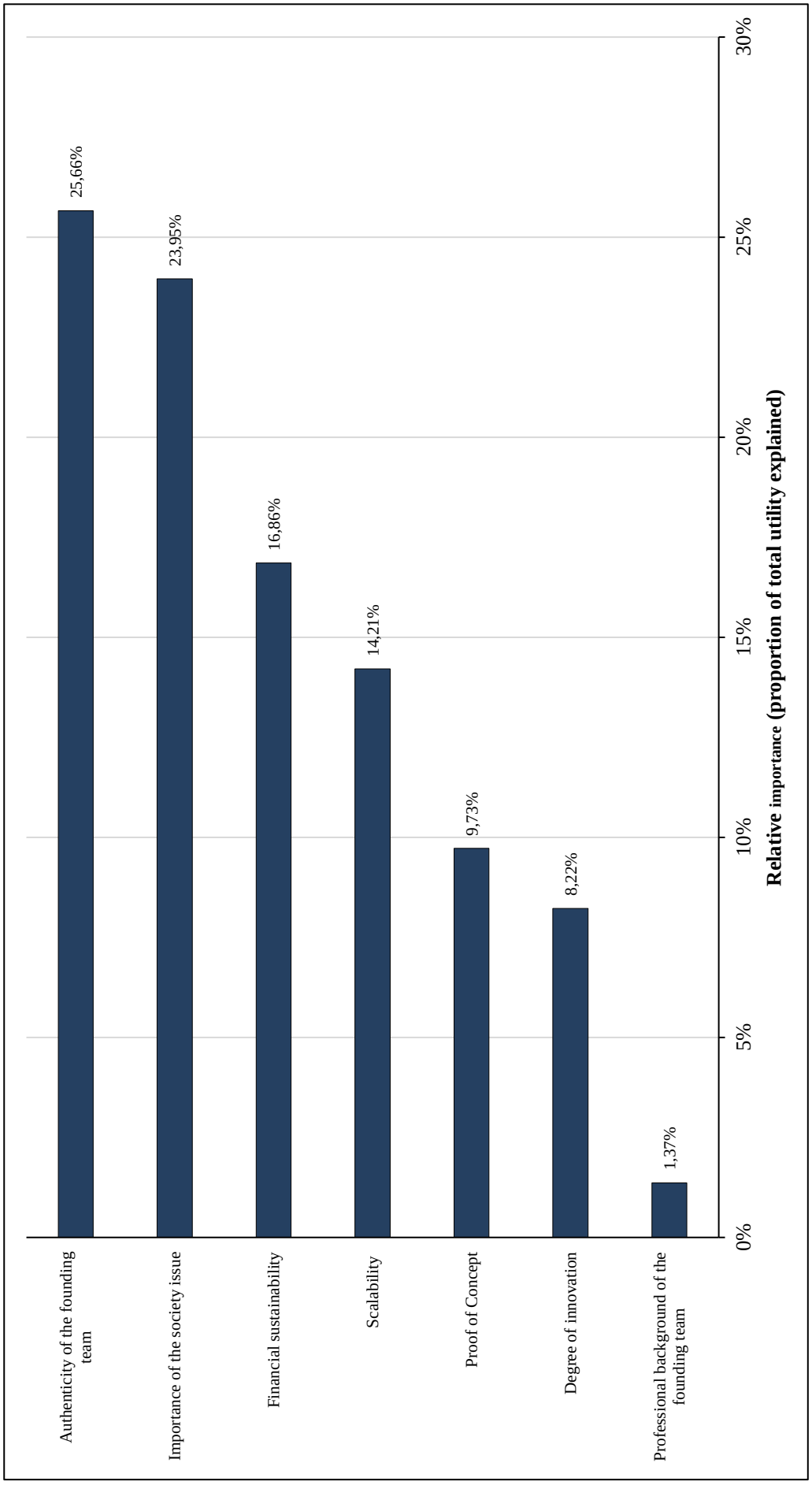
Table 2.6. Main effects of the conjoint analysis

The following table demonstrates the results of a clustered multilevel logistic regression with random intercepts and random slopes. The preference of the decision maker serves as the dependent variable the independent variables are the attribute levels described in Table 2.5. Log-odds and standard errors (clustered at the decision maker level) are displayed. Model 1 explores the full sample and shows that all attribute levels except the professional background of the founding team are significantly influencing the decision of an impact investor ($p < 0.001$). The log-odds of each attribute level indicate the importance impact investors attach to each criterion. For example, the attribute levels of the criterion authenticity of the founding team have particularly high effect sizes. Models 2–4 use each impact investor type separately and enable an initial comparison of the investment criteria's importance for each investor type. We analyze impact investors providing donations, equity, and debt. For example, the Log-odd of 1.622 for equity investors with regard to SEs showing high financial sustainability is much higher than the log-odd of 1.185 for the whole sample. This highlights that being financial sustainable profitable is much more important for equator providers than for other types of impact investor. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	Model	**(1)**	**(2)**	**(3)**	**(4)**
	Sample	**Full sample**	**Equity**	**Debt**	**Donations**
	Attributes and levels	**Log-odds (SE)**	**Log-odds (SE)**	**Log-odds (SE)**	**Log-odds (SE)**
	Social impact criteria				
H1a:	Importance of the societal problem: high	1.684 (0.123)***	1.383 (0.193)***	1.259 (0.215)***	1.858 (0.153)***
	Importance of the societal problem: medium	1.044 (0.097)***	0.864 (0.173)***	0.808 (0.162)***	1.144 (0.129)***
	(reference group: low)				
H1b:	Scalability: high	0.999 (0.103)***	1.245 (0.194)***	0.629 (0.184)***	0.946 (0.123)***
	Scalability: medium	0.525 (0.088)***	0.518 (0.151)***	0.210 (0.143)***	0.645 (0.106)***
	(reference group: low)				
	Founding team criteria				
H2a:	Authenticity of the founding team: high	1.804 (0.131)***	1.968 (0.211)***	1.914 (0.251)***	1.789 (0.165)***
	Authenticity of the founding team: medium	1.379 (0.112)***	1.530 (0.179)***	1.377 (0.205)***	1.267 (0.139)***
	(reference group: low)				
H2b:	Founding team background: social	0.096 (0.100)	-0.044 (0.162)	0.227 (0.194)	0.088 (0.125)
	Founding team background: technical	-0.035 (0.090)	0.054 (0.135)	0.113 (0.175)	-0.097 (0.109)
	(reference group: business)				
	Business criteria				
H3a:	Financial sustainability: high	1.185 (0.122)***	1.105 (0.149)***	1.622 (0.204)***	1.411 (0.232)***
	Financial sustainability: medium	0.771 (0.107)***	0.725 (0.133)***	0.934 (0.176)***	0.956 (0.204)***
	(*reference group: low*)				
H3b:	Degree of innovation: high	0.578 (0.100)***	0.625 (0.125)***	0.524 (0.128)***	0.509 (0.170)***
	Degree of innovation: medium	0.380 (0.092)***	0.404 (0.111)***	0.244 (0.147)***	0.426 (0.193)***
	(reference group: low)				
H3c:	Proof of Concept: provided	0.684 (0.095)***	0.702 (0.118)***	0.818 (0.149)***	0.656 (0.185)***
	(reference group: not provided)				
	N (decisions)	4.296	1.608	1.320	2.784
	N (decision makers)	179	67	55	116

Notes: Estimated with robust standard errors.

Figure 2.1. Relative importance of attributes



Notes: Calculated based on the coefficients of the main model (Table 2.6). Reading example: With a relative importance of 25.66%, social investors consider *the authenticity of the founding team* to be over 18 times as important as the attribute *professional background of the founding team* (relative importance: 4.2%). This value also signifies that the attribute *authenticity of the founding team* accounts for 25.66% of the decision maker's total utility.

Our results show that both social impact criteria have a significant impact on the investment decision of an impact investor. These results support Hypothesis 1a and Hypothesis 1b. Moreover, the importance of the societal problem is the second most important attribute overall. This finding reflects the goals of impact investors because they can only achieve their own social impact if their investees have a decisive impact (e.g., Geczy et al., 2019; Gray et al., 2015).

We also show that impact investors value social impact criteria higher than business criteria when screening SEs. Barber et al. (2021) indicate that impact investors accept lower returns to achieve a social impact. Our findings confirm this finding and show that impact investors value social impact criteria higher than business criteria when screening SEs. This finding is in line with research by Barber et al. (2021) and Chowdhry et al. (2019), who indicate that impact investors have higher stakes in investments with higher levels of social output. Additionally, this finding confirms the assumptions of Miller and Wesley (2010), who suggest that impact investors initially evaluate social criteria and only assess other criteria when a certain threshold is met by the social criteria.

Regarding the founding team criteria, we find that impact investors attach the highest relative importance to the authenticity of the founding team. These findings document the importance of the founding team's authenticity in the SE context (e.g., Chen et al., 2009; Davies et al., 2019; Radoynovska & King, 2019) and support Hypothesis 2a. Additionally, this finding is in line with prior research that identifies founding team characteristics as critical determinants of investment decisions (e.g., Gompers et al., 2020a; Kaplan & Strömberg, 2004). In contrast, we do not find support for Hypothesis 2b. We find that the field of background of the founding team has no significant impact on the selection of an impact investor, indicating that impact investors do not favor a social, technical, or economic background. Since the majority of impact investors from our experiment have an economic background (59%), our findings contradict earlier research by Franke et al. (2006), who illustrate that VCs preferably invest in teams that possess a background similar to themselves. Overall, our findings suggest that the founding team is regarded differently in the screening process of impact investors than it is during the screening process of traditional venture finance investors.

Our findings on business screening criteria are threefold. First, we show that higher financial sustainability increases an SE's chance to receive funding by impact investors. This supports Hypothesis 3a and is in line with research that highlights the importance of economic criteria in the selection process of impact investors (e.g., Miller & Wesley, 2010; Yang et al.,

2020). Furthermore, our finding suggests that impact investors often pursue investments that jointly optimize economic and social returns (e.g., Barber et al., 2021). Without financial sustainability, competitive financial returns are not achievable. Second, we find that SEs with a high degree of innovativeness are more likely to be selected by impact investors than are SEs with a medium or low degree of innovativeness, which supports Hypothesis 3b. This indicates impact investors see SEs' innovativeness as a relevant condition for achieving financial and social objectives. Third, we show that proof of concept is an important screening criterion of impact investors. A proof of concepts shows that the SE is able to combine the sometimes conflicting social and economic goals to achieve a long-turn impact. A direct comparison between the three business criteria shows that impact investors attach the highest importance to financial sustainability.

2.5.2 Differences between equity investors, debt investors, and donors

Models 2–4 in Table 2.6 show the relevance of the respective investment attribute levels for each subsample of impact investors. A comparison of the models suggests possible differences between the three impact investor types.

To assess these differences in an econometrically sound way, we compute interaction terms to compare the different types of impact investors. Since the preferences of investors differ based on the form of capital they provide (Ueda, 2004), the relative importances attached to the screening criteria might differ as well. Table 2.7 shows the results of these separate multilevel regressions. Each model represents a comparison between two types of impact investors. For example, Model 2 shows differences between debt and equity investors. The log-odd coefficients indicate whether significantly different criteria have a higher or lower importance for a particular type of impact investor, thereby allowing us to identify outstanding impact investors. The following subchapters outline each model in Table 2.7 in detail.

Table 2.7. Results of the conjoint analysis with comparison across two types of impact investment

The following table demonstrates the results of a clustered multilevel logistic regression with random intercepts and random slopes. The preference of the decision maker serves as the dependent variable. The independent variables are the attribute levels described in Table 2.5. Log-odds and standard errors (clustered at the decision maker level) are displayed. In each Model attribute levels are interacted with a respective type of impact investor. For example, Model 1 compares donors with equity and debt impact investors. Therefore, we interact every attribute level with a dummy variable which has the value 1 if the impact investor provides donations and 0 if not. Although the main effects are included in the analysis, they are omitted for reasons of brevity so that the coefficients displayed here only refer to interaction effects. Exploring interaction effects enables us to identify whether significant differences between two types of impact investors exist. Model 1 presents the results with regard to Hypotheses 4a & 4b and Model 2-4 shows our additional analysis and robustness checks. * p < 0.10, ** p < 0.05, *** p < 0.01.

Model	**(1)**	**(2)**	**(3)**	**(4)**
Sample	**Donors vs. equity and debt**	**Equity vs. debt**	**Donors vs. equity**	**Donors vs. debt**
Hypotheses	**H4a & H4b**	-	-	-
Interactions	**Log-odds (SE)**	**Log-odds (SE)**	**Log-odds (SE)**	**Log-odds (SE)**
Social impact criteria				
Importance of the societal problem: high	0.661 (0.235)***	-0.085 (0.396)	0.433 (0.255)*	0.909 (0.256)***
Importance of the societal problem: medium	0.351 (0.185)*	-0.201 (0.302)	0.352 (0.198)*	0.407 (0.213)*
(reference group: low)				
Scalability: high	-0.079 (0.209)	1.116 (0.325)***	-0.272 (0.218)	0.081 (0.251)
Scalability: medium	0.385 (0.175)**	0.489 (0.273)*	0.301 (0.197)	0.403 (0.205)**
(reference group: low)				
Founding team criteria				
Authenticity of the founding team: high	-0.145 (0.258)	-0.214 (0.452)	-0.023 (0.302)	-0.226 (0.302)
Authenticity of the founding team: medium	-0.315 (0.215)	0.056 (0.363)	-0.264 (0.236)	-0.311 (0.241)
(reference group: low)				
Founding team background: social	-0.073 (0.208)	-0.739 (0.335)**	0.107 (0.210)	-0.182 (0.256)
Founding team background: technical	-0.237 (0.191)	-0.110 (0.301)	-0.082 (0.189)	-0.418 (0.224)*
(reference group: business)				
Business criteria				
Financial sustainability: high	-0.480 (0.228)**	0.282 (0.383)	-0.588 (0.249)**	-0.331 (0.270)
Financial sustainability: medium	-0.289 (0.211)	-0.181 (0.354)	-0.162 (0.223)	-0.357 (0.259)
(*reference group: low*)				
Degree of innovation: high	0.120 (0.208)	-0.131 (0.328)	0.137 (0.206)	0.158 (0.237)
Degree of innovation: medium	0.092 (0.186)	-0.579 (0.317)*	0.299 (0.187)	-0.165 (0.234)
(reference group: low)				
Proof of Concept: provided	0.033 (0.196)	0.292 (0.318)	-0.170 (0.210)	0.082 (0.240)
(reference group: not provided)				
N (decisions)	3.600	1.488	3.456	3.168
N (decision makers)	150	62	144	132

Notes: Estimated with robust standard errors.

Particularities of donors

The first model in Table 2.7 compares the investment criteria of donors with those of equity and debt impact investors. We find that donors attach a higher importance to the importance of the societal problem and a lower importance to the SEs' financial sustainability. No significant differences emerge with regard to the other investment criteria. Thus, these results partially support Hypotheses 4a and 4b. We show that donors in fact attach less weight to the business screening criteria of financial sustainability. However, we do not find any significant differences concerning the criteria degree of innovativeness and proof of concept. Furthermore, we show that donors place more weight on the social impact criteria importance of the societal problem, whereas the scalability of the SE is not perceived as significantly more important by donors than by equity and debt investors.

An explanation for this pattern is that donors typically do not try to achieve any kind of financial return. Since the economic aspect of investment is not important, the focus shifts towards social criteria. This is in line with the findings of Chowdhry et al. (2019), who highlight that SEs should particularly seek donors that are fully committed to the social goals of their organizations as a source for funding. Furthermore, donations are essential to the funding of nonprofit organizations that only focus on the importance of the societal problem and do not follow any economic objectives. Overall, SEs often rely on this type of impact investment, particularly in early company stages (Bugg-Levine et al., 2012). Finally, these results confirm the heterogeneous landscape of impact investors and outline considerable heterogeneity among the investment criteria of impact investors.

Additional analysis and robustness checks

Model 2 of Table 2.7 compares the investment criteria of equity and debt investors. Both types of investors aim for financial returns on their investments. However, we find that the two types differ with regard to two investment criteria. First, equity investors put less value on the social background of a founding team than do debt investors. Second, equity investors consider the *scalability* of an SE to be more important than do debt investors.

These results are in line with the finding of previous research on traditional debt and equity investments (e.g., Black & Gilson, 1998; Puri & Zarutskie, 2012). Even though equity and debt investors both seek financial returns, the way in which they achieve these returns differs. While debt investors obtain regular interest payments on their investments, equity investors profit from exit proceeds from scaled investments that end in an IPO, for instance. Thus,

equity investors (e.g., VCs) aim for highly and easily scalable ventures to achieve fast exits (Black & Gilson, 1998; Cochrane, 2005). Our results indicate that scalability is important for impact investors, but more from a social than financial perspective. As shown in our descriptive results, debt investors care more about the financial part of an investment, and equity investors more highly evaluate the social *scalability*. Furthermore, Franke et al. (2006) show that equity investors are affected by similarity biases, which means that they tend to invest in venture teams that show high similarities to themselves in terms of professional experience or other factors. Since VCs mainly have an educational background in business or technology (e.g., Bottazzi et al., 2008; Franke et al., 2006, 2008), the similarity bias explains why equity investors attach less value to a social educational background of a founding team compared to debt investors.

Model 3 and Model 4 of Table 2.7 display robustness checks. Model 3 shows that the differences between donors and the group of equity and debt impact investors with regard to the criterion *financial sustainability* are especially driven by equity investors. A reason for this result might be the type of impact organization. Thus, debt impact investors are, for example, social banks, which have low financial return expectations (Brest & Born, 2013). Nevertheless, our findings contrast with the literature that indicates that equity investors should be more risk-prone since their exit strategy is much riskier due to their continuation strategy (e.g., Ueda, 2004; Winton & Yerramilli, 2008). Debt investors usually attach a very high value to the financial plans of a venture to ensure repayment (e.g., Mason & Stark, 2004). Therefore, it would be obvious to expect them to evaluate the financial sustainability of SEs higher than equity investors.

2.6 Conclusion

2.6.1 Summary

Impact investing has transformed from a niche market into a global movement (e.g., Geczy et al., 2019; The Economist, 2017). This study is one of the first to explore impact investors' investment criteria when screening SEs. We analyze the screening criteria of impact investors and compare their relative importance among three types of impact investors based on a CBC experiment with 179 individual impact investors. This approach enables us to identify distinctive differences between donors as well as equity and debt investors. This study extends the knowledge within the financial literature since the research thus far lacks an understanding of

the investment criteria of impact investors within the screening phase of their selection processes, as well as an understanding of how impact investors differ across specific types of investors.

Table 2.8 summarizes our main results. Impact investors attach the highest relative importance to the team-related criterion of the *authenticity of the founding team*, the social impact criterion of the *importance of the societal problem*, and the business criterion of the *financial sustainability*. Further, we compare different types of investors (i.e., equity investors, debt investors, and donors). For example, we find that the investment criteria of impact investors are particularly different when the group is separated in terms of its financial return expectations. Hence, impact investors with return expectations (equity investors and debt investors) evaluate the *financial sustainability* of an SE higher and the *importance of the societal problem* lower than those without return expectations (donors). In addition, we find that further differences exist between equity and debt providers. For equity investors, it is more important that an SE is scalable and less important that the founding team has a social background.

Table 2.8. Summary of the main findings

This table demonstrates the summary of our main findings. We rank the attributes according to the results of Table 2.6. Column 3 shows the mean values across all types of impact investors, while columns 4 and 5 display the investor type with the lowest and highest importance. The final column is based on Table 2.7 and contains a brief qualitative summary of the main findings of our comparison across the three types of impact investors. All attributes are defined in Table 2.5. We consider donors (DOs), equity investors (EQs), and debt investors (DEs).

Rank	Attribute	Relative importance	Lowest relative importance	Highest relative importance	Main results (qualitative summary)
1	Authenticity of the founding team	25.7%	25.2% (DOs)	29.0% (DEs)	No major differences across the three types of impact investors.
2	Importance of the societal problem	24.0%	18.2% (EQs)	26.1% (DOs)	Major differences across impact investor types: less important to equity and debt investors, and more important to donors.
3	Financial sustainability	16.9%	15.5% (DOs)	21.4% (DEs)	Minor differences across impact investor types: less important to donors, and more important to equity investors.
4	Scalability	14.2%	9.5% (DEs)	16.4% (EQs)	Minor differences across impact investor types: less important to debt investors, and more important to equity investors.
5	Proof of Concept	9.7%	9.9% (DOs)	10.7% (EQs)	No major differences across the three types of impact investors.
6	Degree of innovation	8.2%	6.9% (EQs)	8.8% (DOs)	No major differences across the three types of impact investors.
7	Founding team background	1.4%	0.7% (EQs)	3.4% (DEs)	Minor differences across impact investor types: social background is less important to equity investors, and more important to debt investors.

Our study also has implications for practice, particularly for policy-makers, impact investors, and SEs that seek funding. For policy makers, a better understanding of the heterogeneous field of impact investing is beneficial as public authorities need to adopt policies or guidelines for their own impact investment programs. For example, hybrid fund approaches such as the recently developed European Social Innovation and Impact Fund (ESIIF) which provides equity impact investments to SEs can use our results to compare their clearly defined screening criteria with those of other equity impact investors. Impact investing organizations can use our findings to benchmark their own organizational policies with those of other impact investors. Finally, for SEs that seek funding, we demonstrate the key attributes of their ventures that should be highlighted when seeking funding from impact investors.

2.6.2 Limitations and future research

A first set of limitations relates to our CBC experiment. Since the investment criteria used in the experiment needed to be defined in advance, we were unable to consider additional attributes after the experiment was launched. Thus, our study disregards other attributes that could be of additional importance to impact investors. In general, conjoint studies can therefore suffer regarding construct validity and can have a preselection bias (Shepherd & Zacharakis, 1999). However, to minimize the risk of selecting inappropriate criteria, we conducted expert interviews before selecting the criteria. Furthermore, since conjoint experiments confront participants with hypothetical ventures, external validity can be an issue. However, previous research has provided evidence for the external validity of conjoint studies under certain conditions (e.g., Shepherd & Zacharakis, 2018). One condition is that the tasks given to the participants should be as representative as possible for their real-life tasks (Shepherd & Zacharakis, 2018). Prior studies show that real decision-making behavior often correlates strongly with the estimated decision behavior. To address external validity, we conducted a pretest with experienced impact investors to confirm our selection of attributes and attribute levels. Another limitation of the forced CBC experiment is that decision-makers might sometimes perceive two investment opportunities as equally attractive but are still forced to choose one of them. This weakness could be eliminated through other conjoint models, such as a rating-based conjoint experiment. However, previous research has indicated that the results between both approaches are highly similar (Elrod et al., 1992).

Since we investigate impact investors from the DACH region, future research could test whether our results hold for impact investors globally. Previous research suggests that traditional investments differ between Europe and the US (Hege et al., 2009). Such differences might similarly exist between impact investors from Europe and the US, especially because the concept of social entrepreneurship differs between both markets (Defourny & Nyssens, 2010a). Future research might find it interesting to explore such differences between Europe and the US. Furthermore, research on impact investing is still in the early stages, which allows for a multitude of future research directions. For example, based on our study, future research could investigate whether selection processes differ among impact investors with regard to the investment stage in which they invest.

Chapter 3

Motives, supporting activities, and selection criteria of social impact incubators: An experimental conjoint study

Social impact incubators are a new type of incubator that support social enterprises in their early business stages to foster and develop their hybrid objectives. However, research on SIIs is still scarce, and little is known about SIIs' motives, supporting activities, and selection criteria. In investigating 71 SII decision makers from the DACH region, we find the societal duty motive stated as 'most important', while the financial motive is stated as 'least important'. Furthermore, applying a choice-based conjoint experiment, we identify the authenticity of the founding team and the importance of the societal problem addressed as SIIs' most important selection criteria. However, significant heterogeneity exists within the group of SIIs with regard to their selection criteria. In particular, SIIs with strong innovation and societal duty motives stand out and differ in their SE selection criteria from other SIIs. Our results extend prior research on SIIs and contribute to the discussion on selection criteria of SE supporters by showing that SEs are more likely to be supported if they authentically signal social credibility. We also highlight practical implications for SEs seeking support from SIIs.

This chapter is based on

Hirschmann, M., Moritz, A., Block, J. (in press). Motives, supporting activities, and selection criteria of social impact incubators: An experimental conjoint study. *Nonprofit and Voluntary Sector Quarterly*.

3.1 Introduction

SIIs have emerged worldwide along with an increasing number of newly founded SEs in recent years. SIIs, similar to traditional business incubators, help SEs overcome early-stage barriers by providing them with mainly nonfinancial support consisting of value-added services to develop the businesses of incubator participants (e.g., Allen & McCluskey, 1991; Amezcua et al., 2013; Mas-Verdú et al., 2015; Pena, 2004). With the support of SIIs, SEs develop sustainable business models that aim to fulfil their social and economic objectives (e.g., Battilana & Lee, 2014; Cooney, 2011). However, despite their importance in practice, research lacks a deep understanding of the particularities of SIIs as a new organizational type of business incubator (Sansone et al., 2020; Yang et al., 2020). In particular, we know little about the motives and supporting activities of SIIs and about their selection criteria. The answer to these questions is not trivial as SIIs similar to SEs are in a paradoxical situation pursuing hybrid objectives comprising both economic and social goals (Smith et al., 2013; Smith & Besharov, 2019; Child, 2020). It is therefore an open question how SIIs manage the paradoxical situation and the tensions arising from hybridity and how this influences their selection criteria for SEs. Prior research on SIIs was mainly using qualitative-empirical approaches (e.g., Aernoudt, 2004; Almeida et al., 2012; Etzkowitz et al., 2005; Nicolopoulou et al., 2017). Our study is quantitative. It measures the importance of SII's selection criteria and thereby gives SEs guidance which criteria really matter.

In addition, our study regards SIIs as a heterogeneous group where some SIIs lean more towards social goals while other SIIs have a stronger focus on economic goals (Casasnovas & Bruno, 2013). We expect this heterogeneity to influence SIIs selection criteria. To summarize, our study investigates the following research questions: What are the motives and supporting activities of SIIs? Which selection criteria do SIIs use in their decision-making processes, what is their relative importance, and how heterogeneous are SIIs with regard to their selection criteria?

Finding answers to these questions is important because SIIs are in a unique position to help SEs realize their goals and tackle societal challenges. This view is supported by prior research finding that SIIs are an important driver of social innovation (e.g., Almeida et al., 2012; Nicolopoulou et al., 2017). With their specific support activities, SIIs can help SEs manage the underlying tensions between their social and economic objectives (Pache & Santos, 2013; Smith et al., 2013). Understanding the motives and supporting activities of SIIs, and connected

to this, their selection criteria, provides further insights into how SEs can access this support mechanism.

To answer our research questions, we take an exploratory approach in investigating this new phenomenon because such an approach allows us to analyze this trend in a more rigorous and detailed way (Wennberg & Anderson, 2019). More specifically, we use a multimethod design. To identify the most important selection criteria of SIIs, we first conducted 12 interviews with experts on SEs. Based on our findings, we designed a choice-based conjoint (CBC) experiment including seven selection criteria and assessed their importance for SII decision makers. Additionally, we investigated the motives, supporting activities and characteristics of SIIs using a questionnaire that followed the experiment. Our final sample consists of 71 SII decision makers from the DACH region (i.e., Germany, Austria, and Switzerland) and encompasses private as well as public SIIs (e.g., Social Impact Labs or Impact Hubs).

Our study's contribution to the literature is threefold. First, we contribute to the scarce research on SIIs (e.g., Nicolopoulou et al., 2017; Sasone et al., 2020; Yang et al., 2020) by outlining the distinctive motives, supporting activities, and selection criteria of SIIs. With regard to the latter, we emphasize heterogeneity within the group of SIIs and show how the diversity of SIIs is reflected also in their selection processes. Second, our study adds to prior literature examining the selection criteria of SE supporters, which so far has mainly focused on financial investors (e.g., Achleitner et al., 2013; Miller & Wesley, 2010; Yang et al., 2020). Our study extents this line of research by exploring the selection criteria of SIIs as a new organizational type that provides SEs with non-financial support. Third, we contribute to prior research on paradox theory and its applications to hybrid organizations and particularly SEs (Jay, 2013; Smith et al., 2017; Schad & Bansal, 2018; Child, 2020). Our results indicate, that SIIs seem to focus particularly on social objectives while selecting SEs for their programs. Hence, SIIs seem to manage the competing logics of and tensions between social and economic objectives in their selection process by giving priority to the social aspects of SEs. Overall, the explorative approach applied in our study enables us to provide not only theoretical but also practical implications. Our results can help SEs that apply for SII support to better understand the selection processes and motives of SIIs and thereby increase their chances of approval and acquiring important resources. The heterogeneity that exists within the group of SIIs forces them to provide customized applications. SIIs can use our findings to benchmark their own selection processes against the market.

3.2 Background on social impact incubators (SIIs)

Research on SIIs is still limited. Table 3.1 provides an overview of SII research that has been published in peer reviewed journals. As the focus of our study is on the motives and selection criteria of SIIs to better understand how SEs can access SII support, in the following, we offer a deeper review of where SIIs come from and what their motives are, how the SII process unfolds, and what is known so far about SIIs' selection criteria.

