The Role of Finance and Microentrepreneurship in the Informal Economy

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In memory of my father, Per Engström

To Ella, Kajsa and Leona

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PREFACE AND ACKNOWLEDGEMENTS

Here I present my story, connecting the dots of my academic life. I began thinking about pursuing a PhD in 1991, when I was an undergraduate student at Slippery Rock University (SRU) in Pennsylvania, USA, on a Sweden–America Foundation scholarship. Several informal talks with one of my undergraduate professors helped me weigh the pros and cons of an MBA versus a PhD. Being a bit ambivalent about the decision and wanting to keep both doors open, I elected to go for a bachelor of science degree in economics. Upon graduating summa cum laude in 1994, I was still ambivalent, so I returned to Sweden, where I took a job assisting Professor Lars Oxelheim at the Research Institute of Industrial Economics (IFN, then known as IUI) in writing a book about the deregulation of the Nordic financial markets and its effect on Nordic interest rates as compared to a global interest rate (Oxelheim, 1996). Professor Oxelheim and I also discussed me potentially pursuing a PhD, but back then I did not know what research focus I was interested in, nor did I realize that embarking on a PhD is one of the more entrepreneurial ventures in which a person can engage.

The experience at IFN led to my next job as a researcher at the Boston Consulting Group (BCG), where I specialized in corporate valuations and a corporate performance framework known as Cash Flow Return On Investment (CFROI), developed by HOLT Value Associates (Madden, 1999). The experience at BCG motivated me to take a master of science degree in economics and finance from the Stockholm School of Economics (SSE). This was one of the best career decisions I have made and gave me many valuable contacts with whom I still interact today. In 1998 and 1999, after graduating, I tried starting a couple of businesses. One was an online database for financial analysis services called MIG (Management Information Group) and the other a business promoting stand-up comedians and speakers, called IGNITE Infotainment Professionals. Both firms had high-flying visions (seen in the pluralistic nature of the names) but made meager progress. Despite the tough times, the experience was enjoyable, and I learned more about business in these two years than any school could have taught me. Specifically, I learned that perseverance, along with a strong personal conviction, is important, but that luck is probably also part of the equation. The experience and knowledge gained through these years are also shown throughout this dissertation.

In 2005, having spent five years as a financial advisor on global equities at Credit Suisse, I became a portfolio manager at DNB Asset Management, responsible for global cyclical firms (materials, transportation, automobiles, and commercial services). However, in 2008, this work came to a sharp halt with the collapse of Lehman Brothers and the

layoff of many in the financial industry, including those of us at DNB. I discussed with *Professor Carl Fey* starting a PhD, but I still felt ambivalence about the prospect. I had previously written an academic paper with Professor Fey and Professor Ingmar Björkman based in my master thesis at SSE. The article is today cited 49 times according to Google Scholar (Fey, Engström, & Björkman, 1999). However, I did not pursue the opportunity, as this was not an area of interest close to my heart, and I therefore again missed how incredibly entrepreneurial it is to undertake a PhD.

Instead, I worked for three years as chief financial officer at the Swedish Mission Covenant Church, which not only gave me a better understanding of civil society and organizations based on the popular movements from the late 1800s and early 1900s but also a lot of experience in managing people, creating control systems, and managing a budget process and different type of assets, such as properties and foundations. The job involved a lot of responsibility and creativity, but it was also very entrepreneurial. It gave me a good glimpse at how small businesses are run and governed, since the church was involved in several small and large businesses.

One of the investments the church had made was a small footnote on the balance sheet, Oikocredit, that was not earning any interest for the church. As the financial assets I was responsible for were a guarantee for the future pensions of several employees, I was keen to ensure the assets were managed in the best possible way. Not getting a return on investment was unsatisfactory to me. I therefore investigated Oikocredit and visited an annual general meeting in 2011 in Dar es Salaam, Tanzania, where I learned about microfinance. I observed how controversial the idea of paying investors a market interest rate was; some owners there argued frantically that this was morally wrong. In 2011, the interest investors could receive from lending money to Oikocredit was at most 2%. In a scenario where inflation is running at 3%, I as an investor would lose 1% by investing in microfinance. The argument against a higher return to investors was that there was also a return to society, a social return, upon which investors should look favorably. The return was not close enough to the cost of capital required by the pension fund, which was the foundation of the church assets, and thus microfinance did not seem as a good investment to me at the time. Now, with global interest rates at record low levels, many investors are turning towards microfinance as an alternative asset class, in hopes better returns.

The experience in Tanzania sparked my interest in this controversial topic, and I immediately contacted Professor Lars Oxelheim again, with whom I had kept in touch with over the years. The decision to contact Professor Lars Oxelheim was also inspired by my friend *Klas Palm*, who had just initiated his PhD studies on innovation and quality

management related issues. My research interest then was how interest rates are affected by the increased rate of return required by investors. My hypothesis was that the interest rate would not change to the end user, as the local market sets the interest rate. What I therefore wanted to research was the degree to which the microfinance investment vehicles like Oikocredit, which operate between the investors and the local microfinance banks, could absorb a higher required rate from investors, and whether this would pressure them to become more efficient in order to preserve a low interest rate. Little did I know that my topic would be completely different a year later.

I believe it is also worth mentioning that about a year prior to me beginning at the University of Agder, I became friends with the beat artist *Michael Bowen* and his family, who had moved from Hawaii to Sweden (Collin, 2006). On a few occasions, I played the saxophone while Michael spoke or painted. It was inspirational to meet with Michael, who was very positive and encouraging of my talents. Tragically, Michael passed away in 2009. However, his memories live on and are, in fact, scattered all over the University of Agder. He has more than 100 art objects installed at the university and the nearby Kristiansand Cathedral School. I have obtained permission from his widow *Isabel Paoli-Bowen* to use his paintings as article separators in this thesis. Michael was a pioneer in combining music and painting (art), known as performance art, and building on these ideas, I would like to emphasize the long-standing relationship between research and art, and the inspiration both music and art are to my endeavors.

After my first year of PhD studies, during which I learned about current and historic research and methods and interacted with many students and faculty, my interest had turned to how microfinance impacts the *microentrepreneurs*. I had experienced being an entrepreneur previously, and the topic of microfinance and the microentrepreneurs seemed a lot more interesting than doing research on the sensitivity of interest rates. "Come on," as my supervisor Trond Randøy would say. I also had access to unique data, since one of my supervisors, Professor Roy Mersland, had helped build a leading microfinance institution in Ecuador (Banco D-Micro). I am especially grateful to *Carolina and Hans Martin Espegren*, for a successful collaboration in gathering data in Ecuador. We spent several weeks collecting and analyzing the data together, but we also had fun visiting the coast, surfing, cooking dinner together, or going for an evening run.

I would also like to express my gratitude to my supervisors. First of all, a big thank you to my main supervisor, *Professor Trond Randøy*. Working together with Professor Randøy has been truly enjoyable from the start, and I am grateful for not only the professional collaborations, but also for the personal friendship we have built over the years, including a few jazz jam sessions, hikes in the mountains, canoeing around

Kristiansand, international research conferences, and entrepreneurial ventures in Tanzania. An indirect result and spin-off from this PhD endeavor is the creation of MTI Investment AS (www.mti-investment.com), a venture capital firm investing in the growth of eastern Africa. In MTI, all of my previous undertakings and experiences are combined and maximized, and every person with whom I have ever worked is connected somehow with this business.

One of Professor Randøy's previous PhD students, *Professor Roy Mersland,* was my second supervisor. He became a professor within five years of obtaining his PhD. I am grateful for having met Professor Mersland and seen the dedication, passion, and focus with which he carries out all work. Professor Mersland was instrumental in getting me access to Banco D-Miro data, which form the skeleton of my PhD. My third supervisor is *Dr. Leif Atle Beisland.* Dr. Beisland and I had many discussions about performance measurement that were instrumental in focusing the thesis on return on assets. I would also like to express a special thank you to *Professor Oxelheim* who has followed my academic progress and with whom I have written several debate articles with during these three years (Engström & Oxelheim, 2013a, 2013b, 2014). Professor Oxelheim has an inner energy and passion for research that is truly inspirational. Just like my supervisors did, I wrote this thesis during numerous flights, on various airport buses and trains, sometimes in a hotel room in a foreign country such as in Tanzania, sometimes in the office in Kristiansand, and sometimes in the office at the Stockholm School of Economics (SSE), with which I was affiliated during the last year of my thesis.

I also would like to thank all the faculty members at the University of Agder, in particular *Professor Otto Andersen, Dr. Bjørn-Tore Flåten, Dr. Rotem Shneor, Professor Andreas Falkenberg, Professor Joyce Falkenberg, Andre Tofteland, Anne Line Omsland, Dr. Burak Tunca, Dr. Daniel Göller, Daudi Pascal Ndaki, Diana Trydal, Professor Ellen Nyhus, Erik Arntsen, Geir Haaland, Gro Anita Homme, Professor Emeritus Harald Knudsen, Professor Ilan Alon, Irfan Irfan, Professor Jan-Inge Jensen, Dr. Kjetil Andersson, Dr. Kristin Dale, Kristina Walker Pedersen, Bandula Galhena, Amila Sirisena, Harald Stokkeland, Lisa Whitehead, Dr. Naima Saeed, Dr. Neema Mori, Dr. Gibson Munisi, Nertila Stringa, Professor Stein Kristiansen, Dr. Stina Torjesen, Stina Øyna, Stine Bårdsen, Unni Henriksen, Inger-Lise Myrvold,* and *Målfrid Tangedal.*

In addition to the above-mentioned individuals, I also owe a thank you to many of the faculty members and PhD students from other schools, such as *Professor Dale Duhan, Professor Arent Greve, Professor Terje Moen, Professor Yaakob Weber, Professor Kirsten Foss, Dr. Gry Alsos, Professor Tommy Clausen, Professor Johan Wiklund, Professor Karl Wennberg, Professor Carin Holmquist, Professor Sara Carter, Professor Hans Lundström, Dr. Espen Isaksen, Dr. Marianne Steinmo, Dr. Maj Munkejord, Dr. Sølvi Solvoll, Marianne Arntzen-Nortquist, Marit*

Breivik Meyer, Karin Wigger, Oxana Bulanova, Nhien Nguyen, Thomas Lauvås, Siri Jakobsen, Are Jensen, Dr. Terese Strand, Nedim Effendic, Dr. Nadav Rotemberg Shir, Beldina Owalla, Kajsa Asplund, and Professor Alex McKelvie.

Apart from academia I am also grateful to the Norwegian Alliance Microfinance and their CEO *Andreas Andersen* for allowing me to work with Banco D-Miro in Ecuador. At Banco D-Miro, I am thankful to all the support and help from the CEO *Carlos Viteri* and the marketing director *John Pacheco* in creating the survey instrument and in motivating and instructing the local call center. I am also grateful to *Johnny Villavicencio* and colleagues for helping me in retrieving longitudinal (historic) data from the Banco D-Miro database. When in Ecuador, I was also fortunate to get to know many wonderful people from the local Alliance Mission group, including *Hans Martin* and *Caroline Espegren, Isak Holmen Sørensen*, *Maria Andreassen*, *Rebeckka Andreassen Garcia*, *Daniel Garcia*, *Maria Andreassen, Ingunn Skutlaberg Valbø*, *Bjørnar Valbø*, *Rita Franco, Lily Macias Ramos,* and many more. Gathering data without this group of individuals around would simply not have been the same experience. Thank you all.

Last but not least, I would like to thank my close friends and family for supporting me every step of the way. I wish I could thank my aunt *Kajsa Tunér*, who is not with us anymore, but she definitely was an influence, and I still to this day remember when she earned her PhD in 1986 when I was 15 years old (Tunér, 1986). The same must also be said about some other important people who are no longer with us, like my grandparents on both my mother's and father's sides. My brother *Johan Engström* has been an inspiration in his hard work to become a radiologist, and also my sister *Hedvig Engström Jakobsson,* who earned her PhD in 2011 (Engström Jakobsson, 2011). I would like to thank my mother *Margareta Dehle* for always being very supportive and for helping my family in so many ways. A special thank you is directed to my two daughters *Ella* and *Kajsa* who, who during these three years, have had to speak to their father on Skype and Facetime far too many times. A special welcome and thank you to my newborn adorable daughter *Leona*, who was born in the very last phase of my PhD, a phase when I also lost my dear and greatly missed father, *Per Engström*, who had been a surgeon. This dissertation is therefore made in memory of my father and dedicated to my three children.

INTRODUCTION AND ESSAY SUMMARY

1. Introduction

Policies implemented by the UN and the World Bank build on the idea that microfinance is a tool to fight poverty (UNCDF, 2005). Despite claims by Nobel laureate Professor Muhammad Yunus that all people can become entrepreneurs, given the right resources (Yunus, 2013a), few researchers have specifically tried to connect the availability of financing with microenterprise performance (Webb, Morris, & Pillay, 2013). In this dissertation, I will address this research gap in the entrepreneurship literature and argue that the provision of financing to poor microentrepreneurs provides unique lessons on entrepreneurship.

Given some of the broad criticisms of microfinance and claims of having no impact (Armendáriz & Morduch, 2010; Duvendack et al., 2011), there are multiple contributions of this thesis. It specifically addresses the impact of microfinance on microenterprise performance through the lens of research-based theory (Barney, 1991) and human capital theory (Becker, 2009), while also examining the impact of financial literacy (Lusardi & Mitchell, 2014) and role models (Bosma, Hessels, Schutjens, Praag, & Verheul, 2012). In addition, this thesis will investigate the role of entrepreneur (e.g., human capital and financial literacy) and firm characteristics in financial decision making. Noteworthy, by borrowing the ideas of financial literacy from research on consumer behavior and savings, and applying it to entrepreneurship research and the informal economy, our approach links to the knowledge-based focus approach which is often used in entrepreneurship research (Landström, Harirchi, & Åström, 2012).

Another unique feature of this study is the context in which microfinance is provided, typically referred to as the informal or 'shadow' economy (Bruton, Ahlstrom, & Obloj, 2008; Webb, Tihanyi, Ireland, & Sirmon, 2009; C. C. Williams & Nadin, 2012). Microenterprises are commonly overlooked because they operate mostly out of sight of government regulations, government statistics, and interaction with established institutions. For developing countries of many sizes, including such diverse economies as Ecuador, Tanzania and India, employment in the informal economy affects more than 80% of the population (ILO, 2013). Furthermore, the importance of such informal economic microenterprises is shown by the fact that such activity is seen as the *modus operandi* of individuals seeking to exit poverty (Bruton, Ketchen Jr., & Ireland, 2013). This thesis thus also provides an illustration of or guide to how research on microenterprise

performance in the informal economy can be done, including the use of survey questions, data from various providers, and longitudinal panel data.

Based on this study, I suggest that research on the informal economy is undeveloped. In fact, a recent survey among the editorial board members of the Strategic Entrepreneurship Journal shows that one of the most interesting research questions lies at the intersection between the formal and the informal economy (Ketchen, Ireland, & Webb, 2014). The rise of microfinance allows for the first time many informal businesses to be linked to a formal institution, which provides for an interesting research interface. This thesis specifically addresses the intersection between the formal and the informal economy and is divided into three empirical essays with a total of eight separate research questions (see Table 1).

My first essay, co-authored with my supervisor Professor Trond Randøy, deals with how microfinance affects the performance of the microenterprises. Using a unique dataset, we respond to three recent calls for research: microenterprise funding (Moss, Neubaum, & Meyskens, 2014), the impact of microloans on performance (Berrone, Gertel, Giuliodori, Bernard, & Meiners, 2014), and the need for a stronger theoretical underpinning to informal economy research (Webb, Bruton, Tihanyi, & Ireland, 2013). With these three motivations in mind, the following four research questions are addressed: (1) Does the "resource" of debt enhance microenterprise performance in the informal economy? (2) Do economies of scale exist, as an indicator of aggregate resources? (3) Does education/experience, as an indicator of enterprise competency, enhance performance? (4) Does the access to human resources (number of employees) in the enterprise moderate the relationships (1–3) presented above? Our findings suggest that microcredit does not help microenterprises grow or achieve higher return on assets (ROAs), but it helps add more income to the business. Economies of scale are found to follow a U-shaped pattern, and human capital investments (education and age) are not found to contribute towards improved performance, nor do we find any consistent results in relation to number of employees.

My second essay, which seeks to explain strategic financing decisions made in microfirms in the informal economy, responds to recent calls for more research on the funding of microentrepreneurs in the informal economy (Berrone et al., 2014; Moss et al., 2014; Webb, Bruton, et al., 2013). In this essay, I extend pecking-order and tradeoff theory to provide new insights into human capital theory, specifically focusing on financial literacy. This study investigates two interrelated research questions: (1) What are the determinants of the decision to seek external debt financing (or not)? (2) What are the determinants of the capital structure, also commonly referred to as leverage (debt-to-

equity ratio)? In particular, we explore the role of entrepreneur characteristics in light of the informal economy context and how the role of the entrepreneur and the microfirm is intertwined. My findings indicate that entrepreneur characteristics *and* firm characteristics are important drivers of the financing decision. Importantly, I show that those who are more financially literate are more likely to seek debt financing, thus illustrating the importance of developing human capital by teaching financial literacy.

Table 1. Research questions and related research.

	Research question	Essay	Related research
1	Does the "resource" of debt enhance microenterprise performance in the informal economy?	1	(Armendáriz & Morduch, 2010; Barney, 1991; Bourgeois, 1981; Cyert & March, 1963; D. S. Evans & Jovanovic, 1989; Honig, 1998; Kahneman & Tversky, 1979; Thapa, 2015; Webb, Morris, et al., 2013)
2	Do economies of scale exist, as an indicator of aggregate resources?	1	
3	Does education/experience, as a indictor of enterprise competencies, enhance performance?	1	
4	Does the access to human resources (number of employees) in the enterprise moderate the relationships (1–3) presented above?	1	
5	What are the determinants of the decision to seek external debt financing (or not)?	2	(Becker, 1994; Cassar, 2004; Frank & Goyal, 2008; Gartner, Frid, & Alexander, 2012; Lusardi & Mitchell, 2014; Myers & Majluf, 1984; Titman & Wessels, 1988)
6	What are the determinants of the capital structure?	2	
7	What is the impact of financial literacy on firm performance?	3	(Aldrich & Zimmer, 1986; Bosma et al., 2012; Bruhn & Zia, 2013; Bruton, Khavul, & Chavez, 2011; J. S. Coleman, 1994; Honig, 1998; Lusardi & Mitchell, 2014; March & Olsen, 1976; Minniti, 2005; S Shane & Venkataraman, 2000; Thaler, 1985; Unger, Rauch, Frese, & Rosenbusch, 2011; Webb, Bruton, et al., 2013; Webb, Morris, et al., 2013; Wood & McKelvie, 2015)
8	Does the existence of successful role models positively affect microenterprise performance in the informal economy?	3	

My third essay, co-authored with Professor Alexander McKelvie from Syracuse University, draws on resource-based theory (Barney, 1991) and human capital theory

(Becker, 1994).We specifically address the left tail of human capital to understand how a human capital resource, financial literacy, affects performance and how role models alleviate this deficiency. We ask the following two questions: (1) What is the impact of financial literacy on firm performance? (2) Does the existence of successful role models positively affect microenterprise performance in the informal economy? Our findings show that financial literacy has an impact on some measures of microenterprise performance (ROA and profits), while the impact of role models primarily affects ROA. We did not find a significant effect from either financial literacy or role models on growth. In this thesis, I therefore extend the research agenda, understanding entrepreneurship in the informal economy, to examine the impact of debt on firm performance, the determinants of debt structure, and lastly, that of entrepreneurs' financial literacy in conjunction with the importance of role models. The research gap is considerable, and this dissertation is therefore specifically an answer to recent calls for more research on the funding of microentrepreneurs in the informal economy (Berrone et al., 2014; Moss et al., 2014; Webb, Bruton, et al., 2013).

This thesis is organized as follows. First, there is a discussion about microfinance and the informal economy. Second, I discuss entrepreneurship theory and some of its important stages through the lens of the informal economy. Third, I discuss microenterprise performance before, fourth, explaining the methodology, including the background, empirical setting, unit of analysis, and data collection (ethical issues, interviews, and survey design). Fifth, a summary of the dissertation is provided, including a schematic illustration of how the research questions fit into the previously discussed theory of entrepreneurship, which is followed by concluding discussion. Lastly, the actual empirical essays are presented.

2. Microfinance and Poverty Alleviation

Microfinance is the practice of extending financial services to areas where traditional banks are not reaching out. These areas are often collectively called the informal or shadow economy, and it is where many microenterprises operate out of sight of government regulations. Microfinance essentially involves the funding of microenterprises, but increasingly also includes other related services such as insurance, savings, health care, and business training. The 2006 Nobel laureate Professor Muhammad Yunus is an active promotor of microfinance and builds his conviction from his own field experience. In 1974, he experimented by extending a small loan, USD 27 to 42 female basket weavers at subsidized market rates. The loan created the "spark of personal initiative and enterprise necessary to pull themselves out of poverty" (Grameen Bank, 2013). Through these small loans of so-called microcredit, often provided at subsidized market lending rates (Morduch, 1999b), he laid the foundation for the growth of the microfinance industry.

However, since the late 1990s, the microfinance industry has suffered many disappointments, such as the Bolivian credit crisis in 1999 where borrowers became overindebted and microfinance institutions suffered severe losses, or the crisis in Andhra Pradesh in 2010 with alleged unethical collections, stealing savings, high interest rates, and in general very poor governance (CGAP, 2010). Microfinance has as a result been heavily criticized by journalists (Heinemann, 2013) and researchers (Armendáriz & Morduch, 2010; Bateman, 2011; Duvendack et al., 2011) for not delivering what it once promised—the alleviation of poverty (Yunus, 2007).

The crises that have occurred in microfinance have led to increased risk control by practitioners and a more commercial attitude among the microfinance providers, led by for instance ACCION (Chu, 2007). The changes in organizational form and structure are challenging the original mission of microfinance. In the 1970s, for instance, Latin American microfinance organizations were criticized for advocating the idea that interest rates needed to be set at a level that covered costs plus inflation (Chu, 2007). While the microfinance is changing its business model to meet the demand for tighter control, a review of the literature reveals that entrepreneurship researchers have largely shied away from studying this issue; most research is done from a developmental perspective, or an institutional focus, including socioeconomic factors, and a gender focus. The purpose behind this thesis is therefore to draw attention to how businesses are affected by microfinance, from the perspective of entrepreneurship theory, but specifically through theories such as the resource-based view, human capital, and financing (pecking order and trade-off choice) as well as concepts such as financial literacy and the effect of role

models on performance. Entrepreneurship theory, as presented here, marries both the character of the individual with the environment in which the entrepreneurial opportunity exist – two aspects that are central to microfinance. As an important contribution, this thesis focuses primarily on the stage between discovery and exploitation of entrepreneurial opportunities, the evaluation stage (Mckelvie, 2010).

3. Entrepreneurship Theory

To understand the roots of entrepreneurship and how this relates to microentrepreneurs in the formal economy, the financing of these, and the capabilities, we need to review and position their activities and behavior within the entrepreneurship literature. The first mention of an entrepreneur goes back to the writing by Richard Cantillion (1680–1734). The concept was further developed by Jean Baptist Say (1767–1832) in the early 1800s, but it really is Joseph Schumpeter and his 1934 book, *The theory of economic development*, that makes up the foundation of modern entrepreneurship theory (Van Praag, 1999). If one considers the rather poor economic conditions of Europe in the late 19th and early 20th century, the setting in which this book was originally conceived is comparable to the level today of many developing countries. Germany had, for instance, a GDP per capita of USD 5,630 expressed in today's unit of purchasing power,[1] a figure that is comparable to that of Ecuador, which has a GDP per capita of USD 6,091, according to recent figures by the World Bank. This implies that the theory of economic development is very much applicable to developing countries and in the evolution of entrepreneurship theory (Landström, 2015) the informal economy as a context may potentially hold many new and interesting insights.