Table 3.1. Prior research on SIIs

References	Journal	Method	Main content
Aernoudt (2004)	Small Business Economics	Qualitative	Explores different types of business incubators and initially describes SIIs' main objectives as supporting new ventures that integrate people with low prospects in the labor market, such as, for example, disabled people or the long-term unemployed.
Almeida et al. (2012)	International Journal of Technology and Globalisation	Qualitative	Examines a specific SII program that aims to foster social innovations in Brazil. Based on a triple helix dynamic model, which consists of the government, academia, and different industries, the article explains the diffusion and expansion of innovations in SEs.
Casasnovas and Bruno (2013)	Journal of Management for Global Sustainability	Qualitative	Explores the potential for social incubators and social accelerators to scale SEs. Based on a comparison of 40 social incubator and social accelerator programs, the article classifies both types and offers ten propositions for future research in the field.
Etzkowitz et al. (2005)	Research Policy	Qualitative	Identifies SIIs as organizations that foster business and social goals simultaneously. In addition, the study examines how a "meta-innovation system" in Brazil promotes innovation in areas of society that are normally hardly innovative.
Lall et al. (2013)	Innovations: Technology, Governance, Globalization	Quantitative	Investigates the role of SIIs in the formation of SEs. The authors explore the relationship between impact investors and social impact incubation programs based on a survey of 60 impact investors. The descriptive results range cover types of financing to impact targets and SII services.
Nicolopoulou et al. (2017)	R&D Management	Qualitative	Investigates the London Hub, a specific SII, to identify how social innovations are achieved out of incubation programs. The article identifies SIIs as an emerging focus of research which must be explored empirically. Furthermore, the impact of social capital on the relationship between innovation and incubation is examined.
Pandey et al. (2017)	Journal of Social Entrepreneurship	Quantitative	Based on a sample of 4,125 SEs that have applied for support from an SII, the article explores the supporting activities that SEs seek from SII programs. In addition, the authors investigate how the founding teams' human capital is associated with the search for different types of SII support.
Sonne (2012)	Technological Forecasting & Social Change	Qualitative	Identifies a gap in the financing of social innovation and social entrepreneurship in India and shows how SIIs and micro VCs can help bridge this gap while fostering social innovation.

Table 3.1. Prior research on SIIs (continuing)

Sansone et al. (2020)	Technological Forecasting & Social Change	Quantitative	Investigates differences between traditional business incubators and SIIs based on a quantitative analysis of a sample of 162 active incubators in Italy in 2016. The authors find that SIIs are just as efficient at developing start-ups as traditional incubators, although they do not solely focus on economic objectives.
Yang et al. (2020)	Journal of Business Venturing	Quantitative	Examines the most important signals of SEs when applying for social acceleration programs. The authors identify social and economic credibility as important decision-making factors for SIIs and furthermore show that gender role congruity has a significant impact on SIIs' selection processes.

3.2.1 Origins and motives of SIIs

SIIs are a new organizational type that emerged in response to an increasing number of SEs (McKinsey & Ashoka, 2019). Since the advent of the business incubation phenomenon, different incubation types have developed following different objectives and motives (e.g., Grimaldi & Grandi, 2005; Mian et al., 2016; Tamásy, 2007; Zedtwitz, 2003), such as technology or economic development incubators. Aernoudt (2004) initially introduced SIIs as a new incubation type that supports companies that employ people with limited prospects in the labor market and thus concentrate on the nonprofit sector. Over the last decade, however, the work of SIIs has shifted to the field of SEs that aim for financial independence and having a significant social impact in various fields (e.g., Nicolopoulou et al., 2017; Yang et al., 2020). This hybrid feature of SEs differentiates them from traditional business incubation attendees. In line with the characteristics of SEs, SIIs goals are defined by fostering social innovations and thus achieving social impact (e.g., Etzkowitz et al., 2005; Lall et al., 2013; Nicolopoulou et al., 2017).

SIIs themselves are diverse with regard to their different operating dimensions. In particular, SIIs can either be publicly or privately funded, which is reflected in their missions. Whereas publicly funded SIIs have the primary objective of building a sustainable environment that fosters the creation of social innovations to solve societal problems (Choi & Majumdar, 2014), privately financed SIIs are either financed by corporations and thus also serve company-specific objectives such as creating reputational gains (Phan et al., 2009) or are established completely independently as private initiatives to support SEs. An example of the latter is the Impact Hub (see www.impacthub.net), which is active globally in over 50 countries. The goal of the Impact Hub is to scale the impact of SEs that create solutions to global problems. Overall, different funding types and missions among SIIs indicate heterogeneity among SIIs.

3.2.2 Supporting activities and selection criteria of SIIs

In examining the supporting activities of SIIs more closely, prior research shows two main offerings of SII programs (e.g., Sansone et al., 2020; Yang et al., 2020). On the one hand, SIIs provide SEs with value-added services to foster their economic objectives, similar to traditional business incubators. On the other hand, SIIs help SEs develop their social objectives and thus achieve greater social impact, which clearly distinguishes them from other types of incubators. Thus, in addition to providing financial support in the form of grants or investments, SIIs typically provide SEs with nonfinancial support in the form of business development support, infrastructure for SEs, or network access (e.g., Lall et al., 2013; Sonne, 2012). These support mechanisms are designed to teach SEs how to scale their solutions to address societal problems and, at the same time, develop sustainable (profitable) business models that allow them to scale their ideas. Hence, SIIs also support SEs in managing the tension between these often opposing goals and avoiding drifting from their missions (Agafonow, 2015). The fact that SIIs have a positive effect on the economic performance of SEs while simultaneously promoting social objectives has been shown by Sansone et al. (2020). The authors investigated all operating incubators in Italy in 2016 and demonstrated that tenants of SIIs grow as fast as tenants from other types of business incubators. Overall, prior research has argued that SIIs are a suitable tool for establishing a supportive environment for SEs and their specific needs (Chell, 2007).

However, to date, little is known about the selection processes and criteria of SIIs and how they differ between SIIs.[8] Yang et al. (2020) recently analyzed the selection criteria of social impact accelerators[9] closely connected to SIIs. The authors reveal that social startups that signal both economic and social credibility are more likely to be selected. This is an important finding for social entrepreneurs applying for social impact accelerator support, as it provides answers to the question of which aspects of SEs' hybrid objectives applicants should focus on. We aim to extent these findings by investigating specific selection criteria that are used by SIIs when selecting SEs for their programs.

[8] In the literature on traditional business incubation, selection processes of innovation incubators have been investigated (e.g., Aerts et al. 2007; Bergek & Norrman 2008). However, these types of incubators differ strongly in their objectives from SIIs.

[9] Originating from incubators, most accelerators offer mentorship programs as well as coworking spaces to their supported startups (Radojevich-Kelley & Hoffman 2012; Cohen 2013). However, in contrast to incubators, accelerators provide startups with additional services such as seed investments and time-compressed training programs (e.g., Moritz et al., 2021; Block et al. 2018; Cohen & Hochberg 2014).

3.2.3 Conflicts between different objectives, motives and selection criteria of SIIs

SIIs are faced with the challenge to select suitable SEs for their programs. Prior research has discussed SEs extensively as an example for hybrid organizations (e.g., Galaskiewicz & Barringer, 2012; Pache & Santos, 2013; Battilana, 2018; Child, 2020). SEs typically are established to deliver social value and follow economic objectives to be self-sustainable instead of surviving through donations and grants (Ebrahim et al., 2014; Hirschmann & Moritz, 2020). Hence, SEs are hybrid organizations combining competing institutional logics (Jay, 2013; McMullen & Bergman, 2017; Child, 2020). In this context, paradox theory has been argued to be ideally suited to investigate this type of organization (Cherrier et al., 2018; Child, 2020). Paradoxes are defined as "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith & Lewis, 2011, p. 382). Therefore, SEs need to find ways to manage this paradox of following competing objectives (Pache & Santos, 2013; Cherrier et al., 2018).

Solving this paradoxical situation is likely to be reflected on the level of the SII. SIIs need to decide which criteria they should focus on while selecting an SE – social or economic. Even though without profits the SEs cannot survive in the long-run, it could be argued, that achieving a sustainable or even profitable business model is part of the value-added of the SIIs support program. As a result, SIIs might be more likely to focus on social criteria in their selection process. However, based on the type of funding and the mission of SII funders, SIIs themselves could be faced with the tension between achieving social and economic objectives of varying severity (e.g., Etzkowitz et al., 2005). Hence, SIIs could be argued to be hybrid organizations themselves facing a similar paradox than SEs which might be reflected in how they support und select SEs for their programs.

Based on this reasoning, it is not self-explanatory and difficult to predict which motives SIIs follow and related to those, which selection criteria dominate the decisions of SIIs. Therefore, our study investigates the motives, supporting activities, and selection criteria of SIIs. Furthermore, we explore how heterogeneity within the group of SIIs affects the evaluation of different selection criteria.

3.3 Prior research on the selection criteria of social enterprise supporters

Previous literature has explored the selection processes of different organizations supporting SEs (e.g., Achleitner et al., 2014; Miller & Wesley, 2010; Scarlata & Alemany, 2009). In particular, the selection processes of impact investors, such as SVCs and venture philanthropic organizations, have been investigated in depth (e.g., Achleitner et al., 2011; Block et al., 2021a;

Serrano-Cinca & Gutiérrez-Nieto, 2013; Spiess-Knafl & Aschari-Lincoln, 2015). This research has mainly focused on comparing idea- and entrepreneur-focused criteria (Achleitner et al., 2013; Scarlata & Alemany, 2009) and provides ambivalent results. Scarlata and Alemany (2009) find that the entrepreneur and the management team have the strongest impact on decision makers. Achleitner et al. (2013) investigate the importance of human capital aspects of SEs for SVCs and show that entrepreneur-related criteria are less important than other criteria.

However, first attempts have also been made to examine the influence of SEs' hybrid character on the selection processes of supporting organizations (Miller & Wesley, 2010; Yang et al., 2020). For instance, Miller and Wesley (2010) show that both social and economic objectives are acknowledged in the decision-making processes of SVCs. The authors find that economic selection criteria are valued more than social criteria. In their study, entrepreneurial selection criteria include management experience, earnings, performance, and innovation capabilities. Social selection criteria such as the social mission, the network size of a concerned community, or passion for social change have been found to be of lesser importance. However, Miller and Wesley (2010) also demonstrate that the more experience an investor has with VC funding, the more important social selection criteria become. Botetzagias and Koutiva (2014) show that donors place great value on the moral legitimacy of funded SEs. Finally, Yang et al. (2020) find that social impact accelerators are more likely to select an SE if both economic and social credibility are highlighted.

Table 3.2 highlights the findings of previous research conducted in this field. Overall, the literature still lacks a deeper understanding of the distinctive selection criteria of SIIs as a new type of organization within the field of social entrepreneurship.

Table 3.2. Selection criteria of SE supporters

References	Method	Type of SE supporter	Selection criteria
Achleitner et al. (2013)	Quantitative	SVC	• Investigates the influence of five criteria on the assessment of an SE's integrity • Voluntary accountability efforts and the entrepreneur's reputation are the most important for assessment
Achleitner et al. (2014)	Qualitative	Venture philanthropy funds	• Identifies (1) the concept, (2) social impact, (3) the market, (4) the social entrepreneur, (5) and financials as the most important criteria from interviews • Reveals interdependencies between selection criteria
Block et al. (2021a)	Quantitative	Impact investors	• Investigates the importance of seven criteria for the screening decisions of impact investors • Reveals that impact investors differ in terms of the funding that they provide to SEs
Botetzagias and Koutiva (2014)	Qualitative	Foundations and businesses	• Investigates how donors select environmental SEs • Identifies that moral legitimacy is of highest importance for donors generally
Lee et al. (2020)	Quantitative	Impact investors	• Investigates how impact investors can achieve efficient social and financial performance • Shows that the tendency to think in terms of categories such as "social enterprise" or "charity" prevents impact investors from achieving their full financial and social impact
Miller and Wesley (2010)	Quantitative	SVC	• Financial and social sector criteria influence the assessments of SVCs • Finds that greater value is attributed to entrepreneurial criteria
Roundy and Holzhauer (2017)	Qualitative	Impact investors	• Both social and financial returns are important for impact investors • Identifies similarities between impact and traditional investors with regard to selection criteria
Scarlata and Alemany (2009)	Quantitative	Philanthropic venture capitalist	• Finds that philanthropic and traditional VCs use similar selection criteria • Philanthropic VCs attach the most importance to (1) management teams, (2) significant social impact, and (3) social markets served
Spiess-Knafl and Aschari-Lincoln (2015)	Quantitative	Venture philanthropy funds	• Finds that in North America, investees such as children, disadvantaged beneficiaries, and disabled and sick persons are more likely to receive grants
Yang et al. (2020)	Quantitative	Social impact accelerators	• Signaling economic and social credibility simultaneously increases the likelihood of being selected • Identifies how gender stereotypes influence selection processes

3.4 Data and method

3.4.1 Interviews, conjoint experiment, and post experimental survey

We conducted a multimethod approach to assess the importance attached to the different selection criteria of the participants. This approach was necessary due to the scarce research on decision-making criteria in the field of SEs, particularly in the context of SIIs. We started by

identifying a list of the most relevant selection criteria from the literature and conducted interviews with 12 experts with considerable experience with the SE selection process to verify and shorten this list. We selected these experts based on theoretical considerations and conducted interviews until we obtained a sufficient number of different views demonstrating converged agreement between the participants on the selection criteria (Glaser et al., 1968). Thus, our interview partners belonged to German SIIs and impact investing organizations that also provide incubator-like services to SEs. [10] We selected only individuals with decision-making functions in their organizations (e.g., SII founder or project manager) and a high level of expertise in the social entrepreneurship field. The interviews were semistructured using an interview guideline with open-ended questions to ensure a free expression of the views and experiences of the experts (Galletta, 2013). [11] The aim of these expert interviews, which were conducted between November 2017 and March 2018, was to identify selection criteria that reflect a realistic decision-making environment for SII decision makers. Hence, the most relevant social and economic selection criteria and idea- and entrepreneur-related selection criteria were identified in the interviews. For this step, all interviews were analyzed according to the criteria mentioned by the experts. Based on our literature analysis and the results obtained from the interviews, we decided to use the following 7 selection criteria, which also fulfil the requirement of being as independent as possible, for our CBC experiment: (1) authenticity of the founding team, (2) professional background of the founding team, (3) financial sustainability, (4) scalability, (5) proof of concept, (6) degree of innovation, and (7) the importance of the societal problem. Each criterion was varied on two or three different attribute levels (e.g., proof of concept "provided" or "not provided"). All attributes – including the specifications shown to the participants of our conjoint experiment – are presented in Table 3.3. For example, the importance of the societal problem addressed captures the urgency of solving a societal problem, the authenticity of the founding team describes the overall authenticity or credibility of the founders, and financial sustainability indicates to what extent an SE is likely to finance itself in the foreseeable future.

In our study, we applied a discrete choice-based conjoint (CBC) experiment. The premise of this design is that decision makers always must select between two different hypothetical SEs described with different characteristics. We chose this approach to reveal the selection

[10] Impact investors are an increasingly important source of funding for SEs since they aim for a positive environmental or social impact from their investment (e.g., Brest & Born 2013; Geczy et al. 2019; The Economist 2017).

[11] The translated interview guidelines are included in the Appendix.

preferences of each participant by forcing them to make a discrete choice ("yes" or "no") because it has the advantage of jointly measuring decision criteria. Thus, CBC experiments require participants to evaluate a series of SEs based on fixed selection criteria. This experimental approach has been used in previous studies to evaluate VC decision criteria (e.g., Block et al., 2019; Franke et al., 2006, 2008; Shepherd & Zacharakis, 1999). In reference to SEs, Mayer and Scheck (2018) used a conjoint experiment to evaluate the selection criteria employed by SEs in choosing among different SVC investment options, and Achleitner et al. (2013) used this type of experiment to examine different criteria used by SVCs to assess social entrepreneurs' integrity.

In line with previous research, we used a full-profile CBC including all attributes from Table 3.2 (Franke et al. 2008). To make the decision-making situation as comprehensible as possible, the participants received a brief description of the decision-making situation before the experiment. Furthermore, during the experiment, the respondents could always read definitions of the decision-making criteria by clicking on the respective criterion (Table 3.3).

Table 3.3. Attributes and levels used in the conjoint experiment

Attribute	Levels	Labels/explanations for respondents	Rationale for inclusion
Financial sustainability (3 levels – ordinal)	Low Moderate High	Represents the extent to which the SE will be able to finance itself in the foreseeable future	Describes how likely an SE is to achieve financial goals in the future and not be dependent on external sources. Due to the hybrid nature of SEs, many are dependent on external support over the long term (e.g., Chell 2007). Therefore, becoming financially sustainable represents a great obstacle SEs must overcome.
Scalability (3 levels – ordinal)	Low Moderate High	Describes the likelihood of the transfer and large-scale implementation of the project	The scalability covers the social impact an SE wants to have, hence, showing the extent to which an SE's social project can be scaled to achieve greater impact and reach more stakeholders for the social part of the business.
Degree of innovation (3 levels – ordinal)	Low Moderate High	Describes the novelty with which the societal problem is addressed	Innovativeness is an important component of the definition of an SE (e.g., Dart 2004), covering how an SE is addressing a societal problem in a new way. Social innovation has become a major governmental focus for solving global problems and achieve the SDGs (Eichler & Schwarz 2019).
Proof of concept (2 levels – ordinal)	Not provided Provided	Proof of the feasibility of the project	Describes whether a proof of concept is provided for SEs' business models. Thus, the variable proves the feasibility of the social (and financial) part of an SE.
Importance of the societal problem (3 levels – ordinal)	Low Moderate High	Describes the relevance and urgency of solving the societal problem	The importance of the societal problem describes the extent of an issue that an SE aims to solve. Thus, next to the attribute's scalability, this attribute covers the social impact an SE wants to achieve.
Professional background of the founding team (3 levels – nominal)	Technical Business Social	Represents the educational and professional background of the founders	Previous literature has shown that the professional background of the founding team influences selection processes used in venture finance (e.g., Franke 2006, 2008; Kaplan & Strömberg 2004). Therefore, this attribute describes whether the founding team has a technical, social, or business educational and professional background.
Authenticity of the founding team (3 levels – ordinal)	Low Moderate High	Describes the authenticity or credibility of the founders	Davies et al. (2019) argue that SEs must be authentic; otherwise, barriers to growth may arise. Furthermore, several interview partners mention the authenticity of the founding team as an important attribute in their screening phase. The measure provides an indication of how credible the founding team is in solving a certain societal problem. Finally, the attribute measures how authentically or credibly founders present business ideas designed to solve a societal problem.

Based on our different criteria and attribute levels, we created a total of 500 unique experimental designs including differing combinations of attribute levels. However, we conducted the experiment with a reduced conjoint design (Chrzan & Orme, 2000) to ensure that participants would not be overwhelmed by too many decision-making tasks. Hence, each participant was asked to make 14 decisions in total; these decisions involved 12 randomly assigned tasks and 2 fixed tasks that were equal for every respondent.

Data collection took place between March 2018 and March 2019.[12] On average, each respondent took 23 seconds to make a selection between two different SEs. This finding is consistent with previous literature (Johnson & Orme, 1996). To confirm the face validity of our

12 This study is based in parts on the dataset of Block et al. (2021a). The research questions, analyses, and exact sample differ though.

experiment (attributes, the number of choices and complexity), we performed a pretest with 12 SE supporters and 4 researchers. Furthermore, we accounted for order effects (Chrzan, 1994) that could harm the reliability of a CBC experiment. On the one hand, we circumvented issues originating from the ordering of options given for a choice task by randomly ordering the two options offered by each choice task of the 500 different experimental designs. On the other hand, to prevent possible issues resulting from the ordering of attributes within a choice task, we randomized the presented order across the participants while simultaneously keeping the ordering stable within an ongoing experiment.

To identify the SIIs' most relevant selection criteria, we conducted a multilevel logistic regression analysis. The decision to select or not select an SE served as the dependent variable. The different attribute levels demonstrate our independent variables. A multilevel regression is used because our data consist of two levels with multiple decision observations nested within each respondent. Thus, the levels cannot be treated as independent from each other, and a multilevel model allows us to evaluate effects on cross-level interactions while the decisions are nested.

After the experiment, each participant was asked to complete a questionnaire consisting of individual and organizational- and SE-related questions (see the Appendix). For example, for the organizational part, to investigate our first research question, we asked the participants about the motives behind their SIIs. The motives also serve as moderator variables in our subsequent analysis.

3.4.2 Identification and description of the sample

We decided to investigate the DACH region since Germany, Austria and Switzerland are characterized by numerous similarities such as geographic proximity, language, social security systems and state-controlled wages and rents. The countries also offer income support, free access to schools and universities, free health care for low-income earners and very similar legal and tax systems. These characteristics of the DACH region provide a similar starting point for SEs and make the countries comparable. This is also evident in the absence of a specific legal form for SEs, which distinguishes the DACH area from almost all neighboring European countries (Wilkinson et al., 2014).

As no lists of SIIs in the DACH region exist, the search strategy was carried out manually. First, we identified SIIs within the countries of the DACH region. Thus, we identified DACH-specific SIIs such as Social Impact Labs as well as worldwide operating SIIs such as the Impact

Hub, which is already established in all continents and in over 50 countries. Second, listed partner organizations from the websites of identified SIIs and SIIs identified in various publications were collected manually (e.g., German Social Entrepreneurship Monitor, 2018). The decision makers of each SII were identified through the websites of the organizations. However, if a team description was missing from a website, we used the social network platforms LinkedIn and XING to identify the relevant decision makers. These platforms are the most commonly used platforms in the DACH region to communicate current and past personal and professional activities. Furthermore, a computerized search of these social media platforms was conducted to ensure that no SIIs and their decision makers were overlooked. The following keywords were used: "social incubator," "social entrepreneurship," "social lab," and "social hub."

Altogether, we identified 71 SIIs with 441 potential decision makers in the DACH region. We invited the identified decision makers via mail or through direct messages sent on a platform. Each of these decision makers received up to three reminder messages. In total, we collected 71 (response rate = 16.10%) responses from 46 SII organizations. Fifty-two (73.2%) participants were from Germany, 10 were from Austria (14.1%), and 9 were from Switzerland (12.7%). Each of the 71 respondents had to make 28 decisions on whether to select an SE resulting in 1,704 observations in total.

To assess whether our results were influenced by nonresponse bias, we compared our initial sample (N = 441) to our final sample (N = 71). Thus, we conducted a X^2-test to evaluate the representativeness of our sample by comparing participants to nonparticipants (e.g., Armstrong & Overton, 1977). Using the variables *male* and *educational degree*, we find no significant differences between the samples.

3.4.3 Characteristics of the sample

Individual level characteristics

Table 3.4 shows the respondents' individual characteristics. A total of 52% of the respondents are male, and the average age is 35 years (Min = 19 years, Max = 59 years). Overall, the respondents are highly educated. Of all decision makers, 66% have a master's degree or MBA. The respondents' characteristics are similar to those of individuals participating in previous studies in the field of impact investing, which also report a rather young collection of decision-makers with high levels of education (Lee et al., 2020). The participants of our study most often have a business (55%) or social science background (42%), which is in line with the hybridity

of the social and financial goals of SEs. On average, each participant had made between 5 and 10 SE-selection decisions in the past. This finding demonstrates that although social venture incubation has been a rather new phenomenon in recent years (Casasnovas & Bruno, 2013), SII decision makers already show a certain level of experience with the selection process. Additionally, noteworthy is the high degree of work experience in the field of social entrepreneurship; 52% of the respondents have a social entrepreneurship background.

Organization level characteristics

Table 3.5 provides an overview of the SIIs' organizational characteristics. On average, the SIIs included in our study have actively supported social entrepreneurship for 8 years, even though 25% of the SIIs were established within the last three years. The SIIs are relatively small organizations, 40% of which have fewer than 10 employees in total. SEs in very early stages (i.e., idea development stage) were most frequently supported (79%), followed by SEs in the seed (68%) and startup stages (66%). This finding is consistent with prior research on business incubators (e.g., Amezcua et al., 2013; Mas-Verdú et al., 2015) and is explained by the idea of business incubation, which fosters startups, particularly in their early years. SIIs in our sample mostly identify new participants through recommendations of third parties (75%) and focus particularly on the impact topic of sustainability (77%).

Table 3.4. Individual level statistics

Variable	Percentages
Demographic variables	
Male	52%
Age	
< 20 years	2%
20 – 30 years	42%
30 – 40 years	28%
40 – 50 years	20%
> 50 years	8%
Education and decision experience	
Level of education (highest formal degree)	
High school graduation	4%
Bachelor degree	19%
Master degree or MBA	66%
PhD or doctoral degree	11%
Field of education (multiple choice possible)	
Business/economics	55%
Social sciences	42%
Natural sciences	14%
Liberal arts	23%
Other	8%
Decision experience	
1	6%
2-4	34%
5-10	8%
> 10	52%
Experiences as a Social Entrepreneur	
Own background	52%

Notes: N = 71 decision makers.

Table 3.5. Organizational level statistics

Variable	Percentages	Variable	Percentages
Company age		Deal origination (multiple answers possible)	
0 – 3 years	25%	Initiative requests from SEs	49%
3 – 5 years	8%	Targeted own search	49%
5 – 10 years	25%	Tenders	55%
> 10 years	43%	Recommendations by third parties	75%
		Others	11%
Type of support			
Only financial	–		
		Impact topic (multiple answers possible)	
Rather financial	3%	Sustainability & environment	77%
Both equally	20%	Food Supply & nutrition	47%
Rather nonfinancial	49%	Health care	37%
Only nonfinancial	28%	Economic development	53%
		Child & youth welfare	34%
Investment stage (multiple answers possible, Ø 2,6 stages)			
Idea development	79%	Education & enlightenment	67%
Seed	68%	Social inclusion	59%
Startup	66%	Others	4%
Expansion	28%		
		Impact location (multiple answers possible)	
Establishment	11%	Germany	65%
Exit	4%	Within Europe	49%
		Africa	30%
Financial Support		Asia	18%
Donations	27%	North America	7%
Equity	11%	South America	11%
Debt	14%	Australia	1%
Mezzanine capital	3%		
Convertible loans	7%		
Guarantee	3%		
Nonfinancial support			
Networks & contacts	100%		
Infrastructural equipment	65%		
Mentoring/Coaching	96%		
Qualified advice (e.g. tax consulting)	83%		
Selective support (e.g. workshops)	79%		
Others	14%		

Notes: N = 71 decision makers.

3.5 Results

3.5.1 Motives and supporting activities

To be able to answer our first research question about the motives of SIIs to support SEs, each participant was asked to evaluate each SII organizational motive on a 5-point Likert scale ("1 = not important at all" to "5 = highly important"). Table 3.6 presents a correlation matrix as well as the single-item mean values, standard deviations, and multi-item mean values of SIIs' motives in the DACH region. We identified five types of motives for SIIs. First, the stakeholder expectation motive encompasses the single items 'expectations of society' and 'expectations of stakeholders', which correlate positively (0.49) (Cronbach alpha = 0.66). Second, the reputation motive consists of the single items 'image' and 'employer branding' (Cronbach alpha = 0.70). Third, we categorize the 'pursuit of inspiration', 'employee development', and 'new knowledge' under the term innovation motive (Cronbach alpha = 0.69). Finally, the duty to society motive and financial motive are captured through single items.

Table 3.6 shows that SIIs' most important motive is the societal duty motive (mean = 3.89). In contrast, the financial motive is of least importance (mean = 2.54). The stakeholder expectation (mean = 3.34) and innovation motives (mean = 3.27) rank second and third, respectively. The reputational motive, which is also closely connected to the business of an SII, is the second least important motive (mean = 2.89).

In line with previous business incubation research (Allen & McCluskey, 1991; Lalkaka & Abetti, 1999; Lalkaka, 2002), the organizations in our sample provide mostly nonfinancial support to their attendees. Regarding different types of nonfinancial support, we find that all SIIs support their SEs with their personal networks and contacts. This finding is in line with Bergek and Norrman (2008), who show that incubators play an important role as intermediaries between startups and business support organizations (e.g., follow-up investors). Furthermore, 96% of the SIIs provide specific mentoring or coaching programs, and 83% offer qualified advice (e.g., tax consulting). Finally, 65% also provide SEs with coworking spaces or other forms of infrastructure. Table 3.5 highlights the supporting activities of the studied SIIs.