Schumpeter portrays a dynamic framework in which demand and supply interact in a circular flow, striving for equilibrium but interrupted by change (Schumpeter, 1934). New products, new customers, new technologies, etc., alter the balance, and lead to new opportunities. New structures destroy the old ones, which Schumpeter calls the "process of creative destruction," which is "what capitalism consists in and what every capitalist concern has got to live in" (Schumpeter, 1950, p. 83–84). Central in his theory is the idea that individual wants drive the supply, and in finding ways to meet these wants the entrepreneur innovates. This means that the entrepreneur is working in an environment where risk and uncertainty is part of the game. For instance, a baker will not know for certain how much bread will be consumed. Uncertainty is also key to economic development (Knight, 1921), and through the uncertainty comes economic profit. In addition to risk and uncertainty, ambiguity may also hinder an entrepreneur from taking

[1] According to Bairoch (1976), GNP in 1910 in Germany was estimated to be USD 45 billion expressed in 1960s dollars. Expressed in 2016, this amounts to USD 366 billion. With a population of roughly 65 million in 1910, this amounts to USD 5,630 per capita. In 2014, the GDP per capita in Germany was roughly USD 45,000 per capita.

action (Minniti, 2005), a phenomenon this thesis will deal with specifically in Essay 3 with regard to the informal economy.

Schumpeter (1934) writes that "entrepreneurs are a special type" (p. 84), which may explain why one stream of research is concerned with the description of who the entrepreneur is. Numerous studies find common characteristics among entrepreneurs including low risk aversion (Brockhaus, 1980; Kihlstrom & Laffont, 1979), high independence/autonomy (Beugelsdijk & Noorderhaven, 2005; J. A. Hornaday & Bunker, 1970), willingness to adjust to change (Sexton & Bowman, 1985), possession of an internal locus of control (Brockhaus, 1982), having an achievement need (McClelland, 1967), tolerance for ambiguity (Schere, 1982), and persuasiveness (Sexton & Bowman, 1985), to mention a few.

When solely focusing on the nature of the individual, one neglects to capture the variety in the identified entrepreneurial opportunities and how this affects the decision to start a business (Gartner, 1990). Shane and Venkataraman (2000) writes that:

> "*empirical support (or lack of support) for attributes that differentiate entrepreneurs from other members of society is often questionable, because these attributes confound the influence of opportunities and individuals."* (p. 218)

A second stream of entrepreneurship research has looked at the role of the environment, seeking to identify the circumstances under which entrepreneurship will take place. Examples include the dynamics of an industry (Hannan & Freeman, 1993), the market structure (Acs & Audretsch, 1990), the dynamics of technological change (Tushman & Anderson, 1986), and the sociocultural status of entrepreneurship (Begley & Tan, 2001). This research also fails to adequately explain entrepreneurship as solely focusing on the environment excludes the mediating affect of the entrepreneurial individual (Shane, 2003). Being an entrepreneur in the wrong context is not particularly helpful, nor is having the most conducive environment but lacking entrepreneurial individuals. The past century of economic development and research suggests that entrepreneurship occurs at the nexus of promising opportunities and enterprising individuals (Venkataraman, 1997). Instead, this thesis turns our attention to a nexus where the overall conditions are not nearly as promising as in a developed country text, focusing instead on the "left tail", concerning entrepreneurs with weak formal competencies.

3.1. Merging Two Streams of Entrepreneurship Research

In order to bring about a coherent view of entrepreneurship, Shane and Venkataraman (2000) propose a conceptual framework for entrepreneurship that combines the existence of entrepreneurial opportunities in a certain setting with the individual's ability to discover and exploit these opportunities. Figure 1 is an illustration of the framework. The framework does not imply that discovery *leads* to the decision to exploit, but it implies that the decision to exploit *follows* the discovery, which follows the existence of entrepreneurial opportunities. This process is the basis for how, in this thesis, I am conceptualizing entrepreneurship, and as illustrated in *Figure 1*, this thesis is mostly concerned with the discovery and decision-to-exploit phase.

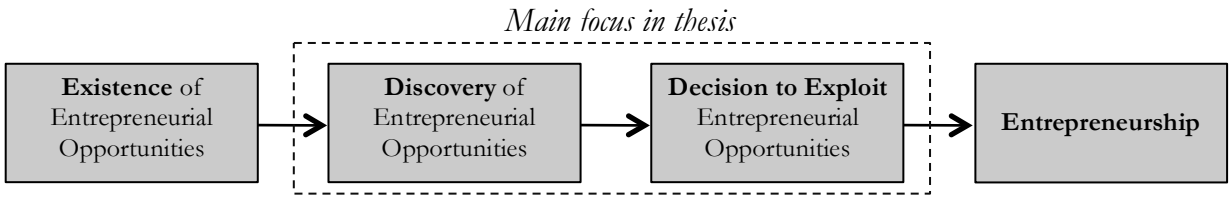

Figure 1. Conceptual framework for entrepreneurship.

Note: Illustration based on an interpretation of Shane and Venkataraman (2000).

3.2. Defining Entrepreneurship

The term entrepreneur stems from the French word "entreprendre," which means "to undertake." Its first half, "entre," means between, and the other half, "prendre," means to take. In other words, at the center of economic development is the entrepreneur, who through innovation mixes the available resources, such as markets, products, and production methods, into *new* combinations (Schumpeter, 1934). However, if a product market is in a state of perfect microeconomic equilibrium, where every factor of production as well as output is fully priced, there would be no need for an entrepreneur (Hayek, 1948). It would be like a future state of research, where all possible research questions have been answered, and hence no need for a doctoral dissertation.

In terms of researching microentrepreneurs, are clients of a microfinance institution entrepreneurs? Are Yunus' basket weavers from 1974 entrepreneurs? What about street vendors in Bangalore, India (Williams & Gurtoo, 2012)? Schumpeter (1934) distinguishes between two kinds of individuals: "mere managers and entrepreneurs" (p. 83). Being entrepreneurial is "not a profession and as a rule not a lasting condition" (p. 78). A static non-evolving small business is not a form of entrepreneurship. Rather,

entrepreneurship involves the creation of something new. Entrepreneurship occurs at the nexus between good opportunities and enterprising individuals (Venkataraman, 1997).

Combining Schumpeter's view of an entrepreneur as a "special type" with the concept of entrepreneurship occurring at the nexus between individuals and valuable opportunities, we can define entrepreneurs as *individuals who through a process of discovery and exploitation seek change, which can be manifested in many ways: a new product, a new market, societal change, cultural change, etc.* Such a change can include improving a small business or changing a life situation to the better. As such, Mohammad Yunus' argument that "all human beings are born entrepreneurs" (Yunus, 2013b, p. 4) is valid, at least in situations where humans seek to better themselves, or to achieve change through a goal-directed process. Yunus' argument is that many do not even have the chance to go through such a process: "Some get a chance to unleash that capacity. Some never got that chance, never knew that he or she has [sic] that capacity" (Yunus, 2013b, p. 2).

3.3. The Existence of Entrepreneurial Opportunities in the Informal Economy

The *existence of entrepreneurial opportunities* means that the product market allows for products and services to be sold at a price greater than the cost. Importantly, in the creation of new products or services, there is a belief by the entrepreneur that there is a profit to be made. Schumpeter (1934) referred to this as the *entrepreneurial profit*. It implies that there is imperfect information about costs and prices, which allows for mispricing. In addition, the absence of competition from other like-minded individuals is crucial to the chance of reaping an entrepreneurial reward (Casson, 2005). The literature provides two different views on how entrepreneurial opportunities come to exist. Schumpeter (1934) argues that they come about through changes in technology, politics, demographics, and the surrounding environment, which create new information that then can be used to form new products and services. The alternative view is that the opportunities exist, but that the information held by different individuals leads to different discoveries (Kirzner, 1973). These two views come together in Shane and Venkataraman, (2000), who argue that they represent two different forms of opportunities.

The informal economy is characterized by being somewhat more economically isolated than in a formal economy, from a business perspective. While, for instance, actors in the informal economy buy goods and services from the formal economy, the opposite is not necessarily true (Böhme & Thiele, 2012). In addition, drawing new

customers from nearby villages or neighborhoods is costly. The competitive situation is also intense—many engage in similar activities, such as construction or wholesale and retail trade. In such markets, the firms are operating in local "monopolies," but their market power does not extend very far (for example, within a 10-minute walk of the shop). As a result, entrepreneurial opportunities quickly erode. For instance, an individual may see that a neighbour is making a profit on his or her brick-making business, so the individual decides to start a business. As soon as he or she starts, the cost of raw material used to make bricks goes up, and since more bricks are being created, the price of bricks drops. Hence, the entrepreneurial opportunity may cease to exist.

3.3.1. Money as Medium of Exchange

In many areas of the world, the lack of financial institutions creates obstacles to entrepreneurial opportunities. In a barter economy, the lack makes for high transaction costs when goods are exchanged. How many goats are needed in an exchange for a cow, for instance? Savings is also difficult. Just imagine saving some fresh meat for a purchase at a later stage. Hence money, as once argued by (Smith, 1776), even mobile money such as M-PESA in Kenya, acts as a medium of exchange and makes exchanging goods and services more efficient, with less time spent on searching for suitable exchange partners (Jack & Suri, 2011; Jones, 1976; Saving, 1971). Through lower transaction costs, it allows for more entrepreneurial opportunities.

3.3.2. Capital Availability

Various studies on the impact of capital on start-ups exist (see Table 2, below). Some researchers argue it has a positive impact (Gaspar, 2009; Pennings, 1982; Samila & Sorenson, 2011), whereas others argue for a reverse causality, i.e., that it is the number of start-ups that drives the availability of capital, not the other way around (Kreft & Sobel, 2005). Perhaps it is as Steve Jobs once said: "A lot of times people don't know what they want, until you show it to them" (Business Week, 1998). Introducing money, such as the mobile currency M-PESA, makes people think about what they can do with the money. This is further exemplified by a study in Nigeria, where funding was available but had little impact; as it turned out, many of the entrepreneurs were not aware that funding existed (Oyefuga, Siyanbola, Afolabi, Dada, & Egbetokun, 2008). The existing research-based literature lacks studies on the effects of capital availability on entrepreneurship in the informal economy (Webb, Morris, et al., 2013).

Both groups of researchers may be correct, as there may be a causal direction going both ways, i.e., the availability of capital may be supply induced and demand driven

at the same time. On the one hand, we have the capital providers (supply), and on the other hand, we have the microentrepreneurs (demand). An increase in capital availability shifts the supply curve to the right (see *Figure 2*, where P is the cost of capital and Q is the capital availability of, for instance, microloans). The effect is a lower cost of capital, which thereby increases the odds of creating entrepreneurial profits. Having subsidized funding has the same effect as increasing the supply (as when the donors request less in return)—the capital availability is increased. Research shows indeed that the demand curve is downward sloping and quite steep (Karlan & Zinman, 2008), though perhaps slightly flatter than I have illustrated in *Figure 2*, below. A flat demand curve could exist, for instance, if the clients are not well versed in financial terminology. After all, interest rates on loans provided to microfirms in the informal economy can vary widely, from 30% to over 100% per annum. However, if the bank charges too high of an interest rate despite the insensitive demand, the bank will eventually find its portfolio of loans has gone bad. Hence, there is a correcting mechanism built in. However, if demand is insensitive to interest rates, then extending more capital into the market will not necessarily have much impact on interest rates. This therefore starts to beg the question of how sensitive microentrepreneurs are to interest rates, but it also explains why many view credit and debt as a last resort (Magill & Meyer, 2005), since borrowing money with high interest rates will put some individuals in financial trouble.

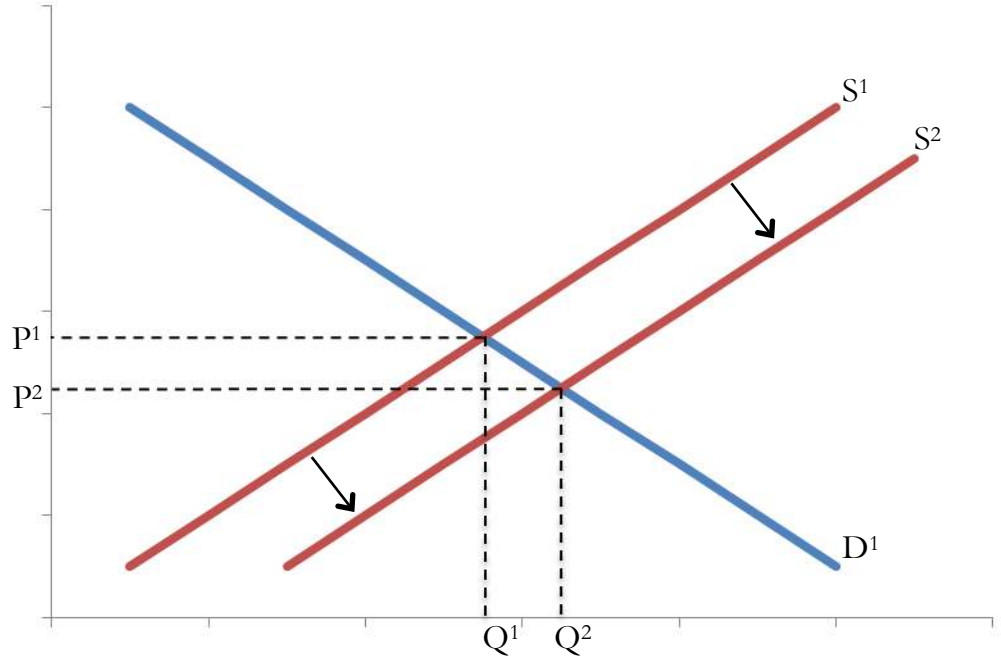

Figure 2. Illustration of an increase in the capital availability lowers the lending rates.

3.3.3. Reluctance to Debt

Several studies have shown that not all people are interested in taking on debt (Johnston & Morduch, 2008; Magill & Meyer, 2005; Navajas & Tejerina, 2006). It may be that many are not financially literate, and as some individuals make bad financial decisions and take on too much debt, the fear of microcredit spreads. In one study, less than half of the eligible households took out a loan, and many also relied on other forms of informal sources of credit (Karlan, Morduch, & Mullainathan, 2010). Such behavior creates an inelastic demand curve (see my illustration in *Figure 3*) where an increase in the capital supply creates a lower capital cost but has no impact on, for instance, the number of microloans offered. Financial literacy may also have something to do with the way the demand curve is shaped. For instance, if clients do not understand interest rates or cannot do simple numerical exercises, the decision to finance will be based mostly on a following the herd mentality, or listening to or emulating successful role models.

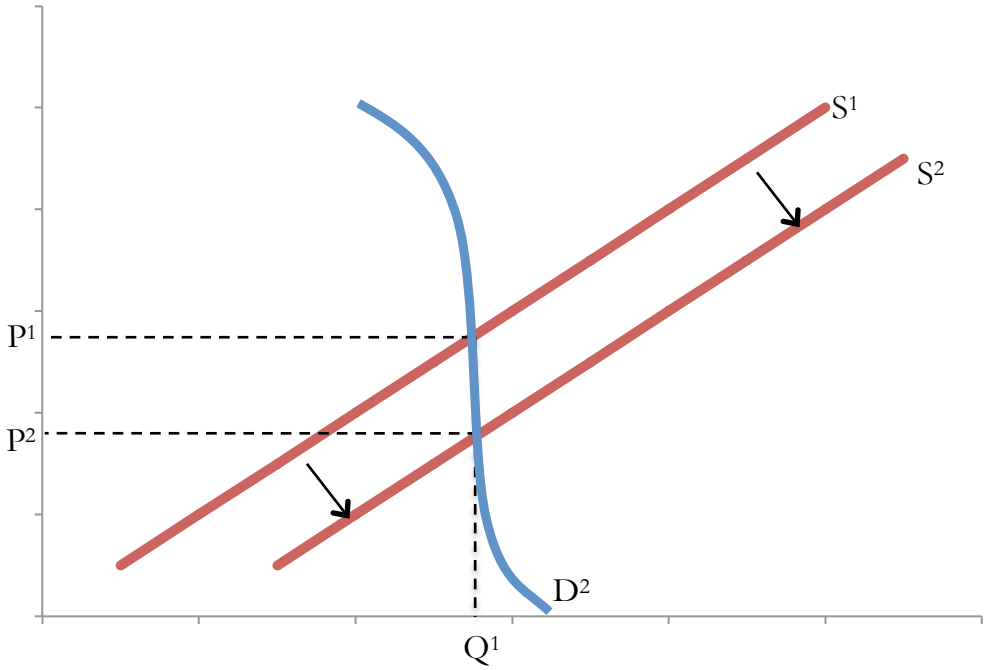

Figure 3. Illustration of how an increase in the capital supply with an inelastic demand curve has little effect on the outreach.

3.3.4. Market Imperfection

When the market fails, Keynesian economic theory often points to government intervention (Keynes, 1936). Previous studies show that imperfect capital markets adversely affect entrepreneurship (D. S. Evans & Jovanovic, 1989; D. S. Evans & Leighton, 1989), thus warranting government intervention. Non-profit organizations may also play an important role (Weisbrod & Dominguez, 1986). In the case of the growth of the microfinance industry, both non-profits and governments have been active. For instance, one of the largest microfinance investment vehicles in the world is Oikocredit, which is a non-profit organization founded by churches. Another example is the Grameen Bank, which since its start had strong financial backing from the central bank of Bangladesh, the Ford Foundation, and the Norwegian government.

Government involvement in the case of a non-functional financial market benefits the state, as the alternative will be to pick up the social cost of high unemployment. China is another example (Zhou, Xing, & Tong, 2009) where government has initiated several microfinance programs. Even the growth of the venture capital market in the US was made possible with the help of a government initiative and the Small Business Investment Act of 1958 (Brewer III & Genay, 1996; Coles Jr., 1973). The EU is currently pushing forward with some initiatives to foster better funding for microenterprises. While this thesis is concerned with the funding of microenterprises in the informal

economy of a developing country, some of the insights are likely also relevant to many situations in Europe, for instance, in terms of financing an improved integration and employment situation for asylum seekers, or the younger generation, many of whom are full of ideas but lacking in wealth.

3.4. The Discovery of Entrepreneurial Opportunities in the Informal Economy

3.4.1. Risk, Uncertainty, and Ambiguity

While there maybe several entreprenurial profit opportunities in existance in any given market at any given time, there is also a need for the *discovery of entrepreneurial opportunities*. In a world with perfect information, all products and services are sold or bought at prices that are at equilibrium and there are no entrepreneurial opportunities to be discovered, as the invisiable hand have already "discovered" them all. However, rarely are decisions made in such a way that resources are optimally allocated. Part of an entrepreneur's reality is the uncertainty of the future (Knight, 1921) wherein resources may not always be allocated optimally. Knight (1921) separates risks and uncertainty, arguing that risk pertains to situations where we have knowledge of the probabilities, whereas with uncertainty we do not know the probabilities. Risk-taking research is split in two avenues: 1) risk-taking skills sit with the entrepreneur (Knight 1942); and 2) risk-taking sits with the capital provider (Schumpeter, 1934). Knight's view implies that it is the entrepreneur who best understands the risks and uncertainty, whereas in Schumpeter's view the capitalist makes that decision by comparing risk to the expected return. While a microfinance institution will make that judgment based on a credit assessment, I side with Knight in this thesis and argue that, lacking financial capital constraints, the entrepreneur will "use a suboptimal amount of capital" (Evans & Jovanovic, 1989, p. 4).

Apart from risk and uncertainty, an entrepreneur may also refrain from acting because of ambiguity (Minniti, 2005). This implies that while the range of outcomes is known, the future road may still be too fuzzy or complex to embark on, especially if one lacks education, experience, or other relevant training. Financial decisions are typically complex, even in the formal economy. Therefore, financial literacy is a skill that specifically addresses an individual's ability to process economic information (Lusardi & Mitchell, 2014).

3.4.2. Role Models and Access to Information

Lacking the skills and know-how about what decisions to take, the entrepreneur may benefit from knowing role models for inspiration and support. The presence of role models helps provide social cues (Aldrich & Zimmer, 1986), thereby reducing the potential ambiguity in a decision (Minniti, 2005). Other potential helpers may very well include the credit officer. In the case described earlier with the basket weavers, Muhammad Yunus facilitated the creation of an entrepreneurial profit when lending money at a subsidized interest rate. We do not know if it was he who first saw the idea or if it was the group leader, but the fact that he was part of the project may have influenced the basket weavers positively. Yunus had the knowledge and experience to see that by offering a loan at a competitive rate, an entrepreneurial opportunity would emerge for the basket weavers. What makes it possible for one person to discover an opportunity and another not is that one holds information that the other does not (Kirzner, 1973). Indeed, differences in access to information can come from many different sources in life, such as through experience, education, social networks, information searches on the internet, business education, role models, and credit officers.

3.4.3. Recognizing the Opportunity

The cognitive nature of the entrepreprenurial discovery process implies a strong reliance on the individual, but also on the role models and the social cues and acceptance they provide (Aldrich & Zimmer, 1986). In microfinance, as exemplified in particular in Bangladesh by the Grameen Bank, the use of group lending demands unique capabilities from the individuals and in particular the group leader, whose role is vital in the performance of the group (Hermes & Lensink, 2007; Paxton, Graham, & Thraen, 2000). Assuming entrepreneurial opportunities exist, why are some people more likely to discover an opportunity than others? Research in the US highlights two key aspects behind the discovery: absorptive capacity and cognitive processes (Shane, 2003). The idea behind absorptive capacity is that an individual, through prior knowledge, knows about markets and how to serve them. Cognitive processes of importance are "intelligence, perceptive ability, creativity and not seeking risks" (Shane, 2003, p. 60).

With relation to microfinance-funded entreprenurers, often the human capital and/or business experience is limited primarily as a result of a poor education system. Studies have suggested that the human capital may be a stronger limiting factor to microenterprises in an informal economy than financial capital (Bjorvatn & Tungodden, 2010; Berge, Bjorvatn, & Tungodden, 2011; Berge, Bjorvatn, Juniwaty, & Tungodden, 2012). Berge et al. (2011) found in randomized field experiment that:

"*training had a significant effect on the business of males, increasing profits by around 20–30 percent, whereas we do not find any evidence of the training improving profits of the businesses of females*" (p. 11).

To conclude, discovering entrepreneurial opportunities in the informal sector requires an understanding of the markets and intelligence or perceptive ability. We may expect that role models play a role in compensating for the lack of experience and market knowledge. Financial literacy, with which we are also concerned, does to some degree also deal with the issue of cognitive processes, as shown in Lusardi, Mitchell, and Curto (2010), since an individual must be able to consider an opportunity and relate that opportunity to the cost of interest, the potential return that opportunity will yield, and the potential risk involved in the project.

3.5. The Decision to Exploit Entreprepreneurial Opportunities in the Informal Economy

The mere discovery of an opportunity is not enough to explain entrepreneurship. There must also be a *decision* to exploit the entrepreneurial opportunity. This decision is made with regard to the expected value from the opportunity. Financial literacy is vital in this regard (Lusardi & Mitchell, 2014). In deciding to exploit an entrepreneurial opportunity, the potential individual entrepreneur must weigh the opportunity against the opportunity of doing something else, such as pursuing education or employment. Both monetary and psychcological costs need to be incorporated into the equation, in addition to a compensation for the risks involved (an uncertainty premium). To a poor person, however, there may not be many other opportunities. Therefore, this may create situations where entrepreneurship is pursued despite a neutral entreprenurial opportunity, at best. We may call this form of entrepreneurship necessity driven, i.e., a person is pulled into entrepreneurship because of lack of other options (Reynolds, Camp, Bygrave, Autio, & Hay, 2002). Research has shown that necessity-driven entrepreneurship does not lead to economic development at a national level (Acs, 2006), but to the individual it is better than the alternative—unemployment.

Since 2000, a growing amount of research has focused on the bridge between the discovery phase and the decision to exploit an opportunity. This phase is called the evaluation phase, and four parts of this process have emerged as important (Wood & McKelvie, 2015):

1. Mental models—emphasizing the cognitive aspects and the entrepreneur's ability to predict and evaluate the potential feasibility of the business idea (Keh, Foo, & Lim, 2002).
2. Integration—the ability to visualize and individuate that this is an idea that he or she can pursue (Wood, McKelvie, & Haynie, 2014).
3. Congruence—the drive to understand how one's conception of an opportunity compares with others' conceptions (Murnieks, Haynie, Wiltbank, & Harting, 2011).
4. Action orientation—the ability to evaluate what one has that he or she can contribute, and what resources are needed (Haynie, Shepherd, & McMullen, 2009).

In the evaluation phase process, in the informal economy, financial literacy links with the mental model, as it directly touches on the individual's numeric ability, but also his or her ability to comprehend basic financial concepts such as return and risk. Role models have the ability to influence points 2, 3, and 4 by acting as a social cue, a sounding board, and a source of inspiration.

3.5.1. Industry and Environment

Research in Britain has shown that the type of industry has an effect on the likelihood of new firm formation (Taylor, 1996). Within an industry, there are many conditions that influence opportunity exploitation, including knowledge conditions, demand conditions, industry life cycles, and industry structure (Shane, 2003, p. 121). In a relatively more capital intensive industry such as agriculture, microfinance may play role, as the more capital intensive an industry is, the fewer firms are founded (Audretsch & Mahmood, 1995). In the informal economy, there is a tendency to find heavily concentrations in certain industries. For instance, manufacturing, repair services, and trade is typically numerically as important as wholesale retail. Therefore, in analyzing the informal economy, it is vital to take note of differences in industry classification as compared to the formal economy (United Nations, 2008).

3.5.2. Wealth

Personal wealth allows for self-financing of ventures, which enables the entrepreneur to maintain more control over the direction of the new venture but is nonetheless a challenging balancing act (Saxton, Saxton, Steen, & Verreynne, 2010). Several studies suggest that people with more wealth are more likely to become entrepreneurs

(Blanchflower & Oswald, 1990; D. S. Evans & Jovanovic, 1989; Jackson & Rodkey, 1994; Paulson & Townsend, 2004). Goldstein (1984) proposes that under-capitalization improves the firm-level efficiency of entrepreneurship as it, on the one hand, vows for increased cost consciousness and, on the other hand, allows for less diversified ownership. However, a key feature of the informal economy is the lack of wealth. In a microfinance perspective, it may seem awkward to discuss wealth, but research indicates that savings is important, as it allows for increased productivity and income, investments in education and health, and reduced illness (Dupas & Robinson, 2009, 2011).

3.5.3. Economic Stability and Capital Availability

A stable economic environment is positive for entrepreneurship (Harper, 1998). One worry is inflation and an unstable currency, particularly as it adds to the uncertainty when buying a good at one point and selling it later. In many of the countries where microfinance is used, inflation is running high, which may be a hindrance to entrepreneurship.

The decision to exploit an entrepreneurial opportunity will also be affected by capital availability. As discussed earlier, previous research supports the proposition that capital availability affects new firm formation rates (see Table 2). In the conceptual framework of entrepreneurship, the availability of capital both affects the existence of entrepreneurial opportunities and the decision to exploit.

Table 2. Selected studies on the impact of entrepreneurial funding.

Author	Country	Method	Findings
Pennings (1982)	USA	Regression analysis	Capital availability increased firm formation rates
Dobbin & Dowd (1997)	USA	Multiple regression analysis	The British capital market had a positive impact on new railroad ventures in the US
Kreft & Sobel (2005)	USA	Granger–Sims causality test on data between 1991 and 2002 for 43 US states	Entrepreneurial activity results in a capital inflow
Oyefuga et al. (2008)	Nigeria	Qualitative study, questionnaires and interviews	Although the scheme had been helpful to some SMEs, most of them were not aware of its activities and potential
Gaspar (2009)	Portugal	Questionnaire	74% of entrepreneurs who obtained funding from venture capital would not have started a business without that support
Samila & Sorenson (2011)	USA	Panel data: 329 US metropolitan areas from 1993 to 2002	Increases in the supply of venture capital stimulates the production of new firms

3.5.4. Non-Psychological Factors

As discussed earlier, one research stream has attempted to identify psychological characteristics that explain entrepreneurship (Begley & Boyd, 1987). However, these factors alone do not make individuals undertake entrepreneurial opportunities. It has an influence but is not a direct cause. Despite all the right psychological characteristics, a person may still not make the decision to exploit.

Non-psychological factors include education, business experience, age, and social position. Education increases the likelihood of exploiting an opportunity because it improves the expected return. The understanding of the entrepreneurial process improves (Casson, 1995). Moreover, Isaga (2012) studied 300 small- and medium-sized entrepreneurs in Tanzania involved in the the furniture industry and found that demographics (i.e. the age distribution of individuals) have a positive effect on business growth. In addition, previous work experience improves the ability to discover an opportunity. Therefore level of business training is also an important factor in the decision to exploit entrepreneurial opportunities.

Over time, as a person obtains more business experience, the opportunity costs of pursuing alternative strategies may rise, i.e., one may have a job somewhere else with a high salary, or a family situation that requires less risk be taken. Starting up a business takes a lot of time. Therefore, age of the entrepreneur is a factor influencing the likelihood of entreprenurial discovery. Shane (2003) claims that "age has a curvilinear relationship with the likelihood of opportunity exploitation" (p. 89). From a certain age onward, depending on context, the willingness to bear risk typically decreases.

4. Methodology

4.1. Background

The Norwegian Christian organization Mission Alliance is engaged in microfinance in several countries, including Bolivia, Ecuador, Vietnam, and most recently, Liberia. Loans are offered to individuals, families, or groups who seek to "create their own business, develop their existing production or improve their living conditions" (Mission Alliance, 2015). Given the above discussion of who an entrepreneur is, I argue that Mission Alliance's microfinance recipients, in the selected context used here (see section 4.2 below), meet that definition well.

These customers typically do not legally own any property, nor do they have a documented income or verifiable credit history. Because of this, they are not eligible for a loan through a regular commercial bank. However, this does not imply that the microfinance institution will accept any client; customers must undertake some basic business management training, be serious about their venture, and be willing and capable of repaying a loan. Mission Alliance often performs a thorough application process in which the credit officer, in dialogue with the credit branch manager, decides whether the business idea and the income it is expected to generate will allow for the individual to repay the loan. The bank does not discriminate based on ethnicity, gender, religious beliefs, cultural beliefs, or physical handicap.

Through my contact with the Norwegian Mission Alliance, I was able to collaborate with the microcredit organization Banco D-Miro in Ecuador as part of an internal study. I had the academic lead, including the research design, and I worked with two team members, Hans-Martin and Carolina Espegren from the Norwegian University of Science and Technology (NTNU) in Trondheim, Norway, intensely over a period of two months, creating a survey, interviewing several clients (transcribed interviews), executing the survey, and maintaining a close relationship with the call center. These two months were then followed by several months of analyzing and also accessing more historical data.

4.2. Empirical Setting

Banco D-Miro in 2013 served roughly 40,000 clients in mostly the poor coastal regions of Ecuador (red area in Figure 4), with a gross loan portfolio of USD 56.6 million. Average monthly loan balance was USD 1,391.40. It also had USD 17 million in deposits and 43,422 depositors. It is one of the most respected microfinance institutions in South America and is ranked as the Number 1 microfinance institution by the Multilateral

Investment Fund and the Microfinance Information Exchange (Martínez, 2014). When we began working with D-Miro, their rating with Microfinanza was BBB+ but today it is A-.

Figure 4. Map of Ecuador and researched area.

Source: Adapted from University of Texas (2008) with my own markings in red.

Note: Red marks the provinces and the areas from which the microentrepreneurs in this study stem.

4.3. Ecuador and the Informal Economy

As given by its name, Ecuador is located on the equator, on the west coast of South America. It has a population of roughly 16 million (United Nations, 2015) and has a land area of about 85% the size of Norway. The capital is Quito which is located in a generally safer and mountainous area, as compared to the largest city, Guayaquil. The US state department rates Ecuador as *Critical* in terms of criminality, including crimes such as armed robbery, sexual assault, and even murder or attempted murder. In Guayaquil it is fairly common with what is known as *express kidnappings*, which locally is known as *secuestro express*. In fact, part of my research team experienced this at one point. The US state department writes the following about these incidents:

> *Shortly after the passenger enters a taxi, the vehicle is typically intercepted by armed accomplices of the driver, who threaten passengers with weapons, rob passengers of their personal belongings, and force victims to withdraw money from ATMs. Increasingly, victims have been beaten or raped during these incidents.* (U.S. Department of State, 2015)

The population growth has remained high, nearly tripling over the past 50 years. The labor market in Ecuador is characterized by being widely informal with about 80% affected (ILO, 2013). During recent years the country has been negatively affected by the weather phenomenon El Niño and more recently the major earthquake with a magnitude of 7.8 on the Richter scale with a death toll of more than 650 people. The poor living conditions, often in simple wooden housing or semi-finished brick houses, commonly on steep slopes, contribute towards the high death rates.

Much of the country has remained largely agrarian, but over the last three decades the population has increasingly urbanized with today 64% living in urban areas (United Nations, 2014). As a result of the urbanization, not unique to Ecuador but common in many developing countries, is the creation of slums, which by some scholars are referred to as poverty traps, which limit the development of human capital, leads to investment inertia, and holds little value to politicians (Marx, Stoker, & Suri, 2013). In addition to poverty, many are also informally employed or carry our informal businesses. By informal businesses, this thesis considers "businesses operating out of sight of government regulation, either completely or in some small capacity" (Enriquez, 2015). These businesses operate outside of formal institutional boundaries (Webb, Bruton, et al., 2013), but do not comply fully with all legal, regulatory, and tax requirements (Perry et al., 2007; Portes, Castells, & Benton, 1989). By informal businesses, we are not considering activities that would otherwise be considered illegal, such as the production or distribution of illicit drugs.

4.4. Unit of Analysis

The sample of 755 randomly selected microentrepreneurs, among the approximately 40,000 clients at the end 2013, are mostly from the urban areas near Guayaquil—Portoviejo, Machala, and La Libertad. Thirty-five percent had only completed primary school, while 59% had finished or had some sort of secondary school degree. Only 4% attained a degree beyond secondary school. In a similar study, Magill and Meyer (2005) found that for urban Ecuadorian enterprises, 46% had only finished primary school, 41% had at least some secondary education, and 12% had gone beyond the secondary education. They note that these levels are higher than for the general population.

4.5. Data Collection

Various sources for data have been used. One of the sources is a survey, described below in more detail. Another is the microbank and the credit analyses they perform prior to extending a loan. A third is national credit bureau data, which helps in obtaining a full picture of the firm's financial position. Finally, the thesis makes use of Statistics Ecuador and the United Nation's industry classification scheme for the informal sector (United Nations, 2008).

4.6. Survey Design

The complete survey incorporated a total of 83 questions, but no respondent answered more than 60 questions, depending on what type of client answered the survey (see Appendix 1). Since the PhD research project was in collaboration with the bank's own internal analysis, several questions were asked that did not relate to the PhD dissertation project but may be used in subsequent publications. Most questions, apart from Section A, were based on various academic studies (see note at the bottom of the survey). All in all we made 3,468 phone calls reaching 756 microentrepreneurs. These clients were drawn from three different pools of clients: 1) clients with payment difficulties; 2) clients who had not renewed their loan; and 3) clients with no payment difficulties. The individuals were in general happy to talk to a representative of the microbank and were also incentivized to help out in the survey by getting a free calendar at the nearest bank office. It took approximately 20 minutes to carry out the interview with each individual, with all of the interviews taking place in December 2013. The complete survey is shown in Appendix 1, but for this thesis the only sections used were E , F, and G. Section H of the survey dealt with entrepreneurial success, but yielded little variability in responses and therefore was not appropriate to use. The other sections are intended to be used for other related articles following this thesis.

In close cooperation with the local call center and their marketing director John Pacheco, Hans-Martin and Carolina Espegren and I executed the overall survey. The local call center team, John, Hans-Martin, and Caroline provided valuable input into the survey design, and we discussed the wording of some questions intensely to make sure it was correctly translated and understood by the person at the other end of the telephone line. Each call lasted 20 minutes. While Hans-Martin and Carolina were initially asked to look at two other bank-related issues unique to Banco D-Miro, my role was to lead the academic part of the survey. An initial test survey of roughly 60 interviews was first

carried out to make sure we obtained reasonable and varied answers. Research on the use of a five-point versus a seven-point scale has shown that both scales produce the same mean score once rescaled; the use of a ten-point scale format tends to produce slightly lower means (Dawes, 2008). However, we discovered that the individuals did not understand a numbered scale, as we obtained little variability in the answers. If given a choice of 1 to 5 (or 1 to 7), typically they would all answer with a 5 (or a 7). Thus we changed the wording to better describe the various options (see *Table 3***Error! Reference source not found.** below) and were able to obtain more variability in the answers.

Table 3. Example of question using Likert scales.

R. Role models

Indicate your level of agreement with the following statements.

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
R1.- I am personally familiar with successful entrepreneurs	☐	☐	☐	☐	☐
R2.- In my network of friends and colleagues, there are successful entrepreneurs	☐	☐	☐	☐	☐
R3.- I regard some of the entrepreneurs I know as role models	☐	☐	☐	☐	☐
R4.- Some entrepreneurs I know have been a source of influence for me	☐	☐	☐	☐	☐

4.7. Practical Activities Relevant to the Research Process

In order to better understand the microentrepreneurs, we also carried out in-depth interviews with approximately 30 individuals, of whom 10 were videotaped and partially transcribed. These were random clients from the areas near Guayaquil and included clients with no payment difficulties, clients with payment difficulties, as well as former clients. The interviewss helped better address the research questions in light of both entrepreneurial performance and also in terms of why the individuals sought financing. All visits were made together with a credit officer, which gave us an opportunity to talk more about how the credit evaluations were done and how the clients were selected. When we did the interviews, the credit officer was not present, to allow the clients to talk freely. We also did an online survey of the 100 credit officers with the bank, which helped in better understanding the clients.

4.8. Ethical Issues

During the survey, we did not get the impression that clients felt provoked or intimidated by our questions. When we did the on-site interviews, we sometimes encountered

individuals who had difficulties in their business and who found it difficult to talk about these issues. Some of them even cried a little when telling us about how, for instance, someone had stolen a car used to transport bread, which meant they had fallen behind in paying the interest on the loan used to purchase the car. Requiring loan recipients to have insurance against theft may therefore be an option for the microbanks to consider, although it may be difficult and costly to enforce.

4.9. Microenterprise Performance

Schumpeter (1934) describes performance in terms of an entrepreneurial profit. The empirical entrepreneurship literature uses different ways of expressing firm performance. In one of the pioneering studies on the relationship between financial capital and performance, Honig (1998) used income as an indicator of performance, as did Copestake et al. (2001), who also used profit growth and quality of life. In a quantitative study on Malaysian microenterprises, Mahmood and Rosli (2013) use a subjective scale from 1 to 7 to measure performance, including such measures as sales revenue, profits, enterprise stability, employment growth, reduction in production costs, customer satisfaction, market outreach, value of business assets, business networks, efficiency, growth, profit, size, liquidity, success/failure, and market share. Of these measures, efficiency, growth, and profit are most often used (Murphy, Trailer, & Hill, 1996). *Table 4* below shows some studies that have looked at the connection between finance capital and microenterprise performance. Increasingly, researchers are also using a return-to-capital measure (De Mel, McKenzie, & Woodruff, 2008; McKenzie & Woodruff, 2008). While there are comprehensive measures of performance to be used, such as cash flow return on investment (Madden 1998), access to detailed data is one of the biggest obstacles when analyzing informal microenterprises, suggesting that simpler measures may need to be used. This thesis makes use of three measures of performance: 1) operating efficiency measured as ROA; 2) income generation measured as profits; and 3) sales growth to capture the momentum in the business.

Table 4. Research on the role of financial capital on the performance of microenterprises.

Reference	Journal	Constructs	Dependent variable	Sample	Findings
Webb, Morris, and Pillay (2013)	JDE	Credit line	Sales growth	156 microentrepreneurs in South Africa	Finds a negative relation inbetween receive a credit line and sales growth
Mahmood & Rosli (2013)	MRR	Microcredit	Subjective performance measurement	756 micro and small enterprises in Malaysia	Microcredit is positively and significantly correlated with performance
Hietalahti & Linden (2006)	PDS	Loan size	Profits	21 microentrepreneurs in South Africa	A strong positive correlation was found between loan size and profits
Bosma, Van Praag, Thurik, & De Wit (2004)	SBE	Financial capital	Survival, profits, employment	1000 new business founders in the Netherlands	Finds that capital constraint at the start has a negative impact on survival times and earnings
Copestake, Bhalotra, & Johnson (2001)	JDS	Loan size	Profits and household income	Survey among 420 in Zambia	Borrowers who obtained a second loan experienced significantly higher growth in business profits and household income.
Honig (1998)	JBV	Financial Capital	Average monthly profit	215 Jamaican microenterprises	Model explained 30% of the differences in income, R^2 of 33.9% for all cases.

Note: JBV—Journal of Business Venturing, MRR—Management Research Review, SBE—Small Business Economics, PDS—Progress in Development Studies, JDS—Journal of Development Studies, JDE—Journal of Developmental Entrepreneurship.

5. Summary and Conclusion

In the mid-1970s, microfinance began a new era of growth, pioneered by the work of Professor Muhammad Yunus and the Grameen Bank, with a mission to eradicate poverty from the face of the earth. In 2006, when Yunus and the Grameen Bank received the Nobel pieze price for their work, Yunus expressed his vision in the Nobel lecture:

> *I firmly believe that we can create a poverty-free world if we collectively believe in it. In a poverty-free world, the only place you would be able to see poverty is in the poverty museums* (Yunus, 2006).

Presently, more than 200 million individuals globally have a microfinance loan, compared to 13 million in 1997 (Reed, Marsden, Ortega, Rivera, & Rogers, 2014). Microfinance is today synonymous with external entrepreneurial finance in the informal economy, and it is beginning to reach magnitudes where significant population groups are being affected. However, research has struggled to find support for the argument that microfinance helps individuals get out of poverty (Roodman & Morduch, 2013), and critiques by some journalists and researchers have been harsh on microfinance (Bateman & Chang, 2012; Heinemann, 2013). This thesis therefore adresses several firm-level drivers and issues of microenterprises, the *modus operandi* in the informal economy.

The informal economy can be assumed to follow a similar entrepreneurship process (Shane & Venkataraman, 2000) to the formal economy, although it is also somewhat more isolated, since few buyers from the formal economy ever buy goods or services from the informal economy (Böhme & Thiele, 2012). Further, many microentrepreneurs in the informal economy become involved in similar business activities to their friends and neighbors, particularly construction, wholesale and retail trade, and restaurants. This creates an environment where competition is high and where it may also be difficult for entrepreneurship opportunities to exist, especially if the cost of borrowing capital is excessively high. Through the rise of microfinance institutions, capital can potentially be provided at more affordable interest rates than those offered by local loan sharks.

If money is not available, engaging in trade or general business activities will involve high transaction costs, which hinder the formation of entrepreneurial opportunities even further. By introducing money as a medium of exchange, transaction costs are lowered, thus enabling more entrepreneurial opportunities to exist. The same holds true for the increased use of mobile money.

Discovering an entrepreneurial opportunity requires keeping a close eye on the market and understanding what customers need. This study was performed on microentrepreneurs in Ecuador, clients of Banco D-Miro, who have been running a business over some years and can be assumed to be somewhat experienced at this. A common characteristic for all individuals in our sample is that they have at one point approached microfinance institutions to seek a loan for their microenterprise. We argue that that act is a symbol that this individual is following an entrepreneurial process and has decided that taking out a loan is *a priori* good for their business. In addition, our sample includes individuals who previously have had a loan, but are not longer clients. To sum up, there are a number of key lessons learned from this thesis:

1. Risks of failure leads to risk aversion in borrowers

Those who decide to take on debt earn a higher ROA and have higher sales growth as a form of insurance against the risk of default. These results are partly based on *prospect theory* (Kahneman & Tversky, 1979) which suggests that since individuals tend to exaggerate the fear of failure in comparison to a sure gain. In the informal economy, we see a high variability in performance level.

2. Microdebt has no impact on ROA or growth, but impacts profits positively

The panel study shows that in microenterprises a higher leverage is positively related to increased profits, but has no impact on the operating efficiency (ROA) or sales growth. This implies that the provision of microdebt is adding more income to the microentrepreneurs, income that will be used on improved housing or education. However, using debt does not improve the operating efficiency nor does it help the business grow, thus hindering the poor microentrepreneur on his or her path out of poverty. The resource-based view (Barney, 1991) predicted that resources are key to the performance, as have others researchers (D. S. Evans & Jovanovic, 1989) but as shown here in the informal economy, microdebt is only impacting profits, not ROA or sales growth. These findings imply that microdebt as a resource is not helping the microenterprises create a competitive advantage, but it does add extra income to the bottom line.

3. Firms face a curvilinear (concave) relationship between size and performance

My findings indicate a curvilinear (concave) relationship between the size of the microenterprise and ROA on the one hand and between size and profits on the other. No affect is measured on sales growth. This findings illustrates the challenge of growing

a small business. As the size increases, the profits and profitability may actually decrease initially and later increase, but before the microentrepreneur will likely have given up long before reaching that stage. This links to previous resources that suggest diminishing economies of scale (Armendáriz & Morduch, 2010), a finding contrary to observations of formal firms. However, my findings suggest that the relationship is concave and the positive economies of scale, as Adam Smith once predicted, kick in at a later stage.

4. Human capital investments (education/age) are not enhancing performance

The results show no impact from education on microenterprise performance. In fact, the other parameter of human capital, experience (measured as age), is seen to be negatively correlated which could be a cohort effect, or may illustrate that younger microentrepreneurs take more risks than older. This suggests that human capital in the informal economy is not a resource that helps microentrepreneurs improve performance.

5. The relationship between debt and performance is negatively moderated by number of employees

The cross-sectional study shows a negative moderating effect on the relationship between leverage and performance, such that leverage has less impact on performance in smaller firms than larger firms. In previous studies (Honig, 1998) it was found that the relationship varied depending on number of employees. This study achieved somewhat similar results.

6. Both entrepreneur characteristics and firm characteristics matter in the decision to finance

Drawing inspiration from human capital theory and the resource-based view, the results indicate that, contrary to previous research, entrepreneur characteristics matter more in the informal economy than in the formal economy. I find that being older, not married, and more financially literate increases the likelihood that microdebt will be undertaken. Traditional firm characteristics such as size, asset structure, and performance (ROA) are also positively linked to the decision to finance. For the informal economy, it was found that growth intent was also a key driver in the decision to finance, which is typically not found in research in formal economies. In terms of leverage, those who are financially more literate are more likely to take on more debt. Among the firm characteristics, it was again found that size and performance impacts leverage positively, but it was also found that asset structure is negatively related with leverage.