Table 3.6. Correlations between motives and utilities of the selection criteria

	Variables	Single-item mean	Std.	Multi-item mean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Stakeholder expectation motive	(1) Expectations of stakeholders	3.32	1.17	3.34															
	(2) Expectations of society	3.35	1.12		0.49														
Reputation motive	(3) Image	3.07	1.06	2.89	0.21	0.41													
	(4) Employer Branding	2.72	1.12		0.16	0.27	0.54												
Innovation motive	(5) Be inspired by the startup spirit	2.96	1.26	3.27	0.19	0.24	0.34	0.26											
	(6) Employee development	3.13	1.17		0.03	0.02	0.25	0.23	0.37										
	(7) Learning from the innovations of others	3.72	1.00		0.20	0.18	0.14	0.18	0.45	0.47									
Societal duty motive	(8) Sense of duty to society	3.89	1.14	3.89	-0.10	0.14	-0.06	-0.09	0.28	0.33	0.36								
Financial motive	(9) Financial interests	2.54	1.04	2.54	0.20	0.15	0.04	0.17	-0.12	-0.14	-0.11	-0.30							
Utilities	(10) Financial sustainability	11.47	3.17	-	0.03	-0.01	0.11	0.04	0.09	0.05	-0.10	0.08	0.01						
	(11) Scalability	11.00	3.30		0.09	-0.02	-0.04	-0.08	0.18	0.26	0.19	0.20	0.08	0.45					
	(12) Degree of innovation	12.17	6.60		0.04	0.22	-0.05	-0.13	0.14	-0.11	0.24	0.23	-0.23	-0.17	-0.27				
	(13) Proof of concept	7.52	5.12		-0.20	-0.24	-0.05	-0.01	-0.11	-0.33	-0.28	-0.29	-0.12	0.02	-0.33	0.10			
	(14) Importance of the societal problem	24.75	7.73		0.08	0.11	0.01	0.13	0.08	0.10	0.09	0.16	0.06	-0.15	-0.00	0.20	-0.64		
	(15) Background of the founding team	4.94	2.66		0.17	0.14	0.15	-0.05	-0.00	0.18	0.21	0.15	0.03	-0.27	-0.21	0.27	0.03	-0.11	
	(16) Authenticity of the founding team	28.11	10.25		-0.06	-0.13	-0.01	0.01	-0.18	0.01	-0.16	-0.25	0.13	-0.18	-0.07	-0.78	0.01	-0.49	-0.22

3.5.2 Selection criteria

To answer our second research question about the selection criteria of SIIs, we conducted a multilevel (hierarchical) logistic regression. The results shown in Table 3.7 demonstrate that SIIs seem to focus mostly on the *authenticity of the founding team* and the *importance of a societal problem* in their selection processes. Our results also show that the *professional background of the founding team* is considered to be the least important criterion in the selection process. In examining the attributes of this criterion more closely, we find that only the *social background of the founding team* has a significant positive impact on decision making. Regarding *business* versus *technological background,* the participants are indifferent. All other criteria have a significant influence on the decision makers ($p < 0.01$). The *degree of innovation* ranks third, which is in line with the motives of SIIs, as learning from the innovation of others was also identified as the third most important motive for SII support of SEs. Less important to the selection processes of SIIs are *proof of concept* and *financial sustainability,* but they still have a significant influence on decision making.

We estimate the relative importance of each attribute to enable better comparability between the selection criteria. Therefore, first, zero-centered utility values for each attribute level of every decision maker are calculated. Second, we measure the range between the lowest and highest utility value of each attribute level to evaluate the effect of a change in an attribute's level on the total utility of a specific SE. In the third and last step, the range of each attribute level is divided by the sum of all ranges to calculate its relative importance. Figure 3.1 shows the values for the relative importance of each attribute. These values are normalized (zero-centered) for comparability reasons. Thus, the sum of all relative importance values is 100. Accordingly, higher values make greater contributions to an SE's total utility value.

Figure 3.1 demonstrates that the *authenticity of the founding team* accounts for 27.8% of the total utility of an SII decision maker. Thus, this attribute is almost 7 times more important for a decision maker than the *professional background of the founding team*. The same is true for the *importance of the societal problem,* which is the second most important attribute. This attribute's relative importance is almost 6 times greater than that of the least important attribute and is still twice as high as that of the third most important attribute *degree of innovation*. Overall, with 52.3%, the first two attributes have a greater influence on an SE's decision making than all other five attributes combined. However, with a relative importance of 10%, even the second least important attribute of *financial sustainability* still has a significant influence and is twice as important as the *professional background of the founding team*.

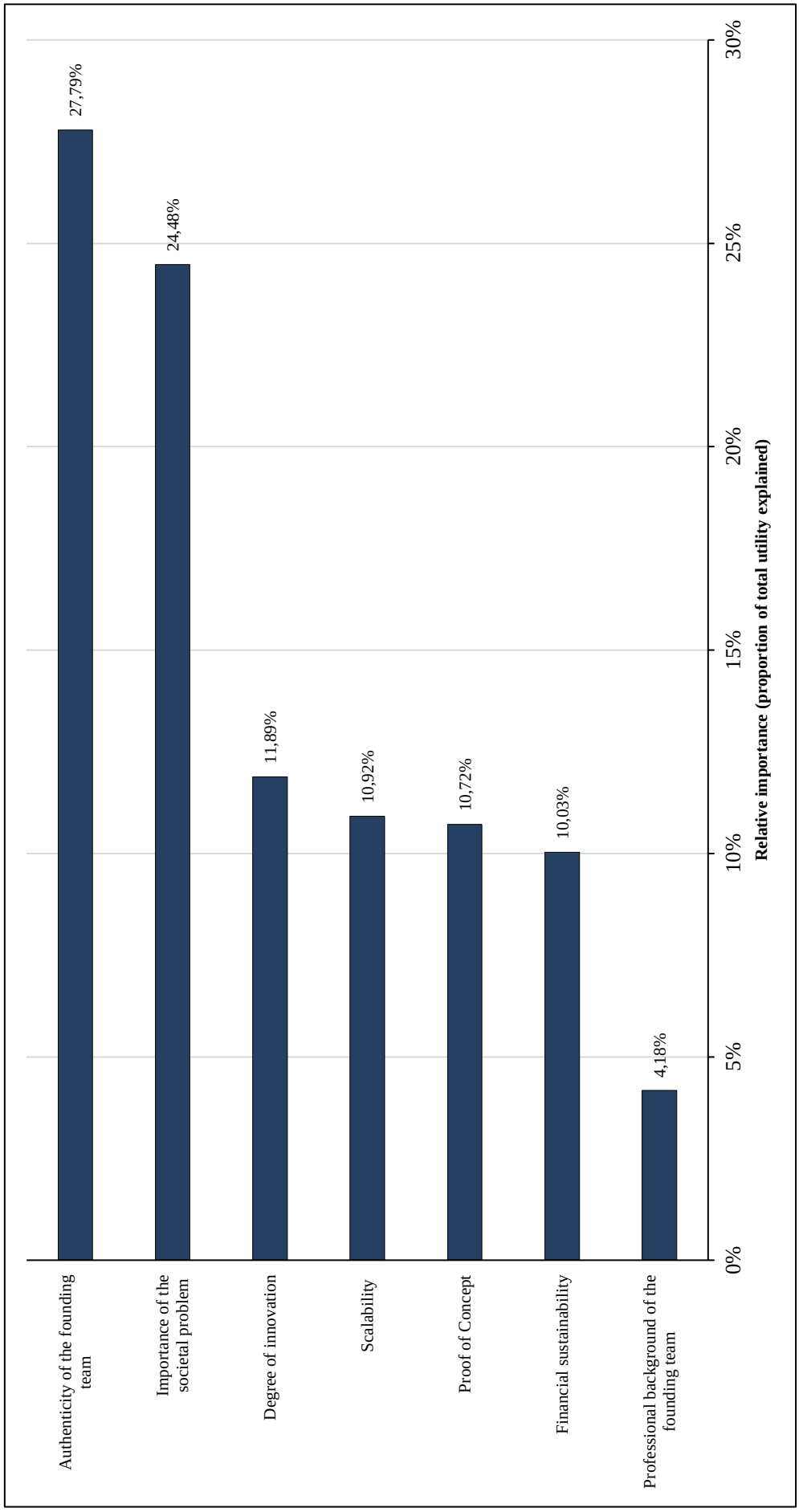
Table 3.7. Main effects model

Regression type: multi-level logistic regression with random intercepts and random slopes. Dependent variable: preference of decision maker. *p < 0.10, ** p < 0.05, *** p < 0.01.

Attributes and levels	**Log-odds (SE)**
Financial sustainability: high	0.704 (0.160)***
Financial sustainability: medium	0.455 (0.151)***
(*reference group: low*)	
Scalability: high	0.766 (0.163)***
Scalability: medium	0.422 (0.153)***
(reference group: low)	
Degree of innovation: high	0.834 (0.177)***
Degree of innovation: medium	0.515 (0.152)***
(reference group: low)	
Proof of Concept: provided	0.752 (0.172)***
(reference group: not provided)	
Importance of the societal problem: high	1.718 (0.181)***
Importance of the societal problem: medium	0.942 (0.154)***
(reference group: low)	
Professional background of the founding team: social	0.293 (0.150)*
Professional background of the founding team: technical	0.176 (0.157)
(reference group: business)	
Authenticity of the founding team: high	1.95 (0.202)***
Authenticity of the founding team: medium	1.412 (0.160)***
(reference group: low)	
N (decisions)	1.704
N (decision makers)	71

Notes: Estimated with robust standard errors.

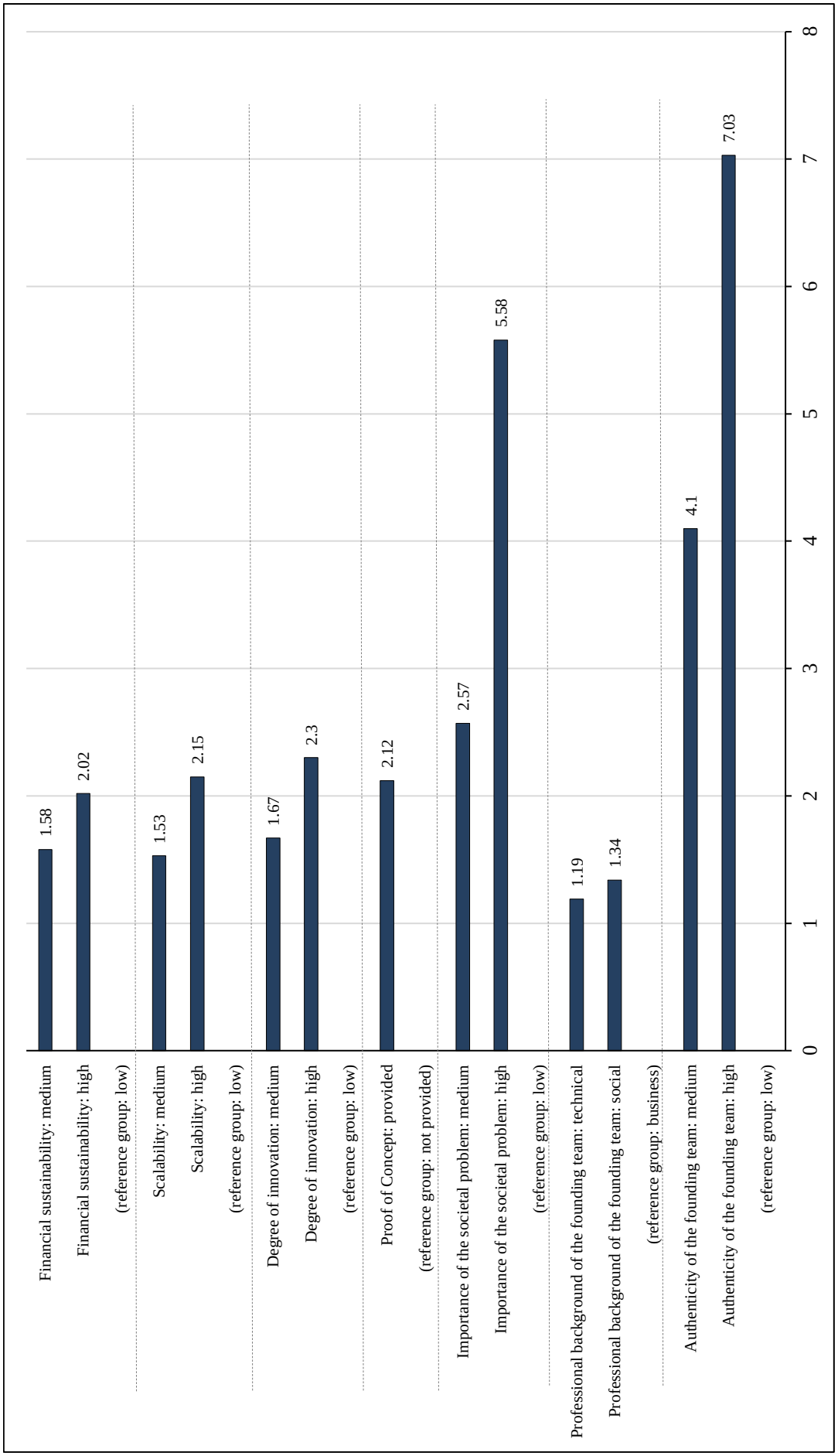
Figure 3.1. Relative importance of SIIs' attributes



Notes: Calculated based on the coefficients of the main model (Table 3.7). Reading example: With a relative importance of 27.8%, SII decision makers consider *the authenticity of the founding team* to be almost 7 times as important as the attribute *professional background of the founding team* (relative importance: 4.2%). This value also signifies that the attribute *authenticity of the founding team* accounts for 27.8% of the decision maker's total utility.

Finally, to further explore the effect sizes of the different attribute levels, we created Figure 3.2, which displays the odds ratios of each attribute level. SEs with 'high' scores for the *authenticity of the founding team* have an odds ratio of 7.03, meaning that they are seven times more likely to be selected by an SII decision maker than an SE with a 'low' score for the *authenticity of the founding team*. Even SEs with an *authenticity of the founding team* score described as 'moderate' are still chosen 4.10 times more often than their low-authenticity counterparts. Regarding the *importance of the societal problem*, SEs addressing very important problems (e.g., measures against climate change) are 5 times more likely to be selected than SEs focused on less important problems. For all other attributes (i.e., except for the *background of the founding team*), SEs with the highest level for a given attribute are more than twice as likely to be selected than those with the lowest level. Thus, the overall likelihood of being selected by an SII decision maker is strongly affected by high levels of (1) the authenticity of the founding team and (2) the importance of the societal problem.

Figure 3.2. Odds ratios of attribute levels



Notes: Calculated based on the coefficients of the main model (Table 3.7). Reading example: In comparison to an SE with low-authenticity founders, the odds of being selected by an SII decision maker increase 7.03 times if the founders of an SE are highly authentic.

3.5.3 Impact of SII heterogeneity on SE selection

To investigate the impact of SIIs' motives on the relationship between selection criteria and a participant's decision, we conducted additional analyses. Table 3.8 displays the results of each attribute level interacting with the motives of SIIs (see Section 5.1). Observing these interaction effects enables us to explore the heterogeneity of SIIs with regard to their SE selection decisions.

Model 1 shows the results of the interaction effects between the stakeholder expectation motive and SIIs' selection criteria. For this group, we do not find significant differences regarding their evaluation of the different selection criteria, except a slightly lower importance of the authenticity attribute. Model 2, however, shows that SIIs more focused on their own reputation place more importance on the societal problem and prefer a technical professional background in the founding team. In Model 3, we reveal that SIIs that strongly follow the innovative motive tend to assign less value to the proof of concept (-.446, $p < 0.01$) but favor ideas with a possibility of large-scale implementation (.507, $p < 0.01$) and those with a high degree of innovation (.349, $p < 0.1$). These results are similar to those of Model 4, which explores SIIs with a high duty to society motive. In addition to the greater importance assigned to the scalability of a project and the lesser importance assigned to the proof of concept, SIIs which focus strongly on their societal duty assigned less importance to a moderate authentic founding team (-.242, $p < 0.05$). Model 5 shows no significant differences regarding the evaluation of different screening criteria for SIIs that follow more financial motives. This result could be explained by the limited variation and generally low relative importance of this attribute (see Table 3.6). Finally, in Model 6, we investigate whether the scope of supporting activities provided by an SII affects their selection criteria. However, we do not find that SIIs with a larger scope of nonfinancial supporting activities have significantly different selection criteria. Applying a Wald test comparing the respective interaction model with the base model, we find statistically significant improvements for Models 3 and 4. Hence, in particular SIIs with a high importance attached to innovation and societal duty motives stand out and differ in their SE selection from other SIIs.

Table 3.8. Interaction effects between selection criteria and motives and supporting activities of SIIs

Regression type: multi-level logistic regression with random intercepts and random slopes.
Dependent variable: preference of the decision maker.
In Model 1-5 each attribute level interacts with a SII motive. For example, in Model 1, every attribute level is interacted with the stakeholder expectation motive. Model 6 captures the scope of non-financial supporting activities by an SII. The main effects are included in the estimation but are omitted for reasons of brevity so that the coefficients displayed here only refer to interaction effects. However, the main effects are qualitatively similar to the effects displayed in Table 3.7. *p < 0.10, ** p < 0.05, *** p < 0.01.

Model	(1)	(2)	(3)	(4)	(5)	(6)
Sample	**Stakeholder expectation motive**	**Reputation motive**	**Innovation motive**	**Societal duty motive**	**Financial motive**	**Extent supporting activities**
Variables	**OR (SE)**	**OR (SE)**	**OR (SE)**	**OR (SE)**	**OR (SE)**	**OR (SE)**
Financial sustainability: high	0.146 (0.167)	0.010 (0.162)	-0.019 (0.159)	0.092 (0.140)	-0.011 (0.126)	0.194 (0.146)
Financial sustainability: medium	-0.001 (0.169)	0.001 (0.170)	-0.211 (0.134)	-0.082 (0.103)	0.043 (0.124)	-0.026 (0.131)
Scalability: high	-0.065 (0.144)	0.064 (0.158)	0.507 (0.126)***	0.244 (0.120)**	-0.013 (0.115)	-0.202 (0.122)*
Scalability: medium	0.059 (0.173)	-0.085 (0.190)	0.376 (0.159)**	0.318 (0.108)***	-0.092 (0.143)	0.091 (0.185)
Degree of innovation: high	0.199 (0.210)	-0.237 (0.194)	0.349 (0.205)*	0.328 (0.149)**	-0.172 (0.148)	0.022 (0.179)
Degree of innovation: medium	0.083 (0.148)	-0.115 (0.151)	-0.137 (0.140)	-0.147 (0.128)	-0.030 (0.155)	0.039 (0.150)
Proof of Concept: provided	-0.277 (0.172)	-0.029 (0.187)	-0.446 (0.154)***	-0.290 (0.127)**	-0.026 (0.155)	-0.001 (0.154)
Importance of the societal problem: high	-0.061 (0.168)	0.025 (0.186)	-0.036 (0.181)	0.063 (0.159)	0.049 (0.169)	0.073 (0.212)
Importance of the societal problem: medium	0.251 (0.154)	0.274 (0.146)*	-0.010 (0.161)	-0.021 (0.135)	0.051 (0.143)	0.099 (0.144)
Professional background of the founding team: social	0.128 (0.156)	0.136 (0.131)	0.084 (0.167)	0.103 (0.131)	0.103 (0.133)	0.088 (0.134)
Professional background of the founding team: technical	0.088 (0.144)	0.254 (0.141)*	-0.040 (0.162)	0.010 (0.117)	0.197 (0.163)	-0.028 (0.143)
Authenticity of the founding team: high	-0.332 (0.190)*	-0.172 (0.192)	-0.126 (0.215)	-0.260 (0.158)	-0.049 (0.210)	-0.131 (0.196)
Authenticity of the founding team: medium	-0.145 (0.125)	-0.097 (0.141)	-0.086 (0.163)	-0.242 (0.106)**	-0.034 (0.146)	-0.215 (0.165)
Wald test	22.41**	18.92	37.28***	26.63**	5.75	20.53*
N (decisions)	1,704	1,704	1,704	1,704	1,704	1,704
N (decision makers)	71	71	71	71	71	71

3.6 Discussion, contributions and future research

3.6.1 Discussion

In investigating SIIs as a new type of incubator, our findings indicate that SIIs seem to focus strongly on the social outcomes of their activities. The main motive behind SIIs support of SEs seems to be the achievement of societal impact. By contrast, economic motives such as financial and reputation motives seem to be of comparably lesser importance for SIIs. This result indicates that SIIs are driven by the objective of fostering social entrepreneurship rather than being financially motivated (e.g., Aernoudt, 2004; Lalkaka, 2002). This finding is in line with prior research on business incubators, which argues that business incubators – rather than being driven by financial objectives – are primarily a tool to enhance the entrepreneurial environment in a region overall or in a certain field (e.g., Allen & Rahman, 1985). Even though social motives are of particular importance for SIIs, it could be argued that they still need to consider their own financial situation, at least if they must be self-sustainable. However, this is not reflected in their motives which clearly prioritize on social objectives. This result could be an indication that SIIs do not experience their own business situation as paradoxical but rather focus on the bigger picture of solving societal problems by supporting social entrepreneurship (Child, 2020).

With regard to supporting activities, SIIs are similar to traditional business incubators. Thus, they provide SEs with a diverse set of mainly nonfinancial supporting activities. Our findings are therefore in line with prior business incubation research (e.g., Allen & Rahman, 1985; Mian, 1996; Smilor, 1987). However, in contrast to the findings of Bruneel et al. (2012), we show that SIIs focus more on providing access to personal networks and less on providing infrastructure.

Furthermore, applying a CBC experiment, we identify the most relevant selection criteria of SII decision makers. Thus, we draw on previous literature analyzing the selection criteria of SE supporters (Achleitner et al., 2013; Miller & Wesley, 2010; Yang et al., 2020). In particular, we extend the results of Yang et al. (2020), who suggest that both social and economic criteria are important to be selected into an impact acceleration program. In contrast to these findings, our results highlight that the authenticity of the founding team and the importance of a societal problem are the top selection criteria of SIIs. Since financial interests seem to be of lesser importance for SIIs, we demonstrate that they seem to value social criteria more than economic criteria.

Our finding that SIIs attribute relatively low importance to financial sustainability and the degree of SE innovation indicates that the financial performance of their program participants does not seem to be their main priority even though these criteria are components of the definition of an SE (e.g., Dees, 1998; Martin & Osberg, 2007). This finding diverges from previous research on impact investors (Achleitner et al., 2013; Block et al., 2021a; Miller & Wesley, 2010). For these types of investors, financial criteria such as earned income or voluntary accountability reports of their supported ventures are of comparatively high relevance to the decision-making process. These differences might be explained by the diverse motives of both types of supporters. While SIIs seem to be particularly motivated by the social impact they wish to achieve, impact investors typically seek ventures to achieve both social and financial returns for their investors (Achleitner et al., 2013). However, Achleitner et al. (2014) also indicate that the passion of the founding team has a great impact on the decisions of impact investors, echoing the relevance of our authenticity criterion for SII decisions.

Furthermore, the relatively low importance attributed to the financial sustainability of SEs could be explained by the business models of SIIs, which typically support ventures by fostering their economic orientation through the value-adding services they provide (Grimaldi & Grandi, 2005). Therefore, SIIs might not place much weight on the financial criteria of SEs because SIIs – similar to traditional incubators – aim to help SEs become financially sustainable as part of their value-adding inputs. Hence, the specific business model of SIIs allows them to manage the paradoxical situation of SEs by clearly prioritizing one objective over the other. First of all, they follow their social mission by focusing on social criteria and only afterwards focus on other aspects. However, compared to traditional business incubators, SIIs also help SEs develop their social objectives. Overall, our findings are in line with Hirschmann and Moritz (2020) and Lall and Park (2020), who indicate that SEs should highlight their soft skills and sell their ideas in an authentic manner if they wish to obtain initial grants and signal their credibility to follow-up investors.

Finally, we show that SIIs are heterogeneous, as reflected by their evaluations of different selection criteria. Our results indicate that SIIs wishing to gather ideas from SEs and thus strongly follow an innovation motive also place more importance on SE innovativeness and on the potential to scale an SE's social solution and focus less on an already provided proof of concept. Hence, for these SIIs, innovative projects that inspire them and with the potential to have large-scale social impact seem to be of particular relevance. This finding is in line with prior research on SIIs indicating that SIIs' objectives are mainly to expand social innovations

in society through the scaling of SEs (Almeida et al., 2012; Casanovas & Bruno, 2013; Sansone et al., 2020). Finally, we show that SIIs that strongly value the motive to achieve societal duty also attribute more importance to SEs with scalable business ideas, which is in line with the findings of Yang et al. (2020) on social impact accelerators.

3.6.2 Implications

Theoretical implications

Our findings reveal important insights into a new incubation type and thus contribute to the literature in three ways. Two of our contributions address the extensive gap that exists with regard to prior research in the field of SIIs. Thus, we expand the literature focused on the particularities of SIIs (e.g., Aernoudt, 2004; Etzkowitz et al., 2005; Sansone et al., 2020) by exploring the motives, supporting activities and selection criteria of SIIs. In contrast to previous literature that identifies promoting social innovation as the driving motive (e.g., Almeida et al., 2012; Nicolopoulou et al., 2017; Sonne et al., 2012), the results of our quantitative study indicate that the societal duty motive is SIIs' most important motive. Thus, our findings show that in contrast to the economic motivations of other supporting organizations such as SVCs (Achleitner et al., 2014; Miller & Wesley, 2010; Scarlata & Alemany, 2009), SIIs seem to be more socially oriented and less driven by financial objectives. Furthermore, with our explorative multimethod approach, we are the first to identify the distinct selection criteria of SIIs as well as their heterogeneity, which is reflected in their evaluations of different selection criteria. Hence, we provide new insights into and a deeper understanding of the phenomenon of SIIs.

Second, our results contribute to the previous literature on the selection criteria of SE supporters (e.g., Lee et al., 2020; Miller & Wesley, 2010; Yang et al., 2020). Our finding that the authenticity of the founding team is the top criterion suggests that SIIs use an entrepreneur-focused selection process, which is consistent with the findings of Scarlata and Alemany (2009). However, the professional background of the founding team seems to be of comparatively low relevance for SIIs. This is surprising because the professional background of the SE team is another important criterion for entrepreneur-focused selection. However, this finding is in line with Achleitner et al. (2013), who also show that this criterion has little influence on SVCs' assessments of the integrity of SEs. In addition, we find that the importance of the societal problem addressed is the second most important selection criterion for SIIs. In contrast to social impact accelerators (Yang et al., 2020) and impact investors (Achleitner et al., 2013), SIIs seem to focus mainly on social selection criteria rather than economic criteria.

Third, we contribute to prior research on paradox theory investigating hybrid organizations and, in particular, SEs (e.g., Cherrier et al., 2018; Child, 2020; Jay, 2013; Pache & Santos, 2013). Our results highlight that SIIs seem to follow in particular social motives and value financial motives as least important. This could be an indication that SIIs do not experience their own business situation as paradoxical but look at the big picture of solving societal problems by supporting social entrepreneurship (Child, 2020). The focus on their social mission is also reflected in their screening criteria as they focus particularly on the authenticity of the management team and the importance of the societal problem. This result suggests that SIIs manage the paradox between the competing goals of SEs by setting clear priorities – first their social objectives need to be fulfilled before they look at economic criteria. This could be the result of the specific business model of SIIs where helping SEs to become financially sustainable is an important value-added service provided by SIIs.

Practical implications

The empirical insights of our study are of particular relevance to SEs seeking support from an SII and for SIIs themselves. First, our findings provide insights into how SIIs evaluate different selection criteria in their decision-making processes and hence offer knowledge to SEs on which criteria should be emphasized in their applications for SII support. We find that the authenticity of the SE team and the importance of the societal problem addressed are the most important selection criteria for SIIs, suggesting that SEs applying for SII support should focus on these criteria in their pitches. Other criteria that have been found to be highly relevant for other SE supporters, such as the background of the founding team and financial sustainability, receive the least attention from SIIs' decision makers. Hence, these criteria should not be the center of attention in an application for SII support. The motives of SIIs are represented by these results because SIIs seem to be especially motivated by achieving societal impact and not by pursuing financial interests. Thus, for SEs, our results illustrate that SIIs might provide very helpful support for developing their social ideas and establishing their businesses. Furthermore, our results with regard to the heterogeneity of SIIs suggest that SEs should emphasize different attributes in their application depending on the type of SII. For example, an application for an SII with a strong innovation motive should highlight the potential scalability and innovativeness of a project.

Decision makers of SIIs can use our findings to better understand their own screening processes and benchmark themselves against the overall market for social incubation. Because our results reveal that the background of the founding team, financial sustainability and proof

of concept have a comparatively limited impact on SIIs' selection decisions, SEs can evaluate whether these findings are in line with their overall business strategies. In particular, the observed strong preference for the perceived authenticity of the team and the importance of the societal problem addressed can provide SIIs with more transparency about their own evaluations of specific ideas, target groups, and beneficiaries.

3.6.3 Limitations and avenues for future research

This study is not without limitations. Some of these limitations are related to the CBC method used. Whereas early research on selection criteria using questionnaires and qualitative interviews (e.g., Hall & Hofer, 1993; Tyebjee & Bruno, 1984) has been criticized for self-report, recall and response biases, conjoint analysis can suffer from the preselection of decision making criteria and construct validity (Shepherd & Zacharakis, 1999). Thus, we were not able to test selection criteria other than the seven chosen. Nevertheless, conjoint experiments have been developed to more closely reflect actual selection processes because decision makers are forced to trade-off criteria against each other. To minimize the risk of choosing the 'wrong' selection criteria, we conducted expert interviews beforehand to identify the most relevant selection criteria. Furthermore, for external validity, we also conducted a pretest with SIIs to confirm our selection of attributes and attribute levels. Another drawback of the conjoint method is that participants are confronted with hypothetical SEs without providing additional material, such as business plans. The conjoint experiment, however, assumes that the decision maker possesses all relevant information, even though in real-life situations, more or less information might be available during a screening phase. Hence, it is important to provide goals that are as realistic as possible to elicit reliable selections from decision makers (Hsu et al., 2017). Our expert interviews, as well as the pretest, provide assurances that our choices are realistic and reflect real-life decision-making situations. Finally, our results are limited to the decision-making behavior of our 71 participants from the DACH region. Since the conception, characteristics and degree of development of social entrepreneurship differ between countries (e.g., Defourny & Nyssens, 2010a; Kerlin, 2006), it is possible that the motives and selection criteria of SIIs also show geographic differences. Even though we have included SIIs that operate globally (e.g., Impact Hub), and we would expect the same types of organizations to make decisions similarly across countries, future research could replicate our approach in other geographical areas to identify possible differences. For example, a similar research project could investigate the motives of SIIs in other geographic and cultural areas. Differences might especially exist

between SIIs from developing and developed countries. Furthermore, a larger sample would enable a deeper investigation of the heterogeneity of SIIs and not only focus on differences with regard to their selection criteria but also on differences regarding value-added and (social and economic) impact achieved.

Another interesting research avenue would be to understand how the different motives of SIIs attract different SEs for their programs. Hence, future research could investigate whether SIIs that communicate a strong innovation focus and mission are successful in attracting SEs with a strong focus on social innovation. Taking the perspective of SEs, it could be investigated how the supporting activities offered by an SII might influence the attractiveness of a social incubation program. Furthermore, it would be interesting to see how these characteristics of SIIs influence SE performance. This approach could also provide further insights into whether performance is mainly driven by a focus on specific selection criteria (i.e., a specific preselection approach) or by SIIs' value-added services (Croce et al., 2013; Di Guo & Jiang, 2013). Another important area for future research would be to further investigate the heterogeneous landscape of SIIs. Since SIIs may be affected differently by tensions between their social and economic objectives depending on how they are motivated and funded, further research could explore this relationship in more detail. This would also help provide even deeper insights into the interconnections between the motivations and selection criteria of SIIs.

Chapter 4

Market, social, or both? Measuring social innovation through trademarks

Social innovation in market-oriented SEs contributes to both social and financial value creation. In order to develop and evaluate policy programs that promote social innovation to address societal challenges, it is therefore critical to understand how to identify social innovation. However, while the literature on commercial innovation is well advanced, research lacks empirical evidence on the measurement of social innovation. This study addresses this gap by investigating how trademarks and its diverse IPR characteristics serve to measure social innovation by SEs. Based on a sample of 925 SEs from Germany, we apply a textual analysis of their corporate websites to assess four dimensions of social innovation (i.e., innovation, social impact, financial, and scalability). In total, we analyze more than 35,000 sub-pages of SE-websites to construct our dependent variables. Our results show that the number of SEs' registered trademarks relate to all dimensions of social innovation. In addition, we find that certain trademark characteristics predict the dimensions of social innovation in different ways. We provide implications for both policy-makers and social entrepreneurs.

This chapter is based on

Hirschmann, M., Block, J., Krlev, G. (2021). Market, social, or both? Measuring social innovation through trademarks. *Working paper*.

4.1 Introduction

Social innovation experiences increasing international attention as an essential tool for solving societal problems (e.g., Lee et al., 2019; Van der Have & Rubalcaba, 2016; Pel et al., 2020; Shaw & De Bruin, 2013). Governments are channeling huge amounts of money to organizations that spur social innovation. For example, the European Commission's "Employment and Social Innovation" (EaSI) program seeks to invest almost EUR 100 billion in the area from 2021–2027. Social enterprises (SEs) are seen as one of social innovations' main promoters (Seelos & Mair, 2017). Since its early days social entrepreneurship researchers (Anderson & Dees, 2006, Bacq & Janssen, 2011; Krlev & Mildenberger, 2020; Phillips et al. 2015) have distinguished a "social enterprise school of thought", that is mission-oriented organizations establishing more market income, from a "social innovation school of thought", that is organizations that foster social innovation to impact social problems—suggesting that they can do either one or the other. Scholars have lately sought to bridge this gap by analyzing organizations that seem to be able to do both, pursue market orientation and "drive positive social change" (Stephan et al., 2016; also 2019; Vasin et al., 2017).

However, and unfortunately, gauging this claim empirically is very challenging for several reasons. First, the measurement of social innovation is hardly advanced. There is conceptual work on relevant dimensions and indicators (Krlev et al., 2014) and very recent more targeted scales (Andries et al., 2019), which have however not yet been applied beyond the specific context in which they were develop. Second, the market orientation of SEs is hard to grasp, especially when the supposition is that they promote social innovation, which unlike commercial innovation can hardly ever result in patents (Krlev et al. 2018). Thus, the long history of measuring innovation by means of registered patents (e.g., Audretsch & Feldman, 1996; Gittelman, 2008; Pavitt, 1985; Romijin & Albaladejo, 2002) is of limited use for measuring market-orientation in SEs. This implies, that we first need to find an alternative approach to measuring social innovation, for example through self-description of enterprise websites, which has recently experienced a major push for measuring commercial innovation (Kinne & Axenbeck, 2020; Axenbeck & Breithaupt, 2021; Bellstam et al., 2021). Such an effort can be complemented by developing the few available scales further for measurement. In addition, it implies that we need an alternative to measuring commercial orientation. While patents do not work, the SE school of thought clearly stresses the provision of services and selling of products. Thus, trademarks as proven indicators of market performance (and in fact innovation) in service industries (e.g., Schmoch & Gauch, 2009), might also serve as indicators for market orientation

in SEs. By combining these two suppositions, we address the following research question with this study: How can social innovations by SEs be measured through trademarks?

To investigate this research question we apply a multi-pronged research strategy. First, we combine a large primary dataset of 925 SEs from the DACH-region with a textual analysis of their corporate websites. More specifically, we apply a web crawler and investigate 42,469,408 words from 35,624 subpages of the 925 SE-websites to measure social innovation. We regress this data against information on company-related trademarks to explore how trademark characteristics indicate the four dimensions of social innovation by SEs (i.e., innovation, social impact, financial, and scalability dimension). To substantiate our measure of social innovation, we apply manual coding to the SEs' websites through members of our research team to assess their social innovativeness. Both help us not only to test the accuracy of the web-scraped and automated data analysis, but also to calibrate analytic insights from automated analysis, external assessment (by the researchers) and self-assessment (by the enterprises) on social innovation.

We find that trademarks differently indicate social innovation. While the results of our textual analysis do not provide strong evidence that SEs that register at least one trademark are more innovative than those without trademarks, our results show that the number of registered trademarks relates to all social innovation dimensions except the financial one. Furthermore, our detailed trademark characteristic analyses demonstrate how the breadth, type, and geographical scope of a trademark indicates the dimensions of social innovation.

We organize this article as follows: Section 2 provides a literature background on indicators of commercial and social innovation. Section 3 demonstrates how we construct our sample and how we compose our sets of variables. In Section 4, we present our empirical results and Section 5 concludes our study by discussing our results in the context of prior research and highlighting policy implications as well as future research directions.

4.2 Literature background

To assess how to measure social innovation, it is necessary to understand already established indicators and measurement approaches of commercial innovation. Therefore, the next section discusses prior research in this area. We then summarize how initial studies measure or indicate social innovation. This approach enables us to identify possible suitable indicators of social innovation that have been studied before.

4.2.1 Measuring commercial innovation

For a long time, different economic fields have been exploring how to measure innovation. Therefore, nowadays there are various approaches ranging from surveys, R&D investment analyses to proxies for IPRs. Furthermore, latest research still develops new methods to measure commercial innovations. The following paragraphs summarize different approaches that exist.

There is a long history of research that investigates the relationship of R&D investments and innovation activity (e.g., Audretsch & Feldman, 1996; Chen et al., 2012; Hagedoorn & Cloodt, 2003; Lahiri, 2010). One exemplary research stream investigates how firms innovate through R&D internationalization (e.g., Altomonte et al., 2013; Chen et al., 2012; Hsu et al., 2015). For example, Hsu et al. (2015) demonstrate the U-shaped relationship between R&D internationalization and innovation performance. More precisely, the authors identify a specific point at which the benefits of internationalization outweigh the costs due to high intensity and diversity. Furthermore, R&D investments can serve as means to explore competences of firms to innovate (e.g., Gerybadze & Reger, 1999; Henderson & Cockburn, 1994). In total, a large amount of studies use R&D investments as an indicator that in turn leads to innovation output (Hadedoorn & Cloodt, 2003).

Prior research frequently uses different types of IPRs and their characteristics as an indicator of innovation performance (e.g., Archibugi & Pianta, 1996; Flikkema et al., 2014; Mansfield, 1986; Pavitt, 1985; Trajtenberg, 1990). Here, the main focus lies on patents. In particular, the studies commonly indicate innovation performance through patent statistics such as the number of patents or the number of patent citations (e.g., Archibugi & Pianta, 1996; Acs et al., 2002; Trajtenberg, 1990). For instance, Mansfield (1986) shows that patents differently indicate innovation between sectors. Besides patents, research in the last decades has increasingly focused on examining trademarks as indicators of innovation (e.g., Flikkema et al. 2014, 2019; Mendonça et al., 2004). Especially in industries where patents are less important, such as knowledge-intensive business services, trademarks have the potential to indicate innovation (e.g., Gotsch & Hipp, 2014). More specifically, Flikkema et al. (2019) demonstrate that different trademark characteristics can indicate specific types of innovation (i.e., product or service innovation).

Furthermore, conducting surveys to determine the innovation performance of companies illustrates a more direct approach that many researchers use (e.g., Cicera & Muzi, 2020; Falk, 2007; Hashi & Stojcic, 2010; Tsai & Wang, 2009). Similar to the employment of patents as

indicators, measuring innovation via surveys has advantages and disadvantages. For example, Archibugi & Pianta (1996) argue that surveys hardly allow time-series comparisons, which are necessary to assess innovation development processes. However, recent studies still aim to enhance the measurement of innovation via surveys. Thus, Cirera and Muzi (2020) show that framing and cognitive problems can be minimized by conducting preliminary interviews and having a deep understanding of the study field. The authors provide specific information on how the results of their focus on developing countries can be transferred to further research that focuses on an innovation study design.

With the advent of Big Data analytics, research on measuring innovation has expanded its scope. Therefore, text-based analysis approaches in this field have been developed in various studies in recent years (e.g., Axenbeck & Breithaupt, 2021; Bellstam et al., 2021; Kelly et al., 2021; Kinne & Axenbeck, 2020). These studies investigate texts from corporate websites (web mining) and analyst reports to research articles. In a comparison between the survey results of the Community Innovation Survey (CIS) and a text-based model for detecting innovations on corporate websites, Daas and Van der Doef (2020) find that the text-based model is able to reproduce the survey results. Furthermore, Bellstam et al. (2021) show that textual analyses of analyst reports strongly correlate with patents that indicate innovation.

Overall, most studies mentioned in the previous paragraphs use a single approach to indicate or measure innovation. Hagedoorn and Cloodt (2003, p. 1366) therefore argue that there is "hardly any clear understanding of the concept and measurement of innovative performance" and develop a more complex multi-indicator approach. However, because information on one of these multi-indicators is often lacking, e.g., when studying SMEs, many new studies still need to focus on single specific indicators when examining commercial innovation (e.g., Gimenez-Fernandez et al., 2020; Hervás-Oliver et al., 2021; Nyuur et al., 2018).

4.2.2 Measuring social innovation

Social innovation encompasses "any new idea or model that addresses a social (or environmental) need" (Nicholls et al., 2015, p. 5). Accordingly, in the field of social entrepreneurship, SEs represent the organizational level at which social innovations emerge.[13] However, so far, a limited number of studies have investigated the measurement of social innovations. Table 4.1

[13] Since our focus is on innovation of SEs that pursue either social or/and environmental impact goals, the innovations can also be social and environmental in nature.

demonstrates different approaches introduced by prior research. All of them were published in the last decade, which highlights the importance of this topic at the present time.

Table 4.1. Measurement approaches of social innovation

References	Journal	Indicator/ Measurement approach	Main findings
Akgüç (2020)	European Planning Studies	• Proxies for social innovation: o Social protection expenditures o Share of innovative entrepreneurs o Share of social economy	• Identifies determinants of social innovations • Level of education, total government expenditures, existence of commercial and legal infrastructure, and the availability of supportive cultural and social norms for innovative entrepreneurial activities positively relate to social innovation
Andries et al. (2019)	Research Policy	• Development of a Community Innovation Survey (CIS) • Survey tested in Flanders (Belgium)	• Measurement whether for-profit and nonprofit organizations are improving the situations of vulnerable groups • More specifically, the authors identify how innovation help vulnerable groups to gain access to basic provisions
Bund et al. (2015)	Historical Social Research	• Development of a methodological framework of social innovation that combines theoretical top-down strategies with an empirical bottom-up strategy	• Outline dimensions that help to measure social innovation capacities of spatial units • Identify four groups of core factors for social innovation processes: o Social need structures o Financial resources o Political anchoring and support o Social capital and networks
Krlev et al. (2014)	Information Systems Management	• Development of a theoretically grounded measurement approach	• Demonstrate a broad range of indicators and possible data sources to measure social innovation • Patents are not suitable to capture social innovation
Kruse et al. (2019)	Journal of Product Management	• Development of a theory-guided bottom-up search process	• Approach to identify social innovations in the sector dealing with humanitarian problems • Four phases to identify social innovation: (1) Project scoping, (2) problem understanding, (3) solution search, and (4) peer-creation facilitation
Phillips et al. (2019)	Journal of Business Ethics	• Use the Community Innovation Survey (CIS) to identify social innovation as dependent variable	• Social enterprises closely work together with their stakeholder in the ideation stage of social innovation • Social enterprises face problems in their stakeholder relationships during the implementation of social innovations
Unceta et al. (2016)	Innovation: The European Journal of Social Science Research	• Development of the Regional Social Innovation Index (RESINDEX) • Tested with 282 regional organizations in the Basque Country (Spain)	• Organizational level is appropriate to measure social innovation activities • Use of absorptive capacity to explain and measure social innovation • Identify four key dimensions of social innovation: o Acquisition of knowledge (exploration) o Development of innovations (exploitation) o Impact assessment (evaluation) o Governance of social innovation (participation and cooperation)
Vassallo et al. (2019)	Journal of Product Management	• Use two market-level outcome measures to evaluate the scaling of social innovations	• Not-for-profit, quasi-profit, and for-profit organizations differ with regard to their scaling potential • For example, quasi-profit (hybrids) more often achieve greater usage of their social innovations in lower development markets

Several studies address the measurement of social innovation on a theoretical level (e.g., Bund et al., 2015; Krlev et al., 2014). In one of the first attempts at measuring social innovation, Krlev et al. (2014) develop a theoretically grounded measurement approach in which the authors provide indicator dimensions and associated data sources for measuring social innovation. For example, the number of petitions in a country can capture political participation as an indicator of social engagement, which some social innovations strive to increase. Furthermore, Bund et al. (2015) and Kruse et al. (2015) develop frameworks to measure social innovation based on a bottom-up approach. While the former authors identify four core factors of social innovation processes (social need structures, financial resources, political anchoring and support, social capital and networks), the latter focus on how to identify social innovation through four phases (project scoping, problem understanding, solution search, peer creation).

Prior research on the identification of social innovation based on surveys is very limited. Andries et al. (2019) design a survey to assess how social innovation may contribute to social improvements in a community. The authors test their Community Innovation Survey (CIS) with for-profit and nonprofit organizations in Flanders to identify how these organizations support vulnerable groups to regain access to basic provisions. Phillips et al. (2019) use the CIS to measure social innovation as a dependent variable in their model. Using a sample of SEs' top management team members, the authors investigate how SEs interact with their stakeholders at different stages of the organization. Additionally, Unceta et al. (2016) develop an index to assess social innovations on a regional level. More specifically, the authors use the theory of absorptive capacity to identify key dimensions of social innovation.

Finally, there are initial studies that measure social innovation by using macro-level proxies. For example, Akgüç (2020) combine social protection expenditures, the share of innovative entrepreneurs, and the share of social economy to proxy social innovation. Thereby, the authors find that, for example, the level of education as well as the availability of supportive cultural and social norms for innovative entrepreneurial activities are determinants of social innovations. Furthermore, Vassallo et al. (2019) show how prevalence and usage of social innovation indicates the scaling of social innovations. Due to this approach, the authors identify differences that exist between nonprofit, quasi profit, and for-profit organizations.

Beyond these studies, to the best of our knowledge, there are no studies to date investigating indicators for social innovation at the organizational level. While Krlev et al. (2014) argue that patents are not suitable for identifying social innovations, trademarks might be useful to measure social innovations. Therefore, with this study, we aim to contribute to a greater

understanding on how trademarks and their distinctive characteristics relate to different dimensions of social innovation.

4.3 Data and method

4.3.1 Sample construction

We collected a large sample of German market-oriented SEs and identified the companies via a threefold approach.

First, we defined a search strategy to collect SEs from the regularly used business information database of the Bureau van Dijk (Orbis) (e.g., Mina et al., 2021; Shubbak, 2019; Visnjic et al., 2016). Therefore, we collected a sample of charitable limited companies, cooperatives, and associations from the database. However, since we restrict our sample to market-oriented SEs, we limited the companies to those that have their own business model and hence offer their own products or services. For example, we excluded care centers that are narrowly connected to the third sector or the government. Based on the websites of the SEs, we were able to identify whether an SE strongly relies on donations or offers own products.

Second, we identified further German SEs through the pitchbook database. This platform provides information on private capital markets and includes some impact investing organizations from Germany. Pitchbook has been used by previous studies in the field of entrepreneurial finance (e.g., Degeorge et al., 2016; Gompers et al., 2020b). Thus, we use previous investments of impact investing organizations that are members of the EVPA to identify SEs for our sample.

Third, we utilized platforms of large SE support organizations from Germany to identify further SEs. Hence, we collected the members of the organizations Ashoka (a global player the field of social entrepreneurship), BonVenture (a Germany specific SVC), and SEND (a German lobby organization for SEs).[14]

As a result, our initial dataset encompasses 1,089 SEs. However, due to missing values with regard to missing company websites and missing number of employees of some SEs, we excluded 141 SEs. Furthermore, we reduced our sample by 16 SEs that have a website with less than 50 words. Thus, our final sample encompasses 925 SEs.

[14] SE members are listed on the following websites: https://www.send-ev.de/netzwerk, https://www.ashoka.org/en-us/our-network/ashoka-fellows/, https://bonventure.de/unser-portfolio/

4.3.2 Measures

Dependent variables

In order to evaluate the degree of social innovativeness within an SE, we create a set of indices that capture different dimensions of social innovations. We derive these dimensions from prior conceptualization studies from the field of social innovation as well as market-oriented social entrepreneurship (e.g., André & Pache, 2016; Austin et al., 2006; Choi & Majundar, 2014; Dawson & Daniel, 2010). For example, Choi and Majundar (2014) describe social innovation as a core of SEs, which is necessary to have a market orientation while aiming for social value creation. Furthermore, André and Pache (2016) describe the process of scaling and sharing social innovation without experiencing a mission drift as an SE. Since these articles show that social innovation is hardly measurable in a single dimension, we identify the following four core dimensions to capture the social innovativeness of an SE: *innovation*, *social impact*, *financial*, and *scalability*.

To create each of these four indices, we use textual analyses of the corporate websites of SEs. More specifically, we apply a keyword search, which is in line with prior research that investigates how innovativeness can be assessed through website analyzes (e.g., Axenbeck & Breithaupt, 2021; Daas & Van der Doef, 2020). Thus, we examine the first layer of each website that connects to the root (i.e., landing page of a website), in which companies describe most of their core activities. Thereby, we are able to exclude biases that stem from large websites explaining in detail every single product (e.g., in the food industry) or introduce every employee, which would add little value to our assessment of the social innovativeness of SEs. Meanwhile, we do not limit our results to a specific number of subpages (cf. Axenbeck & Breithaupt, 2021). Thus, we analyze company websites that range up to 731 subpages with a median of 24 subpages.

We construct each dimension of SEs' social innovativeness by using a web crawler to identify specific terms. To define the search terms of each dimension, we conducted a two-step approach. First, we identify suitable search terms from prior studies that investigate innovation through corporate website analyzes. For example, we derive some of our search terms from Daas and Van der Doef (2020), who provide a list of innovation related search terms. However, since social innovation is more complex to assess due to its multi-layered nature, in a second step, each researcher of this project (all with experience from the field of social innovation and social entrepreneurship) listed their own search terms for each dimension. Afterwards, we chose

search terms that were mentioned from at least two researchers. Because our focus is on SE innovation and we also identified SEs with environmental goals, we include search terms that relate to the independent research area of sustainable innovation. Table 4.2 lists all of the German search terms that we use in our web crawler as well as the English translations. Each of these terms was crawled with a prefix search mechanism since the stemming method developed at Stanford University by Manning et al. (2014) is not suitable for German search terms. The website texts were crawled in August 2021.

In total, our web crawler collected 42,469,408 words from 35,624 subpages of the German SEs. To derive distinctive dimensions from the number of crawled search terms, we exclude search terms in grey of the last column in Table 4.2. We exclude these terms either because they were mentioned by only one researcher, because their content is too closely related to another dimension, or for statistical reasons because one term is strongly correlated with another from a different dimension. Based on the web crawling results of the utilized search terms, we develop a dependent variable index for each dimension, which we create as follows:

$$\beta_i = \frac{1}{N}\sum_{j=1}^{N} x_j$$

In this equation β_i represents the dependent variable for each dimension. On the right side of the equation we calculate the arithmetic mean of each index, x_j demonstrates the number of terms that were crawled from a corporate website and N the number of terms, which we used in an index. For example, for the innovation index, we take the sum of the results of the five search terms (innovat*, neu*, technol*, idee*, besser*) divided by five.

Table 4.2. Search terms for each dependent variable index

	Innovation index		Social impact index		Financial index		Scalability index	
	German terms	**English translation**	**German terms**	**English translation**	**German terms**	**English translation**	**German terms**	**English translation**
Retained	• Besser* • Idee* • Innovat* • Neu* • Technol*	• Improv* • Idea* • Innov* • New* • Technol*	• Bio* • Bildung* • Gesellschaft* • Gesundheit* • Klima* • Nachhaltig* • Öko* • Ressource* • Sozial* • Verantwort* • Wirkung*	• Organic* • Education* • Societ* • Health* • Climate* • Sustainab* • Ecolog* • Resource* • Social* • Responsib* • Impact*	• Absatz* • Eigenständig* • Gewinn* • Kommerzialis* • Rendit* • Tragfähig* • Umsatz*	• Sales* • Independ* • Profit* • Commercial* • Return* • Sustainab* • Turnover*	• Diffus* • Diversifi* • Erweiter* • Internat* • Reichweite* • Skalier* • Verbreit* • Wachs*	• Diffus* • Diversifi* • Extend* • Internat* • Range* • Scal* • Distribut* • Grow*
Excluded	• (Forsch*) • (Lösung*) • (Invest*) • (Prototyp*)	• (Research*) • (Solution*) • (Invest*) • (Prototyp*)	• (Armut*) • (Begünstigt*) • (CO_2) • (Emission*) • (Fair*) • (Geschlecht*) • (Holist*) • (Hunger*) • (Inklusi*) • (Sauber*) • (SDG*) • (Selbstbestimm*) • (Ungleich*)	• (Poverty*) • (Benefitt*) • (CO_2) • (Emission*) • (Fair*) • (Gender*) • (Holist*) • (Starvation*) • (Inclusi*) • (Clean*) • (SDG*) • (Self-determin*) • (Inequal*)	• (Dienstleist*) • (Finanz*) • (Güter*) • (Konkurrenz*) • (Markt*) • (Performance*) • (Produkt*)	• (Service*) • (Finance*) • (Goods*) • (Compet*) • (Market*) • (Performance*) • (Product*)	• (Franchis*) • (Global*) • (Langfristig*) • (Steigen*) • (Transfer*) • (Vergröß*)	• (Franchis*) • (Global*) • (Long-term*) • (Rise*) • (Transfer*) • (Enlarg*)

Independent variables

To test whether trademarks and their various characteristics serve as indicators of the social innovation of SEs, we collected trademark data from the German Patent and Trade Mark Office (see https://register.dpma.de/DPMAregister/marke/basis). Based on this data, we form a set of five independent variables.

First, we use a trademark dummy to assess whether SEs that register a trademark are more likely to be classified as socially innovative than their counterparts without a registered trademark. Prior research shows that trademark registrations of traditional SMEs relate to different forms of innovation in 60 per cent of all cases (Flikkema et al., 2014). Second, we investigate if the number of registered trademarks indicates social innovation. Therefore, we create a continuous variable that reflects the total number of trademarks registered by an SE, which equals the approach of Block et al. (2014) who show that the number of registered trademarks has an inverted U-shaped relationship to VCs' evaluations of startups. Our third set of variables has been employed various times by prior research that investigates the breadth of a trademark (e.g., Castaldi & Giarrata, 2018; Flikkema et al., 2014). In line with these studies, we include a variable that captures the number of different Nice classes that are registered by an SE within its set of trademarks. These Nice classes cover the area in which trademarks protect IPs. Overall, 45 Nice classes exist, in which 34 relate to goods and 11 relate to services. In our fourth set of independent variables, we use these classes to assess the number of trademarks that relate to products, services, or both of the SEs. Prior studies, for example, show that in service industries trademarks capturing only service Nice classes indicate innovation (Schmoch & Gauch, 2009). Finally, we conduct a set of variables that measure the geographical scope of registered trademarks. By doing so, we draw on prior research that shows how different geographical scopes of trademarks also serve as different indicators (Flikkema et al., 2019; Li & Deng, 2017; Giarratana & Torrisi, 2010). This is in no small part due to the differing costs of trademarks, which protect corporate assets in different ranges (national protection = 290 €, international protection = 900 €). Hence, we create a variable that measures the number of nationally protected trademarks, and another variable that measures the internationally protected trademarks.

Control variables

We collected most of our control variables for empirical analyses via Orbis. In detail, we capture urban-rural differences by including a dummy for SEs from a German metropolitan area, which can be Berlin, Hamburg, Munich, Frankfurt, or Cologne. Furthermore, we control for

company age effects as well as company size effects. With respect to the latter, we use the log number of employees. A patent dummy variable serves to exclude further effects of other IPRs. To control for size effects of the corporate websites, we include the log of the number of characters of the respective websites. Thereby we exclude possible biases that might occur because our search terms could be named more often on large websites. Finally, we include a set of industry dummies (12) and SDG dummies (17). While the industry dummies stem from NACE codes (Orbis) to control for industry differences, we collected the SDG dummies manually from the SEs' corporate websites to control for different cluster in social impact objectives.

4.4 Results

4.4.1 Descriptive statistics

Exactly half of the SEs in our sample are located in a German metropolitan area. Furthermore, they are in the mean around 10 years old with the maximum age being reached by a 130 year-old SE. To assess the company size, we use the number of employees, a commonly used measure in both fields, social and traditional entrepreneurship (e.g., Battilana et al., 2015; Putra, 2019). While the largest SE employs 2,392 people, SEs generally tend to be small, with an average of 35.10 employees.

The descriptive statistics of our set of independent variables show that 40 % of the SEs in our sample filed at least one trademark. This result is slightly higher than the outcome of prior studies on small and medium-sized enterprises (SMEs) trademarking (e.g., Agostini et al., 2015; Brem et al., 2017). Agostini et al. (2015) identify that 29.3 % of the SMEs from the fashion industry file a trademark and Brem et al. (2017) have 22.5 % companies with a registered trademark in their sample of Spanish SMEs. These comparisons indicate that trademarks might be more important in the field of social entrepreneurship. With regard to the total amount of registered trademarks, the SEs have on average 1.6 registered trademarks. Ninety-seven registered trademarks represents the maximum number registered by an SE. On average, two Nice classes were registered by SEs and most of them register their trademarks in product classes, followed by diversified use of classes and trademarks registered only in service Nice classes. Finally, the geographical scope characteristics of the trademarks of SEs show that national protections are used more frequently (1.02 trademarks per SE on average) than international protections (0.60 trademarks per SE on average). With a patent dummy, we include another IPR as control variable. As previous research considers, patents do not seem to be suitable to protect

social innovations because only 5% of the social firms in our sample have registered a patent (Krlev et al., 2014).

The descriptive statistics of our four indices of social innovation show that the *innovation index* is the strongest. More specifically, we find on average 22.31 search terms of the *innovation index* (see Table 4.2) on the' corporate websites of the SEs. The second most relevant index is the *social impact index* with 17.73 terms on average. The *scalability index* ranks on the third place with a mean of 2.84 related terms. Finally, the SEs in our sample only use 0.35 financial-related terms on average within their website texts. These statistics show that the innovation and social impact dimensions are significantly more relevant within SEs corporate communication on websites. Since these dimensions are most directly linked to social innovation, this result is expectable. Table 4.3 demonstrates our descriptive statistics as well as short descriptions of the variables.