7. Financial literate microentrepreneurs achieve higher ROA and profits

The findings show a strong positive relation between financial literacy and ROA and between financial literacy and profits, suggesting that financially literate microentrepreneurs make better investment decisions. This illustrates again how a key resource, in this case a skill, helps microentrepreneurs earn higher returns. However, when relating to sales growth, financial literacy was not seen to have any impact. Perhaps other skills such as marketing (Webb, Morris, et al., 2013) are more important for growth.

8. Knowing successful role models helps the microentrepreneur achieve higher ROA

My results show a significant relationship between those microentreprenurs who indicate that they know a succesful role model and their performance in terms of ROA, suggesting that the role model has a positive impact on the operating effiency and perhaps the microentrepreneurs' ability to make more sound investments.

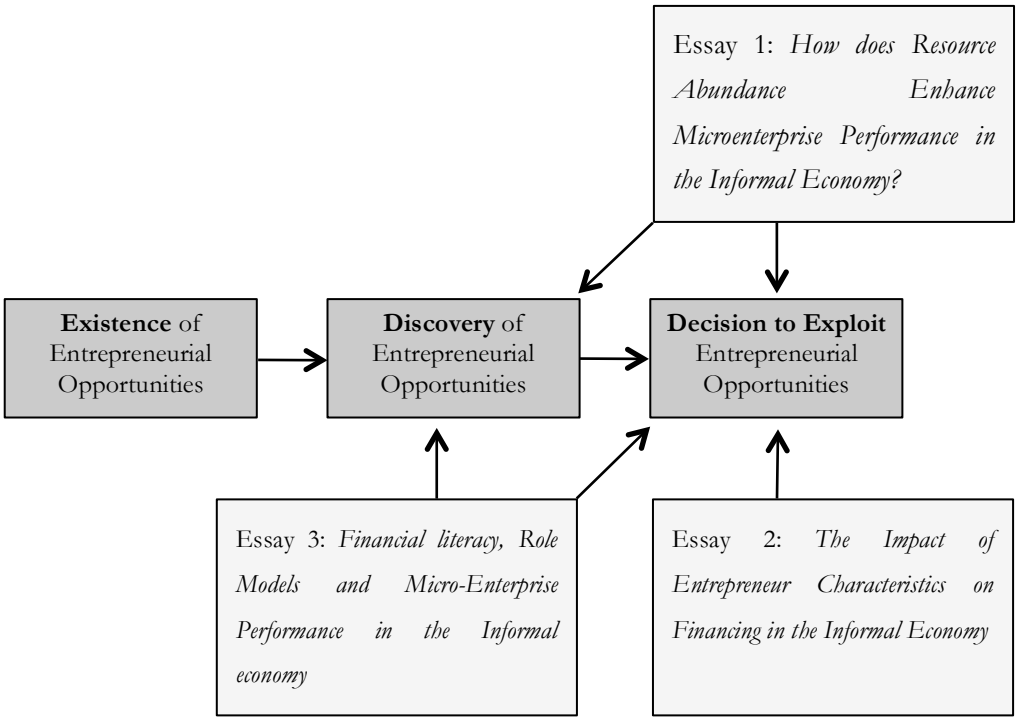

Figure 5. Schematics of essay and theory.

The purpose of this thesis was to address the impact of microfinance on microenterprise performance in the informal economy through research-based theory (Barney, 1991) and human capital theory (Becker, 2009), as well as an exploration of the

impact of financial literacy (Lusardi & Mitchell, 2014) and role models (Bosma et al., 2012). In addition, this thesis also investigated the role of entrepreneur (e.g., human capital and financial literacy) and firm characteristics in financial decision making. The essays are summarized in the introduction of this thesis and are also illustrated in *Figure 5* relative to how they fit in with entrepreneurship theory. By positioning the practice of microfinance within entrepreneurship theory, I try to better explain successes and failures in using microfinance, and the critical interplay between the environment and the individuals. My thesis sheds light on the role microdebt has in relation to entrepreneur characteristics. I argue that while microdebt enhances ROA and profits, it does not affect sales growth. The thesis shows the importance of understanding the characteristics of the microentrepreneur and that relevant skills, such as financial literacy, do have an impact on the bottom line of microenterprise. After all, economic and social development is not created by external sources from above, but through "its own initiative, from within" (Schumpeter, 1934, p. 63).

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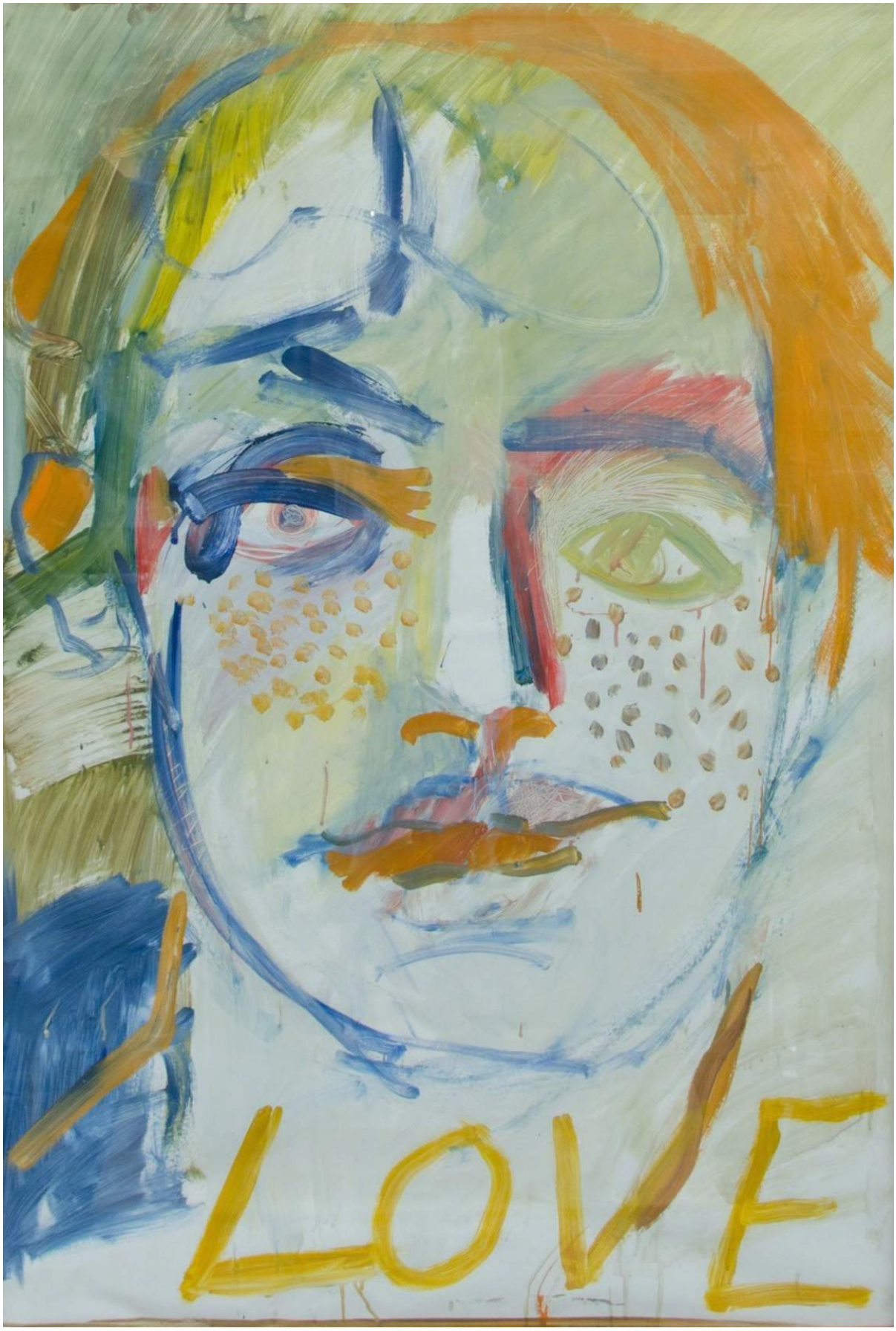
7. Essays

The following three empirical essays are presented in this section:

1. Engström, P. and T. Randøy "How does Resource Abundance Enhance Microenterprise Performance in the Informal Economy?
2. Engström, P. "The Impact of Entrepreneur Characteristics on Financing in the Informal Economy"
3. Engström, P. and A. McKelvie "Financial Literacy, Role Models and Micro-Enterprise Performance in the Informal Economy"



Michael Bowen, LOVE
The Art Collection of the University of Agder. Permission by Isabela Bowen Paoli

7.1. Research essay 1: How does Resource Abundance Enhance Microenterprise Performance in the Informal Economy?

How does Resource Abundance Enhance Microenterprise Performance in the Informal Economy?

by Pontus Engström and *Trond Randøy*[2]

Applying the resource-based theory of the firm, we study the performance impact of three resource dimensions: access and use of debt, asset availability (size) and human capital investments. To test our hypotheses we use a sample of 755 Ecuadorian microenterprises operating in the informal economy. These microenterprises were clients of a microfinance institution for at least there years in the period 2005-2013. Our findings suggest that access to microcredit does not help microenterprises grow or become more efficient, but it does increase their aggregate profits. We find that the entrepreneur's level of education does not impact performance, and that experience in fact has a negative impact on performance. We observe that there is a U-shaped economies of scale in relation to asset abundance, and no consistent pattern in relation to number of employees. Our findings imply that in the informal economy simply adding financial capital is not sufficient to enhance microenterprise efficiency. One policy implication of this study is that capital providers in emerging markets should solicit larger microenterprises, with potential for economies of scale.

Introduction

Entrepreneurship research has largely overlooked one important part of the economy – the invisible or informal economy (Bruton et al., 2008), defined as businesses operating out of sight of government regulations.[3] While the informal economy constitutes up to 70 percent of the GDP of some emerging economies (Buehn & Schneider, 2012), research has largely been anecdotal (Webb, Bruton, et al., 2013), perhaps largely due to the inherent

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[3] The informal economy is commonly defined as income-generating activities "not declared to the authorities for tax, social security and/or labour law purposes when it should be" (C. C. Williams & Nadin, 2012).

difficulties in obtaining reliable data. This study addresses this problem using a unique dataset and responds to three recent calls for research; on the funding of microenterprises[4] (Moss et al., 2014), on the impact of microloans on performance (Berrone et al., 2014) and the need for a stronger theoretical underpinning to informal economy research (Webb, Bruton, et al., 2013). Based on the above motivation we specifically addresses the following Wes: (1) *does* the "resource" of debt enhance microenterprise performance in the informal economy; 2) *do economies of scale* exist, as an indicator of aggregate resources, and 3) *does* education/experience, as a indictor of enterprise competencies, enhance performance and 4) *does* the access to human resources (number of employees) in the enterprise moderate the relationships (1-3) presented above? This is visualized in Figure 1.

The broader motivation for this study of resource in microenterprises, concerns the role of microfinance in providing resources to such enterprises. Previous research has shown that access to microfinance enhance the broader social performance of microenterprises (Bruton et al., 2011). While the positive relationship between access to finance among microentrepreneurs and (their) poverty reducing impact, in their communities, has been difficult to identify (Roodman and Morduch 2013; Khandker 2005), past research has not addressed the impact on microenterprise financial performance. Microfinance institutions are unique in that they are *formal* providers of finance that mostly serve microenterprises in the *informal* economy. In our review of existing research we thus identify a gap in the literature that, given the growth of microfinance, the relative size of the informal economy in emerging economies, and the theoretical distinctness of microenterprises, should be of both theoretical and public policy interest.

With our research design we try to alleviate methodological weaknesses of past microenterprise research (Duvendack et al., 2011). Specifically, by using unique hand-collected data and a broad set of measures (firm-based as well as entrepreneur-based measures) in the context of a large-scale multi-year dataset, we increase our ability to assess the impact of microfinance (Armendáriz & Morduch, 2010) and other resources on microenterprise performance. Previous research has commonly defined performance with a single measure, or somewhat vaguely, such as using monthly income (Honig, 1998), the

[4] Commonly referred to firms with less than 10 employees.

entrepreneur´s perception of performance (Berrone et al., 2014; Mahmood & Rosli, 2013), or business knowledge as a proxy for performance (Bjorvatn & Tungodden, 2010). Instead, we are applying three financial measures of microenterprise performance in order to capture essential traits of performance; 1) operating efficiency, 2) profit generation, and 3) sales growth.

We use Ecuador as the empirical context of this study, arguing it to be particularly appropriate for studying financing of entrepreneurship in the informal economy (World Bank, 2012). First, there is an extensive informal economy (Canelas 2014; Schneider et al. 2010; Albornoz et al. 2011). Second, there are well-developed and regulated microfinance institutions specifically targeting the informal economy. Third, through unique access to inside information from one major microfinance institution, we gain access to exceptional and detailed entrepreneur-level and firm-level data. Fourth, we have access to microenterprise data that allow us to separate the financing of business-related activities (our focus) from the financing of microentrepreneurs' personal consumption.

This article is organized as follows. First, there is a review of entrepreneurship literature relating to financing, human capital investments, economies of scale and firm performance in the informal sector. Second, the hypotheses are developed. Third, the research methodology is presented, including constructs and measures. Following this, we test the hypotheses using various multivariate regression techniques with both cross-sectional and panel data. Lastly, we discuss and draw conclusions on the findings, their limitations and their implications for scholars as well as practitioners.

Theory development and hypotheses

The resource-based theory and microfinance

Based on the resource-based theory of the firm (Barney, 1991) a microenterprise can be considered a collection of resources; specifically its assets, capabilities, including the unique network and knowledge of the microentrepreneur. These resources are then used to create a sustainable advantage in the market place, or merely a firm advantage in the context of microentrepreneurs as argued by some researchers (Webb, Morris, et al., 2013). While previous research has *implicitly* made references to the resource-based theory, relatively little *explicit* referencing is done despite our knowledge of interenterprise performance differences and the path dependent trajectory for a firm´s development, i.e. today´s opportunities are a result of yesterday´s decisionsH (Lockett & Thompson, 2001).

Thus, the resources available to a microenterprise in the informal economy are here argued to be partly determinants of its performance.

With reference to classical literature on entrepreneurship, the Schumpeterian entrepreneur creates profit through a process of innovation (Schumpeter, 1934), in which access to resources is crucial. When lacking the necessary resources, entrepreneurs engage in a variety of strategies to overcome this resource gap, of which borrowing external capital is one (Webb, Bruton, et al., 2013). Financial capital represents one of the most easily convertible resources. However, in the informal economy, microenterprises in developing countries are commonly excluded from formal financing. If financing is available, it often comes at an exorbitant cost, from moneylenders or other kinds of informal providers of capital, a cost so high that it may deter entrepreneurs from making any investments (Armendáriz & Morduch, 2010). Microfinance institutions commonly pursue a "double bottom line" of financial sustainability and social impact, such that they typically charging much lower interest rates than informal moneylenders.[5] Therefore, microfinance institutions have emerged to fill the institutional void in the capital market, bridging the gap between the informal and the formal sector,

Beginning at larger scale in mid-1970s, though the initiatives of Dr. Muhammad Yunus and the Grameen bank, who both received the Nobel peace prize in 2006 for their efforts, the microfinance industry has grown rapidly. Since 2009 the year-on-year growth has ranged between 11 percent and 17 percent (MicroRate, 2013). Presently, more than 200 million individuals globally receive a microfinance loan, compared to 13 million in 1997 (Reed et al., 2014). Microfinance is today synonymous with external entrepreneurial finance in the informal economy, and it is beginning to reach magnitudes where significant population groups are being affected.

Risk taking and firm performance in the informal economy

To a traditional banker, the poorest clients in the world are also the worst client. Perhaps this is the reason why financing of enterprises at the bottom of the pyramid (BOP) and in the informal economy has taken such a long time to develop. In order to understand financing of microentrepreneurs, we think it is beneficial to consider how the

[5] The term moneylenders refers to informal providers of credit that commonly charge 100 percent or more per year in interest rates and apply harsh collection methods.

traditional research on risk-taking is split in two avenues: one attributing the skills in risk-taking to the *entrepreneurs* (Knight 1942) and another to the *capitalists – the capital provider* (Schumpeter, 1934). The Schumpeterian view implies that in an informal economy, the capitalists decide that it is too risky to invest compared to the expected return, thus creating an environment without access to capital. The opposing Knighterian view is that it is the entrepreneur, who best understands the risks and uncertainty of his or her business, both measurable and not measurable, who makes the decision to finance based on the available cost of capital. In this article we side with Knight, and as Evans and Jovanovic (1989), we argue that capital, and in particular a lack of capital, constrains an entrepreneur, causing them to "use a suboptimal amount of capital" (p. 4) in starting up their business.

If the entrepreneur is a specialist in taking risk or alleviating uncertainty (Knight 1921), seeking an external financier is not only a sign of a lack of financial capital, but also reflects an interest in sharing risk and uncertainty. We argue that the adverse self-selection by the entrepreneur in pursuing external funding from the microbank, (partly based on asymmetric information that the other sources of funding do not possess), makes the entrepreneur better informed about his or her opportunities. In order to deal with such adverse selection by entrepreneurs, the microfinance bank will conduct careful credit screening and apply interest rates and fees in order to compensate for the uncertainty of overly risky and/or unprofitable entrepreneurial investments or activities, and also to deter such projects. If these interest rates are set too high, then none of the proposed investments will be undertaken; if set too low, the bank's operations will become unsustainable. To circumvent this dilemma, microbanks commonly use the "double bottom line" approach. This way microcredit providers incorporate the concept of both a social and a financial return, which has become the dominant logic of microfinance operations around the world (Armendáriz & Morduch, 2010). If the entrepreneur and microfinance institution are successful in its evaluation of the business potential, the lending activity should result in the improved performance of the business. Despite that recent research has questioned the (positive) impact of microfinance on poverty reduction within a community (Roodman & Morduch, 2013), researchers have to our knowledge not addressed the *firm-level* drivers behind these results, specifically the impact of access to microfinance and human capital investments on microenterprise performance.

Honig (1998) provided one of the pioneering studies on the relation between access to financial capital and income (as an indicator of performance) among microenterprises in the Jamaican informal economy. He showed that those microenterprises who had received a business loan had higher income, especially among

the solo self-employed, and his main argument behind this effect was the range, quality and technological capacity of the business. Copestake et al. (2001) find, in the case of Zambia, that business performance and household income improved significantly upon the taking of a second loan, but that nearly half of the clients studied who did not continue with a second loan fared worse. From interviews carried out, they speculated that the improvements were due to investments, increased sales and diversification, whereas those who did not continue with a loan attributed the drop to a lack of capital. A qualitative case study by Hietalahti and Linden (2006) on poor women in northeastern South Africa reveals that some of the poorest women had been able to improve living conditions modestly through access to microloans, but also highlights that impact was stronger among the poorest women, than among the slightly better off but still poor entrepreneurs. In a recent quantitative study on Malaysian microenterprises, Mahmood and Rosli (2013) find that microcredit has a significant impact on firm performance, when measured subjectively by the microentrepreneur, highlighting the added value a borrowed external resource, in contrast to the internal resources as argued by (Barney, 1991). They attribute this effect to the ability of the firms to engage in entrepreneurial activities and expand existing microenterprises, however without elaborating further on the concept of size. Overall the above studies suggest that access to financing has a positive impact on microenterprise performance, as this enables the entrepreneur to achieve economies of scale and better access to business critical resources.

A number of recent studies applying randomized control trials (RCTs) provide unique opportunities for theory development, as these studies have conducted experiments related to the impact of business grants, another form of financing, on microenterprise performance. McKenzie and Woodruff (2008) find, in an RCT on Mexican microenterprises, monthly returns to capital of 20-33 percent, corresponding to a return between three and five times higher than the interest rate charged. The RCT did not adjust the returns for the opportunity cost of the self-employed entrepreneur pursuing an alternative activity, as deemed necessary by Shane and Venkataraman (2000). Therefore, we argue that the performance impact of debt is exaggerated in the Mexican RTC study. De Mel et al. (2008) find, in a study on Sri Lanka, a monthly return on capital of 4.6-5.3 percent (55 percent-63 percent annually), also higher than prevailing interest rates, with the opportunity cost of labour deducted in this case. In a study on rural firms in Kenya the authors find returns of over 100 percent, however with a lot of variability (Kremer, Lee, Robinson, & Rostapshova, 2010). Grimm, Krüger, and Lay (2011) find further support for the existence of very higher returns in western Africa, with rates of 50-70 percent, notably higher among firms with small capital investments.

In the context of the informal economy, little attention has thus far been paid to how debt (the main instrument used in microfinance) relates to firm performance. One recent study found an opposite direction on the use of a credit line, linking it to a negative growth of microenterprises (Webb, Morris, et al., 2013). While several RCTs have been performed, the cash injections are typically small, which makes it difficult to generalize their findings to a broader spectrum of firms. For instance, Berge et al. (2011) look at the effects of a small business grant of USD 60. De Mel et al. (2008) use a sample of business grants of USD 100 to USD 200 made to businesses with a maximum asset size of USD 1,000, where the sizes of these grants were in some cases equal to a value greater than the original capital invested in the business. However, the generalizability from these RCTs is limited by the fact that they use small amounts and the RCTs fail to take into account the different business needs. A relatively small grant to a larger microenterprise, for instance with assets worth USD 1,000, will have a relatively small impact in comparison to the same size of grant made to a very small microenterprise with, for instance, assets worth USD 100. Comparing the above figures to the current study, in which we include debt financing of up to USD 40,000, we believe that we capture more of the reality and complexity of microenterprise financing in the informal economy.

Based on the above theoretical considerations and empirical observation, we suggest the informal economy differs from the formal economy in a number of key areas. Firstly, since the individuals are operating out of sight of government regulation, there is little protection in the case of business failure, particularly as there are no laws governing bankruptcies. Secondly, in small microenterprises, the role of the manager and the owner is interconnected, which means that the goal of maximizing the return for the business must be weighted against the personal risk of not having an income at all (Donaldson, 1963). As discussed by Myers (1977), the risk of bankruptcy may deter the entrepreneur from seeking more financing, even with access to finance and with the existence of investment opportunities expected to produce a rate of return higher than the lending rate. To informal economy microentrepreneurs this implies that the risk of failure must be carefully weighted against success, both on a personal and a microenterprise level. While the Knighterian view on risk-taking suggests that the entrepreneur is best informed as to what potential lies ahead, *prospect theory* suggests that if the individual perceive the risk of failure to imply severe consequences for the individual, such a fear of failure may be exaggerated in comparison to a sure gain (Kahneman & Tversky, 1979). In the informal economy one can expect the risk of failure to be high (high variability of financial returns) and the impact of failure potentially significant economic hardship for the entrepreneur. This is exacerbated by the fact that there are no bankruptcy laws governing failures in the

legal "shadow" of the informal economy. Based on the riskiness of the microenterprise's investment opportunities, it would be rational for a microentrepreneur to demand (a priori) a high financial return if they chose to expand their business activities by using (more) debt. Part of the demanded increase in return would reflect the increased risk of business failure, equivalent to bankruptcy in the formal economy. We thus argue that microentrepreneurs deciding to take up a loan, i.e. a self-selection process, require a higher expect financial return compared to those who do not.

Hypothesis 1: Among microenterprises in the informal economy, there is a positive association between those who make use of microcredit and firm performance.

In addition, as discussed earlier, in the resource-based theory of the firm, the firm´s resources are key to its performance, and if they are not imitable or easy to copy they will create sustainable businesses with returns above the average. The resource-based theory thus suggests that the operating efficiency, ROA, can be improved through higher margins and/or improved asset turnover. Lacking resources, the entrepreneur will turn to borrowing, and taking on debt financing can theoretically lift financial returns through improved operational performance, for example through the acquisition of inventory in larger quantities at lower costs or simply satisfying an unmet demand for a product or service. However, if the invention is not providing a sustainable advantage, the returns will revert to the mean. Lacking capital limits the available opportunity set to an entrepreneur (D. S. Evans & Jovanovic, 1989), thus hindering experimentation in general and the ability to use cash as a resource cushion (Bourgeois, 1981; Cyert & March, 1963). With lack of financial resources we expect that microentrepreneur displays lower risk-taking behavior and as a consequence we expect to see lower financial returns. Therefore our second hypothesis suggest that:

Hypothesis 2: Among microenterprises in the informal economy, there is a positive association between leverage and firm performance.

There is a limited amount of previous research concerning the performance impact of microenterprises' resource availability in relation human capital investments, such as the entrepreneur's level of education. Honig (1998) investigates the effect in the informal economy of Jamaica, using the classic Mincer human capital equation (Mincer 1974). Considering the lower levels of education, it was found that those with only primary education performed better than those with junior secondary school experience,

speculating that additional work experience outweigh the returns from investing time in additional schooling. The Mincer equation used reads:

$$log\ Y_i = \beta_0 + \beta_1 E_i + \beta_2 X_i + E$$

where Y is income, E is years of schooling and X is the year of experience. The reason that they use the log of income is the assumption that education is believed to have a multiplicative effect on income (Mincer 1958). This has been empirically been verified for most income levels, albeit with less impact around the minimum wage level (Fortin & Lemieux, 1998) where individuals in the informal economy often at best treads (Canelas, 2014). Another more recent study on microenterprises in Nepal did however not find any impact from education on microenterprise performance (Thapa, 2015). The impact from number of year in schooling is generally assumed to be linear in relation to income, unless there is an extra layer of credential or "sheepskin" on top of the education (Lemieux, 2006), such as graduating from a prestigious school, which will generally not be the case among entrepreneurs in the informal economy. Age is often used to capture the experience on an individual, but the findings from Nepal provide no support to age as a determinant of microenterprise performance (Thapa, 2015), possibly to be due similar businesses and common characteristics between the older and younger microentrepreneurs. In some research the experience variable is often used as a *quadratic* to capture the non-linear declining added value from on-the job training. However, recent research indicates that the quadratic term underestimates the growth in wages of the individual over the early 10-15 years of work, and then overstates the years post 25 years, with then a spurious decline among elderly. Instead, research suggests that a *quartic* variable is important to consider (Lemieux, 2006). We shall also for the informal economy consider the value of education and experience on firm performance such that:

Hypothesis 3: Among microenterprises in the informal economy, there is a positive and curvilinear (convex) association between human capital investments and firm performance

However, the growth trajectory of a small firm in the informal economy may be limited by other factors, such as a limited product market that easily becomes saturated. An informal economy is characterized by being an isolated economic system where supply and demand are held fairly constant over time. If anything research shows that while the informal economy buys goods from the formal economy, the opposite is not true (Böhme &

Thiele, 2012). Many microentrepreneurs in the informal economy are also engaged in similar activities, such as construction or wholesale and retail trade. In such markets, the firms are operating in local "monopolies", but their market power does not extend very far (for example within a 10-minute walk of the shop). Therefore, adding capacity does not necessarily improve economies of scale. Drawing new customers from nearby villages or neighborhoods are costly. The idea of economies of scale dates back to Adam Smith who in the 18th century argued that if a poor microentrepreneur, became a pin-maker, he or she could make only about one a day, but when the small microenterprises included ten persons they could each perform different tasks in making a pin, such that they together could make 48.000 pins in day (Smith, 1776). Penrose (1959) argued that larger firms having more varied capabilities are able to achieve better performance as compared to smaller firms. However, research on microenterprises suggests that microenterprises may face diminishing economies of scale (Armendáriz & Morduch, 2010), which is contrary to research on formal publicly listed firms (M. Hall & Weiss, 1967; J. Lee, 2009; Ozgulbas, Koyuncugil, & Yilmaz, 2006). For instance, an example could be an expanding informal brick-making business, where an expansion may result in increased input costs, because the raw materials have to be sourced from further away, while output prices may fall as more bricks flood the market. However, Moreno and Casillas (2007), find that high-growth firms are smaller in size than lower-growth firms, suggesting a negative relationship between size and firm financial performance. Evidence of diminishing returns to scale is also found in western Africa, where the slightly larger microenterprises (with assets above USD 150) earned one tenth the return on assets, 4-7 percent per month, of the smaller businesses who had monthly returns above 70 percent (Grimm et al., 2011). As a result, among microenterprises in the informal economy research points towards a negative association between firm size and firm performance. Furthermore, if microenterprise start to become relatively big, emulating regular businesses, we expect that they start to display the positive economies of scale of regular businesses. Thus combining the two effects, we suggest that:

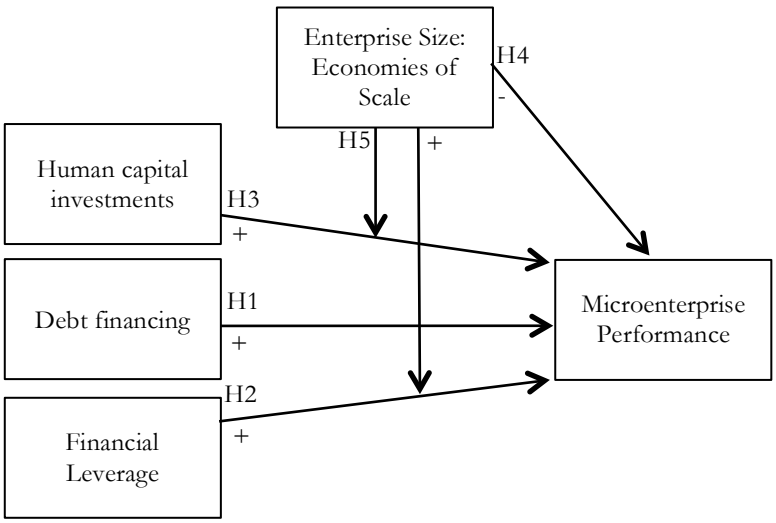
Hypothesis 4: Among microenterprises in the informal economy, there is a negative and curvilinear (concave) association between firm size and firm performance.

Lastly, as Honig (1998) concluded in his study on informal microentrepreneurship on Jamaica, it is important to consider the heterogeneity when assessing microentrepreneurship in the informal economy. He argues that informal firms with more employees are more complex and therefore require more human capital (education) to be

successful. In an organization with several employees it is possible for the leader to take advantage of the variety of skills and abilities present in the group, whereas in an organization of one, the leader is limited to his or her own cognitive skills. Honig (1998) finds a strong return from human capital investments among firms with multiple employees, whereas for firms with no employees (beyond the entrepreneur) a significant and negative relationship with performance is found. This may be a result of self-selection whereby individuals with higher human capital skills opt into businesses with higher market potential or that higher cognitive skills yield better returns. However, the Jamaica study suffer from one complication, which is that it includes microentrepreneurs with college degrees, which is not typical for the general population of an informal economy. In fact, research shows that high ability individuals are rather associated with formal firms (de Paula & Scheinkman, 2011). The world bank estimates that only 7% of managers in informal firms have a college degree whereas 76% have such a degree in formal firms (Porta & Shleifer, 2014). Instead, microentrepreneurs of the informal economy are rather endowed with lower to intermediate managerial skills, and including college-educated entrepreneurs would therefore stretch the results. In addition, the higher capital costs of the informal economy create lower capital-labor ratios, resulting in more single-employed firms. The fifth hypothesis reads:

Hypothesis 5: Among microenterprises in the informal economy, the number of employees positively moderates the relationship between financial or human capital vis-à-vis firm performance.

Figure 1: Hypothesized relations



Method

Research design

Researching poor microentrepreneurs in emerging/developing economies involves a number of inherent challenges. Obtaining detailed data from the informal economy is difficult as microentrepreneurs typically do not maintain financial records and in addition often mix family and business transactions. The challenges also include getting access to respondents, sample selection biases, the respondents' weak knowledge of financial terminology, and microentrepreneurs' limited ability to respond to surveys (with numbered Likert scales, to mention one such challenge). Many of these challenges have been overcome through our unique research design.

In order to *gain access* to microenterprises, we collaborated with Banco D-Miro from Ecuador. This microfinance institution is regulated by the national banking authorities, and has 41,000 clients based in the coastal regions of the country, where a majority of the economy is informal. In January 2013, D-Miro's net loan portfolio was approximately USD 56 million, with an average loan size to each microenterprise of USD 1,391 (AMAS, 2014). Banco D-Miro is owned by the Norwegian NGO, Mission Alliance, a faith-based Christian organization. In practice, D-Miro and Mission Alliance work side by side, but they are separate legal entities with separate local organizations.

Ecuador represents *a suitable country* when studying the informal economy. In Ecuador, 4.6 percent of the population live below the USD 1.25 poverty line, and 10.6 percent below the USD 2.00 line (World Bank, 2014). Over 80 percent of the working population of Ecuador works in the informal sector (Albornoz et al., 2011; Canelas, 2014). As our study is focused on poor microentrepreneurs, *working with a microfinance institution* allows us to reach a sample of *poor entrepreneurial individuals*, for whom the act of seeking credit signals a willingness to grow, through an entrepreneurial process that includes the discovery of an opportunity and the subsequent decision to exploit it. Our data indicate that the median yearly net profit in 2013 (before subtracting the opportunity cost (of the entrepreneur's own labour) was USD 8,280, which could have been used for personal consumption or reinvestment. This compares to the average GDP per capita in Ecuador of USD 6,346 in 2014. To *avoid the problem of self-selection bias*, i.e. only including entrepreneurs that could expect to benefit from accessing financing, we randomly selected three groups of entrepreneurs: 250 currently active microfinance clients, 250 who had payment difficulties, and another 250 microentrepreneurs who choose not to renew their loans with the bank.

By collaborating with D-Miro we were able to collect *detailed financial data* (income statement and balance sheet) on each microentrepreneur and the corresponding

microenterprise. Roughly 100 credit officers work at Banco D-Miro, all of whom have Master's-level education. Some of them have worked for the other commercial banks previously, and in meeting most of these credit officers we could conclude that this group has strong and advanced financial abilities. The credit officers make the overall assessments of the risk and creditworthiness of the clients, and they manually collect the financial data, partly through manually filled out loan application forms and partly through subsequent home visits. It is our assessment that overstating financial results is prevented due to strong internal audits within the bank. In addition, the credit officers are incentivized to implement sound of credit and size, but also on level of provisions and defaults. Prior to granting credit approval to a microenterprise, the branch manager, who is the credit officers' superior, reviews the data to further enhance the quality of the credit assessment. As a credit default by the microenterprise would be a negative outcome for the branch manager as well as the credit officer, this process provides better-quality data than an entirely self-reported measure of entrepreneurial performance. The credit officer estimates the value of all the assets and equity of the microenterprise, and for reasons of caution can be expected to be conservative in their estimates. The data are very detailed and allow for a fine-grained analysis of both income statements and balance sheet items, even the separation of family and business income and assets, thus allowing us to focus specifically on the performance of the microenterprise. Data relating to both the balance sheet and the income statement are obtained during the credit-screening process at the moment when the entrepreneur is seeking financing for the opportunity he/she has identified.

In addition to the data collected through the survey and the data collected by the credit officers of D-Miro, Ecuador's microfinance institutions and banks are by law required to report credit information to a credit bureau, which provides us with more individual credit information than is commonly available in emerging economies (World Bank, 2013), or even in developed countries. The largest credit bureau, and the one used by Banco D-Miro, is Equifax CreditReport. At the time of the loan application, the credit officer incorporates debt held at other financial institutions, and a complete balance sheet and income statement is created prior to each new loan. This process provides a complete picture of the microentrepreneur's financial situation, including loans from other financial institutions. All loans granted by D-Miro were approved by D-Miro, but loans with other financial institutions are granted and assessed by credit officers of these banks.

To ensure a higher response rate to our survey, D-Miro offered each respondent a free calendar, to be picked up at the nearest office. All in all, full responses were obtained from 755 microfinance clients or ex-clients, whose data we were also able to supplement

with historical financial data for the period 2005-2013. The respondents were then split into two groups for comparison, of which, at the time of the most recent loan application in the early part of 2013, 480 had debt and 275 did not. Over the time period 2005-2013, for the same group of entrepreneurs, we obtained 2,171 observations, of which 1,202 were with debt and 969 without. Most of the microentrepreneurs had small businesses in their homes, such as a little kiosk, a restaurant, or a slightly more capital-intensive service such as a hardware store or a tinsmith. This implies that at each point in time, we obtain a measure of a historic balance sheet debt component, financial leverage (period t-1), and a current estimate of the firm performance (period t).

In assessing the data, we are performing both a cross sectional analysis and a panel study analysis. Since many of the independent variables do not vary over time, the panel study will not be able to include them, wherefore the panel analysis primarily includes the variables that change each year. However, robustness checks are performed over several years and across varying industries.

Measures

Firm performance. Schumpeter (1934) describes the success of entrepreneurs in terms of an entrepreneurial profit. The empirical entrepreneurship literature uses various measures of performance; such as efficiency, growth, profit, size, liquidity, success/failure, and market share. Among these measures, efficiency, growth and profit are the most common (Murphy et al., 1996). An increasing number of researchers are also using a return to capital measure (De Mel et al., 2008; McKenzie & Woodruff, 2008). A comprehensive measure would consider the amount invested, the investment life, the cash flow and the resulting residual value at the end of the economic life of the firm (Madden 1998), but such detailed financial statement data is generally only available for publicly traded firms and not microenterprises in the informal economy.

This study addresses shortcomings of past research through a unique research design, which allows us to create detailed income and balance sheet statements for the microenterprise, using data collected through a triangulation of three sources: the credit-screening process of a major microfinance bank, access to debt data from the national credit bureau, and a survey of entrepreneurs operating in the largely informal and poor coastal regions of Ecuador.

This study will make use of three measures of firm performance: 1) Profits 2) Return on Assets (ROA) and 3) Sales growth. ROA is computed as net profit divided by total assets. This provides for a longitudinal performance dimension, as the asset value (or equity) is an historical figure and the net profit a current figure. To avoid having outliers

drive the results, the yearly ROAs were winsorized at the 5 percent level, such that for the cross-sectional analysis firms with total assets of less than USD 3,200 had their asset value set to USD 3,200 (a similar approach to Hvide and Møen 2010; Tukey 1962). For the longer panel data the corresponding lower cut-off value was USD 1,000 for assets. While the median ROA remained the same, the variance dropped significantly, thus making the unadjusted high variance of returns less problematic, and still capturing the return variability of 95 percent of the firms.

Table 1

The unaccounted opportunity cost of self-employment by the entrepreneur

	Minimum wage (USD per month)	Adjustment factor	Opportunity cost (USD per month)
2005	150	88%	132
2006	160	92%	147
2007	170	92%	156
2008	200	87%	173
2009	218	83%	182
2010	240	83%	200
2011	264	91%	240
2012	292	91%	266
2013	318	91%	289
2014	340	91%	309

Source: Own estimates, National Statistics and Census Institute of Ecuador (INEC) and Canelas (2014)

In addition, since the entrepreneur does not pay a formal salary to him/herself, we added a proxy number for the opportunity cost of their labour into the reported income statement, in line with suggestions from past research (Scott Shane & Venkataraman, 2000). This was estimated using the minimum wage, but while the minimum wage is intended to set a wage floor, the actual floor may be much lower in the informal sector if formal jobs or alternatives are not available, which is empirically shown to hold true (Bargain & Kwenda, 2011). Canelas (2014) finds, using data from the National Statistics and Census Institute of Ecuador, that informal wage workers earned, on average, 91 percent of the minimum wage during 2010-2012 (see Table 1). We therefore assumed that the opportunity cost of labour for the informal sector in Ecuador in 2013 was equal to the actual minimum wage of USD 318 multiplied by 91 percent, that is USD 289, and also made adjustments to previous years' figures using similar estimates (Table 1). When the opportunity cost of the microentrepreneur's own "salary" was taken out, we found that the microenterprises' mean ROE was reduced from 171 percent to 87 percent and the

mean ROA from 141 percent to 68 percent. The winsorization lowered the means to 77 percent and 61 percent respectively (see Table 2). The median remained unchanged however. Since longitudinal data is not necessarily available for every year, sales growth is computed as the average reported sales in the years 2012 and 2013 as compared to the average reported sales in 2009 through 2011.

Table 2

Descriptive Statistics (full sample with observations from the years 2005-2013)

	Observations without debt (*n*=969)			**Observations with debt (*n*=1,202)**			**Full panel sample (*n*=2,171)**	
	Mean	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Std. Deviation**
Net sales (USD)	19,101	0	216,000	30,369	1,800	360,000	25,340	27,529
Net income (USD)	3,475	-5,736	71,808	7,197	-1,968	101,940	5,536	7,138
Unadjusted ROA (%)	186%	-21%	7200%	104%	13%	1103%	141%	318%
Adjusted ROA (%)	78%	-1371%	5280%	60%	-175%	618%	68%	199%
Winsorized ROA (%)	61%	-174%	2611%	61%	-163%	618%	61%	93%
Asset turnover	5.7	.2	182.6	3.2	.3	41.3	4.3	7.8
Profit margin (%)	16%	-114%	97%	22%	-109%	81%	19%	16%
Debt/assets (%)	0%	0%	0%	20%	0%	97%	11%	17%
Debt/equity (%)	0%	0%	0%	43%	0%	3297%	24%	97%
Total assets (USD)	9,092	68	61,700	15,848	330	269,800	12,833	14,289
Employees (#)	1.6	0	15.0	1.7	0	15.0	1.7	1.8
Urban (%)	90%	17%	100%	86%	20%	100%	88%	17%
Education level	1.6	0	3.0	1.6	0	3.0	1.6	.6
Age	42.5	19.0	67.0	43.3	22.0	66.0	43.0	10.7

Note: Adjusted and unadjusted ROE and ROA refer to adjustment for the opportunity cost of labour. The data relate to observations of 755 randomly selected firms during the time period 2005-2013.

Debted entrepreneur dummy. Some microentrepreneurs decide not to use debt, even when they have the chance to get debt, while others acquire new debt after repaying the previous loan. The debt variable is constructed such that entrepreneurs who have sought microcredit from Banko D-Miro is given the value "1", and entrepreneurs that do not have take on new debt are given the value of "0".

Leverage. In this study we will look at firms with debt and others without. In total we have one group with varying levels of leverage (1,202 observations) and one group with no debt, zero leverage, (969 observations) at the time of seeking a new loan with Banco D-Miro. We capture this relationship in the panel data through a dummy variable, *debt dummy*. In addition, we measure actual *leverage* as debt divided by total equity. Equity is used as

using assets may cause multicollinearity. The debt on the balance sheet was taken up prior to the measured income, thus providing a longitudinal performance dimension. In addition, as a robustness check, a binary measure of debt financing is included in the panel analysis.

Human Capital Investments. In this study we concentrate on two measures of investment, one being the level of education achieved, where we utilize a categorical measure with three levels, each being approximately 6 years apart (basic, upper secondary and post upper secondary, where equidistance is assumed. In addition, in line with many other studies we use the entrepreneur's age less years of schooling as an indication of experience.

Size. We use total assets, here winsorized at the 5 percent level (bottom cut-off only), as a measure of size. The measure is logarithmically transformed.

Number of Employees. This is the number of employees including the owner. However, since formal employment contracts are not used in the informal sector, and the concept of being employed is not easily understood, we have asked instead the respondents the following question: "how many individuals help out in your business apart from yourself"[6] We are using a slightly relaxed assumption on the number of employees as employees as a concept does not exist in the informal economy. Rather, these are to be seen as individuals helping out in the business, and by using a maximum of 15 such individuals, this is assumed to comply with the typical definition of at most 10 full time equivalents.

Control variables. We control for the entrepreneur's gender as many microfinance programs favour women over men, although in a study by Berrone et al. (2014) on microenterprises in Argentina (both formal and informal) they find no support that gender influences performance (measured as the entrepreneur´s perception of several business performance indicators). The same study found support for the fact that level of education had an impact on perceived performance, and also find evidence that rural entrepreneurs achieve

[6] In Spanish the original question was formulated as "¿Cuántas personas ayudan en su negocio actualmente aparte de usted?

higher perceived performance. We also control for degree of rural as opposed to urban location, and industry, using the definitions proposed by the United Nations for the informal sector (United Nations 2008, 279-281). Often, the informal sector is numerically dominated by manufacturing, repair services and trade. In the context of the informal sector of Ecuador, the sample is dominated by wholesale and retail trade (59 percent), of which the most common forms are clothing establishments, goods and grocery retail, bazars and cosmetics, followed by a number of smaller commercial businesses of varying kinds. Following wholesale and retail trade in terms of frequency are manufacturing (18 percent), restaurants (7 percent), other personal service activities (4 percent), agriculture, forestry and fishing (3 percent), transportation (3 percent), construction (2 percent), repair services (2 percent), education, human health and social work activities (1 percent). Furthermore, the urban or rural location of a microenterprise may also explain differences in performance (Honig, 1998; Masakure, Cranfield, & Henson, 2008). Therefore, we also control for this using the ratio of urban to rural persons living within the city area to which each microentrepreneur belongs, using data from the National Statistics and Census Institute of Ecuador (INEC, 2011).

Model

The following regression model measures the relationship between microenterprise performance and the various independent variables:

$$\text{Firm Performance}_{I,t} = b_0 + b_1 D_{I,t} + \beta_2 S_{I,t} + b_3 E_{I,t} + b_4 X_{I,t} + b_5 G_{I,t} + \beta_6 U_{I,2010} + \beta_8 I_{I,t} + ei_{I,t}$$

where

b_0 = constant

$D_{I,t}$ = debt financed (1 or 0) for firm I in year t in model 1, or leverage, measured as debt/equity for firm I in year t in model 2. Debt is taken up prior to the assessment, i.e. t-1.

S_{It} = log size of firm I in year t (total assets)

$E_{I,t}$ = level of education (0, 1, 2 or 3) of owner of firm I in year t

$X_{I,t}$ = age (continuous) of entrepreneur of firm I in year t

$G_{I,t}$ = gender (1 or 0) of owner of firm I in year t

$U_{I,2010}$ = degree of urban setting (versus rural) of location of entrepreneur of firm I in year 2010

$I_{I,t}$ = industry dummies (1 or 0) for firm I in year t

$ei_{I,t}$ = the error term

Analysis and results

Descriptive statistics

The panel data are from 2005-2013 and the cross-sectional data are from 2013. As shown in Table 3, the average annual revenue of the microenterprises over the time period is USD 25,340, and the average revenue in 2013 is USD 27,587. These types of detailed financial statistics have generally not been available in previous research (Copestake et al., 2001; Honig, 1998).

ROA is skewed to the right within our sample of enterprises, as none of the entrepreneurs in our sample would have been able to obtain, or offered, a loan unless they had been able to show a positive number. These high unadjusted performance figures, with an average ROA of 141% are higher than the ones observed in previous research on microenterprises in emerging countries (De Mel et al., 2008; McKenzie & Woodruff, 2008). However, when we adjust the firms' financial returns for the opportunity cost of labour (Scott Shane & Venkataraman, 2000), we find that the adjusted average ROA drops to 68 percent. We trimmed the tails slightly through winsorization, thus deleting extreme observations to avoid stretching the regressions. The median ROA remain unchained, but the average winsorized and adjusted ROA is 61 percent. These measures are similar to those calculated using the data from 2013 only, for which the average winsorized ROA is 60 percent. As discussed earlier, this is the financial return that the entrepreneur needs to weigh against the cost of financing, or hurdle rate. The minimum observed ROA of -1,371 percent indicates that some microentrepreneurs would not benefit from taking out a loan with an interest rate of 26 percent, the average rate offered by D-Miro at the time. In fact, roughly one third of the sample enterprises earned an ROA below 26 percent, once the figures have been adjusted for the opportunity cost of labour (see Table 2).