To provide an overview of the strength of the search terms in each social innovation index, Table 4.4 demonstrates the average frequencies of each term. First, within the *innovation index* the terms "new*" and "improv*" are the strongest ones. Second, the terms "sustainab*"and "organic*" relate most closely to the *social impact index*. This might indicate numerous environment-focused SEs in our sample. However, generally more corporate communication addresses the environmental actions of companies than the other ESG parts, in particular in Europe, since there is no tradition on social involvement of businesses (e.g., Maignan & Ralston, 2002). Third, the only term within the *financial index* that occurs on average more than once on a website is "return*". Overall, this dimension seems to be strongly neglected by SEs. Fourth and finally, we find "grow*" and "internat*" to be the strongest terms within the *scalability index*. This represents motivation of SEs to create scalable solutions to societal issues.

Table 4.5 demonstrates the pairwise correlation of the variables that we use for our analyses.

Table 4.3. Descriptive statistics and description of the variables

Variable	Mean	S.D.	Min.	Max.	Description
Dependent variables					
Innovation index	22.31	43.69	0	495.40	Captures the number of innovation related terms used on an SE website.
Social impact index	17.73	53.11	0	1014.45	Captures the number of social impact related terms used on an SE website.
Financial index	0.35	1.46	0	34	Captures the number of financial related terms used on an SE website.
Scalability index	2.84	8.13	0	116.67	Captures the number of scalability related terms used on an SE website.
Independent variables					
Trademark dummy	0.40	0.49	0	1	Captures whether an SE has registered a trademark.
Trademark registrations	1.63	5.70	0	97	Captures the number of trademarks registered by an SE.
Trademark breadth	1.98	3.40	0	37	Captures the number of different Nice classes registered by an SE.
Trademark type: product	0.66	4.34	0	75	Captures the number of trademarks which are registered solely in product Nice classes by an SE.
Trademark type: service	0.35	1.26	0	19	Captures the number of trademarks which are registered solely in service Nice classes by an SE.
Trademark type: diversified	0.60	1.80	0	20	Captures the number of trademarks which are registered simultaneously in product and service Nice classes by an SE.
Trademark scope: national	1.02	4.17	0	69	Captures the number of trademarks which are registered with a national protection by an SE.
Trademark scope: international	0.60	2.08	0	34	Captures the number of trademarks which are registered with an international protection by an SE.
Control variables					
Metropolitan area	0.5	0.5	0	1	Captures whether an SE stems from a German metropolitan area.
Company age	10.70	12.56	0	130	Captures the age of an SE.
Number of employees	35.10	129.18	1	2,392	Captures the number of employees of an SE.
Patent dummy	0.05	0.22	0	1	Captures whether an SE has registered a patent.
Website size (log)	11.97	1.71	5.96	18.25	Captures the size of an SE website.

Notes: N = 925. Further 12 industry dummies and 17 SDG dummies included.

Table 4.4. Strength of the four social innovation indices

Innovation index	Average frequency	Social impact index	Average frequency	Financial index	Average frequency	Scalability index	Average frequency
Improv*	12.17	Organic*	36.32	Sales*	0.42	Diffus*	0.02
Idea*	9.15	Education*	4.78	Independ*	0.22	Diversifi*	0.01
Innov*	11.32	Societ*	17.19	Profit*	0.29	Extend*	3.57
New*	68.32	Health*	4.35	Commercial*	0.02	Internat*	10.83
Technol*	10.61	Climate*	27.51	Return*	1.23	Range*	0.38
		Sustainab*	39.60	Sustainab*	0.12	Scal*	0.41
		Ecolog*	24.48	Turnover*	0.17	Distribut*	1.30
		Resource*	3.74			Grow*	8.33
		Social*	12.02				
		Responsib*	14.30				
		Impact*	8.38				
Average across index	22.31		17.73		0.35		2.84

Table 4.5. Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Innovation index																
(2) Social impact index	0.58															
(3) Financial index	0.29	0.22														
(4) Scalability index	0.51	0.31	0.18													
(5) Trademark dummy	0.08	0.08	0.01	-0.01												
(6) Trademark registrations	0.11	0.16	0.02	0.09	0.35											
(7) Trademark breadth	0.17	0.16	0.00	0.08	0.71	0.56										
(8) Trademark type: product	0.09	0.16	0.01	0.09	0.19	0.91	0.39									
(9) Trademark type: service	0.02	0.02	0.03	-0.01	0.34	0.34	0.29	0.03								
(10) Trademark type: diversified	0.12	0.11	0.02	0.05	0.41	0.70	0.61	0.42	0.28							
(11) Trademark scope: national	0.11	0.18	0.03	0.09	0.30	0.95	0.49	0.90	0.32	0.60						
(12) Trademark scope: international	0.07	0.08	0.01	0.05	0.35	0.80	0.54	0.65	0.27	0.72	0.58					
(13) Metropolitan area	0.03	0.03	0.06	0.03	0.13	-0.06	0.05	-0.07	0.01	-0.03	-0.07	-0.03				
(14) Company age	0.03	0.11	0.03	0.02	0.12	0.22	0.18	0.16	0.23	0.14	0.21	0.18	-0.18			
(15) Number of employees	0.07	0.07	0.03	0.02	0.13	0.31	0.30	0.19	0.30	0.29	0.25	0.33	-0.10	0.30		
(16) Patent dummy	0.00	0.00	-0.01	0.00	0.13	0.23	0.17	0.20	0.00	0.22	0.20	0.21	-0.06	0.18	0.13	
(17) Website size (log)	0.25	0.22	0.07	0.20	0.11	0.12	0.16	0.08	0.14	0.11	0.12	0.09	-0.02	0.12	0.13	-0.02

Notes: N = 925.

4.4.2. Statistical method and regression results

As we describe in Section 4.2.1, our dependent variables consist of several non-negative values, which we combine into four indices. Typically, if we had integer values, this data form would require poisson regressions or negative binomial regressions. However, since we test four dependent variable indices with error terms that are likely to be correlated (interdependencies exist), we estimate our models with seemingly unrelated regressions (Zellner, 1962). This is in line with prior innovation research with similar data structures (e.g., Laursen & Salter, 2014; Meuer et al., 2015). Thus, in each model of Table 4.6, standard errors are calculated through the simultaneous covariance of coefficients. On a content basis, it is also the case that different dimensions of social innovation are closely related.

Table 4.6 demonstrates the results of our seemingly unrelated regressions. In each model of the Model 1–5, we stepwise enter sets of our independent variables. We logarithmized our four dependent variable indices as these are highly skewed distributed.

Model 1 of Table 4.6 shows the effects of the trademark dummy on our four social innovation indices. Surprisingly, we only find small significant effects of this independent variable on our *social impact index* ($p < 0.1$) and no effects on all three other dimensions of social innovation. In Model 2, we estimate the regression for the number of registered trademarks. In contrast to the results of Model 1, our findings show that an increase of the number of registered trademarks significantly relates to all four social innovation indices. Model 3 illustrates the results with regard to trademark breadth. We find that the number of registered Nice classes significantly positively relates to the *innovation index* ($p < 0.01$*), social impact index* ($p < 0.01$), and *scalability index* ($p < 0.05$). These results are similar to those of Model 4. With regard to the type of trademark, our results show that the number of product-related registered trademarks relates to all indices except for the *financial index*. Furthermore, service trademarks negatively predict the *scalability index* ($p < 0.1$). We identify no significant results for the number of diversified trademarks (with a mixture of product and service-related registered Nice classes).[15] Finally, Model 5 reveals our findings of the geographical scope of trademarks. We find that all dimensions of nationally protected trademarks positively predict all four indices.

[15] In a revision process of a larger scale trademark search, small changes occurred. Thus, the effect of diversified registered trademarks on the innovation dimension became significant, while the effect of product-related registered trademark disappeared.

Table 4.6. Results of seemingly unrelated regressions

Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Dependent variable			**Innovation index (log)**		
Statistic	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**
Independent variables					
Trademark dummy	0.095 (0.089)				
Trademark registrations		0.025 (0.008)***			
Trademark breadth			0.050 (0.013)***		
Trademark type: product				0.021 (0.011)**	
Trademark type: service				-0.004 (0.035)	
Trademark type: diversified				0.044 (0.027)*	
Trademark scope: national					0.036 (0.012)***
Trademark scope: international					-0.006 (0.025)
Control variables					
Metropolitan area	0.088 (0.085)	0.109 (0.083)	0.075 (0.084)	0.110 (0.083)	0.112 (0.083)
Company age	-0.010 (0.004)***	-0.011 (0.004)***	-0.011 (0.004)***	-0.010 (0.004)***	-0.011 (0.004)***
Number of employees (log)	0.091 (0.032)***	0.077 (0.031)**	0.070 (0.031)**	0.077 (0.032)**	0.083 (0.032)***
Patent dummy	-0.083 (0.190)	-0.169 (0.191)	-0.145 (0.189)	-0.190 (0.193)	-0.158 (0.191)
Website size (log)	0.269 (0.024)***	0.265 (0.024)***	0.260 (0.024)***	0.266 (0.024)***	0.264 (0.024)***
Dependent variable			**Social impact index (log)**		
Independent variables					
Trademark dummy	0.154 (0.089)*				
Trademark registrations		0.033 (0.008)***			
Trademark breadth			0.059 (0.013)***		
Trademark type: product				0.039 (0.011)***	
Trademark type: service				-0.035 (0.035)	
Trademark type: diversified				0.035 (0.027)	
Trademark scope: national					
Trademark scope: international					0.056 (0.012)***
Control variables					-0.025 (0.025)
Metropolitan area	0.042 (0.085)	0.073 (0.084)	0.031 (0.084)	0.076 (0.083)	0.079 (0.083)
Company age	-0.003 (0.004)	-0.004 (0.004)	-0.003 (0.004)	-0.003 (0.004)	-0.004 (0.004)
Number of employees (log)	0.051 (0.032)	0.034 (0.031)	0.030 (0.032)	0.042 (0.032)	0.046 (0.032)
Patent dummy	-0.340 (0.191)*	-0.451 (0.191)**	-0.408 (0.190)**	-0.484 (0.193)**	-0.434 (0.191)**
Website size (log)	0.247 (0.024)***	0.242 (0.024)***	0.237 (0.024)***	0.245 (0.024)***	0.239 (0.024)***

Table 4.6. Results of seemingly unrelated regressions (continuing)

Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Dependent variable			**Financial index (log)**		
Statistic	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**
Independent variables					
Trademark dummy	0.013 (0.026)				
Trademark registrations		0.004 (0.002)*			
Trademark breadth			0.001 (0.004)		
Trademark type: product				0.004 (0.003)	
Trademark type: service				0.002 (0.010)	
Trademark type: diversified				0.003 (0.008)	
Trademark scope: national					0.009 (0.003)**
Trademark scope: international					-0.009 (0.007)
Control variables					
Metropolitan area	0.039 (0.025)	0.041 (0.024)*	0.040 (0.024)	0.042 (0.024)*	0.043 (0.024)*
Company age	0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
Number of employees (log)	0.012 (0.009)	0.010 (0.009)	0.013 (0.009)	0.011 (0.009)	0.013 (0.009)
Patent dummy	-0.013 (0.055)	-0.026 (0.056)	-0.013 (0.055)	-0.027 (0.056)	-0.023 (0.056)
Website size (log)	0.042 (0.007)***	0.042 (0.007)***	0.042 (0.007)***	0.042 (0.007)***	0.041 (0.007)***
Dependent variable			**Scalability index (log)**		
Independent variables					
Trademark dummy	-0.035 (0.056)				
Trademark registrations		0.017 (0.005)***			
Trademark breadth			0.019 (0.008)**		
Trademark type: product				0.025 (0.007)***	
Trademark type: service				-0.037 (0.022)*	
Trademark type: diversified				0.008 (0.017)	
Trademark scope: national					0.029 (0.008)***
Trademark scope: international					-0.015 (0.016)
Control variables					
Metropolitan area	0.056 (0.054)	0.057 (0.053)	0.041 (0.053)	0.060 (0.052)	0.060 (0.053)
Company age	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.002 (0.002)	-0.003 (0.002)
Number of employees (log)	0.049 (0.020)**	0.033 (0.020)	0.037 (0.020)*	0.041 (0.020)**	0.039 (0.020)*
Patent dummy	-0.031 (0.120)	-0.104 (0.121)	-0.064 (0.120)	-0.124 (0.121)	-0.093 (0.121)
Website size (log)	0.144 (0.015)***	0.140 (0.015)***	0.140 (0.015)***	0.143 (0.015)***	0.138 (0.015)***
Industry dummies (12)	Yes	Yes	Yes	Yes	Yes
SDG dummies (17)	Yes	Yes	Yes	Yes	Yes
Observations	925	925	925	925	925
R^2	0.195	0.203	0.207	0.203	0.204
Log-Likelihood	-3377.835	-3373.372	-3369.927	-3363.192	-3368.563

Notes: Reference groups of independent variables are SEs without any trademark registrations. * p < 0.1, ** p < 0.05, *** p < 0.01; Coeff. = coefficient, Std. err. = standard error.

4.4.3 Robustness tests

To test the robustness of our results, we create our four social innovation dimension variables in a new way. More specifically, we create a dummy variable for each search term of Table 4.2. In the next step, we take the sum of dimension-related search terms per SE website. For example, for the innovation dimension, the dependent variable can take values ranging from zero to five, since five search terms are crawled in total for this website. Due to these countable variables, we now apply a negative binomial regression in our robustness checks. Table 4.7 displays the results. Similar to our main analyses, we enter the independent variables stepwise.

While most effects are similar to those in our main analyses in attenuated form, we find some significant differences for the innovation dimension as well as for the independent variables that relate to the trademark type. Thus, we do not find any significant effects of trademark variables on the *innovation index*. This finding, however, could partly be explained due to the lowest number of search terms within this index. Furthermore, while the prior positive effects of product-related registered trademarks on the innovation, social impact, and scalability dimension disappear, we now find a positive effect on the *financial index*, which did not exist in our main analysis.

Furthermore, we conducted another robustness check with similar indices and a similar seemingly unrelated regressions for a subsample of our SEs. Therefore, we reduce our sample to those SEs that have more than 25 subpages to investigate effects that might exist because of corporate websites with little content. Based on a new sample of 456 SEs, we only find slight differences with regard to the breadth and type of trademark. Consequently, we do not find a statistically significant effect of the trademark breadth on the *scalability index* as well as no effects of product-related trademarks on our *innovation index*. Our effects of the number of trademarks as well as the geographical scope on the four indices stay robust.

Finally, we apply a manual coding of the SE websites through two members of our research team to test the accuracy of our web-scraped analysis. Therefore, we create a dummy variable for social innovation that equals one if both researchers decided that an SE creates social innovation. With this approach, we bring together analytical insights (i.e., the external analysis of our researchers) with our automated analysis. Consequently, we conduct logistic regressions to compare the results of our new dependent variable with our main analysis. Table 4.8 displays the results. Similar to our web scraping analysis, we find that the number and breadth of trademarks, as well as the number of nationally protected trademarks, positively

relate to social innovation among SEs. However, we also identify two distinctive differences. First, Model 1 of Table 4.8 reveals that based on our analytical analysis of the websites, we identify a strongly significant effect ($p < 0.01$) of the trademark dummy variable. This model also explains the largest variance of all five models. Furthermore, Model 4 shows that with regard to the type of trademark, we do not find an effect of the product-related trademark anymore, but an effect of diversified trademarks ($p < 0.01$).

Table 4.7. Robustness check results of negative binomial regressions

Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Dependent variable			**Innovation**		
Statistic	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**
Independent variables					
Trademark dummy	0.026 (0.039)				
Trademark registrations		0.003 (0.003)			
Trademark breadth			0.007 (0.006)		
Trademark type: product				0.002 (0.004)	
Trademark type: service				0.004 (0.015)	
Trademark type: diversified				0.004 (0.011)	
Trademark scope: national					0.004 (0.005)
Trademark scope: international					-0.001 (0.010)
Control variables included	Yes	Yes	Yes	Yes	Yes
Observations	925	925	925	925	925
Pseudo R^2	0.024	0.025	0.025	0.025	0.025
Log-Likelihood	-1740.497	-1740.332	-1740.000	-1740.304	-1740.257
Dependent variable			**Social impact**		
Independent variables					
Trademark dummy	0.089 (0.045)**				
Trademark registrations		0.006 (0.004)*			
Trademark breadth			0.015 (0.006)**		
Trademark type: product				0.006 (0.005)	
Trademark type: service				-0.002 (0.018)	
Trademark type: diversified				0.009 (0.014)	
Trademark scope: national					0.013 (0.006)**
Trademark scope: international					-0.010 (0.013)
Control variables	Yes	Yes	Yes	Yes	Yes
Observations	925	925	925	925	925
Pseudo R^2	0.023	0.023	0.024	0.023	0.024
Log-Likelihood	-2473.778	-2474.244	-2473.164	-2474.270	-2473.319

Table 4.7. Robustness check results of negative binomial regressions (continuing)

Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Dependent variable			**Financial**		
Statistic	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**
Independent variables					
Trademark dummy	0.094 (0.107)				
Trademark registrations		0.012 (0.008)			
Trademark breadth			0.001 (0.016)		
Trademark type: product				0.018 (0.011)*	
Trademark type: service				-0.013 (0.042)	
Trademark type: diversified				-0.009 (0.032)	
Trademark scope: national					0.027 (0.012)**
Trademark scope: international					-0.042 (0.031)
Control variables included	Yes	Yes	Yes	Yes	Yes
Observations	925	925	925	925	925
Pseudo R^2	0.046	0.046	0.045	0.047	0.048
Log-Likelihood	-989.413	-988.833	-989.794	-988.218	-987.188
Dependent variable			**Scalability**		
Independent variables					
Trademark dummy	0.074 (0.050)				
Trademark registrations		0.007 (0.004)*			
Trademark breadth			0.016 (0.007)**		
Trademark type: product				0.005 (0.005)	
Trademark type: service				0.005 (0.020)	
Trademark type: diversified				0.015 (0.015)	
Trademark scope: national					0.013 (0.006)**
Trademark scope: international					-0.007 (0.013)
Control variables	Yes	Yes	Yes	Yes	Yes
Observations	925	925	925	925	925
Pseudo R^2	0.027	0.027	0.027	0.027	0.027
Log-Likelihood	-1926.491	-1925.837	-1925.237	-1925.841	-1925.120

Notes: Reference groups of independent variables are SEs without any trademark registrations. * p < 0.1, ** p < 0.05, *** p < 0.01; Coeff. = coefficient, Std. err. = standard error.

Table 4.8. Robustness check results of logistical regressions

Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Dependent variable			**Social innovation**		
Statistic	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**	**Coeff. Std. err.**
Independent variables					
Trademark dummy	0.710 (0.168)***				
Trademark registrations		0.100 (0.036)***			
Trademark breadth			0.083 (0.028)***		
Trademark type: product				0.036 (0.053)	
Trademark type: service				0.064 (0.079)	
Trademark type: diversified				0.191 (0.074)***	
Trademark scope: national					0.099 (0.050)**
Trademark scope: international					0.110 (0.071)
Control variables					
Metropolitan area	0.337 (0.163)**	0.428 (0.161)***	0.392 (0.161)**	0.427 (0.162)***	0.428 (0.161)***
Company age	-0.050 (0.010)***	-0.053 (0.010)***	-0.051 (0.010)***	-0.051 (0.010)***	-0.053 (0.010)***
Number of employees (log)	0.167 (0.063)***	0.161 (0.064)**	0.173 (0.063)***	0.158 (0.064)**	0.160 (0.064)**
Patent dummy	1.354 (0.451)***	1.385 (0.454)***	1.375 (0.450)***	1.310 (0.458)***	1.380 (0.456)***
Website size (log)	0.158 (0.049)***	0.161 (0.048)***	0.154 (0.048)***	0.155 (0.048)***	0.161 (0.048)***
Industry dummies (12)	Yes	Yes	Yes	Yes	Yes
SDG dummies (17)	Yes	Yes	Yes	Yes	Yes
Observations	925	925	925	925	925
R^2	0.213	0.207	0.206	0.209	0.208
Log-Likelihood	-503.418	-507.019	-507.556	-505.932	-506.854

4.5 Discussion and conclusion

4.5.1 Discussion and contributions of the main results

While prior research investigated indicators of commercial innovation in depth, indicators of social innovation are a largely blank slate. Building on earlier research in the field of social innovation that identify different dimensions of it (e.g., André & Pache, 2016; Choi & Majundar, 2014; Dawson & Daniel, 2010), our study demonstrates new results on how trademarks serve to measure social innovation by market-oriented SEs. Contrary to other studies that find that filing at least one trademark relates to commercial innovation (e.g., Flikkema et al., 2014, 2019; Gotsch & Hipp, 2012), we do not find that a registered trademark relates to different dimensions of social innovation based on our web-scraped analysis. Therefore, these results are in contrast to the findings of Gotsch and Hipp (2012) who show that a first trademark registration relates to innovation success, in particular, within service industries. However, surprisingly, our robustness checks differ from our automated analysis, suggesting that also the trademark dummy might serve to measure social innovativeness in SEs. Therefore, we encourage further research to investigate this relationship.

Similar to prior research on the relationship of trademarks and commercial innovation, our findings suggest that the number of registered trademarks by an SE indicates social innovation (e.g., Castaldi, 2020; Mendonça et al., 2004, Schautschick, 2016). This is the case, since the number of trademarks positively significantly relates to all dimensions of social innovation. Thus, we find that even though patents might be less suitable to measure social innovation (Krlev et al., 2014), trademarks are an important IPR for SEs. This finding is in particular in line with prior research that investigates trademarks as indicators for innovation in the cultural industry (e.g., Castaldi, 2018; Stoneman, 2010), which closely connects to the field of social entrepreneurship. Furthermore, this finding extents prior studies that aim to identify indicators of social innovation (e.g., Andries et al., 2019; Krlev et al., 2014; Unceta et al., 2016). For example, prior research using secondary data to indicate social innovation mainly focuses on the macro-level perspective thus far (Akgüç, 2020; Vassallo et al., 2019). We contribute to this strand of literature by demonstrating how trademarks serve to measure social innovation on the organizational-level. More precisely, we show that a differentiation between less and more socially innovative SEs is possible by investigating their corporate websites.

With regard to how diverse trademark characteristics relate to social innovation, we find distinctive similarities and differences to the literature in the field of commercial innovation.

First, our results show that trademark breadth relates to social innovation with regard to the innovation, social impact, and scalability dimension. This is in line with prior research that highlights the predictive power of trademark breadth (Block et al., 2014; Fisch et al., 2021; Sandner & Block, 2011). Second, our findings concerning the type of trademark broaden the knowledge of this characteristic with regard to innovation. While Castaldi (2020, p. 6) describes many operationalizations that have been utilized, our approach of measuring the number of trademarks with a focus on a specific type have not been investigated yet. Therefore, in particular the result that only product-related trademark registrations seem to relate to all dimensions except the financial one of social innovation extends existing knowledge in this field. However, from a social innovation perspective, these results are unintuitive, since social innovations often have a service character. Thus, our results could indicate that trademarks mainly relate to those social innovation that protect product-specific social innovation. Third, our findings of the geographical scope of trademarks contradicts research from the field of trademarks and commercial innovation (e.g., Flikkema et al., 2019) as we find that a geographic tighter protection (nationally) solely relates to social innovation. However, our findings can be explained from a social entrepreneurship perspective by previous research that examines differences between domestic and international SEs, which shows that social innovation are often locally embedded (e.g., Marshall, 2011; MacCallum, 2009; Zahra et al., 2008). Thus, trademarks of market-oriented SEs might measure in particular those social innovations that have a national focus. Finally, we need to emphasize that our robustness checks show that the most robust results occur with regard to the trademark characteristics geographical scope. For trademark breadth and the type of trademark, we find minor changes in our robustness checks. For example, our robustness checks based on manual coding of social innovation on SEs' websites suggest that diversified trademarks, rather than product-related ones, positively relate to social innovativeness.

Moreover, our findings tie into the recent strand of literature examining new measurement strategies with regard to trademark characteristics (e.g., Castaldi & Mendonça, in press; European Union Intellectual Property Office (EUIPO), 2021; Ghisetti et al., 2021). While we show that trademarks registered in different types of Nice classes can be used to measure social innovation, EUIPO (2021) examines the specifics of goods and services in more detail and shows that they can help identify green EU trademarks. These trademarks relate to environmental protection and sustainability and are therefore closely linked to SEs' social innovations as well as sustainable innovations overall. Castaldi and Mendonça (in press) highlight further research opportunities with regard to different trademark characteristics. One possibility mentioned by

the authors is to combine different Nice classes with specific SDGs. Such an analysis could expand our insights into how trademarks capture social innovation. For example, future research projects could combine a methodology for in-depth analysis of Nice classes with our approach to measuring social innovation via corporate websites to investigate how "green" trademarks relate to innovation by SEs, or how social innovation might be indicated by in-depth analyses of trademark goods and services registrations.

By investigating the social innovation of SEs based on an analysis of their websites, we explore corporate communication in the field of social entrepreneurship to a little extent. Our findings indicate that SEs particularly use their websites to report on activities that are associated with the innovation and social impact dimension of their ventures. Furthermore, we demonstrate that the financial dimension is strongly neglected. While prior research by Gholami et al. (2017) investigates the use of eco-localized websites by SEs, to the best of our knowledge, corporate communication analyses do not exist. Therefore, we hope to encourage further research to investigate this topic in more depth to explore the differences between SEs and traditional ventures.

4.5.2 Practical and policy implications

Our study provides several practical and policy implications. From an organizational perspective, we enable SEs to benchmark their own use of trademarks to protect and indicate social innovation in comparison to their industry. Furthermore, SEs can analyze their own corporate communication on social innovation and identify differences to their field.

From a policy perspective, our results make it possible for policy-makers and SE investors (e.g., impact investors) to identify social innovation on an organizational level. Since we show how trademarks and their diverse characteristics indicate the dimensions of social innovation, our results pave an initial way for policy-makers and investors to differentiate between different forms of social innovativeness by SEs. Since this contributes to better evaluations of governmental programs and, Block et al. (2021a) already showed that the social innovativeness of an SE plays a crucial role in the screening process of impact investors, also to a greater knowledge in investment decisions.

4.5.3 Limitations and areas for future research

Our approach to assess social innovativeness by market-oriented SEs via textual analysis is quite new since no prior studies have investigated social innovation in a similar way before.

Therefore, our results should be interpreted with caution and we encourage further studies to replicate our findings based on other proxies of social innovation. For example, another approach to measure social innovation would be to use the CIS survey of Andries et al. (2019). Applying the SDGs that are addressed by social innovations also provides future research directions to investigate the social impact dimension of social innovations in more detail. To increase the reliability of textual analysis to proxy social innovation, future research should transfer our approach to other geographical contexts. Thereby other established tools from the English-speaking context could be applied (e.g., a stemming method). Moreover, this would increase the generalizability of our results, as the phenomenon of social entrepreneurship differs from country to country (e.g., Lepoutre et al., 2013).

Similar to other literature on trademarks (e.g., Block et al., 2014; Castaldi, 2018; Crass, 2020), we would like to motivate future research to more closely examine the motivations of SEs for registering trademarks. For example, comparing SEs with non-SEs might identify unique characteristics of SE trademarking. In addition, it could be evaluated to which degree SEs use trademarks for protection, marketing, or commercialization reasons. Thereby, prior studies would be able to identify whether trademarks serve as further indicators in the field of social entrepreneurship. Furthermore, Seip et al. (2018) show that trademarks can refer to early or late-stage innovation. Therefore, future research could investigate to which social innovation stage trademarks of SEs refer. Finally, new studies could combine the trademark data of SEs with economic and social impact data to explore how trademarks relate to SE development.

Chapter 5

Trademarks and how they relate to the social and economic outcomes of social startups

Prior research shows that trademarks positively relate to startups' growth and survival. However, empirical evidence on the impact of intellectual property rights, especially trademarks, on the development of social startups' hybrid outcomes is very limited. Our study aims to fill this gap by investigating how early trademarking relates to the social and economic outcomes of social startups. Based on a sample of 485 social startups from Germany, we find that social startups that register a trademark within the first three years of their existence have both significantly higher social and economic outcomes. Additionally, we identify that the geographical scope of a trademark relates differently to social startups' outcomes. Our results contribute to the emerging literature on social startup development and to trademark research that lacks an understanding of the importance of trademarks for startups that aim for hybrid outcomes. We provide several practical implications for social startups, social investors, and policy-makers.

This chapter is based on

Hirschmann, M., & Block, J. (2021). Trademarks and how they relate to the social and economic outcomes of social startups. *Working paper*.

5.1 Introduction

IPRs help startups scale their ventures (e.g., Cockburn & MacGarvie, 2009; Gans et al., 2008; Häussler et al., 2012). Since social startups in particular face challenges as they seek to grow their business due to their hybrid character (e.g., Battilana & Lee, 2014; Dees et al., 2002; Lyon & Fernandes, 2012; Renko, 2013), IPRs can be of special importance for them. However, due to the high proportion of social startups in the service sector, not all IPRs are equally relevant, so trademarks might play a pivotal role (e.g., Flikkema et al., 2014; Greenhalgh & Rogers, 2012; Schmoch & Gauch, 2009). However, to date, we know little about the use and benefits of trademarks for social startups, although they might especially benefit from trademarks' signaling and protection values, as they can prove their growth ambitions. To gain a better understanding of the relationship between trademarks and social startup development, this study investigates the importance of trademarks for social startups' hybrid outcomes. Therefore, we aim to answer the following research question: How do early trademark registrations relate to the social and economic outcomes of social startups?

Thus far, quantitative empirical studies on social startup development are scarce. While predictors of social startup survival have been investigated by some researchers (e.g., Haugh et al., 2020; Renko, 2013), only a few studies provide empirical evidence on the predictors of social and economic outcomes of social startups (e.g., Battilana et al., 2015; Cacciolatti et al., 2020; Kachlami et al., 2020). In particular, the literature lacks an understanding of the importance of IPRs for social startup development since they can serve as an indicator of startups' innovativeness (Hsu et al., 2021).

Prior research demonstrates that the registration of trademarks provides startups with several advantages (e.g., Helmers & Rogers, 2010; Srinivasan et al., 2008). For example, trademarks can reduce information asymmetries in the search for external investors (e.g., Block et al., 2014; Engel & Keilbach, 2007). Additionally, Stoneman (2010) shows that within the creative and cultural industries, which are in many ways closely connected to social entrepreneurship, trademarks can serve as economic indicators for soft innovation. However, to the best of our knowledge, no empirical studies have yet investigated the relevance of trademarking for startups that aim to achieve hybrid outcomes. Therefore, research lacks an understanding of how trademarks and their different types relate to the social and economic development of social startups.

We use a sample of 485 German social startups to examine how their trademarking efforts within the first three years of business relate to their social and economic outcomes. More specifically, we investigate the impact of trademark registrations, trademark breadth, and trademark geographic scope on the hybrid outcomes of social startups. We collected our data from multiple sources. Thus, we use the Orbis database of the business information publisher Bureau van Dijk, the German Patent and Trade Mark Office, and the social startups' websites. Our results show that social startups that register a trademark have both higher social and economic outcomes than those that do not use trademarks as formal IPRs. Furthermore, we find that the type of registered trademark differently relates to social startups' hybrid outcomes. While a narrow and nationally protected trademark relates to higher social outcomes, a broad and internationally protected trademark predicts higher economic outcomes.

Our findings contribute to three fields of research. First, we extend prior research that investigates predictors of social startup development (e.g., Cacciolatti et al., 2020; Lall & Park, 2020; Staessens, 2019). We contribute to the field by highlighting the importance of formal IPRs in the form of trademarks for their development as well as how types of trademarks differently relate to their social and economic outcomes. In particular, we provide first quantitative evidence on the development of social outcomes of social startups. Second, we contribute to prior research on the relationship between the use of IPRs and traditional startup development (e.g., Farre-Mensa et al., 2020; Gaulé, 2018; Helmers & Rogers, 2011). Thus, while earlier studies mainly show that patents relate to higher employment growth rates (e.g., Buerger et al., 2012; Gagliardi et al. 2016; Van Roy et al., 2018), we demonstrate that trademarks and their diverse characteristics significantly relate to economic outcomes in the form of jobs created by social startups. Third, we contribute to prior trademark research on the informative value of different types of trademarks (e.g., Castaldi, 2020; Hsu et al., 2021; Sandner & Block, 2011). While previous studies identify how trademarks serve as an indicator for innovation (e.g., Flikkema et al., 2014; 2019) or internationalization (e.g., Li & Deng, 2017; Giarratana & Torrisi, 2010), we provide initial evidence on how trademark breadth and geographical scope differently predict the hybrid outcomes of social startups. Furthermore, prior research has ignored the importance of trademarks for job creation in startups.

5.2 Literature review

5.2.1 Empirical evidence on social startup development

Initial empirical evidence on predictors of social startups' social or economic development arose in the previous decade (e.g., Battilana et al., 2015; Jiang et al., 2018; Kuckertz et al., 2019; Renko, 2013; Rey-Martí et al. 2016). Since social startups contribute to the achievement of the SDGs for 2030 (e.g., Galindo-Martín & Castaño-Martínez, 2020; Littlewood & Holt, 2018; Schaltegger et al., 2018), it is important to understand which factors enable them to scale their solutions. Table 5.1 demonstrates the relevant studies that investigate diverse factors that predict social startups' development.

Table 5.1. Empirical evidence on social enterprise development

References	Journal	Dependent variable	Main finding
Cacciolatti et al. (2020)	Journal of business research	Firm performance	• Effects of external funding on firm performance of social startups differ with regard to different options. • Strategic alliances with nonequity investors enhance profitability while equity and hybrid alliances (for example acceleration programs) have a negative effect on social startups' EBITDA. • Credit ratings increase through strategic alliances with equity investors.
Cheah et al. (2019a)	Journal of Cleaner Production	Firm performance	• To increase the social and economic performance of social startups, external resources should be correlated with formal business planning. • Hence, common business practices are also a useful tool for mission driven-social startups.
Haugh et al. (2020)	Small Business Economics	Startup survival	• The greater the number of SEs in a population, the more likely it is for new social startups to survive. • Industry has a higher influence on social startup survival than firm age. • A positive relationship exists between the density of commercial SMEs in a population and social startup survival, but a negative one with the density of active charities.
Kachlami et al. (2020)	Small Business Economics	Regional employment change	• Net regional employment effect is higher for social firm entry than for commercial firm entry. • Social firms account for a respectable share of the total variation in regional employment creation.
Lall and Park (2020)	Business & Society	Commercial Performance	• Grants have a positive effect on employment growth and subsequent access to debt finance. • No effects exist with regard to follow-up equity finance or revenue growth.
Rey-Martí et al. (2016)	Journal of Business Research	Job creation (QCA analysis)	• Founder experience and external financial support positively influence job creation. • Training, educational attainment, and entrepreneurs in the family history are of less importance for the job creation of SEs.
Renko (2013)	Entrepreneurship: Theory and Practice	Organizational emergence	• Nascent social entrepreneurs that are motivated by financial goals are more likely to establish a new organization successfully. • Social entrepreneurs with products or services that are highly novel to a market are less likely to establish a new operating business.
Staessens (2019)	Journal of Business Ethics	Social and economic performance	• Top performers of SEs focus first on revenue growth and pay attention to social performance afterwards. • Bottom performers focus too strongly on social objectives and do not manage to change a stronger economic performance.

To date, two studies have quantitatively investigated the successful establishment of social startups and which of them survive (Haugh et al., 2020; Renko, 2013). Renko (2013) shows that social entrepreneurs' motivations are an important predictor of new firm foundations. Thus, the author shows that social entrepreneurs who are more financially motivated are more likely to start new social organizations than their socially motivated counterparts. Furthermore, social entrepreneurs with ideas for radical social innovation are less likely to establish an operating business. Following the successful establishment of social startups, Haugh et al. (2020) indicate that the number of other SEs in a population influences startup survival. For example, the author team demonstrates that the greater the number of other SEs is, the more likely it is for new social startups to survive.

Concerning the economic outcomes of social startups, prior studies document that external funding and formal business planning are of major importance (e.g., Cacciolatti et al., 2020; Lall & Park, 2020; Staessens, 2019). While different studies show that external funding predicts economic outcomes (Cacciolatti et al., 2020; Lall & Park, 2020), Cheah et al. (2019a) highlight that external resources are more successful for social startups if they are provided together with common business training. Furthermore, Cacciolatti et al. (2020) show that the economic outcomes of social startups are predicted differently for different types of external funding. For example, equity investments have a positive influence on credit ratings but weaken the profitability of social startups.

Another strand of prior research investigates economic outcomes in the form of job creation by social startups (e.g., Lall & Park, 2020; Rey-Martí et al., 2016). Lall & Park (2020) demonstrate that grants have a positive effect on employment growth, and Rey-Martí et al. (2016) find that in addition to external funding, the experience of the social founder is an important influencing factor, while business training, educational attainment, and entrepreneurs in the family history do not predict job creation. Furthermore, Kachlami et al. (2020) investigate the overall regional employment effect of social startup entry. The authors show that the net employment effect for social firm entry is higher than that for commercial firm entry; therefore, social startups account for a share of the overall variation in regional job creation.

While previous paragraphs illustrate the different drivers of economic outcomes by social startups, research on predictors of social startups' social outcomes is limited. The main reason for this is likely to be the difficulty in measuring and comparing social outcomes (e.g., Izzo, 2013; Rawhouser et al., 2019). Nevertheless, some studies already investigate social outcomes

by established SEs (e.g., Battilana et al., 2015; Cheah et al., 2019b) and thus demonstrate opportunities for research on social startup development.

5.2.2 IPRs and startup development

Prior research has investigated the implications of IPRs in many facets (e.g., Dinopoulos & Segerstrom, 2010; Eicher & García-Peñalosa, 2008; Hanel, 2006; Zhao, 2006). In addition to the literature that explores IPRs as proxies or predictors of innovation (e.g., Candelin-Palmqvist et al., 2012; Pisano, 2006; Sweet & Maggio, 2015), IPRs, for example, serve to predict VC evaluations and access to other external support (e.g., Block et al., 2014; Engel & Keilbach, 2007; Häussler et al., 2012). Furthermore, IPRs can predict the firm development of startups in different ways (e.g., Appel et al., 2019; Farre-Mensa et al., 2020; Mann & Sager, 2007). Table 5.2 summarizes the results of prior research in this field.

A key point of interest is how patents as formal IPRs can predict the financial growth and future innovation activity of startups (e.g., Farre-Mensa et al., 2020; Gaulé, 2018; Helmers & Rogers, 2011). Farre-Mensa et al. (2020), for example, show that startups with patents have on average 80% higher sales growth after five years and are up to four times more likely to launch an IPO (Mann & Sager, 2007) or exit by a lucrative acquisition (Gaulé, 2018). With regard to the asset growth of startups, Helmers and Rogers (2011) indicate that patenting leads to an increase in asset growth rates of 6%–17% per annum. Additionally, prior research demonstrates that startups with registered patents are more likely to apply for new patents and thus have higher innovation activity (Farre-Mensa et al., 2020).

Furthermore, patents serve to predict the job creation of startups (e.g., Appel et al., 2019; Buerger et al., 2012; Gagliardi et al. 2016; Van Roy et al., 2018). While Farre-Mensa et al. (2020) argue that patenting startups have, on average, 55% higher employment growth rates, Van Roy et al. (2018) identify only a positive employment effect for the high- and medium-tech manufacturing sector. Additionally, patenting has positive long-run effects, especially for green innovations (Gagliardi et al., 2016).

While prior research on the implications of IPRs for startup development mainly focuses on patents, the literature on the implications of trademarking startups is still limited (e.g., Helmers & Rogers, 2010; Srinivasan et al., 2008). Initial evidence suggests that trademarking reduces the probability of startup failure in almost all sectors, while patenting only predicts longer survival in the manufacturing, R&D, computing, and business services sectors (Helmers & Rogers, 2010). Furthermore, Srinivasan et al. (2008) extend this finding and add that a large number of

trademarks together with a more diverse product-market portfolio of startups increases the chances of survival.

Although there is preliminary evidence on the relationship between the use of IPRs and startup development, research fails to understand their relevance for the social and economic outcomes of social startups. Our study aims to fill this gap by investigating how trademark registrations relate to the development of social startups.

Table 5.2. IPRs and startup development

References	Journal	Independent variables	Dependent variables	Main findings
Appel et al. (2019)	Journal of Financial Economics	• Anti-patent troll law	• Employment growth • Innovation activity	• Anti-patent troll laws lead to a 4.4% increase in employment driven by startups from the IP sector where patent trolls are most active. • Additionally, better patent legislation leads to a higher number of further patents.
Buerger et al. (2012)	Regional Studies	• Patents • R&D expenditure	• Employment growth	• Positive employment effects for patents in the medical and electronic manufacturers industries. • In high-employment regions, the effects are even stronger, so they benefit more from increased patenting.
Farre-Mensa et al. (2020)	Journal of Finance	• Patents	• Employment growth • Sales growth • Innovation activity • Investor reward	• After five years, startups with patents have on average 55% higher employment growth, 80% higher sales growth, and are more often listed on a stock exchange in the long-run. • Additionally, patenting increases the likelihood of a firm to continue innovating with further patent applications.
Gagliardi et al. (2016)	Industrial and Corporate Change	• Patents	• Employment growth	• Green innovations have positive long-run effects on job creation in Europe.
Gaulé (2018)	The Journal of Industrial Economics	• Patents	• Firm success (i.e., went public or high acquisition)	• Important Patents (multicountry) of VC-funded startups increase firm success in the life-science sector.
Helmers and Rogers (2010)	Review of Industrial Organization	• Patents • Trademarks	• Startup exit	• Patenting and trademarking is associated with a higher likelihood of startup survival. • Trademarking reduces the probability to exist in almost all sectors while patents are especially useful to survive in the manufacturing, R&D, computing, and business services sector.
Helmers and Rogers (2011)	Research Policy	• Patents	• Asset growth	• Patenting of startups leads to higher asset growth rates of 6%–17% per annum.
Mann and Sager (2007)	Research Policy	• Patents	• IPO • Longevity	• Startups with patent applications have longer firm survival and are four times more likely to have an IPO.
Srinivasan et al. (2008)	International Journal of Research in Marketing	• Diversity of Product-market portfolios • Patents • Trademarks	• Firm exit	• High tech firms having a more diverse product-market portfolio together with a larger number of patents are more prone to exit earlier by dissolution. • In contrast, a large number of trademarks together with a more diverse product-market portfolio increases the time to exit.
Van Roy et al. (2018)	Research Policy	• Citation-weighted patents	• Employment growth	• Prove the labor-friendly nature of innovation in European patenting firms. • Positive employment effect is only identified in high- and medium-tech manufacturing sectors.

5.3 Theory and hypotheses

5.3.1 Trademark registrations and social startup development

Trademarks are formal IPRs that are intangible by nature and therefore difficult to value (e.g., Block et al., 2014; Crass, 2020; Hsu et al., 2021). The World Intellectual Property Organization (WIPO) (2021) defines trademarks as identifiers for certain goods or services that are produced or provided by a company or individual. Although trademarks are the most widely used IPR, research thus far primarily focuses on patents (WIPO, 2013) since they apply to products and services. However, there are several reasons for startups to file a trademark at an early stage of their business (Block et al., 2015).

First, registered trademarks provide startups with protection value. Since trademarks are registered when innovations, in the form of products or services, are on the verge of commercialization, the protection value of trademarks enables startups to appropriate returns from innovations (Hsu, 2021; Malmberg, 2005). Thus, trademarks have been shown to predict, for example, the profitability or stock returns of firms (Hsu et al., 2021; Sandner & Block, 2011). According to the U.S. National Science Foundation's Business R&D and Innovation Survey (NSF BRDIS), the protection value of trademarks can make them even more important than patents, particularly in low-patenting industries.[16] Since the field of social entrepreneurship is part of the low-patenting industry, trademarks might be of great importance for social startups. Furthermore, trademarks support firms in protecting their whole brands, which in turn enables them to improve customer loyalty and willingness to pay for their offers (e.g., Wood, 2000).

Second, trademarking firms profit from signaling value. The ® symbol for registered trademarks helps firms signal their legal protection. Among others, firms use trademarks to signal the introduction of new products or services (Block et al., 2015; Flikkema et al., 2014). Thus, the signaling value of trademarks serves as an indicator of market orientation (Castaldi, 2020; Srinivasan et al., 2008). Since prior research shows that trademarking firms are more successful (Castaldi & Giarratana, 2018; Hsu et al., 2021), trademarking is used by startups to signal a positive value of innovation or their brand. For example, Block et al. (2014) identify the signaling value of trademarks within the valuation process of VCs. Therefore, the signaling value of trademarks enables startups to acquire financial resources due to the reduction of information asymmetries. However, although prior studies identify trademarks as a suitable proxy

[16] More information is provided in Table 59 of the following publication: https://ncses.nsf.gov/pubs/nsf18313/#data-tables

for innovation (Castaldi et al., 2020; Flikkema et al., 2014, 2019), they are still undervalued by external stakeholders (Hsu et al., 2021). In addition, from a customer perspective, the signaling value of a trademark reduces search and transaction costs (Economides, 1988).

We assume that the trademarking motives of social startups are driven by protection and signaling value. Prior research on social startups indicates that signaling economic credibility is particularly important for them for several reasons (e.g., Block et al., 2021a; Miller & Wesley, 2010). For example, Yang et al. (2020) indicate that signaling economic value increases the likelihood of support by a social impact accelerator. Consequently, we argue that a registered trademark at the early venturing stage of a social startup serves as a signal of economic professionalization, innovation activity, and in turn growth ambitions; provided growth ambitions of a social startup enable them to obtain access to important resources. Since many social startups face resource constraints, it is important for their development to leverage their assets with external partners. We argue that social startups profit from a registered trademark by strengthening their negotiation power, which is similar to the field of traditional startups (e.g., Block et al., 2014; Srinivasan et al., 2008). Furthermore, trademarks can serve to appropriate returns from protected innovations and therefore contribute to the economic outcomes of social startups. Since achieved growth (e.g., employment growth) is connected to growth ambitions, we argue that the signaling value of trademarks is of special importance for social startups' development. This is consistent with previous research showing that trademarks have a positive impact on productivity (e.g., Greenhalgh & Rogers, 2012). Furthermore, the protection of their social innovations from imitations enables social startups to profit from their ideas through the appropriation of innovation rents (e.g., Flikkema et al., 2014). Thus, we assume that social startups with a protected brand more easily commercialize new products and achieve profits. Accordingly, we hypothesize:

H1a: Trademarks positively relate to the economic outcomes of social start-ups.

Few studies investigate the value of trademarks for social or environmental goal achievements (e.g., Marie-Vivien et al., 2014). However, in addition to trademarks' value for economic outcomes, these IPRs are also likely to relate to the social outcomes of social startups for several reasons. Thus, trademarks can serve to protect social services that a social startup offers. For example, a social startup that offers health care services might use a trademark to protect their brand that is connected with high-quality health care services recognized by its stakeholders. Furthermore, social startups use trademarks for marketing reasons. For example, the German

social startup "reCup GmbH" uses its protected logo to introduce new environmentally friendly products that are then recognized by its customers. Subsequently, the protection of a social startup brand, product or service can lead to higher social outcomes since it attracts new customers and fosters the loyalty of existing customers. Finally, exchange motives for trademarking can play a role in social startups' social outcomes. A signaling value generated by a trademark that consequently provides a social startup with new external support is likely to have an impact on social outcomes. This is the reason most support that is provided for social startups addresses both the development of their social and economic outcomes. For example, a support program by a SII fosters both social startups' social and economic outcomes (Yang et al., 2020). Reflecting on the different values that trademarks may have on the social outcomes of social startups, we hypothesize the following:

H1b: Trademarks positively relate to the social outcomes of social start-ups.

5.3.2 Trademark breadth and social startup development

A trademark can be filed in several product or service classes (34 product Nice classes and 11 service Nice classes). Prior research demonstrates that firms use trademark classes to protect their assets (e.g., Flikkema et al., 2014). Therefore, trademark classes serve as different indicators (e.g., Castaldi, 2020; Sandner & Block, 2011). For example, Hsu et al. (2021) identify a differentiation strategy of firms reflected in the registration of trademarks that are registered in new classes for a firm. Regarding a startup's product portfolio, these classes thus indicate diversification (e.g., Mendonça et al., 2004). Thus, startups with few classes have narrow product lines, while many classes indicate wider product lines (Sandner, 2009). Additionally, Block et al. (2014) show that trademark breadth predicts the startup valuations of VCs in an inverted U-shaped relationship.

We argue that trademark breadth relates to the economic outcomes of social startups for two reasons. First, the higher the number of registered Nice classes, the greater the field in which a brand, product, or service is protected. Thus, social startups that register a trademark in broad areas could be able to commercialize new products and services more easily. Second, a higher number of Nice classes is connected to higher trademark registration costs since only three Nice classes are included in the registration fee of trademarks with national protection and only one Nice class for those with international protection. Consequently, social startups that register more Nice classes could benefit from an increased signaling value since they are bearing higher costs. We assume that the increased signaling and protection value will be recognized

as economic growth ambitions of social startups since it proves that a social startup considers economic objectives and can weigh financial decisions. This can in turn lead to greater access to resources and hence higher economic outcomes. Thus, we hypothesize the following:

H2a: Trademark breadth positively relates to the economic outcomes of social start-ups.

Trademark breadth can capture the scope of a social innovation by a social startup. Thus, the breadth of a trademark can serve to appropriate social returns from protected social innovations that address broad stakeholder groups and consequently relate to social outcomes of social startups. Furthermore, a trademark that protects a social innovation in broad fields might relate to a social solution for a societal problem that is more scalable, which in turn leads to higher social outcomes. Finally, we argue that social innovations that are protected more broadly are also valued more highly by organizations such as SVCs (Block et al., 2014). Greater access to external financial or nonfinancial resources by a social startup will in turn lead to higher social outcomes. Therefore, we hypothesize:

H2b: Trademark breadth positively relates to the social outcomes of social start-ups.

5.3.3 Trademarks' geographical scope and social startup development

Finally, the type of trademark differs in terms of its geographical scope. Prior research started to investigate the explanatory power of the different protection degrees (e.g., Li & Deng, 2017; Giarratana & Torrisi, 2010). For example, Li & Deng (2017) show that trademarking abroad serves as an indicator of internationalization and market expansion. In addition, trademarks protected across countries have an even stronger signaling value, partly because they are more cost intensive. While national protections are relatively low-priced (290€), European-protected trademark registrations cost more than three times as much (900€).

Prior research on social startups shows the high relevance of scalable projects (e.g., Shepherd & Patzelt, 2020; Tracey & Jarvis, 2007). For example, social startups that demonstrate the scaling potential of their business models are more likely to receive funding from impact investors (Block et al., 2021a). Scalability also determines the potential to complete fast internationalization and address social problems on a worldwide scale (Zahra et al., 2008). Therefore, we argue that trademarks with a greater geographic scope serve social startups as a strong signal of scalability potential. In this way, social startups can stand out from others that address local

problems and do not seek growth. Accordingly, we expect social startups that register trademarks with cross-country protection to have greater access to external resources, which ultimately predicts higher economic outcomes. Thus, we suggest the following hypothesis:

H3a: Trademarks' geographical scope positively relates to the economic outcomes of social start-ups.

In addition to economic outcomes, prior research suggests that social startups receive important support to scale their social impact due to external resources (e.g., Bacq & Eddleston, 2018). To gain access to external resources, Block et al. (2021a) reveal that the potential to scale a solution for societal problems is a valuable decision criterion for different types of impact investors. Hence, social startups that can highlight their scalability ambitions are more likely to receive external resources, which subsequently increases social outcomes. The registration of an internationally protected trademark could therefore be a valuable sign for social startups. Furthermore, if a social innovation is protected with a broader geographical scope, social startups are able to transfer their social services more easily. For example, in franchising business models frequently used by social startups (Tracey & Jarvis, 2007), trademarks with broader protection can serve to secure the brand image. A high-quality brand image, in turn, is necessary to foster strong relationships with stakeholders and improve social outcomes. For those reasons, we argue that social startups benefit from international protected trademarks in terms of their social outcomes. Thus, we hypothesize:

H3b: Trademarks' geographical scope positively relates to the social outcomes of social start-ups.

5.4 Research design

5.4.1 Data and sample

Our sample includes a large number of social startups from Germany, which we identified in three ways.

First, we collected social startups from large social entrepreneurship support organizations in the German-speaking area. These data include members of the organizations SEND

(Social Entrepreneurship Netzwerk Deutschland), Ashoka, and BonVenture. These organizations list members or fellows on their websites.[17] Second, we used the Orbis database of the business information publisher Bureau van Dijk to identify social startups based on their legal status (e.g., charitable limited company or cooperative). However, we restricted our sample to social startups that have established a business model with the goal of financial sustainability by offering their products or services. Thus, we did not include nonprofits, which are part of the broader definition of social entrepreneurship (e.g., Austin et al., 2006). Furthermore, we excluded all organizations that were narrowly connected to public authorities, such as universities or care centers. Third, we used the database pitchbook to identify further social startups from the investments of German impact investing organizations that are members of the EVPA.

In total, we identified 1,089 German social startups. Since social entrepreneurship strongly developed in the previous two decades, we excluded all ventures that were founded before 2000. Furthermore, we restricted our sample to social startups that were already actively running their businesses for more than three years to examine how registered trademarks during this time affected the further development of their startups. Thus, we also excluded social startups that were established in the years 2018 to 2020. Finally, we reduced our sample to those social startups for which we were able to identify the number of employees in 2020 as well as information about the team at the time of the ventures' foundation. In total, our final sample includes 485 social startups.

In addition to company-specific data, which we collected from Orbis, we gathered further information on the management team, IPs, and social outcomes of the social startups. We identified the founders' level of education through the social network LinkedIn. Additionally, we collected the relevant patent and trademark data from the German Patent and Trade Mark Office. Finally, we collected data on the social outcomes of our sample in three ways. First, we used the corporate websites of the startups in our sample to identify the specific SDGs that they address. Second, we used Orbis' ownership data and BonVenture's list of investments to determine whether an SE received an investment from a SVC. Third, we determined whether a social

[17] See https://www.send-ev.de/netzwerk, https://www.ashoka.org/en-us/our-network/ashoka-fellows/, https://bonventure.de/unser-portfolio/

startup was supported by Ashoka[18], the B Corp network[19], and the Phineo Impact program[20] through the organizations' websites.

5.4.2 Variables

Table 5.3 provides an overview of the variables and their definitions.

Table 5.3. Variables and definitions

Variable	Definition
Dependent variables	
Economic outcome measure	Dummy variable equal to one if an SE has more than ten employees in 2020.
Social outcome measure	Dummy variable equal to one if the SE has received (a) an investment by a SVC, (b) a Phineo impact certification, (c) a B Corp certification, (d) membership in the Ashoka support network.
Independent variables	
Trademark dummy	Dummy variable that captures whether a trademark was registered by a social startup (=1) or not (=0).
Trademark breadth	Set of dummy variables that capture the number of Nice classes covered by the trademark portfolio within the first three years of the social startup's founding. Dummies include social startups that registered trademarks in (a) at most three Nice classes (b) more than three Nice classes.
Geographical scope	Set of dummy variables that capture the geographical scope of trademark protection. Dummies include whether a social startup registered their trademarks with (a) (Germany-wide) national protection or (b) European or international protection.
Control variables	
Metropolitan area	Dummy variable equal to one if the social startup was established in (a) Berlin, (b) Hamburg, (c) Munich, (d) Cologne, or (e) Frankfurt.
Team	Dummy variable that captures whether the social startup was founded by a team (= 1) or not (= 0).
Patent dummy	Dummy variable that captures whether a patent was registered by a social startup (=1) or not (=0).
Female	The proportion of women in the founding team.
Age	Age of the founder at the time of the social startup's foundation. When the social startup was established by a team, the average age is taken.
Degree of education	Set of dummy variables that capture whether the social startups' founding team has received an (a) professional education, (b) academic education at university, or (c) doctoral education.
Founding year dummies	Set of dummy variables that capture the year in which a social startup was founded (2000–2017).
Industry dummies	Set of 12 dummy variables that capture the main industry of the social startup. Dummies include the industries (a) manufacturing, (b) energy and water, (c) construction, (d) wholesale, (e) information and communication, (f) financial and insurance services, (g) provision of professional, scientific, and technical services, (h) other economic services, (i) health and social services, (j) arts and entertainment, (k) other services, (l) others.
SDG dummies	Set of dummy variables that capture which of the 17 SDGs a social startup addresses. Dummies include the SDGs (a) No Poverty, (b) Zero Hunger, (c) Good Health and Well-being, (d) Quality Education, (e) Gender Equality, (f) Clean Water and Sanitation, (g) Affordable and Clean Energy, (h) Decent Work and Economic Growth, (i) Industry, Innovation and Infrastructure, (j) Reducing Inequality, (k) Sustainable Cities and Communities, (l) Responsible Consumption and Production, (m) Climate Action, (n) Life Below Water, (o) Life On Land, (p) Peace, Justice, and Strong Institutions, (q) Partnerships for the Goals.

[18] Ashoka is the worldwide leading support program for social entrepreneurs. It aims to include the world's leading social entrepreneurs in their network after a rigorous selection program, in which the impact potential of a social entrepreneur is evaluated (see https://www.ashoka.org/en-us/program/ashoka-venture-and-fellowship).

[19] SEs that are certified as Benefit corporations (B Corps) have to meet high standards of verified social and environmental performance (see https://bcorporation.net/about-b-corps).

[20] The Phineo Impact certification is provided to nonprofit projects of SEs after a four-stage impact assessment (see https://www.phineo.org/en/seal-of-impact).