In terms of background statistics, our sample includes 12 percent rural microentrepreneurs, while 35 percent have completed primary school, 59 percent have completed secondary school or have gained some sort of secondary school degree, and only 4 percent have attained a higher degree beyond secondary education. In a similar study, Magill and Meyer (2005) find that, among urban Ecuadorian entrepreneurs, 46

percent have completed primary school, 41 percent received at least some secondary education, and 12 percent an education beyond secondary level. They note that these education levels are higher than for the general population. Our sample is therefore a representation of the informal economy in Ecuador, where few people have higher degrees beyond secondary education. Honig (1998) finds that education has a positive impact on the financial success of businesses, especially university education, but since such persons rarely are part of the informal economy, we believe our sample is less stretched than Honig (1998). He also finds that those with only primary education perform better than those with secondary education.

Table 3

Correlation Matrix – cross-sectional

		1	2	3	4	5	6	7	8	9	10
1	Debt dummy										
2	Leverage	.169**									
3	ROA	.117**	.150**								
4	Profits	.294**	.157**	.401**							
5	Sales growth	-.059	.024	.202**	.078**						
6	Ln size	.242**	.035	-.314**	.573**	-.026					
7	Employees	.019	.018	.041	.179**	.011	.140**				
8	Education level	-.004	.051	-.019	.001	-.044	.038	.017			
9	Age	.038	-.010	-.156**	.058	-.127*	.299**	.021	-.109**		
10	Gender	-.058	.037	.036	.116**	-.072	.081*	.175**	.057	.003	
11	Urban vs rural	-.094**	-.019	-.136**	-.062	-.260**	.071	.008	.032	.031	-.057

Note: Data as of early 2013

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 4 The financial performance of microenterprises in 2013: OLS regression analysis

Variables	ROA	Profits	Sales growth
H1: Debted dummy	.090*	.041	.194**
	(2.589)	(1.506)	(3.413)
H2: Leverage	.225***	.210***	-.025
	(4.453)	(5.259)	(0.000)
H4: Economies of scale			
Ln size	-.330***	.568***	.065
	-(8.969)	(19.578)	(0.000)
(Ln size)^2	.154***	.327***	-.137*
	(4.420)	(11.912)	-(2.120)
# of employees	.100*	.080	.042
	(2.003)	(2.036)	(0.500)
# of employees^2	-.063	-.038	-.060
	-(1.291)	-(0.973)	-(0.718)
H3: Human Capital Investments			
Education	-.010	-.030	-.026
	-(0.291)	-(1.113)	(0.266)
Entrepreneur age	-.012	-.061*	-.181**
	-(0.333)	-(2.106)	(0.036)
Entrepreneur aage^2	-.074*	-.081**	.102
	-(2.117)	-(2.960)	(0.003)
H5a: Nr of employees x leverage	-.087	-.101*	-.036
	-(1.711)	-(2.533)	(0.012)
H5b: Nr of employees x education	-.026	-.014	-.041
	-(0.751)	-(0.532)	(0.595)
Controls			
Gender	.052	.044	-.046
	(1.433)	(1.539)	(0.124)
Urban vs rural	-0.092**	-0.075**	-0.256***
	-(2.713)	-(2.774)	(0.006)
N	755	755	298
r^2	.194	.498	.158
Adjusted r2	.169	.483	.140
Δr^2 (H1-H4)	.154***	.454***	.078***
Δr^2 (H5)	.004	.005*	.002

Notes. The estimation method is ordinary least squares. Betas are standardized. Industry dummies are included, but not reported. t-values are given within parentheses. Data as of early 2013. Δr^2 is over and above the control variables.

* Significant at the 5% level; ** significant at the 1% level; *** significant at the .1% level

In a previous baseline study, Magill & Meyer (2005) found that for urban Ecuadorian enterprises, 46% had finished primary school, 41% had some or had completed a secondary education with 12% having an education beyond the secondary education. They note that these levels are higher than for the general population. Our sample include rural microentrepreneurs and finds that 35% have completed primary school, 59% had finished or had some sort of secondary school degree, with only 4% attaining a higher degree beyond secondary education.

Regression results

In Table 4, we show the cross-sectional results using data available at the end of 2013. We are also performing a panel analysis on the same data set, with the exception of time invariant variables (e.g. education, gender, etc.).

The regression in Table 4 indicates that, when controlling for gender, urban/rural, and industry, there is a significant positive association between those who decide to take a loan and subsequent performance (ROA and Sales growth). This provides support to hypothesis 1 – i.e. that entrepreneurs taking on a loan have better microenterprise performance than those who not. However, the same support is not provided with respect to the panel data regressions.

Regarding hypothesis 2, the cross-sectional analysis shows a positive association between ROA and Profits. The panel analysis in Table 5 supports only the positive association with profits, thus partly confirming hypothesis in terms of increased income generation, but that it has no effect on ROA or growth. In other words, the increased debt does not enhance the operating efficiency, ROA, or have any positive effect on growth, but it does add extra income. In terms of hypothesis 3, the cross-sectional analysis indicates that there is negative relationship between age, as a measure of experience, and profit generation. When we applied an alternative quartic term for age, in line with suggestions by Lemieux (2006), it provided less explanatory power than using age^2. Our results do not show the hypothesized positive and curvilinear (concave) relationship between age and income in the informal economy, but in fact an even accelerating declining relationship. This suggests that the younger and less experienced entrepreneurs in the informal economy of Ecuador today earn higher income than the older entrepreneurs in our sample.

Table 5

Panel data (2005-2013) regression with microenterprise fixed effects

Variables	ROA	Profits	Sales growth	ROA	Profits	Sales growth
H2: Debt dummy	.022	.066***	-.107			
	(1.016)	(3.196)	-(1.879)			
H2: Leverage				.018	.054***	-.022
				(1.027)	(3.255)	-(0.587)
H3: Ln size	-3.944***	-1.887***	0.14	-3.941***	-1.879***	.123
	-(11.221)	-(5.714)	0.179)	-(11.215)	-(5.691)	(0.156)
H3: (Ln size)^2	3.114***	2.075***	-0.027	3.115***	2.079***	-.027
	(8.602)	(6.099)	-(0.034)	(8.605)	(6.110)	-(0.034)
Fixed effects controls						
Entrepreneur id	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Years	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
N	2171	2171	1168	2171	2171	1168
r^2	.718	.750	.374	.718	.751	.371
Adjusted r^2	.568	.619	-.027	.568	.619	-.032

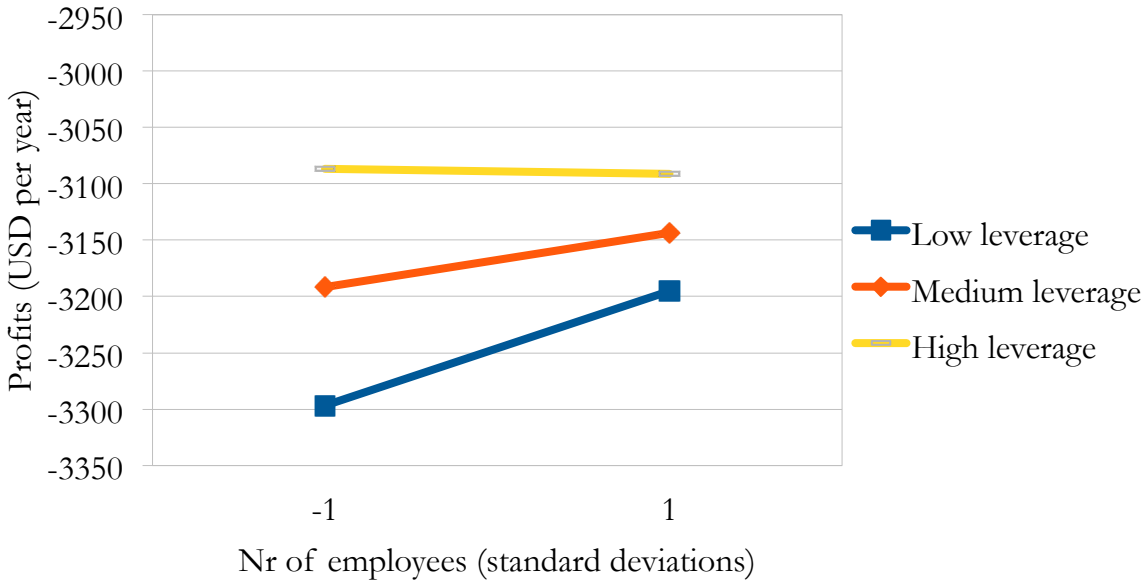
Notes. Entrepreneur ID used as fixed-effects. Betas are standardized. H2 and debt dummy indicates whether or not an entrepreneur has debt or not, and is different from H1 where we are looking at entrepreneurs who specifically did not refinance.

t-values are given within parentheses.

* Significant at the 5% level; ** significant at the 1% level; *** significant at the .1% level

To test our fourth hypothesis we apply both cross-sectional and panel data tests. We find that the results of both tests support this economies of scale based hypothesis: that the relationship between firm size and microenterprise performance follows a positive and concave curvilinear trend for ROA and profit generation. However, we did not find a significant association between microenterprise size and growth. Lastly, our fifth hypothesis is partly supported in that the relationship between leverage and performance is positively moderated with an increasing number of employees, see Figure 2.

Figure 2 Number of employees compared with profits in 2012



Discussion

Our findings indicate that microentrepreneurs in the informal economy, who take on a loan, have a higher income, than firms who do not take on a loan. We argue that the microentrepreneurs' risk aversion imply that they *a priori* require a high expected return in order to take on new debt, and this helps to explain the *ex post* higher financial return for such debt. Given the weak legal protection available to microentrepreneurs in the case of default, the risk of "bankruptcy" (legally not possible since the business isn't legal in the first place) may deter the entrepreneur from seeking financing (in line with Myers (1977). Our findings lend support to the applicability of prospect theory (Kahneman & Tversky, 1979) to the issue of financing in the informal economy. While the returns are potentially huge in the informal economy, the consequence of defaulting on a loan is also considerable.

Furthermore, the resource-based theory suggests that firms who use unique and non-imitable resources to create a sustainable advantage will create above average returns. When lacking such resources themselves, entrepreneurs can turn to borrowing to purchase such resources. On the basis of this argument, the findings indicate however that taking on microcredit, as a way to access resources, does not enhance firm performance, when measured as ROA. This is not surprising given the weak competitive advantages of most microenterprises, as entrepreneurs engage in generic or similar business concepts, such as a restaurant, retailing, or construction business etc. As our sample indicates, 59% of our sample were engaged in wholesale and retail trade, which is quite representative for

the informal economy world wide. However, we do see that entrepreneurs taking on more debt have more income, which at the end of the day can be used for consumption or reinvestments. Thus, while using microcredit does not enhance the relative returns of the business (ROA) more income is created, thus helping the poor entrepreneur and his/her family. This positive relationship between the use of debt financing and performance is important, as previous research has unsuccessfully sought to relate microfinance to improved income generation or poverty alleviation (Khandker, 2005).

Furthermore, we see no effect from debt financing on microenterprise growth. This might explain why anecdotal evidence suggests that microfinance has not transformed a lot of micro-enterprises into larger income generating firms. Indeed, microfinance is often met by skepticism among microentrepreneurs, as stated in a study by Magill and Meyer (2005): "Credit is not seen as a positive tool to grow a business, but rather as a cost or penalty to be avoided at almost any cost" (p. 118). They therefore recommend that donor organizations and MFIs exercise caution when "focusing on credit as a solution to the problems facing microentrepreneurs". Our results indicate that it is not a panacea, but it provides more income, which is still an accomplishment. In addition, our results support the previous view put forth by Armendáriz and Morduch (2010) that most microenterprises face diminishing economies of scale. However, at some point economies of scale actually matter, wherefore returns and profits turn positive just like Adam Smith once suggested with his example of the simple pin-business.

In this study we apply education and age as proxies for human capital investments. Previous research suggests a positive return to human capital investments (Unger et al. 2011), even in the informal economy (Berrone et al., 2014). However, Honig (1998) discovered a reversed relationship were entrepreneurs with less education performed better, suggesting that the value of experience outweigh the added value from incremental education. Our results question previous findings in this context. First of all we can attribute no positive effect from education on microenterprise performance. This might be explained by the lack of entrepreneurs with higher education, as most microentrepreneurs in the informal economy of Ecuador do not attend more than six years of schooling (Magill & Meyer, 2005). However, our sample is slightly biased towards individuals with a few more years of schooling, therefore even more showing the poor impact of education on performance. From the sample, we can observe that 34% of the microentrepreneurs have completed 6 years of primary school, with an additional 60% finishing secondary school (an additional 6 years).

In addition, contrary to (Thapa, 2015) our results indicate some impact from micro entrepreneurs' experience on performance. We find that older entrepreneurs are

associated with lower profits and experience lower growth. While this may be a cohort effect, it could be seen as an indicator of the *lack* of value added experience among microentrepreneurs' in the informal economy. It may also be a result of lower risk taking among the slightly older generation, as compared to the younger ones. In fact, in this study we observe that younger more inexperienced entrepreneurs earned a higher profit than older and more experienced ones. Alternatively, this could possibly also be a result of a higher willingness to take risk among the younger microentrepreneurs, compared to the older generation.

Past research (Honig, 1998) suggests that microenterprise heterogeneity, such as in terms of number of employees or industry, could affect the relationship between our independent variables and enterprise performance. We also observe this to hold true in terms of industry, where the findings are not universal for all industries, such as manufacturing, but the individual industries are too narrow in our sample to make definitive conclusions. Future research could look into why some industries in the informal economy are more easily affected by micro finance whereas others are not. It may be that certain industries, such as retailing and restaurants, simply are more competitive, where extra resources do not enhance performance.

However, our data suggests that with an increasing number of employees and leverage comes for low and medium leveraged firms an increased profit, but for highly leveraged firms the relationship turns slightly negative. This suggests that the heterogeneity that past research found is more a matter of economies of scale rather than heterogeneity.

Among the control variables, rural-based microenterprises have higher performance than others, in line with Berrone et al. (2014). The impact of the gender of the microentrepreneur is not conclusive, but our robustness testing show that it may matter when considering the dominating wholesale and retail trade sector. Future studies on the informal economy may want to address difference between urban and rural locations. Lastly, the informal sector is typically dominated by a few industries, and we do find that debt financing has somewhat different impacts, although directionally the same, in the two largest industries of the sample, wholesale retail stores and manufacturing businesses.

Conclusion

In this study we find that microenterprises that take on micro debt are more profitable and have higher sales growth than businesses which do not take on debt. We argue that this is a self selection mechanism because of the high risk and importantly the

consequences of bankruptcy to the individual. However, among those who use microdebt, we see that it generates a higher profit figure, but we do not observe an improved operating performance (ROA) or growth. When viewing these findings through the lens of the resource-based theory, this suggests that the resources obtained and used by the microentrepreneurs are not providing a sustainable competitive advantage such that higher returns are achieved, or growth. In addition, the resource of microcredit does not transform the businesses into larger profit making businesses, and it does not help create a more profitable business. We further observe a curvilinear relationship (negative which turns positive) between microenterprise size and their performance, illustrating the limited growth trajectory of a microenterprise in an informal economy. With reference to the resource-based theory our interpretation is that firm size is not improving performance because the resources are not unique or new, in fact odds are high that most other microentrepreneurs in the neighborhood are making the same resource changes, hence adding more demand for their common inputs (raw material, or local retail products) and putting downward pressure on the selling prices. In addition, our results show no impact from human capital investments, such as education or experience. If anything, experience appears to be linked to a stagnating business, possibly as a result of a lower appetite to risk. Lastly, we are seeing a positively moderating effect of the number of employees on leverage linked to performance from low and medium leveraged firms, providing support of the idea that economies of scale, when viewed as humans, positively moderate the relationship.

The study is not without limitations. Measuring financial performance in the informal economy is challenging, as we must analyze unaudited financial figures that are subjectively reported by the credit officer from the microbank. We tried to improve the applied performance measures (ROA) by adjusting our estimate for the opportunity cost of labour, but we were limited in that we used a national average labour cost figure for all enterprises. In terms of the robustness of our tests and the various measures of performance, our regressions show that our main results do not change regardless of whether or not we include the opportunity cost of the labour of the entrepreneur. Furthermore, in the one-year cross-sectional test we tried to control for other potentially confounding variables such as gender, location, or industry (Tables 4), whereas with the panel data we were able to control for firm-specific unobserved effects (Table 5).

Performance and debt is inevitably linked, but the direction of causality could go both ways. In this paper we emphasize the selection-effect whereby it is the expected high financial returns that make microentreprenurs accept debt. We acknowledge that we have not eliminated all possibly endogeneity possibilities in relation to this issue. Our study

looks at microenterprises that have access to debt (so we eliminate the adverse selection of possible borrowers), and that either decided to take a loan, or did not continue to take more loans. In our fixed-effect panel regression we do however take care of this bias, as we control for firm-specific historical effects (such as past profitability).

In this study we focus on one country (Ecuador) and the clients of one microfinance provider (D-Miro), and this significantly limits our ability to generalize from our results. Specifically, there might be institutional and cultural variables that make generalizing beyond Ecuador difficult. The fact that D-Miro is pursuing social goals, even though this is the norm in the industry, might impact the self-selection of microentrepreneurs that seek financing from this particular microfinance institution.

In terms of policy recommendations for practitioners, this study highlights that, while debt has a positive impact on the bottom line, it has no significant effect on the operating efficiency or the growth of the microenterprise. This indicates that the theory of capital constraint is not fully applicable to the informal economy. Microfinance institutions and donor organizations need therefore to apply caution when extending credit to microentrepreneurs and be aware of the limited performance impact, and also the diminishing economies of scale. Particular attention must be paid to the competitive landscape and prioritize financing resources that helps the microenterprise to creating something new – the essence of entrepreneurship. Financing more of the same type of businesses may generate more income, but it not aiding the entrepreneur in incrementally lifting the business to improved performance. As a result of these findings, future research should look more at how small and medium size businesses (that is larger than microenterprises) in the informal economy are affected by resource availability and access to financing. These firms might be able to attract resources that achieve economies of scale, similar to the economies of scale of formal enterprises, such that they benefit *more* from access to loans, and thus be a more suitable target for economic development.

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Faces of Informality
A shoemaker in Guayaquil, Ecuador

7.2. Research essay 2: The Impact of Entrepreneur Characteristics on the Financing of Micro-firms in the Informal Economy

The Impact of Entrepreneur Characteristics on the Financing of Micro-firms in the Informal Economy

PONTUS ENGSTRÖM

Abstract:

This study seeks to explain the strategic financing decisions of micro-firms in the informal economy. We extend pecking-order and tradeoff theory with new insights from human capital theory, specifically focusing on financial literacy. Based on data from 500 micro-entrepreneurs in Ecuador's informal sector, this study reveals that entrepreneur characteristics and firm characteristics are important drivers of entrepreneurs' strategic financing decisions. In particular, the study shows that micro-entrepreneurs with stronger financial literacy skills are more likely to seek debt financing, thus illustrating the importance of human capital development.

Keywords: microfinance, capital structure, micro-firms, informal economy, financial literacy

INTRODUCTION

Financing growth is a key strategic challenge for micro-entrepreneurs worldwide, even more so in developing economies, where smaller firms are significantly financially constrained (Beck, Demirgüç-Kunt, & Maksimovic, 2008). Microfinance providers commonly provide microcredit to poor micro-firms, as access to capital can reduce poverty among their clients (Morduch, 1999a). Indeed, the demand for microcredit, which often extends into the informal economies[7] of developing countries, is soaring with annual growth rates between 15 and 20 percent (Etzensperger, 2015).

Past research has extensively studied entrepreneurial financing in the developed world (e.g., Cassar, 2004; Gartner et al., 2012), but few studies have examined the role of micro-firms, which are the engine of the informal economy.[8] In fact, limited research has investigated what drives microenterprises' demand for financial services in developing countries. Moreover, research has typically shown that firm characteristics outweigh entrepreneur characteristics in financing decisions (Cassar, 2004). A recent literature review reveals the lack of theoretical underpinnings in most studies on entrepreneurs' behaviors in the informal economy (Webb, Bruton, et al., 2013), particularly regarding their financing choices. While several factors may explain this gap, it likely stems at least partially from this topic's challenging research environment, where reliable data are difficult to obtain and personal safety is a major concern. Thus, we see a major research gap that needs to be filled with both new theory and appropriate data. We see this study as an answer to recent calls for research on the funding of micro-entrepreneurs in the informal economy (Berrone et al., 2014; Moss ., 2014; Webb et al., 2013).

This study investigates two interrelated research questions: (1) What are the determinants of the decision to seek external debt financing (or not)? (2) What are the determinants of the capital structure—also commonly referred to as leverage (debt-to-

[7] By the informal economy, we mean businesses activities that are similar to those of formal businesses, though "occurring outside of formal institutional boundaries" (Webb, Bruton, et al., 2013), i.e., not complying fully with all legal, regulatory, and tax requirements (Perry et al., 2007; Portes et al., 1989). Activities that would otherwise be considered illegal, such as the production or distribution of illicit drugs, are not included in this definition.

[8] For example, 35 percent of GDP in Latin America and the Caribbean and 13 percent of GDP in high-income OECD countries (Buehn & Schneider, 2012) are estimated to come from the informal economy, and jobs created in the informal economy affect 50–80 percent of the working population in south and southeast Asia, sub-Saharan Africa, and Latin America (Charmes, 2012).

equity ratio)? In particular, we explore the role of entrepreneur characteristics in the informal economy context and the ways in which the roles of the entrepreneur and the micro-firm are intertwined. Apart from testing the classic pecking-order theories, i.e., an emerging capital structure based on available financing, and static tradeoff theories, i.e., a capital structure based on a cost-benefit analysis (Myers & Majluf, 1984), in a new context, we extend the analysis to consider several other entrepreneur characteristics that are important in the informal economy. For instance, in a population in which only 50% of each cohort finishes secondary schooling, other measures of human capital skills, such as the vital concept of *financial literacy*, should be considered.

In this study, we argue that the factors driving entrepreneurs' financing choices are fundamentally different in the informal economy and in the formal economy. In particular, we suggest that entrepreneur characteristics—such as age, financial literacy skills and marital status—have an impact on entrepreneurs' strategic choices, but even firm characteristics will vary. The consequences of firm failure will have a more severe impact on informal economy entrepreneurs than on formal economy entrepreneurs because of the lack of protection in the case of default in the informal economy, which partially explains the difference between formal firms and informal firms. In fact, bankruptcy is not a legal option in the informal economy because the firm does not exist in a legal sense. As such, if a micro-firm fails, the founding entrepreneur can face severe economic hardship without a legal avenue to relieve this hardship, whereas laws govern business bankruptcies and individual civil bankruptcies in a formal economy. In this regard, behavioral economics challenge the idea that people make purely rational and deliberate decisions (J. S. B. T. Evans, 2008; Kahneman, 2003) and suggest that individuals focus and act more on the fear of possible losses than the certainty of gains (Kahneman & Tversky, 1979). We expect this effect to be even stronger among entrepreneurs in the informal sector.

Studying the informal economy and its entrepreneurs is challenging. While a large portion of the world's population is involved in informal business activity, individual operations are typically small and thus fall outside of regulatory interest and/or capacity. Bookkeeping does not exist, and proper credit analysis is often impossible because few national credit bureaus allow microfinance institutions to verify the total debt situation with the micro-entrepreneur. In addition, microfinance institutions often lack experienced personnel and may rely on external aid organizations to set up policies and practices, which are then not followed. In addition, the research context of the informal economy is often associated with high crime rates. Obtaining detailed and reliable data on

the informal economy is thus difficult, as entrepreneurs in this context seldom maintain financial records and commonly mix family and business transactions.