Dependent variables

Our dependent variables capture social startups' outcomes in terms of their hybrid goals. Thus, the first dependent variable *economic outcome measure* captures the number of jobs that a social startup has created. The binary variable equals one if a social startup has created more than ten jobs. Job creation as a measure of economic outcomes is an established proxy variable in both prior social and traditional entrepreneurship research (e.g., Henderson, 2002; Lall & Park, 2020). The second dependent variable *social outcome measure* captures whether a startup was funded by a SVC, received Phineo Impact or B Corp certification, or whether a founder was accepted as a member of the Ashoka network. All these stakeholders evaluate the social outcome of a social startup before supporting it financially or nonfinancially, which led us to choose this proxy variable for high social outcomes by a social startup.

Independent variables

Our independent variables capture IPRs in the form of trademarks that were registered by social startups in the first three years of operations. We use registered and not filed trademarks because registered trademarks have already been checked and approved by the trademark office, which gives them a greater signal effect, for example. Since social startups more often provide services to their customers (Tan et al., 2005), we examine trademarks more intensively than patents. Therefore, we create three sets of dummy variables that capture different trademark properties.

First, since prior research shows that early trademarking can predict startup development (e.g., Sandner & Block, 2011; Hsu et al., 2021), we measure whether a trademark was registered by a social startup.

Second, we measure trademark breadth based on the number of registered Nice classes, which follows the approach from previous studies (e.g., Block et al., 2014; Flikkema et al., 2014). Nice classes indicate the number of goods and service classes in which a trademark is registered. In total, trademarks can be registered in 45 Nice classes (34 goods and 11 services). When applying for German trademarks, three Nice classes are included in a trademark registration, and the application fee is increased for any additional classes. Thus, we create a dummy variable that indicates that at most, three Nice classes were registered in total and another one that is equal to one if more than three Nice classes have been registered.

Third, a set of dummy variables captures the geographical scope of a trademark. Since trademarks can be registered with protection only for Germany (nationally), for European pro-

tection, or even international protection, we create two dummy variables. The first dummy variable equals one if a trademark offers national protection and the second equals one if it offers European or international protection, which is also more cost intensive.

Control variables

We include a range of control variables in our regressions. To capture the environmental difference, we include a dummy variable that is equal to one if a social startup was founded in a German metropolitan area (i.e., Berlin, Hamburg, Munich, Cologne, or Frankfurt).

To control for further IPRs, we include a dummy variable that captures whether a social startup has registered a patent within its first three years.

Furthermore, we include multiple control variables with regard to the founding team characteristics. First, a dummy variable captures whether a social startup was founded by a team (= 1) or not (= 0). Second, we measure the percentage of women on a founding team. Third, we include the age of the founder at the time of the startups' establishment and use the mean age if a social startup was founded by a team. Fourth, we include a set of education dummies that measure whether the founding team has an (a) professional, (b) academic, or (c) doctoral education degree.

Finally, we use a set of variables to account for company-specific confounding effects. To measure the effect that older businesses generally have more employees than younger businesses, we include a set of dummy variables that capture the founding years of the social startups. Additionally, we include a set of 12 industry dummies to capture the main industry of the social startup based on its NACE code, which we received from the database Orbis. In that way, we control for industry-related differences. Our last set of control variables captures the SDGs, which a social startup addresses with its business activities. In total, we include seventeen SDG dummy variables.

5.5 Results

5.5.1 Descriptive statistics

Table 5.4a and Table 5.4b demonstrate our descriptive statistics.

Table 5.4a. Descriptive statistics

Column	(1)	(2)	(3)	(4)
Sample		**Full sample**		
Variables	**Mean**	**SD**	**Min**	**Max**
Dependent variable				
Economic outcome measure	0.48	0.50	0	1
Social outcome measure	0.24	0.43	0	1
Independent variables				
Trademark dummy	0.34	0.47	0	1
Trademark breadth: <= 3	0.17	0.38	0	1
Trademark breadth: > 3	0.16	0.37	0	1
Geographical scope: national	0.19	0.40	0	1
Geographical scope: international	0.15	0.36	0	1
Control variables				
Metropolitan area	0.53	0.50	0	1
Patent dummy	0.04	0.19	0	1
Team	0.38	0.49	0	1
Female	0.21	0.37	0	1
Age	38.15	10.05	17	66
Degree of education: professional	0.09	0.29	0	1
Degree of education: academic	0.77	0.42	0	1
Degree of education: doctoral	0.14	0.34	0	1

Notes: N = 485.

Regarding our dependent variables, Table 5.4a illustrates that 24% of the social startups in our sample are classified as startups with a high social outcome. With regard to our second dependent variable, we find that 48% of the social startups in our sample have created more than ten jobs and are therefore classified as having high economic outcomes.

The descriptive statistics of our independent variables show that 33% already registered a trademark within the first three years of their existence. Within the group of social startups that registered a trademark, 17% filed their trademarks in more than three Nice classes. Finally, 15% protected their trademark internationally, but the majority applied for trademarks with purely German protection (19%). These results are similar to those of Castaldi (2018), who finds that 23.2% of the firms of the creative and cultural industry apply only for nationally protected trademarks.

The descriptive statistics of our control variables demonstrate that 53% of the social startups operate in metropolitan areas and 4% registered a patent as another IPR. With regard to the founding team-related control variables, 38% of our social startups were founded by a team. Furthermore, the proportion of women on the founding team is 21%, and the founders

are on average 38.15 years old. Most of the founders or founding teams have an academic educational degree (77%), followed by a doctorate (14%) and a professional degree (9%). Table 5.4b shows the industries in which the social startups operate and the SDGs they address. The majority of social startups (52%) are part of the service sector. Within the service sector, 16%, for example, operate in the information and communication industry. With regard to the SDGs, the top three SDGs that the social startups of our sample address are reduced inequalities (39%), responsible consumption and production (38%), and decent work and economic growth (37%).

Table 5.4b. Descriptive statistics (continuing)

Column	**(1)**	**(2)**	**(3)**	**(4)**
Sample			**Full sample**	
Variables	**Mean**	**SD**	**Min**	**Max**
Control variables				
Industry 1: Manufacturing	0.08	0.28	0	1
Industry 2: Energy and water	0.02	0.14	0	1
Industry 3: Construction	0.01	0.09	0	1
Industry 4: Wholesale	0.12	0.32	0	1
Industry 5: Information and communication	0.16	0.37	0	1
Industry 6: Financial and insurance services	0.02	0.14	0	1
Industry 7: Provision of professional, scientific, and technical services	0.11	0.31	0	1
Industry 8: Other economic services	0.05	0.21	0	1
Industry 9: Health and social services	0.07	0.26	0	1
Industry 10: Arts and entertainment	0.02	0.14	0	1
Industry 11: Other services	0.25	0.43	0	1
Industry 12: Others	0.09	0.29	0	1
SDG 1: No poverty	0.14	0.35	0	1
SDG 2: Zero hunger	0.19	0.39	0	1
SDG 3: Good health and well-being	0.23	0.42	0	1
SDG 4: Quality education	0.30	0.46	0	1
SDG 5: Gender equality	0.14	0.35	0	1
SDG 6: Clean water and sanitation	0.11	0.32	0	1
SDG 7: Affordable and clean energy	0.18	0.38	0	1
SDG 8: Decent work and economic growth	0.37	0.48	0	1
SDG 9: Industry, innovation, and infrastructure	0.23	0.42	0	1
SDG 10: Reduced inequalities	0.39	0.49	0	1
SDG 11: Sustainable cities and communities	0.16	0.37	0	1
SDG 12: Responsible consumption and production	0.38	0.49	0	1
SDG 13: Climate action	0.18	0.38	0	1
SDG 14: Life below water	0.09	0.29	0	1
SDG 15: Life on land	0.17	0.38	0	1
SDG 16: Peace, justice and strong institutions	0.10	0.30	0	1
SDG 17: Partnerships for the goals	0.11	0.31	0	1

Notes: N = 485.

Table 5.5 demonstrates the pairwise correlations of our variables.

5.5.2 Multivariate analyses

Since we assume that the error terms of our dependent variables might correlate due to some unobserved factors, we estimate bivariate probit regressions as our main form of analysis. Table 5.6 displays the results of our Models 1–4. Model 1 displays only our control variables, and in Models 2–4, we enter our independent variables.

Table 5.5. Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Economic outcome measure																			
(2) Social outcome measure	0.16																		
(3) Trademark dummy	0.15	0.13																	
(4) Trademark applications: = 1	0.01	0.08	0.65																
(5) Trademark applications: > 1	0.18	0.08	0.61	-0.20															
(6) Trademark breadth: <= 3	0.06	0.15	0.64	0.55	0.25														
(7) Trademark breadth: > 3	0.14	0.02	0.62	0.26	0.53	-0.20													
(8) Geographical scope: national	-0.00	0.16	0.67	0.56	0.29	0.50	0.35												
(9) Geographical scope: international	0.20	0.00	0.59	0.26	0.50	0.30	0.44	-0.20											
(10) Type of trademark: product	0.03	-0.03	0.31	0.16	0.23	0.35	0.04	0.07	0.32										
(11) Type of trademark: service	0.02	0.09	0.39	0.35	0.14	0.38	0.11	0.30	0.19	-0.06									
(12) Type of trademark: both	0.14	0.10	0.74	0.45	0.49	0.32	0.62	0.54	0.39	-0.12	-0.15								
(13) Metropolitan area	0.09	0.15	0.22	0.11	0.17	0.12	0.16	0.14	0.14	0.07	0.13	0.14							
(14) Team	0.00	0.04	0.08	0.03	0.07	0.10	0.00	0.07	0.03	-0.03	0.08	0.05	0.01						
(15) Patent dummy	0.10	-0.03	0.09	-0.01	0.12	0.06	0.06	-0.01	0.13	-0.04	-0.01	0.13	-0.01	0.12					
(16) Female	-0.15	-0.01	-0.04	-0.03	-0.03	-0.02	-0.05	0.05	-0.11	-0.05	-0.07	0.02	0.07	0.09	-0.04				
(17) Age	-0.09	-0.12	-0.21	-0.11	-0.15	-0.17	-0.10	-0.13	-0.14	-0.14	0.00	-0.17	-0.25	-0.14	-0.03	0.07			
(18) Degree of education: professional	-0.07	-0.13	-0.13	-0.09	-0.08	-0.11	-0.06	-0.08	-0.09	-0.07	-0.09	-0.06	-0.13	-0.10	-0.02	0.02	0.26		
(19) Degree of education: academic	0.10	-0.01	0.04	-0.01	0.06	0.02	0.03	-0.01	0.06	0.09	-0.06	0.04	0.10	-0.03	-0.08	-0.02	-0.25	-0.58	
(20) Degree of education: doctoral	0.12	-0.06	0.06	0.08	-0.01	0.06	0.02	0.07	0.00	-0.06	0.14	0.01	-0.01	0.11	0.11	0.00	0.08	-0.13	-0.73

Notes: N = 485.

Table 5.6. Results of bivariate probit regressions with a measure for the economic and social outcomes of a social startup as dependent variables

	Model	**(1)**		**(2)**		**(3)**		**(4)**	
	Dependent variable	**Economic**	**Social**	**Economic**	**Social**	**Economic**	**Social**	**Economic**	**Social**
	Statistic	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**
	Independent variables								
H1a&b:	Trademark dummy			0.494 (0.171)***	0.494 (0.171)***				
	(reference group: no trademark)								
H2a&b:	Trademark breadth: <= 3					0.363 (0.192)*	0.635 (0.206)***		
	Trademark breadth: > 3					0.704 (0.197)***	0.363 (0.220)*		
	(reference group: no trademark)								
H3a&b:	Geographical scope: national							0.327 (0.183)*	0.747 (0.200)***
	Geographical scope: international							0.795 (0.209)***	0.137 (0.229)
	(reference group: no trademark)								
	Control variables								
	Metropolitan area	0.266 (0.140)*	0.329 (0.155)**	0.163 (0.145)	0.243 (0.159)	0.160 (0.145)	0.254 (0.160)*	0.149 (0.145)	0.244 (0.160)
	Patent dummy	0.762 (0.413)*	-0.214 (0.403)	0.704 (0.407)*	-0.283 (0.411)	0.698 (0.409)*	-0.292 (0.414)	0.641 (0.409)	-0.138 (0.413)
	Team	0.157 (0.143)	0.243 (0.159)	0.172 (0.145)	0.249 (0.161)	0.183 (0.146)	0.237 (0.161)	0.186 (0.146)	0.241 (0.162)
	Female	-0.629 (0.192)***	-0.090 (0.210)	-0.644 (0.194)***	-0.082 (0.212)	-0.635 (0.195)***	-0.079 (0.212)	-0.603 (0.195)***	-0.172 (0.218)
	Founder age	-0.003 (0.008)	-0.020 (0.009)**	-0.001 (0.008)	-0.018 (0.009)**	-0.001 (0.008)	-0.018 (0.009)**	-0.002 (0.008)	-0.019 (0.009)**
	Degree of education: academic	0.343 (0.245)	0.502 (0.355)	0.262 (0.247)	0.455 (0.362)	0.267 (0.248)	0.445 (0.362)	0.246 (0.247)	0.529 (0.366)
	Degree of education: doctoral	-0.080 (0.298)	0.999 (0.392)**	-0.226 (0.305)	0.893 (0.402)**	-0.218 (0.305)	0.878 (0.402)**	-0.225 (0.305)	0.945 (0.406)**
	Founding year dummies (18)	Yes		Yes		Yes		Yes	
	Industry dummies (12)	Yes		Yes		Yes		Yes	
	SDG dummies (17)	Yes		Yes		Yes		Yes	
	Observations	485		485		485		485	
	Chi^2	185.331		196.597		198.771		151.972	

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01; Coeff. = coefficient, SE = standard error.

First, Model 1 shows a positive significant effect for social startups that were established in a German metropolitan area on both the dependent variables, social outcome measure ($p < 0.05$) and economic outcome measure ($p < 0.1$). Second, we find that a registered patent in the first three years of operations increases the likelihood of having a high economic outcome ($p < 0.1$), while the percentage of women has a significant negative effect ($p < 0.01$). Third, our results show that the age of the founding team negatively affects the likelihood of high social outcomes ($p < 0.05$), while a doctorate on a founding team increases the likelihood ($p < 0.05$). Finally, we included founding year, industry, and SDG dummies. With regard to the SDGs, we find that, for example, SDG 10 and SDG 12 have a positive effect on our dependent variable social outcome measure, while the economic outcome measure is positively predicted by SDG 7 and SDG 10.

Models 2–4 introduce different sets of independent variables. Model 2 shows that a significant positive effect for our trademark dummy on the economic and social outcome measure exists ($p < 0.01$). Thus, we find support for Hypotheses 1a and 1b, which indicates that a social startup that registered a trademark within its first three years has, on average, more employees today and a higher social outcome. Model 3 indicates the influence of trademark breadth on our dependent variables. While we find a significant positive effect of both a small and a large number of Nice classes on our dependent variables, we see differences with regard to the effect sizes.[21] Concerning the social outcome, the effect size of a narrow trademark (0.635) is almost twice as high as that of a broad trademark (0.363), whereas we identify the opposite results for economic impact. Therefore, we find tentative evidence that the breadth of a trademark differently relates to social and economic outcomes of social startups even though the differences are not statistically significant from each other. Finally, Model 4 compares trademarks that were registered with exclusively national protection or international protection. Surprisingly, we find two different significant effects of these trademark characteristics on our dependent variables. While our results show that national ($p < 0.1$) and international ($p < 0.01$) trademark protection relates to a higher likelihood of our economic outcome measure, we find that only national trademark protection has a significant effect on the social outcome measure ($p < 0.01$). The result of the test for equality of distribution confirms significant differences between national

[21] In a revision process of a larger scale trademark search, small changes occurred. Thus, the influence of trademarks with less than three registered NICE classes became insignificant.

and international trademark protection for both of our dependent variables ($p < 0.1$). Therefore, we are only able to confirm Hypothesis 3a.

5.5.3 Robustness checks and further analyses

We perform robustness checks by adapting both of our dependent variables. As a result, we now measure the social outcome solely by a received investment of a SVC (14% of our sample received an investment). Furthermore, we change our economic outcome measure to social startups that employ more than 50 employees (13% of our sample). The results of our robustness checks are displayed in Table 5.7

In general, we find similar results regarding our independent variables. However, there are some slight differences with regard to trademark registrations and the type of registered trademark. Thus, our robustness checks show that a trademark registration within the first three years of a social startup does not positively significantly relate to an investment by a SVC. The effect of a trademark on our new economic outcomes measure remains positively significant. Moreover, we no longer find a significant impact of nationally protected trademarks on economic outcomes and of internationally protected trademarks on social outcomes.

Finally, we conduct further analyses to assess whether the number or class category of registered trademarks within the first three years of a social startup affects social and economic growth. We, therefore, create a dummy variable that is equal to one if only one trademark was registered within the first three years of a social startup and another dummy that measures if more than one trademark were registered. Our findings show that while both dummy variables significantly positively relate to our dependent variable of social outcome ($p < 0.01$), the likelihood of a high economic outcome only increases with more than one registered trademark ($p < 0.01$). Furthermore, we measure whether a social startup registered Nice classes (a) only in product Nice classes, (b) only in service Nice classes, or (c) in both, to examine whether differences for the trademark classes exist. Flikkema et al. (2014) argue that service trademarks are registered at earlier innovation stages than product trademarks since they help to symbolize intangible service innovations and to foster effective customer communication. Thus, since product and service trademarks serve as different indicators, they might also predict job creation by social startups differently. We find that those startups that registered trademarks using service and product Nice classes simultaneously ($p < 0.01$) have a significant likelihood of being classified as a social startup with high social and economic outcomes currently, while we do not find any statistically significant results for those that only registered product Nice classes.

Table 5.7. Results of our further analyses and robustness checks with new measures as dependent variables

	Model	**(1)**		**(2)**		**(3)**		**(4)**	
	Dependent variable	**Economic**	**Social**	**Economic**	**Social**	**Economic**	**Social**	**Economic**	**Social**
	Statistic	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**	**Coeff. (SE)**
	Independent variables								
H1a&b:	Trademark dummy			0.606 (0.227)***	0.280 (0.198)				
	(reference group: no trademark)								
H2a&b:	Trademark breadth: <= 3					0.549 (0.266)**	0.460 (0.236)*		
	Trademark breadth: > 3					0.708 (0.284)**	0.108 (0.261)		
	(reference group: no trademark)								
H3a&b:	Geographical scope: national							0.212 (0.293)	0.531 (0.232)**
	Geographical scope: international							0.988 (0.278)***	-0.085 (0.270)
	(reference group: no trademark)								
	Control variables								
	Metropolitan area	0.613 (0.216)***	0.208 (0.189)	0.520 (0.221)**	0.155 (0.193)	0.516 (0.221)**	0.173 (0.195)	0.533 (0.232)**	0.148 (0.194)
	Patent dummy	0.681 (0.420)	-0.320 (0.468)	0.719 (0.423)*	-0.366 (0.476)	0.724 (0.422)*	-0.402 (0.485)	0.617 (0.428)	-0.237 (0.478)
	Team	0.324 (0.205)	0.248 (0.189)	0.328 (0.210)	0.247 (0.190)	0.335 (0.211)	0.233 (0.191)	0.304 (0.211)	0.245 (0.193)
	Female	-0.311 (0.280)	-0.007 (0.259)	-0.295 (0.278)	-0.003 (0.261)	-0.280 (0.278)	0.008 (0.260)	-0.115 (0.290)	-0.132 (0.272)
	Founder age	0.019 (0.011)*	-0.022 (0.011)**	0.023 (0.012)**	-0.020 (0.011)*	0.023 (0.012)*	-0.020 (0.011)*	0.021 (0.012)*	-0.021 (0.011)*
	Degree of education: academic	0.348 (0.363)	0.232 (0.416)	0.269 (0.367)	0.220 (0.421)	0.270 (0.368)	0.185 (0.420)	0.245 (0.374)	0.299 (0.427)
	Degree of education: doctoral	-0.942 (0.539)*	0.754 (0.458)*	-1.174 (0.552)**	0.704 (0.465)	-1.180 (0.552)**	0.666 (0.464)	-1.207 (0.569)**	0.745 (0.470)
	Founding year dummies (18)	Yes		Yes		Yes		Yes	
	Industry dummies (12)	Yes		Yes		Yes		Yes	
	SDG dummies (17)	Yes		Yes		Yes		Yes	
	Observations	485		485		485		485	
	Chi^2	120.167		121.816		121.816		125.822	

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01; Coeff. = coefficient, SE = standard error.

5.6 Discussion

5.6.1 Interpretation of our results

Our results demonstrate that IPRs in the form of trademarks relate to social startup development. As such, we find similarities to prior research on traditional startup development (e.g., Helmers & Rogers, 2010; Srinivasan et al., 2008). However, we find that there are particularities in trademarks for the development of hybrid outcomes of social startups.

Our findings reveal that trademark registrations within the first three years of a social startup's existence relate to their social and economic outcomes. Thus, we find that in addition to the receipt of grants and the experience of a social entrepreneur (Lall & Park, 2020; Rey-Martí et al., 2016), IPRs relate to the employment growth of social startups. Social startups seem to benefit from a signaling and appropriation value that has been identified by prior trademark research on traditional startups (e.g., Flikkema et al., 2014; Hsu, 2021; Malmberg, 2005). The signaling value of trademarks can help startups obtain access to external financial and non-financial support (e.g., Yang et al., 2020); also, trademarks enable them to have stronger commercialization of their products and services (Hsu, 2021). Furthermore, the signaling effect of trademarks can serve as a valuable sign for the growth ambitions of a social startup, which in the next step can lead to higher realized growth (e.g., Delmar & Wiklund, 2008). In turn, trademark registrations foster the economic development of social startups. However, our further analysis indicates that social startups that register more than one trademark during this time profit from the benefits of trademark registrations. This finding is in line with Block et al. (2014), who show that the number of trademarks affects startup valuations by VCs.

Furthermore, we demonstrate that trademark registrations relate to higher social outcomes. Once again, the signaling effect can be a reason since external support that is achieved through a trademark registration (e.g., through a social impact accelerator) also provides a social startup with knowledge on how to scale social outcomes (e.g., Block et al., 2021a; Yang et al., 2020). In addition, our proxy for social outcomes includes multiple stakeholders who evaluate the social outcomes of social startups and might perceive trademarks as a valuable signal of the scaling potential or appropriation value of a startup's social innovation. However, the findings of our robustness check reveal that a trademark registration no longer significantly relates to social outcomes if we use solely the proxy of an investment by a SVC. This finding contradicts prior research that identifies trademarks as a valuable predictor for a VC investment (Block et al. 2014). Furthermore, this finding could indicate that social startups profit more from the marketing or protection value of trademarks than from an exchange value if trademark

registrations do not relate to greater access to financial resources. Finally, our further analyses show that trademarks that are registered in service and product classes positively relate to social startups' hybrid outcomes. Since Flikkema et al. (2019) show that startups use trademarks in product and service classes to protect brand attributes, our results suggest that social startups, in particular, benefit from these brand protections.

Our findings concerning the type of registered trademark are ambiguous. We show that broad trademarks with a high geographical scope relate to a higher number of jobs created by social startups. Thus, with regard to the economic outcomes of social startups, our findings are in line with those of Block et al. (2014) or Xiong and Bharadwaj (2011), who identify a predictive power of the number of registered Nice classes. Furthermore, our results indicate that international protection of a trademark might relate to the economic growth ambitions of a social startup, which in turn can lead to higher realized growth. This interpretation would be consistent with prior studies regarding the effects of a trademark's geographical scope on market expansion (e.g., Li & Deng, 2017; Giarratana & Torrisi, 2010). However, our results of the effects of different trademark types on social outcomes are counterintuitive. Thus, we show that narrowly registered trademarks with national protection relate to higher social outcomes. These findings contradict the assumptions that the fast internationalization ambitions of social startups indicate a higher potential for social outcomes (e.g., Zahra et al., 2008). A tentative interpretation for this finding is that social startups with narrow social innovations in a closer geographical context are more focused on the specific needs of their stakeholders and increase their social outcomes stepwise. Moreover, this interpretation would be in line with prior research on work integrated social enterprises (WISE), which rarely act across borders (e.g., Davister et al., 2004). Hence, our results indicate that focused social innovations could be more promising for social startups to scale their social outcomes. This would also be consistent with prior research on small- and medium-sized enterprises that often use stepwise and slow internationalization approaches to achieve learning advantages (e.g., Hilmersson & Johanson, 2016; Mejri & Umemoto, 2010). The acquisition of new knowledge that is relevant in new geographical contexts might be even more important for social startups with a high need for information about the specific needs of their stakeholder.

In addition to our trademark-related findings, some effects of our control variables are worthwhile to discuss. For example, we confirm the findings of Rey-Martí et al. (2016) since we do not identify a significant relationship between the educational attainment of a founding team and higher economic outcomes in the form of jobs created by social startups. However,

our results show that a higher education degree of a founding team relates to a higher social outcome of a social startup. We interpret this finding as a sign of the ability to deal with complex situations that are required when solving a social problem. Furthermore, we find the first indications that patents, as another form of IPR, relate to higher economic outcomes of social startups. This finding is consistent with prior research on the implications of patent registrations for traditional startups (e.g., Farre-Mensa et al., 2020; Gaulé, 2018; Helmers & Rogers, 2011).

5.6.2 Practical and policy implications

Our findings have some implications for both practice and policy. Thus, we suggest that social startups that aim to increase their hybrid outcomes should consider trademark applications in their nascent venturing phase. However, social startups need to be aware of the ambiguous effects that different types of trademarks have on social and economic outcomes. For example, if a social startup aims for high economic growth, trademarks should be registered in a broad field of Nice classes with a high geographical scope.

The policy implications of our findings relate to external stakeholders such as social investors or policy-makers. Since trademarking of social startups leads to higher growth rates, it can serve social investors as a sign of professionalization. Subsequently, the consideration of trademarks can help social investors identify social startups that aim for both high economic and social outcomes. Furthermore, social startup development programs, for example, incubation programs, should raise social startups' awareness of the advantages of early trademarking. Finally, the results of our control variables suggest that specific support programs on how to develop social outcomes could help social startups with less educational attainment.

5.6.3 Limitations and future research areas

Our study has several limitations that open up room for future research. First, we have a survivorship bias in our data since we are not able to identify those social startups that failed during our observation time. Further studies could therefore expand the literature on social startup survival and examine whether social startup trademarking also reduces the likelihood of failure. Second, our results might suffer from omitted variable bias. Since prior research shows that social startups that receive early external funding have higher employment growth rates and greater economic performance (e.g., Cacciolatti et al., 2020; Rey-Martí et al., 2016), this might be a variable to explain some of our trademark effects. For example, it could be the case that trademarking increases the likelihood of external funding, which then increases employment

growth rates. Therefore, we encourage future research to investigate this mediation relationship since we were not able to collect funding rounds of social startups in their first three years of operations. Furthermore, future studies could use further proxies for the economic and social outcomes of social startups. While the number of created jobs is an established growth parameter (e.g., Henderson, 2002; Lall & Park, 2020), research thus far lacks quantitative evidence on the social outcomes of social startups. Since our proxy of social outcomes of a social startup is an indirect measure, we encourage further research to replicate our findings based on a more direct measure of social outcomes (e.g., using a survey approach). Third, our findings relate to German social startups, which reduces the generalizability of our findings since social entrepreneurship has been proven to differ geographically (e.g., Defourny & Nyssens, 2010a; Kerlin, 2006). Future research should thus investigate other geographical areas, in particular, since the use of IPRs also varies between different regulatory contexts (e.g., Cohen et al., 2002; Maskus, 2000).

Additionally, our findings also provide some areas for future research. For example, the relationship between trademarks and job creation clearly requires further examination in the broader field of traditional entrepreneurship since the overall literature in this respect is scarce. Furthermore, the literature lacks an understanding of how trademarks serve to predict the social innovativeness of social startups. While prior research shows that trademarks relate to the service and product innovations of traditional startups (Flikkema et al., 2019), there is potential for future research to investigate trademarks' predictive power for innovation in the field of social entrepreneurship. Finally, we encourage future research to investigate the relationship between SDGs and social startups in greater depth. A deeper understanding of the predictive power of SDGs in the field of social entrepreneurship could be of great importance for the further development of the field.

Chapter 6

Conclusion

The final chapter of this dissertation proceeds as follows: Section 6.1 provides brief answers to the research questions addressed in this thesis by summarizing the main findings of each chapter. Section 6.2 outlines implications of this dissertation for theory and practice and Section 6.3 discusses the limitations. Finally, Section 6.4 concludes this thesis by identifying avenues for future research.

6.1 Findings per chapter

This chapter provides summaries of the findings of each chapter. A first overview of these findings is demonstrated in Table 6.1. Afterwards, four subchapters highlight the main results of each chapter in detail.

Table 6.1. Summary of the main findings

Research question	Summarized answers
RQ 1	• All attributes except the criterion background of the founding team are relevant in the screening process of impact investors. • The most important criteria are: (1) the authenticity of the founding team, (2) the importance of the societal problem targeted by the SE, and (3) the financial sustainability of the SE. • Impact investors are heterogeneous with regard to their screening processes.
RQ 2	• Societal duty and meeting the expectations of their stakeholders are the most important motives of SIIs. • SIIs provide a large set of nonfinancial supporting activities to SEs. • Similar to impact investors, their most important selection criteria are the authenticity of the founding team and the importance of the societal problem. However, SIIs vary in their selection processes depending on their motives.
RQ 3	• A single trademark does not indicate social innovation while a higher number of trademarks does. • The geographical scope of trademarks (nationally protected) is a strong indicator of social innovation. • Trademarks hardly indicate the financial dimension of social innovation.
RQ 4	• Social startups that register trademarks in the first three years of their development have higher social as well as economic outcomes. • Trademark characteristics relate differently to the hybrid outcomes of social startups.

6.1.1 Chapter 2: Which criteria matter when impact investors screen social enterprises?

RQ 1: *Which screening criteria do impact investors use, what is their relative importance, and how do they differ between different types of impact investors?*

Chapter 2 investigates the decision-making behavior of impact investors in early stages of their selection processes. Since impact investors invest in SEs that follow hybrid objectives, they use different forms of investment. To answer RQ 1 and to provide a holistic view on the different types of impact investors, the chapter analyzes the screening behavior of impact investors as a total group as well as differences across the different types. Therefore, a multi-method approach consisting of an interview study and a conjoint experiment is used. In total, Chapter 2 examines 12 interviews and 4,296 screening decisions made by 179 impact investors.

The results of multilevel logistic regressions show that three screening criteria are central for impact investors when investing: (1) the authenticity of the founding team, (2) the importance of the societal problem targeted by the SE, and (3) the SE's financial sustainability. In addition, the findings reveal that the scalability of a societal problem, the SE's degree of innovation, and proof of concept contribute to impact investors' selection decisions. However, the

results show no significant importance of the professional background of the founding team. Thus, impact investors seem to strongly value both the social and economic objectives of SEs. By comparing the different types of impact investors (i.e., donors, equity, and debt impact investors), differences in their screening behavior are identified. For example, donors rather focus on the social objectives of SEs, while debt and equity impact investors pay more attention to the financial sustainability of SEs because they aim for financial returns. Furthermore, equity impact investors value SEs higher if they are able to demonstrate large-scale solutions to societal problems.

6.1.2 Chapter 3: Motives, supporting activities, and selection criteria of social impact incubators: An experimental conjoint study

RQ 2: *What are the motives and supporting activities of SIIs? Which selection criteria do SIIs use in their decision-making processes, what is their relative importance, and how heterogeneous are SIIs with regard to their selection criteria?*

Chapter 3 analyzes various characteristics of SIIs as primarily nonfinancial supporters of SEs. In doing so, this chapter relates to Chapter 2, which focuses on impact investors as the financially supportive part of SEs. Again, this chapter combines interviews with a conjoint experiment to identify core elements of SIIs' work. Thus, the analyses include 71 SIIs that made 1,704 decisions in total.

The chapter addresses RQ 2 in three ways. First, the results show that the most important motive of SIIs regarding their work is their duty to society, while the financial motive is the least important one. Second, SIIs provide SEs with a set of multiple supporting activities which are mainly of nonfinancial nature. As such, SIIs provide SEs with personal networks and contacts, specific mentoring or coaching programs. Moreover, in many cases they also offer coworking spaces. Third, the findings demonstrate the selection criteria of SIIs and show that the authenticity of the founding team and the importance of the societal problem addressed by an SE are the most important criteria for SIIs. These are similar results to impact investors in Chapter 2. However, SIIs seem to focus less on the financial sustainability of SEs. This could result from the fact that they themselves offer supporting activities to SEs that help building financial sustainability. Finally, the findings reveal that SIIs are a heterogeneous group because their selection criteria differ with regard to the motives they follow. For example, SIIs with strong innovation motives value the scalability of a solution to a societal problem as well as the

degree of innovation of an SE higher in their selection processes than SIIs that follow other motives (e.g., stakeholder expectation motives).

6.1.3 Chapter 4: Market, social, or both? Measuring social innovation through trademarks

RQ 3: *How can social innovations by SEs be measured through trademarks?*

The increased public interest in social innovation is partly due to the immense global challenges societies face. Chapter 4 investigates how social innovations of market-oriented SEs can be measured by IPRs. More specifically, this chapter analyzes how trademarks and their diverse characteristics relate to the four main dimensions of social innovation. To measure the dimensions of social innovation, a textual analysis based on over 35,000 subpages of 925 SE's websites is conducted.

To answer RQ 3, Chapter 4 combines prior research from the field of trademarks and social innovation. The findings show that while a single trademark registration does not clearly serve to measure social innovation, the number of registered trademarks positively significantly relates to all dimensions of social innovation. In addition, the results demonstrate that trademark breadth and the number of product-related trademarks indicate three of four social innovation dimensions. These characteristics merely do not relate to the financial dimension. Finally, the results show that, surprisingly, nationally protected trademarks are a stronger indicator of social innovation than internationally protected trademarks. The results are robust, particularly in terms of the number and breadth of trademarks as well as their geographical scope.

6.1.4 Chapter 5: Trademarks and how they relate to the social and economic outcomes of social startups

RQ 4: How do early trademark registrations relate to the social and economic outcomes of social startups?

Chapter 4 investigates trademarks as important IPRs from a social startup perspective. To date, prior research on the use of IPRs by social startups is scarce. To fill this gap, this chapter examines the trademarking behavior in the first three years of 485 German social startups. The analysis is based on three sources: (1) the business information publisher Bureau van Dijk, (2)

the German Patent and Trade Mark Office, and (3) the websites of social startups. Social outcomes are assessed by an Ashoka support of a social startup or the enrollment into the B Corp network or the Phineo Impact program through the websites of these organizations.

Because our dependent variables (i.e., social and economic outcomes) may have correlated error terms, the analyses are based on bivariate probit regressions. The results show that social startups that register trademarks in the early founding stages achieve both higher social and economic outcomes. Furthermore, the findings reveal that trademark characteristics relate differently to the hybrid objectives of social startups. Thus, narrow and nationally protected trademarks relate to high social outcomes, while broad and internationally protected trademarks relate to high economic outcomes. However, when examining social outcomes solely through an investment by an SVC, registered trademarks no longer relate to social outcomes.

6.2 Implications for theory and practice

This dissertation provides various implications for theory and practice. Overall, the thesis contributes to the emerging research field of social entrepreneurship and ties in with specific literature strands therein. First, this thesis expands the existing knowledge on the financing of hybrid organizations (e.g., Guo & Peng, 2020, Lehner & Nicholls, 2014; Santos et al., 2015). More specifically, the findings contribute to recent research on impact investing (e.g., Barber et al., 2021; Brest & Born, 2013; Phillips & Johnson, 2021) and social incubators (e.g., Baskaran, 2019; Sansone et al., 2020, Valero et al., 2021). Furthermore, based on a conjoint experiment, this dissertation closes gaps with regard to selection processes (e.g., Achleitner et al., 2013; Barraket & Yousefpour, 2013; Meqdadi et al., 2020) and value-added services of SE supporters (e.g., Hirschmann et al., in press; Giordano et al., 2021; Scarlata & Alemany, 2013). Second, this thesis adds to the increasing literature strand on social innovation of SEs (e.g., Phillips et al., 2019; Vickers et al., 2017; Zainol et al., 2019). In detail, the results address the lack of understanding of IPRs as well as indicators of social innovation (e.g., Kleverbeck et al., 2019; Mulgan et al., 2013; Unceta et al., 2016). Finally, the thesis also contributes to the question of how SEs grow. Thereby, it enlarges the existing pool of research on the development of social startups, in particular with regard to their social (e.g., Choi et al., 2020; Haugh et al., 2006; Urban, 2015) and economic (e.g., Bhattarai et al., 2019; Chell, 2007: Gray et al., 2003) outcomes.

Moreover, this dissertation has distinctive practical and policy implications. In terms of policy, it offers several SE stakeholders a better basis for decision-making. Thus, the thesis

supports impact investors and SIIs in their work with SEs. In addition, governments that work together with SEs or aim to improve social innovations in societies are provided with new insights from the field. For example, the thesis creates a deeper understanding of indicators of social innovation, which is important for more sophisticated government programs in this context. Finally, this dissertation provides SEs with new knowledge that can serve them at different business development stages. The results not only highlight the importance of early trademarking in achieving the hybrid goals of SEs, but also provide guidance on how to successfully compete for impact investors or SII investments.

The following paragraphs summarize the detailed theoretical and practical implications of each chapter.

Chapter 2 contributes to two literature strands. First, this chapter extents prior research on impact investing by exploring the screening phase of impact investors' selection processes (e.g., Barber et al., 2021; Chowdhry et al., 2019). Thus, the study identifies the relative importance of seven investment criteria. Thereby, it contributes to a better understanding of how impact investors select SEs for their portfolios. Furthermore, Chapter 2 explores the heterogeneity that exists within the group of impact investors. For example, equity impact investors attach more importance to some criteria than it is the case for debt impact investors or donors. The heterogeneity analyses add to prior studies that investigate selection process differences between different investors (e.g., Mason & Stark, 2004; Moritz et al., 2021; Ueda, 2004). Second, Chapter 2 contributes to the discussion on the importance of the management team for entrepreneurial finance investors (e.g., Block et al., 2019; Gompers et al., 2020a). For example, the finding that the professional background of a founding team does not contribute strongly to the decision of impact investors contradicts earlier research on traditional VC investors (e.g., Franke et al., 2008; Kaplan et al., 2009). Finally, from a practitioner's perspective, Chapter 2 provides important contributions for impact investors and SEs. While the findings enable SEs that seek funding to customize their applications for different kinds of impact investors, impact investors can benchmark their own screening processes against their industry.

The contributions of **Chapter 3** are threefold. First, the chapter contributes to earlier research on SIIs (e.g., Nicolopoulou et al. 2017; Yang et al. 2020). Thus, the study outlines major motives, supporting activities, and selection criteria of SIIs. Second, Chapter 3 extends prior research that investigates the selection processes of SE investors (e.g., Miller & Wesley 2010; Yang et al. 2020). As a new type of organization of SE investors, the findings demonstrate the unique selection criteria of SIIs. Third, Chapter 3 contributes to prior studies on paradox theory

and its application in the context of hybrid organizations (e.g., Schad & Bansal 2018; Smith et al. 2017). The results show that SIIs place a special emphasis on social goals compared to financial goals. With regard to practical implications, Chapter 3 provides SEs with relevant knowledge on how to best apply for SII programs. Furthermore, the findings of the study enable SIIs to better understand the selection processes within their industry.

Chapter 4 contributes to three different research fields. By exploring how trademarks serve to measure social innovation, this chapter contributes to earlier studies that started to investigate measuring social innovation (e.g., Andries et al., 2019; Krlev et al., 2014; Unceta et al., 2016). While most studies, thus far, indicate social innovation on a macro-level (e.g., Akgüç, 2020; Vassallo et al., 2019), Chapter 4 introduces an indicator on the organizational level. Furthermore, the study in Chapter 4 contributes to prior research that investigates how trademarks and their characteristics indicate traditional innovation (e.g., Flikkema et al., 2014, 2019; Mendonça et al., 2004). For example, Castaldi (2018) and Gotsch and Hipp (2014) highlight the importance of trademarks as indicators of innovation in the creative and service industry. Chapter 4 extends these findings by demonstrating how the number of trademarks, the trademark breadth, type of trademark and their geographical scope indicate innovation in the field of social entrepreneurship. Finally, the chapter ties in with research that investigates corporate communication of SEs (e.g., Nicholls, 2009; Ramus & Vaccaro, 2017) by deriving four dimensions of social innovation via the corporate websites of SEs.

While Chapter 4 explores trademarks as indicators of social innovation by SEs, **Chapter 5** contributes in several ways to prior research on IPRs and the growth of SEs. On the one hand, this chapter contributes to ealier studies on the predictors of social startup development (e.g., Haugh et al., 2020; Renko, 2013). Therefore, while formal business planning or grant financing have been shown to improve the economic development of social startups (e.g., Cacciolatti et al., 2020; Lall & Park, 2020; Staessens, 2019), our study initially illustrates how trademarks relate to social as well as economic performance. On the other hand, we contribute to prior research on the importance of trademarks for traditional startup development (e.g., Helmers & Rogers, 2010; Srinivasan et al., 2008) as well as the informative value of different types of trademarks (Castaldi, 2020; Hsu et al., 2021; Sandner & Block, 2011). For example, Chapter 5 demonstrates that different types of trademarks also relate differently to social and economic outcomes. For practice and policy, our study provides some implications as well. Our findings encourage social startups to register trademarks at an early venturing stage. Furthermore, we provide impact investors with valuable information on predictors of social startup development.

6.3 Limitations

As with all dissertations with scientific pretensions, this dissertation has a number of limitations. Some of them arise from the novelty of the phenomenon of social entrepreneurship. As with other emerging phenomena (e.g., Initial Coin Offerings (Fisch, 2019)), many changes are still taking place in the social entrepreneurship field, limiting the long-term generalizability of results and encouraging future replication studies. For example, in countries such as Germany, new legal forms for SEs are currently under discussion which could lead to organizational changes in the future. However, these changes offer plenty of opportunities for future research. The following sections discuss in detail the limitations of the studies included in this dissertation.

The first set of limitations is methodological, as this dissertation includes four quantitative empirical studies. Because the samples in each study are composed, self-selection bias may be present in all studies. In particular, **Chapter 2** and **Chapter 3**, which include an experiment as well as a survey, are likely to be affected by such a bias as well as by closely related non-response biases or late-response biases. However, the studies aim to address these biases in various ways. For example, the studies include a number of tests to assess the degree of concern (e.g., non-response bias test). Other methodological limitations of Chapter 2 and Chapter 3 arise from the choice of the conjoint experiment as the research design. Since conjoint experiments confront participants with hypothetical decision tasks, they are likely to suffer from construct validity or external validity (Shepherd & Zacharakis, 1999). This means that the decision tasks of the choice-based conjoint experiments in these chapters might differ from reality. However, to reduce this potential limitation of using inappropriate tasks, interviews and pretests were conducted in advance with experts from the field and the conjoint design was adapted based on their responses. In addition, the results of previous conjoint studies showing that real decisions strongly correlate with estimated decision behavior reduce the external validity problems.

Beside possible methodological limitations with regard to the sample selection in **Chapter 3**, this chapter has some limitations due to the measurement of the dependent variables used in this study. Since it applies a textual analysis of websites to assess social innovations by SEs, biases can result from the simple use of word counts. Therefore, future studies could replicate the findings of this study by constructing further approaches to measure social innovation. For example, new investigations could utilize a survey such as the CIS by Andries et al. (2019) or further established surveys from prior innovation research.

The methodological limitations of **Chapter 4** occur once again mainly with regard to the sample. In particular, the study is unable to rule out survivorship bias. This is the case because no information on failed SEs is available during the observation period. With regard to the utilized variables, further limitations might be worth mentioning. For example, an omitted variable bias may result from missing company-specific information on the first three years of the development of social startups (e.g., financing, network, etc.). Furthermore, the study uses a proxy to indicate the social outcomes of social startups, which reduces the generalizability of the findings. Future studies should therefore measure the complex social outcomes in new ways.

Overall, the studies of this dissertation can also suffer from context-specific limitations. The major limitation arises from the geographical context, as all the studies focus on the DACH region. Prior research shows that there are distinct country-specific differences in the field of social entrepreneurship (e.g., Defourny & Nyssens, 2010a, 2010b; Kerlin, 2006). These differences are, for example, due to different levels of welfare provision by governments, social inequalities, or the general level of development of geographic areas. Moreover, research on IPRs, and even more specifically trademarks, is still in its infancy in the field of social entrepreneurship. Due to the lack of existing knowledge, the explorations of the studies within this dissertation (i.e., Chapter 4 and Chapter 5) are limited because they have little to build upon from previous studies in the field.

6.4 Future research opportunities

Every chapter of this thesis provides various future research opportunities. **Chapter 2** highlights the importance of further research in the field of impact investing. Since research on impact investing is still in its infancy, plenty of further research areas exist. Derived from the results of Chapter 2, future research could examine the geographic differences that have traditionally existed in private equity investing between Europe and the United States (e.g., Black & Gilson, 1998). Furthermore, Chapter 2 investigates the screening phase of impact investors. Therefore, new research should extent the field by investigating later stages of impact investors' selection process. For example, the existing pool of literature, thus far, lacks an understanding on how impact investors decide in startup pitches or when evaluating the business plans of SEs. Additionally, more research is needed with regard to decision-making of impact investors in terms of the different investment stages. For example, prior literature shows that late-stage VC investors apply different selection criteria than those who invest in startups at a very early stage (Block et al., 2019). Finally, Chapter 2 identifies differences between different types of impact

investors with regard to their selection processes. Future research could expand the knowledge of the heterogeneity of the field by examining different investment behaviors in more detail.

Based on the results of **Chapter 3**, several future research directions can be derived. First, future research could investigate the heterogeneous field of SIIs in greater depth. For example, it would be a great contribution to study the degree of success of different types of SIIs with different missions and supporting activities in their work. In particular, future studies could investigate the value of different supporting activities for SEs similar to earlier studies on traditional business incubators (e.g., Bruneel et al., 2012; Mian, 1996, 1997). Furthermore, changing the perspective from SIIs to SEs opens up new research opportunities. As such, future research could investigate which offers of SIIs attract SEs and also focus on necessary activities of SEs. In particular, I encourage future researchers to conduct experiments, such as the conjoint experiment in Chapter 2, with social entrepreneurs to identify what they perceive to be the most important supportive activities. Finally, future studies could compare SIIs with traditional business incubators with regard to their selection behavior in quantitative approaches. In addition to the results of our study, such a research project would also extend the findings of Sansone et al. (2020).

Chapter 4 shows that trademarks and their diverse characteristics of SEs correlate differently with the dimensions of social innovation, which are measured via the corporate websites of SEs. Future research could use further measures of social innovation to evaluate how trademarks serve to indicate them. For example, the frequently applied CIS (e.g., Andries et al., 2019; Phillips et al. 2019) could serve for another approach. Furthermore, replication studies could transfer our research design to textual analysis in other languages to identify possible differences. Moreover, an investigation of whether trademarks relate differently to innovation in the context of social and traditional entrepreneurship would broaden the understanding of the significance of this IPR in both fields. For instance, a comparative study of samples from both fields could identify distinctive differences and similarities. Finally, there is potential for research to explore the motives of SEs for trademarking in more depth. While the motives of SMEs have already been analyzed (Block et al., 2015), future research could assess whether SEs have unique motives since other IPRs are less suitable for them.

Finally, the findings of **Chapter 5** open up new avenues for future research. While Chapter 5 explores the relationship of the trademark registrations of social startups and hybrid outcomes based on secondary data, future research could, for example, assess the motives of social startups for trademarking more directly (e.g., based on a survey or experimental approach).

Additionally, I encourage future researchers in this field to use further proxies for social and economic outcomes. In particular, with regard to social outcomes of social startups, the literature, thus far, lacks a profound understanding. Since Chapter 5 is one of the first studies to examine the use of IPRs by social startups, there are numerous opportunities for future researchers to explore this area in greater depth. For example, it is necessary to extend the knowledge about the differences between social and commercial startups and their use of IPRs. Yang et al. (2020) show that the signaling effect of social startups is unique, which opens up space for future research to investigate whether the signaling effect of IPRs is also specific to social startups.

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Appendix

APPENDIX OF THE EXPERIMENT IN CHAPTER 2 AND CHAPTER 3

Introductory slide

Please imagine the following initial situation:

You are a representative of an organization or company that promotes social entrepreneurship. For a preselection (screening phase) you will receive a number of requests from SEs asking for your support. The SEs are generally interesting for you in terms of their geographical and thematic focus and eligible for funding.
You always compare two SEs with each other.

The SEs only differ in the following seven criteria:
1. Authenticity of the founding team
2. Proof of concept
3. Financial sustainability
4. Importance of the social problem
5. Scalability
6. Technical background of the founding team
7. Degree of innovation

In the following, you will be asked to choose the SE that you find more attractive for support. This is followed by a short questionnaire.

Scenario examples presented to participants

Figure A.1. Illustration of the conjoint experiment's scenarios

Decision 1/14

	Social Enterprise 1	**Social Enterprise 2**
Scalability	Medium	High
Proof of Concept	Not provided	Provided
Financial sustainability	Low	High
Importance of the social problem	Medium	Low
Professional background of the founding team	Social background	Economic back-ground
Authenticity of the founding tem	High	Low
Degree of innovation	High	Medium
	Choose	**Choose**

Decision 2/14

	Social Enterprise 1	**Social Enterprise 2**
Scalability	Medium	Medium
Proof of Concept	Not provided	Provided
Financial sustainability	Low	Medium
Importance of the social problem	High	High
Professional background of the founding team	Economic back-ground	Technical back-ground
Authenticity of the founding tem	Low	High
Degree of innovation	High	Low
	Choose	**Choose**

Translated survey

Dear sir or madam,

Thank you for participating in our online survey on selection criteria for screening SEs.
The survey takes about **15 minutes**.
The survey is anonymous and the data collected is confidential and used for research purposes only.
If you need to interrupt the survey, you can click again on the link in the email to the survey return.
For each completed survey, we will donate 10 Euro. You can choose the recipient at the end.
Please do not hesitate to contact us at any time if you have questions, suggestions or technical problems.

Warmly,

1. Please enter your year of birth.

2. Please indicate your gender. (female, male)[22]

3. What is your highest educational level? (Secondary school graduation, High school graduation, Bachelor's Degree, Master's Degree, PhD)

4. Please name your main education area(s). *Multiple selection possible*
   - Economic
   - Law, Social sciences
   - Natural sciences
   - Engineering
   - Humanities
   - Others

5. How many years of professional experience do you have in the following sectors? (None, <1, 1-2, 3-5, 6-10, >10)
   - (High)school system
   - Public sector (except universities)
   - Nonprofit/ social sector
   - Agriculture / forestryProducing/manifcaturing industries (Please name the industry.)
   - Service sector (Please specify the sector.)
   - Other (Please specify.)

6. Please rate your knowledge in the following areas. (None, Very low, Low, Medium, High, Very high).
   - Human Resources
   - Marketing / Sales
   - Finance & Accounting
   - Logistics
   - Innovation/ Research & Development
   - Entrepreneurship
   - Social Entrepreneurship
   - Other (Please specify.)

[22] The scales of the individual questions are shown in parantheses.

7. How important are the following motives for promoting social entrepreneurship to you personally? (Unimportant, Less important, Neutral, Important, Very important)
   - Pursuing the personal vision to make the world a better place
   - Motivating and supporting others
   - Earn income
   - Be inspired by the start-up spirit
   - Achieving social recognition and prestige
   - Driving social innovation
   - Learning from innovations of others
   - Other (Please specify.)

8. From the following statements, please select those that apply to you. *Multiple selection possible*
   - o I have gained my own experience as a social entrepreneur.
   - o I have gained my own experience as a "conventional" entrepreneur.
   - o My parents run/ran their own business.
   - o Other close family members run/ran their own business.
   - o People from my close circle of friends and acquaintances run/ran their own business.
   - o None of the above statements apply.

9. In how many real decision-making processes supporting social ventures have you been involved so far? (None, 1, 2-4, 5-10, >10)

The following questions relate to your work in the company or organization that promotes social entrepreneurship.

10. Are you the business owner of the organization? (Yes, No)

11. Please classify your position in the organization. (Board of directors, Supervisory board, Management board, Management position (e.g. head of department), Project management with personnel responsibility, Project management without personnel responsibility, Other (Please specify.))

12. The promotion of social entrepreneurship is one of your personal… (main activities, side activities)

13. Which of the following organization types best describes your organization? *Multiple selection possible*
    - o Social Venture Capital Organization
    - o Conventional Venture Capital Organization
    - o Venture Philanthropy Organization
    - o Alternative/ Social Bank
    - o Conventional Bank
    - o Social Enterprises (Please specify the sector.)
    - o Conventional Company (Please name the sector.)
    - o Family Office
    - o Foundation (Please indicate the type of foundation, e.g. corporate foundation, family foundation, etc.)
    - o Incubator/Accelerator
    - o Management Consultancy
    - o Crowdfunding Platform
    - o Educational Institution
    - o Other (Please specify the type of organization.)

14. Is the promotion of social entrepreneurship one of the core activities of your organization? (Yes, No)

15. Is there a separate department in your organization that deals with the promotion of social entrepreneurship? (Yes, No)

16. If so, how many employees work in this department? (<5, 5-10, 11-20, >20)

17. In which year was your organization founded?

18. How long has your organization been promoting social entrepreneurship?

19. How many employees work in the organization as a whole? (<10, 10-49, 55-99, 100-249, 250-499, >500)

20. In which country is the headquarters of your organization located?

21. In which country is your place of work located?

22. How does your organization support social ventures? (Only financial, Mostly financial, Financial and non-financial equally, Mostly non-financial, Only non-financial)

23. In terms of motivation to support social ventures, where would you position your organization below?
(Highest possible financial return ⟷ Highest possible social return)

24. Which financial support does your organization offer predominantly? *Multiple selection possible*
    - o Donations
    - o Equity
    - o Debt
    - o Mezzanine capital
    - o Convertible loans
    - o Convertible donations
    - o Refundable donations
    - o Guarantees
    - o Other (Please specify.)

25. What non-financial support does your organisation mainly offer? *Multiple selection possible*
    - o Network & contacts
    - o Infrastructural equipment
    - o Mentoring/ Coaching
    - o Qualified advice (e.g. in the areas of tax, finance, law, organisational development)
    - o Accelerator/incubator programs
    - o Selective support (with social pitches, social start-up weekends, social innovation camps, workshops, etc.)
    - o Other (Please specify.)

26. How important are the following motives for your organization to promote social entrepreneurship? (Unimportant, Less important, Neutral, Important, Very important)
    - Stakeholder expectations
    - Society's expectations
    - Reputation
    - Employer Branding
    - Be inspired by the start-up spirit
    - Employee development
    - Learning from innovations of others
    - Dissemination of Social Entrepreneurship
    - Sense of duty towards society
    - Financial interests
    - Other (Please specify.)

27. How are the social ventures supported by your organization mainly found? *Multiple selection possible*
    - o Initiative requests on the part of Social Ventures
    - o Targeted own search
    - o Tenders
    - o Recommendations by third parties
    - o Other (Please specify.)

28. What is the stage of development of most of the social ventures that your organization supports? *Multiple selection possible*
    - o Idea development phase
    - o Seed-Phase
    - o Startup-Phase
    - o Expansion-Phase
    - o Establishment phase
    - o Management buy-in/buy-out or exit phase

29. Please name the areas in which most social ventures supported by your organization are active. M*ultiple selection possible*
    - o Sustainability & environment
    - o Food supply & nutrition
    - o Health economic development & poverty reduction
    - o Child & youth welfare
    - o Education & information
    - o Social inclusion (Please specify, e.g. people with disabilities, migrants, older people, etc.)
    - o Other (Please specify.)

30. In which country or region do most social ventures supported by your organization operate? *Multiple selection possible*
    - o Germany
    - o Europe
    - o Africa
    - o Asia
    - o North America
    - o South America
    - o Australia

Interview guideline

1. Characteristics of the interviewee and VPG

a) Which position do you hold in your organization and how long have you been doing this?
b) To what extent and how often have you been involved in selection processes of SEs?
c) How does your organization support SEs?

2. General questions about the selection process

d) How did you find out about the last SE that you supported?
e) When you think back to your most recent investment decisions, in which industries and in which stage of development was the respective SE?
f) How does the selection process usually work in your organization and who is involved in this process?
g) Do you invest exclusively in German/Austrian/Swiss or also in foreign SEs? And do the decision criteria differ regarding the origin of the SE?

3. Phase-specific decision criteria - screening

h) Suppose someone tells you about an investment opportunity or SE for the first time. What information must be provided to arouse your interest?
i) What criteria does an SE need to meet at first glance so that you further evaluate it? How do you determine that these criteria are met?
j) What are so-called knock-out criteria that prevent you from pursuing an investment opportunity?
k) Are there social ventures that you or your company fundamentally reject? If so, why?

4. Finally

l) Can you think of any other aspect or question that could be relevant to this research project?
m) Do you have other questions or suggestions?

Expert interviews

Table A.1. Characteristics of the interview participants

ID	Type of organization	Age	Gender	Educational background	Position
1	Venture Philanthropy Organization	43	Male	Business	Manager
2	Venture Philanthropy Organization	40	Male	Business	Managing partner
3	SII	28	Male	Humanities/ Business	Co-Founder
4	SII	36	Female	Humanities	Co-Founder
5	Research institution on social investments	34	Male	Economics	Project manager
6	Network for SEs	38	Female	Economics	Managing director
7	SVC	40	Male	Business	Co-Founder
8	SVC	47	Male	Business	Co-Founder
9	SII	45	Male	Humanities	Board member
10	SII	26	Male	Social Sciences	Project manager
11	Social Impact Accelerator	30	Male	Business	Manager
12	Crowdfunding platform for SEs	37	Female	Business	Founder