Many of the aforementioned research challenges have been overcome with our unique research design. First, we have been cooperating with the leading Ecuadorian microbank, Banco D-Miro, which has vast experience in microfinance and has transformed itself from an unregulated entity into a regulated one, thereby significantly enhancing its governance structure and internal policies. Second, Ecuador represents a context with many informal entrepreneurs, especially along the coastal areas, where informal business is widespread and growing (Albornoz et al., 2011) and involves more than 80 percent of the population (World Bank, 2012). Third, this study combines data from detailed credit assessments of individuals with data obtained from a national credit bureau (a particularly unique feature of Ecuador), thus providing a full picture of a micro-entrepreneur's overall debt-financing situation. While no meaningful separation exists between short-term and long-term debt, most debt was taken up for one year. Fourth, through an extensive telephone survey that successfully reached 500 entrepreneurs, we were able to receive behavioral data from the entrepreneurs. We also made complementary interviews in various districts to complement and support our research design.[9]

In this study, we separate financing from internal or personal sources from external debt financing in line with the empirical approach of Cassar (2004) and Gartner et al. (2012). The cooperating microfinance bank recently approved and offered debt financing—or additional financing to repeat clients—to all the entrepreneurs included in this study, which implies that we are specifically excluding those who were not deemed credit worthy and cases in which financing decisions would never take place. Given that these firms operate in the informal economy with generally limited financing options, no added complexity related to quasi-equity financing exists (Cassar, 2004).

This paper is organized as follows. The next section reviews relevant theories of financing and capital structure decisions, and the subsequent section develops various

[9] To safeguard interviewers' personal safety, the research team used dedicated drivers, who agreed to take the team to the informal and often more dangerous zones of Guayaquil, which illustrates the challenges associated with obtaining good data in the informal economy. Even with these safeguards, our research team was stopped and robbed once by several armed men.

hypotheses. Section 4 discusses the method used in the empirical tests, the data, and the constructs used. A discussion of the results of the empirical analysis and their implications follows in Section 5. The concluding section reviews the limitations of this study and discusses ideas for future research.

LITERATURE REVIEW

Theories of entrepreneurial financing

Two theories in the general finance literature explain why a particular type of financing (internal or external) may be preferred to another: *pecking-order theory* and *tradeoff theory* (Frank and Goyal, 2008; Myers, 1984; Myers and Majluf, 1984). Pecking-order theory suggests that capital structure emerges as a result of the various financing options available to a firm. In the informal economy, limited financing options are available, creating high barriers to entrepreneurship (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2008). Thus, many small informal businesses ultimately have a limited amount of debt—or even no debt—on their "balance sheets" (they rarely compile actual financial statements).

In the case of informal firms, greater information asymmetries exist between the firm (represented by the entrepreneur) and the potential debt providers, such that the risk to an external financier is higher than of an insider (i.e., the entrepreneur), who has more information about the business. For example, credit officers (from the microbank in our case) have to spend considerable time and effort to ensure that an asset is actually owned by the micro-entrepreneur. The lack of audited financial statements, even basic accounting numbers, is another source of this information asymmetry. This asymmetry leads to a type of market failure, or mispricing, which is characterized by the cost of capital being set too high, thus resulting in the entrepreneur's preference for inside financing (inside equity) over external financing (debt or equity).

Based on pecking-order theory, equity is assumed to be the least-preferred option, only to be used as a last resort. In the informal economy, outside equity is rarely available, although some microfinance providers have begun offering this form of financing in addition to debt financing (Oikocredit, 2015). Much of the inside equity comes in the form of family investments, which are considered an internal form of financing here. As few external financing options are available, the tradeoff is simply between external and internal financing. Internal financing is often achieved through the entrepreneur's savings or interest-free loans from family and friends.

Tradeoff theory suggests that the firm weighs the costs and benefits of alternative forms of financing (Titman & Wessels, 1988), "holding the firm's assets and investment plans constant" (Myers 1984: 577). Within the informal economy, taxation is not typically a consideration; therefore, in a strict interpretation of existing research, tradeoff theory in the informal economy suggests that external debt financing carries no tax incentive, apart from the cost of interest, which is often considerable in the informal context (here typically approximately 30% per annum in nominal terms), leaving debt as a potential contributor to business failure. Tradeoff theory assumes that other forms of financing are available, such as equity, which is typically not the case in the informal sector. Therefore, we argue that applying tradeoff theory must also include weighing the expected net present value of new competencies, networks, and investment opportunities against the costs of, for instance, less entrepreneurial control or even the risk of personal economic failure (because bankruptcy is not a legal option in the informal economy).

Human capital and the psychology of financing

When an entrepreneur makes a decision to take on debt financing, we argue that he or she must have a certain skill set and psychological aptitude. Based on *human capital theory* (Becker, 1994), we argue that a positive relationship exists between a micro-entrepreneur's human capital and the decision to finance. In micro-firms in the informal economy, the individual entrepreneur – that is, the owner – is generally the one who possesses the primary human capital, whereas human capital is a collective resource that comes from many specialists in larger firms. As such, linking the concept of financial literacy to firm performance is easier in a microenterprise than in a larger company, where many individuals' competences and skills contribute to firm performance. An entrepreneur's human capital is essentially his or her aggregate skill set, which originates from education, training, and experience. Extant research has shown that entrepreneurs with higher levels of education are more likely to be successful (Unger et al., 2011). Entrepreneurs who lack sufficient education or business experience may find basic numerical calculations challenging, and they often fail to fully understand basic financial concepts, such as inflation, compound interest, and risk. In developing countries, the education level is even lower because children are commonly pushed into the labor force at an early age (International Labor Affairs Bureau, 2012). This lack of education, particularly business education, makes these micro-entrepreneurs vulnerable to simplified "rules of thumbs" and basic heuristics. For example, Magill and Meyer (2005) claim that, among informal economy entrepreneurs in Ecuador, debt "is not seen as a positive tool

to grow a business, but rather as a cost or penalty to be avoided at almost any cost" (p. 118).

Prospect theory suggests that individuals put more weight on certain outcomes than they do on uncertain outcomes (Kahneman & Tversky, 1979) and that they assign more weight to extreme outcomes, including both positive outcomes (e.g., winning the lottery) and negative outcomes (e.g., going bankrupt). For instance, imagine an opportunity yielding a certain income of 100 dollars compared with an opportunity yielding a probable income of 110 dollars. Although the mathematical expectation in the latter case is to receive 110 dollars, many would prefer to take the certain 100 dollars. For a firm in the informal economy, the risk of not receiving the expected income can lead to failure, with grave – sometimes even mortal – consequences (Bateman, 2010). Because informal micro-firms are not bound by bankruptcy laws, fear of the consequences of bankruptcy can lead them to never even attempt many potentially high-returning projects (S.-H. Lee, Yamakawa, Peng, & Barney, 2011). Because no laws govern situations that would lead to bankruptcy in the informal sector, the micro-entrepreneur is less protected than he would be in the formal sector. Thus, we expect informal industry entrepreneurs to require a higher expected financial return than formal industry entrepreneurs to take on risky investment decisions supported by debt.

Entrepreneurs' characteristics and financing choices

Human capital

Because practically all small firms in the informal economy are owner-managed, individual owner characteristics matter – not only from a signaling perspective but also from a business perspective. Previous research has been rather inconclusive about the relationship between individual characteristics and financing choices, possibly because more individuals collectively affect the decision making in larger firms or because the measures used have been too broad. For instance, once firm characteristics are considered, Cassar (2004) finds no link between nascent Australian entrepreneurs' education and industry experience and their financing decisions. However, in line with Coleman and Cohn (2000), Gartner et al. (2012) find that a higher level of education and industry experience are significantly correlated with the use of external funding sources. However, apart from education, Coleman and Cohn (2000), like Cassar (2004), find firm characteristics to be more important than entrepreneur characteristics.

We argue that, while firm characteristics are expected to be important, the importance of the entrepreneur characteristics cannot be ignored in the informal economy, where we believe the owner's human capital matters. However, in the informal

economy, many entrepreneurs do not complete basic schooling and venture into employment or entrepreneurship either out of necessity (Reynolds, Bygrave, Autio, Cox, & Hay, 2002) or because of a poor education system in need of reform (Van Damme, Aguerrondo, Burgos, & Campos, 2013). For example, in Ecuador, more than 50 percent of urban entrepreneurs have not finished primary school (Magill & Meyer, 2005). As such, a human capital investment in the informal economy may be manifested through not only years of schooling but also experience. Our first hypothesis is as follows:

H_1 In the informal economy, an entrepreneur's human capital investment is positively related to debt financing.

A recent meta-analysis concludes that specific skills and knowledge are more strongly related to an entrepreneur's success than are human capital investments, such as education and work experience (Unger et al., 2011). For instance, when taking out a loan, an important skill is the ability to comprehend concepts such as compound interest, inflation, and risk – i.e., financial literacy (Lusardi & Mitchell, 2014). A lack of financial literacy is not only a problem in developing countries; previous research has shown that, even in the United States, less-educated and poorer individuals are less likely to benefit from refinancing their mortgages, even when interest rates are falling (Campbell, 2006). Financial literacy can thus be expected to be an important aspect in a micro-entrepreneur's debt-financing decision, which leads us to our next hypothesis:

H_2 In the informal economy, a high level of financial literacy is positively related to debt financing.

Previous research suggests that married couples will be more likely to take on more debt because they potentially have two income streams (Scherr, Sugrue, & Ward, 1993). Others argue that married men are more likely to take risks (Rees & Shah, 1986). However, married couples do not necessarily have access to two income streams. Married couples may sometimes have two incomes, but income streams are more unpredictable in the informal economy, given the lack of formality and stringent employment contracts. Therefore, because marriage involves more responsibility, prospect theory leads us to expect a negative relationship with debt financing in the informal economy, given the couple's fear of failure. As such, we present our third hypothesis below:

H_3 In the informal economy, marriage is negatively related to debt financing.

Research on entrepreneur gender has shown conflicting impacts on capital structure. Gartner et al. (2012) find no significant effect of gender on the choice between internal and external funding and, in turn, on capital structure, but Carter and Peter (1998) report a significant effect, finding that men use larger amounts of capital in starting businesses. A Dutch study revealed that female entrepreneurs use less financial capital than their male counterparts, but they use more debt in the composition of the financial capital (Verheul & Thurik, 2001). The Dutch study suggested that female entrepreneurs more likely to work part-time, more likely work in the service sector, more averse to risk, and less experienced in financial management; in addition, they network less and start smaller businesses. The informal economy and the practice of extending microcredit differ in this regard. Microfinance practitioners often prefer extending loans to women, not only because of their social mission to strengthen the status of women but also because of their belief that women have better financial management skills than men. As Percy Barnevik, the founder of Hand-in-Hand, once said, "men cannot be trusted not to drink or gamble the money away" (Brindle, 2008: 2). This preference points to potential differences in how men and females finance their businesses.

H_4 In the informal economy, gender is positively related to debt financing.

Firm characteristics and financing choices

Firm size

Previous research has shown that firm size is an important factor in determining capital structure (Cassar, 2004; Degryse, de Goeij, & Kappert, 2012; Gartner et al., 2012; López-Gracia & Sogorb-Mira, 2008; Michaelas, Chittenden, & Poutziouris, 1999). In particular, tradeoff theory predicts that larger firm size results in more diversification and less volatility in earnings (Fama & French, 2002), making larger firms more attractive to lenders. In addition, larger firms can expect lower information asymmetries vis-à-vis lending institutions. Larger micro-firms are more likely to repay loans and to take on a larger amount of debt, thus lowering the banks' transaction costs. By contrast, pecking-order theory predicts that larger firms may accumulate more internal resources and thus use less debt. Given that informal firms operate in a resource-constrained environment, tradeoff theory is likely more applicable here. Thus, we put forth the following hypothesis:

H_5 In the informal economy, firm size is positively related to debt financing.

Asset structure

Previous research has suggested that firms with more tangible assets use more external financing methods as well as debt (Cassar, 2004; Degryse et al., 2012), as banks are expected positively view increased use of collateral. Tradeoff theory predicts that firms with more collateral will have fewer agency problems in relation to formal debt providers (i.e., banks), as collateral will lower the credit risk in the case of failure/bankruptcy. In a similar way, pecking-order theory suggests that the asymmetric information problem is mitigated when firms have more collateral (Degryse et al., 2012), which external lenders regard as a positive. Therefore, we hypothesize the following:

H_6 In the informal economy, asset structure, i.e., one with relatively more fixed assets, is positively related to debt financing.

The intention to grow

Entrepreneurs may wish to tap into the credit market to expand their businesses and exploit entrepreneurial opportunities (Webb, Bruton, et al., 2013). However, tradeoff theory suggests a negative relationship between growth and leverage because, while opportunities with a positive net present value may exist, the value of these new opportunities may primarily go to the debt holder. To avoid such conflicts, the entrepreneur might not use external debt financing. Pecking-order theory predicts a positive relationship between growth opportunities and entrepreneurs likelihood of seeking external debt financing. However, previous research has shown contradictory or inconclusive results regarding the relationship between the entrepreneur's growth intent and his or her decision to seek external debt financing (Cassar, 2004; López-Gracia & Sogorb-Mira, 2008; Michaelas et al., 1999). In a review of the informal economy in Ecuador, Magill and Meyer (2005) find that most entrepreneurs remain unconvinced that debt can help grow their businesses. In their sample, some of the reluctance to take on debt was based on the cost of borrowing and fears about not being able to pay back the loans. To put this relationship to the test, we hypothesize the following:

H_7 In the informal economy, the entrepreneur's intention to grow is positively related to debt financing.

Firm profitability

On the one hand, pecking-order theory predicts that the better the firm's financial performance, the less it needs external debt financing, as it can rely on retained earnings to a greater extent (Degryse et al., 2012; Fama & French, 2002; Titman & Wessels, 1988).

On the other hand, tradeoff theory predicts a positive relationship between debt and profitability – typically because of an increased tax-deductibility benefit. Previous research on tradeoff theory has suggested that, among larger firms, the relationship between profitability and leverage is positive (Fama & French, 2002), whereas it is negative among smaller firms (López-Gracia & Sogorb-Mira, 2008; Michaelas et al., 1999; Van der Wijst & Thurik, 1993). There are also contradictory studies relating to larger firms, such as that of Rajan and Zingales (1995), who also note differences across countries. There may also be a bias in the extension of loans to more profitable customers if the MFI is working for profit ((Shahriar, Schwarz, & Newman, 2015).

The general management literature has highlighted how having access to cash provides the firm with a resource cushion or organizational slack (Bourgeois, 1981; Cyert & March, 1963; Sharfman, Wolf, Chase, & Tansik, 1988). This cushion allows for experimentation, thereby lead the firm to undertake better projects than it would have if it had not had access to external financing.

Therefore, previous studies point to a potentially curvilinear relationship between performance and the willingness to take on debt. In addition, because of the informal economy's informality and lack of a social safety net, firms that take on external debt may require quite good returns to offset the risk of bankruptcy/failure, which is in line with prospect theory (Kahneman & Tversky, 1979). Therefore, our next hypothesis is as follows:

H_8 In the informal economy, a positive and curvilinear (concave) relationship exists between a firm's operating performance and debt financing.

DATA AND METHOD

Sample

To create a research design that provides a strong test of the proposed model and hypotheses in the informal economy, many challenges had to be overcome that are generally more straightforward in the formal sector. These challenges included finding a representative sample (although, by definition, the population is not registered), obtaining reliable accounting data (when no auditor or taxperson checks the accounting quality), and ensuring a complete picture of the entrepreneurs' financial situations (when entrepreneurs can draw on many sources of financing). While the data are cross-sectional, the independent variables are relatively time insensitive.

By collaborating with Banco D-Miro in Ecuador, a leading regulated microbank owned by a Norwegian nongovernmental organization (NGO), we have been able to gain access to a large sample of entrepreneurs in the informal economy. This approach is similar to that of Degryse et al. (2012), who used the Dutch bank Rabobank and its database of clients' financial statements. We argue that the selected data are representative of entrepreneurs in the informal economy in several ways. First, in many ways, Ecuador is an ideal country in which to study the informal economy. Informality is widespread there, covering nearly 80 percent of the working population (World Bank, 2012). Our sample of firms is particularly illustrative of informality, as 90 percent of them do not pay income tax, sales tax, or any other tax; the few that do pay taxes only pay, on average, 2 percent of their net incomes.

Second, D-Miro is a pioneer of microfinance in Ecuador and specifically targets micro-entrepreneurs in areas of Ecuador that have many informal businesses. Once an unregulated bank, D-Miro has recently undergone a major transformation, becoming a regulated bank; as such, to obtain central bank approval, D-Miro has been subject to stricter processes and policies. Most of its clients are located in poor areas in the coastal region, which has no traditional banks. At the end of 2013, with 40,682 clients, D-Miro was the third-largest regulated microfinance institution in Ecuador, following Solidario (382,027 clients) and Creditfe (147,080 clients). A recent ranking of outreach, efficiency, and transparency named D-Miro the best microfinance institution in Ecuador and the eighth best in South America (Martínez, 2014), out of a total of 229 microfinance institutions.

Third, to capture the complete financial situation of these firms, we also used data from the national credit bureau, including their clients' other banking relationships. The surveyed clients each used between one and six microfinance banks, with most using only one bank, a common feature among smaller firms in the formal economy (Ang, 1992). Through this approach, D-Miro and its clients illustrate the role of micro-entrepreneurs in Ecuador's informal economy.

Fourth, the selected population includes both debt-seeking and non-debt-seeking banking clients. Moreover, D-Miro uses a strict loan application process, whereby the credit officer, supervised by a branch manager, approves a loan based on the business' current earnings. As such, all the clients investigated here were performing sufficiently well to be considered for external debt financing. In other words, these businesses had a proven track record and were not in their early stages. However, one limitation is that these entrepreneurs were all approved as bank customers, meaning that our approach does not capture the behavior of entrepreneurs who want a loan but are unable to obtain

one. The behavior that we captured thus relates specifically to credit-worthy informal entrepreneurs with sustainable cash flow-generating businesses, which implies that, to some extent, we excluded non-sustainable business discoveries from our sample.

To the best of our knowledge, the entrepreneurs covered in this study did not receive any grants or consulting support from this microfinance institution, which may sometimes be the case with other microfinance institutions. By contrast, these entrepreneurs needed to demonstrate their ability to exploit entrepreneurial opportunities on their own. When an individual applies for a loan, he or she signals that an entrepreneurial process has preceded this event. Some of the entrepreneurs were new clients, while others had previously received loans from D-Miro. In general, credit officers work closely with 300 to 400 clients, and, for each new client, they spend time ensuring that the entrepreneur's assets are indeed owned by him or her and not by someone else. To obtain information from the entrepreneurs, 3,468 phone calls were placed, producing complete interviews with 755 firms, of which 255 were excluded because the firms belonged to another firm category (clients with delayed payments). Each interview lasted approximately 20 minutes and was conducted in Spanish by a professional Ecuadorian call center that was supervised by a team of three researchers and an experienced marketing manager.

Measures

Human capital

Education is a broad measure of human capital investment. We used level of education (i.e., basic, upper secondary, or post-upper secondary) as such a measure. Each level is approximately six years apart from the next; thus, equidistance is assumed. Years of education may have an effect on the type of business that an individual sets up. In addition to education, human capital can also be measured in terms of loan experience, which we captured as the number of loans that an individual has previously received. To capture general work experience, we used the entrepreneur's age, a measure that may also be correlated with the entrepreneur's risk attitude.

Financial literacy

Financial literacy is used to measure a person's ability to comprehend three key financial concepts: compound interest, inflation, and risk/diversification (Lusardi & Mitchell, 2014). The first two questions that we asked our respondents were taken directly from Lusardi and Mitchell (2011a), whereas the third was adapted to better fit the context of the informal economy. The first question is designed to capture the participant's ability to

do simple calculations (i.e., numeracy) and his or her understanding of the idea of compound interest; the second question incorporates the concept of inflation; and the third addresses risk and diversification, as shown below:

1. Suppose you had $100 in a savings account and the interest rate was 2 percent per year. After five years, how much do you think you would have in the account if you left the money to grow: more than $102, exactly $102, less than $102?
2. Imagine that the interest rate on your savings account was 1 percent per year and inflation was 2 percent per year. After one year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?
3. Do you think that the following statement is true or false: Investing everything in one opportunity usually provides a more certain economic reward than investing smaller amounts in many different opportunities?

Debt financing

In this analysis, two dependent variables are used: 1) leverage, calculated as total debt divided by total assets, and 2) a dummy variable that indicates whether the entrepreneur decided to renew his or her loan. Importantly, the clients who chose not to renew their loans voluntarily "left" the microbank, and they do not represent the clients to whom the microbank did not want to extend another loan. Thus, the results are demand driven and not supply induced. Using the dummy variable, we captured entrepreneurs' financing decisions about whether to seek external financing through debt. In theory, equity could also be a source of external financing, but it was not yet available to this group of entrepreneurs. Due to our unique access to information, we captured the micro-entrepreneur's total debt, including its sub-components. For example, we were able to distinguish between business assets and non-business household-related assets. This distinction is important because many of these businesses are located in the entrepreneur's home. Non-business assets are defined as assets that are uniquely used for the household and that are not included in our definition of firm assets.

Firm size

In line with past studies, we define firm size as the log of total assets (Cassar, 2004) because the assets are related to the business' collateral. We believe that our measure is superior, as we explicitly focus on business-related assets.

Asset structure

In line with Cassar (2004), asset structure is defined as non-current assets divided by total assets. This definition helps us distinguish between more and less capital-intensive firms.

Growth intent

Cassar's (2004) study of start-ups in a developed country's formal economy uses entrepreneurs' growth intent and applies a dichotomous variable based on entrepreneurs answering "yes" to any of the following: "During the next 3 years, does the business intend to (1) significantly increase production levels, (2) open new locations, and (3) introduce new goods or services?" (p. 12). When we applied Cassar's survey instrument to our sample of entrepreneurs in Ecuador's informal economy (who potentially had a more limited understanding of the question), the answers yielded little variability: 709 out of the 755 entrepreneurs answered "yes," which made using this measure difficult. Instead, in line with the Global Entrepreneurship Monitor (Xavier, Kelley, Kew, Herrington, & Vorderwülbecke, 2013), we created an alternative scaled variable based on the respondents' answers to the following two questions: (1) If you want to grow your business, how many persons do you want to work with you? (2) Besides you, how many persons work in your business? These questions were phrased in Spanish. We found more variability in these responses, ranging from 9 to 37 employees.

Firm profitability

For firm profitability, we computed a return-on-assets (ROA) measure, deducting the opportunity cost of the entrepreneur's labor. This *adjusted* ROA was created using the financial data gathered by D-MIRO's credit officer. We subtracted the opportunity cost of labor – namely, the indirect compensation for the entrepreneur's work – from the return part of the ROA, as suggested by Shane and Venkataraman (2000). Using data from the National Statistics and Census Institute of Ecuador, Canelas (2014) shows that, on average, informal wage workers earned 91 percent of the minimum wage from 2010–2012. We thus estimated the opportunity cost of labor in Ecuador's informal economy in 2013 to be the actual minimum wage (i.e., USD 318) multiplied by 91 percent (i.e., USD 289), reducing the median ROA from 63 percent to 37 percent. To capture the potential concavity of returns, we squared the ROA term.

Controls

Micro-entrepreneurs may display different characteristics depending on whether they are located in an urban or rural environment (Honig, 1998). Therefore, obtaining data from the National Statistics and Census Institute of Ecuador, we used the ratio of urban to rural persons who lived within the city area of the micro-firm to control for location

(INEC, 2011). In addition to controlling for location, we also controlled for the size of the household (the number of dependents) and the business' industry. The industry definitions used were those proposed by the United Nations for the informal economy (United Nations 2008: 279–281). Recent research call for more information on whether MFIs select clients based on industry (Shahriar et al., 2015). Often, the informal economy is numerically dominated by manufacturing, repair services, and trade. In the context of Ecuador's informal economy, the sample is dominated by wholesale and retail trade (52 percent), of which the most common forms are clothing retail, goods and grocery retail, bazaars, and cosmetics.

To test our hypotheses, we performed two forms of regression. First, we used a logit regression to determine the influence of the independent variables on the micro-entrepreneur's debt-financing decision. The debt versus no debt decision is particularly relevant in the informal sector, as a number of businesses have not taken on debt (36 percent of the sample). For the level-of-debt decision, we applied an ordinary least squares (OLS) regression, explaining the proportion of financing from debt, which is in line with previous research on the formal economy.

RESULTS

Descriptive statistics

As shown in Table 1, the average micro-firm in our sample has only 13 percent debt to total assets compared to an average leverage of 61 percent (with a median of 75 percent) in Cassar's (2004) study in a developed country and 49 percent in a study by Degryse et al. (2012). The low number that we observe is consistent with other studies on informal economies and perhaps reflects the entrepreneurs' general skepticism toward debt financing (Magill & Meyer, 2005), but it could also reflect high interest rates and a lack of relevant debt products (i.e., lines of credit or long-term loans).

The average ROA among our sample firms is 45 percent (adjusted for the opportunity cost of the entrepreneur's labor). This profitability can be compared with the 15 percent observed for small firms in the formal economy in Degryse et al. (2012), which indicates that the financial returns are, on average, much higher among micro-firms in the informal economy than among small firms in developed economies. However, the downside risk of business failure is also much higher in the informal sector. In fact, 32 percent of the surveyed firms had an adjusted ROA below their marginal cost of capital (median yearly nominal interest-rate expenses of 26.5 percent). We argue that this extremely high variability in profit is an important characteristic of the informal

economy, which can help explain how an entrepreneur views business risks (bankruptcy/failure) in a context with no bankruptcy protections. Such high returns signal that these entrepreneurs require a significant risk premium to counter the high risk of failure or default.

When we measured financial literacy among the surveyed micro-entrepreneurs, on average, only 1.1 out of three questions were answered correctly. This figure is low when compared to the results for formal entrepreneurs in developed economies (Lusardi & Mitchell, 2011c, 2014). Micro-entrepreneurs in the informal economy are thus distinctly different from entrepreneurs in the formal economy, justifying our argument for the expanded use of theory (by including human capital theory and prospect theory).

On average, the entrepreneurs in this sample had previously gone through three loan cycles (taking out a loan and then paying it off), with some having gone through as many as 16 loan cycles, who were thus considered more experienced microbank clients. A total of 41 percent of the sample entrepreneurs were men, and 36 percent of the entrepreneurs were married. The average number of children per household was 1.9, and the highest number of children per household was 7.

Table 5 Descriptive data

	Definition	Mean	Std. dev.	Min	Max
Dependent variables					
Leverage	Total debt/total assets	0.13	0.20	0.00	1.00
Loan renewal	Dummy, with decision to renew as 1 and non-renewal as 0	0.49	0.50	0.00	1.00
Firm characteristics					
Firm size (log)	Log of total assets	9.51	0.69	8.10	11.80
Asset structure	Non-current assets/total assets	0.86	0.14	0.12	1.00
Growth intent	Dummy, 1 if number of desired employees > current number	0.69	0.46	0.00	1.00
ROA unadjusted	(Net income - opportunity cost of labor)/total assets	0.45	0.44	-1.65	4.78
ROA	ROA winsorized at 5% level	0.43	0.37	-1.10	1.93
Human capital					
Education	Three levels (basic, secondary and post-secondary)	1.63	0.58	0.00	3.00
Financial literacy	From 0 to 3, where 3 is the highest level of literacy	1.06	0.99	0.00	3.00
Loan experience	Number of loans previously taken out	3.27	2.62	1.00	16.00
Age	Age of entrepreneur	43.00	10.74	19.00	67.00
Other entrepreneur characteristics					
Civil status	Dummy, 1 for married and 0 for not married	0.36	0.48	0.00	1.00
Dependents	Number of children in the household	1.93	1.44	0.00	7.00
Controls					
Gender	Dummy, 1 for male and 0 for female	0.41	0.49	0.00	1.00
Urban vs. rural	Degree of the location's urbanity (from 0 to 1)	0.88	0.17	0.17	1.00
Industries	Wholesale, manufacturing, restaurants, agriculture, transportation, personal services, education and health, construction, repair services				

Note: All values are denominated in USD because that is the official currency in Ecuador.

Multivariate analysis

Table 2 presents the results of our logit and OLS regressions. The logit regression shows the influence of the independent variable on the financing choices made. The OLS regression shows the proportion of debt financing, or leverage, explained by the independent variables. A multicollinearity check was performed on each independent variable against the others, and no reported variance inflation factor (VIF) was above 2.6; hence, multicollinearity does not appear to be a concern (Hair, Black, Babin, & Anderson, 2010).

Our first hypothesis tests whether an entrepreneur's human capital investment (i.e., education/experience) is positively related to debt financing. We find that the level of education *does not* influence the financing choice or the level of leverage. Our measure of education assumes equidistance, as each school level is separated by approximately six years. In addition, the entrepreneur's age, as a proxy for work experience, does not appear to influence the financing decision as we expected. However, the age squared term is significant, which indicates that the higher entrepreneurial age, the more business experience and the higher the likelihood of taking on debt. We did not find previous loan experience to have a significant impact on a person's decision to take out more loans or on the level of leverage; however, at $p = .083$, the effect is positive. In conclusion, our various measures of human capital only partly, via age^2, support Hypothesis 1.

If we instead consider the outcome of human capital investments in line with the meta-analysis of Unger et al. (2011) – i.e., with regard to *relevant* skills – the results are more in line with our expectations. We hypothesized that a higher level of financial literacy is positively related to debt financing, and our results show an impact on both the decision to seek debt financing and the level of leverage, thus firmly supporting Hypothesis 2.

Our third hypothesis regarding the negative impact of marriage on debt financing is partly supported, as those who are *not* married are more likely to take out a loan than those who are married. However, marital status did not affect the loan amount. As such, unmarried individuals—that is, those with less responsibility—are more likely to choose external financing. Nonetheless, when we used the number of dependents or the interaction between gender and the number of dependents as a measure, we did not find a significant effect. However, our fourth hypothesis—that gender would have an impact—was not supported, thereby suggesting that gender is not necessarily a determinant of leverage.

We included the entrepreneur's urban location as a further control variable; it had no influence on the financing choice but had a significant impact on the amount of debt

taken on. This result may be supply driven, as a credit officer may consider the trouble and cost of obtaining and providing services to a client who is located far from an urban office. Therefore, location may have an impact on the amount of leverage taken on, thus giving some support to tradeoff theory. Industry controls were included in our analysis, but they had no impact on the logit regression. However, the OLS regression indicates that firms in the transport industry and those in the education and health sectors tend to have higher degrees of leverage.

In terms of the traditional firm characteristics used in previous research to explain financial decision making (e.g., Cassar, 2004), we found that micro-firm *size* significantly influences both the decision to take on debt and the level of leverage, thus supporting Hypothesis 5 and the underlying tradeoff theory of financing.

We found that *asset structure* has a significant effect on the decision to take on debt financing, thus supporting Hypothesis 6. Our analysis also indicates that *growth intent* (Hypothesis 7) does influence the decision to take out a loan in the informal economy, something that previous research in the context of the formal economy has struggled to show. However, the level of leverage is not related to growth intent; therefore, Hypothesis 7 is only partly supported.

A micro-firm's profitability (ROA) is shown to have a significant association with its leverage, and we observe that the squared term (ROA^2) appears to have a positive curvilinear (concave) relationship with the financing decision but not with actual leverage. This finding lends partial support to Hypothesis 8. We emphasize that this effect is not supply driven (i.e., no selection bias exists) because all of our sample's firms had *access* to debt financing (i.e., they had already been approved for debt financing).

While not specifically studied here, Shahriar et al. (2015) ask whether MFI´s decision to lend is influenced by the type of business. Among the controls, not reported, we note that there are such differences, e.g. that agricultural clients are more likely to take on a loan, whereas clients in repair services are less likely. In terms of leverage, it was found that transportation and education related businesses had a higher leverage.

Table 2 Logit and OLS explaining the use and proportion of external financing

	Logit			OLS		
Variables	B	Std. Error	Sig.	B	Std. Error	Sig.
Constant	-8.657	1.943	0.000	12.087	17.012	0.478
Entrepreneur characteristics						
H1a: Education	-0.248	0.178	0.164	-0.861	1.459	0.555
H1b: Age	-0.008	0.011	0.486	0.075	0.091	0.410
H1c: Age^2	0.003**	0.001	0.001	-0.002	0.007	0.770
H1d: Loan experience	0.069	0.043	0.109	0.600	0.345	0.083
H2: Financial literacy	0.287**	0.106	0.007	2.290**	0.851	0.007
H3: Married	-0.722**	0.228	0.002	-1.942	1.843	0.293
H4: Gender	-0.048	0.380	0.900	-2.673	1.881	0.156
Other entrepreneur characteristics						
Dependents	0.182	0.111	0.100	1.310	0.923	0.156
Gender x dependents	-0.189	0.149	0.206	-0.906	1.227	0.461
Firm characteristics						
H5: Size (log)	0.669***	0.177	0.000	5.063***	1.548	0.001
H6: Asset structure	0.022*	0.009	0.018	-0.258***	0.073	0.000
H7: Growth intent	0.087*	0.041	0.034	-0.327	0.282	0.248
H8: ROA	0.013**	0.005	0.007	0.150***	0.035	0.000
H8: ROA^2	0.000**	0.000	0.006	0.000	0.000	0.140
Other control variables						
Urban vs. rural	0.014	0.629	0.983	-13.558**	5.145	0.009
Industry controls	Yes			Yes		
N	500			500		
-2 Log likelihood	577.4					
χ^2	6.393					
Cox and Snell R^2	0.183					
Nagelkerke R^2	0.243					
F statistic				4.832***		
R^2				0.184		
Adjusted R^2				0.146		

Note: Industry dummies included but not reported. ROA is winsorized at the 5% level.

* Significant at the 5% level, ** significant at the 1% level, *** significant at the 0.1% level.

Implications

This section discusses the aforementioned measures and the implications of our findings. This study develops a multi-theory model that attempts to explain the capital structure of firms in the informal economy. Our theoretical contribution is making these theories applicable to micro-firms in the informal economy. We did so by adding dimensions of human capital theory (Hypotheses 1 and 2) and by considering other entrepreneur characteristics (Hypotheses 3 and 4) that had previously been tested with conflicting

results and that had not been examined in this context. In addition, we applied the standard capital structure model based on pecking-order theory and tradeoff theory (hypothesis 5 through 8) in a new context.

With regard to human capital investments and financial literacy, our results indicate that the poor educational systems in these countries do not provide adequate guidance in terms of why some entrepreneurs choose financing and others do not. While this finding is in line with Cassar (2004), it contradicts the findings of Gartner et al. (2012) in the formal economy. We do not find these results surprising, given that individuals spend, on average, five years in school in Ecuador (as did the entrepreneurs in this sample). A new school reform in Ecuador (Buen Vivir) might improve the educational system in the future, although little improvement is noted in the levels affecting the informal economy (primary and secondary education) (David, 2011). As a proxy for experience, age did not yield any insights, but our results indicate that the likelihood of taking on debt increases with age.

One clear take-away from this study is that micro-entrepreneurs who are more financially literate are more prone to select external debt financing and to prefer higher levels of leverage. As such, teaching finance to enhance financial literacy among entrepreneurs in the informal economy will likely have a positive impact on their decisions to use debt financing. With regard to financing decisions, our findings further emphasize the importance of financial literacy to decision making (Lusardi & Mitchell, 2014) in an under-researched and undereducated context. If entrepreneurs' level of understanding of basic finance were increased, would more entrepreneurs at least consider using more financing, contingent, of course, on the credit worthiness of the business idea? However, whether debt financing improves the informal business should be the subject of further research. Today, many charitable organizations and government organizations, including the Bill & Melinda Gates Foundation, UNICEF, and the World Bank, are beginning to focus more on the issue of teaching financial literacy. As this study suggests, the actual skills needed in this context include an understanding of basic financial concepts, such as compound interest, inflation, and diversification of risk. To attain such skills, individuals will need to improve their numeric capabilities as well as their cognitive and analytical decision making.

We also found that unmarried micro-entrepreneurs choose more external debt financing, which may reflect their risk assessments, as they may feel able to take on more risk because they do not have a family to consider. However, having more dependents (children) does not make entrepreneurs more reluctant to take on debt.

Contrary to existing research, our findings on firm size and asset structure in the informal economy reveal a *different relationship* than that among larger firms in the formal economy. In our results, size affects the entrepreneur's decision to take on debt, but, compared with previous findings on formal firms, our findings attribute more weight to firm size in the financing decision. Asset structure shows a negative relationship with leverage, possibly because of the greater need for working capital. In the informal economy, the relationship is reversed in terms of the level of leverage. This finding contradicts previous research (Cassar, 2004; de Jong, 1999; Degryse et al., 2012; G. C. Hall, Hutchinson, & Michaelas, 2004; Michaelas et al., 1999; Sogorb-Mira, 2005) and suggests that firms in formal and informal economies reason differently. In informal economies, a firm with little working capital risks becoming illiquid, which increases the risk of bankruptcy. Therefore, in the informal economy, firms are not necessarily aiming to invest in fixed assets when seeking financing; instead they aim to expand their working capital.

We also found that micro-entrepreneurs' growth intent is associated with micro-firms' interest in seeking external debt financing, but it is not associated with the level of leverage, which is in line with Cassar (2004), who found some support for a relationship between growth intent and the use of bank financing among formal businesses in the United States. These findings expand those of Magill and Meyer's study (2005), showing that growth intent is a reason for taking out a loan, though it is not linked to the loan amount.

Furthermore, our analysis showed that the average financial performance of the micro-firms in this study is higher than that of comparable firms in the formal economy. However, the variability of returns is also higher than has been found in studies on the formal economy (e.g., Miller and Leiblein 1996), suggesting that the downside risk or the risk of failure in the informal economy is much greater than that in the formal economy. This finding illustrates the consequences of human behavior through prospect theory, i.e., that entrepreneurs in the informal economy require a significant safety margin when taking out a loan to compensate for the risk of economic failure in this case.

Lastly, we found that rural entrepreneurs tend to use more leverage than urban entrepreneurs, but location does not influence the decision to use external debt financing in the first place. The higher cost of providing services to a rural entrepreneur compared with an urban entrepreneur, which is in line with tradeoff theory, may explain this finding.

Limitations of this research

This study is not without limitations, which represent possible lines of future research. For instance, some institutional and cultural variables may make generalizing these findings beyond Ecuador difficult. This study is further limited to entrepreneurs who have approached a particular microfinance institution: D-Micro. For example, D-Micro's pursuit of social goals—although such goals are the norm in the industry—might have an impact on the self-selection of entrepreneurs that approach this particular microfinance institution. Lastly, our model only differentiates between external debt financing and internal financing. Further differentiation, for instance, external equity or financing by family and friends, can be performed.

CONCLUSION

In this study, we developed a model and corresponding hypotheses regarding micro-entrepreneurs' strategic financing choices in the informal economy, operating at the intersection between the formal and informal economies. We investigated the determinants of the strategic decision to use external financing from a formal microfinance institution and the drivers of the subsequent level of leverage. Our research context involved 500 entrepreneurs from the informal economy of Ecuador, a country where informality is more the norm than the exception.

This study suggests that, in contrast to previous research on the formal economy of developed countries, several characteristics of the entrepreneur help explain his or her financing behavior in the informal economy. We show that specific skills, such as financial literacy, influence micro-firms' use of debt in the informal economy. Our results indicate that those who are more financially literate are likely to use more debt financing. Another interesting entrepreneur characteristic is marital status; we observed that unmarried entrepreneurs are more likely to take on debt, suggesting that they may be more able/willing to take on business risks.

In terms of firm characteristics, we found that, contrary to Gartner et al. (2012) but in line with Cassar (2004) and tradeoff theory, firm size is related to both the decision to seek formal external financing and the level of leverage. The positive association could signal, on the one hand, smaller firms' unwillingness to take on debt and, on the other hand, formal microfinance institutions' preference for larger firms. Profitability was found to have a curvilinear relationship with the decision to use external financing and a positive association with profitability (ROA). Thus, firms with higher profitability are more willing to take on debt, but microfinance institutions also prefer firms with better

operations. Both size and profitability can be considered inversely related to the risk of bankruptcy, which both the individual entrepreneur and the bank will consider in the financing decision . We found that asset structure is positively related to the decision to seek external financing but that it is negatively related to the level of leverage, likely because of the need for working capital in these "fixed-asset-light" informal industries. An entrepreneur's growth intent was shown to be positively related to his or her decision to take out a loan, but it was found to have no impact on the level of leverage. This finding contrasts with previous research, which has shown little support for the effect of growth intent. Lastly, the entrepreneur characteristics and firm characteristics were found to be equally important in explaining the decision to finance, which differs from the findings of previous research on mostly formal firms.

In terms of control factors, the results show no difference in the likelihoods of rural and urban entrepreneurs selecting external debt financing, but they reveal that rural entrepreneurs have more leverage relative to urban micro-firms in the Ecuadorian context.

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Faces of Informality
A shop owner in Guayaquil, Ecuador

7.3. Research essay 3: Financial Literacy, Role Models and Microenterprise Performance in the Informal Economy

Financial Literacy, Role Models and Microenterprise Performance in the Informal Economy

By Pontus Engström and Alexander McKelvie[10]

Abstract

This study focuses specifically on how financial literacy and role models help to explain microenterprise performance in the informal economy. Grounded in the resource-based view of the firm, we argue that financial literacy is important and leads to improved firm performance (return on assets and profits). In addition, we study the impact of knowing successful role models, which positively influences firm performance (return on assets). Although financial literacy is seen to help performance, future research may also need to explore how other skills, such as marketing skills, may have a greater impact on other financial performance measures, such as sales growth.

Keywords: microfinance, informal economy, financial literacy, microenterprise performance

Introduction

Despite the importance of the informal economy for the entrepreneurial pursuits of individuals and for employment, research into informal microenterprises has remained scant (Webb, Bruton, et al., 2013; Webb et al., 2009). In this paper, we extend the research on entrepreneurship in the informal economy to examine how skills such as financial literacy and the close proximity of entrepreneurial role models help microentrepreneurs achieve better performance in their microenterprises. Drawing upon

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the resource-based theory (Barney, 1991) and human capital theory (Becker, 1994), we examine whether financial literacy impacts performance and whether the presence of role models alleviates resource deficiency if skills and know-how are lacking.

We argue that mainstream entrepreneurship research mostly focuses on the "right tail" of human capital, specifically people with high levels of education, experience and expertise, thus overlooking the "left tail", which concerns entrepreneurs who are weak in terms of formal competencies. With more than 200 million poor individuals globally receiving microfinance services, compared to 13 million in 1997 (Reed et al., 2014), the extension of microcredit is no longer a small industry; its growth rate is in the double digits (MicroRate, 2013).

Our interest in the informal economy is based on the fact that the majority of economic activity in many developing countries takes place in such 'shadow' microenterprises (Bruton et al., 2008; Webb et al., 2009; C. C. Williams & Nadin, 2012). These microenterprises are commonly overlooked because they operate mostly out of view of government regulations, government statistics and interaction with established institutions. For many developing countries, such as Ecuador, Tanzania and India, employment in the informal economy affects more than 80% of the population (ILO, 2013). Furthermore, the importance of such informal economic microenterprises is shown by the fact that such activity is seen as the *modus operandi* of individuals seeking to exit poverty (Bruton et al., 2013).

A focus on entrepreneur financial literacy is important for two reasons. First, although entrepreneurship is commonly based on the idea that individuals discover an opportunity prior to their decision to exploit it (Scott Shane & Venkataraman, 2000), a growing body of research is emerging that looks at the bridge between these two stages – the bridge of opportunity evaluation (Wood & McKelvie, 2015). In this study, we argue that the ability to assess an opportunity financially, i.e., financial literacy, is critical in the evaluation phase. Webb, Bruton, et al. (2013) describe this important aspect of research on the informal economy under the rubric of 'resource allocation'. Fundamentally, if entrepreneurs in the informal economy lack a basic understanding of rudimentary financial concepts and tools, how can they accurately evaluate an entrepreneurial opportunity such that it leads to good performance? In addition, existing research shows conflicting benefits of financial literacy in emerging economies; for instance, in a South African context, Webb, Morris, et al. (2013) find a negative relationship with microenterprise growth, whereas Bruhn and Zia (2013) report improvements in business performance and sales for female-run businesses in Bosnia and Herzegovina. In a qualitative study, Bruton, Khavul, and Chavez (2011) also find that an important

characteristic of borrowers in better-performing businesses is their "awareness of interest rates and the time value of money" (p. 727). With the World Bank and other nonprofit organizations actively promoting financial literacy to help economic development, it is vital to understand and measure its impact on the target group, i.e., the microenterprise.

Second, past studies on the impact of human capital on microenterprise performance often apply measures such as entrepreneur education and previous work experience. However, research shows that the outcome of education and work experience – such as skills and knowledge – are better predictors of firm performance (Unger et al., 2011). In fact, research on the informal economy of Jamaica found a negative relationship between education and microenterprise performance (Honig, 1998). Therefore, entrepreneurship research incorporating the notion of human capital needs to consider specific skills obtained rather than the number of years spent obtaining skills (Hanushek & Woessmann, 2008). This study therefore bridges previous research on financial literacy in the developed world (Lusardi & Mitchell, 2014) with the informal economy.

Lacking skills and knowledge, microentrepreneurs may turn to role models for both inspiration and support. Research on role models has shown that individuals tend to make decisions on the basis of social cues (Aldrich 1999, cited in Minniti 2005). This implies, for example, that decisions to expand a business, enter a new business, or make other changes are made through the indirect influence of others. Whereas financial literacy addresses an individual's ability to assess the benefits and costs of an entrepreneurial opportunity, role models help reduce the ambiguity in decision-making (Minniti, 2005).

Motivated by the factors shown above, our study offers several unique contributions to the literature. First, we outline a model of microenterprise performance in the informal economy, adding empirical tests to such a model. To overcome a singular view of performance, such as focusing solely on profits, growth, or efficiency, we are specifically able to analyze these microenterprises through three forms of firm performance – sales growth, profits and return on assets (ROA). This is notable as scholars are only beginning to develop robust empirical insights into microenterprises that operate outside of the purview of established institutions and where access to microenterprise performance data is very rare (Bruton et al., 2008; Webb et al., 2009). Second, we extend theoretical discussions of human capital and the "ability" in evaluating opportunities into the realm of a tangential area, that of financial literacy. In doing so, we provide an alternate metric (financial literacy) of human capital, compared to the level of education, into how microenterprise performance is affected. This is important for

microenterprises in the informal economy (Drexler, Fischer, & Schoar, 2014; Field, Jayachandran, & Pande, 2010), where relatively little work related to entrepreneurship has been done. Lastly, microentrepreneurs may alleviate a lack of certain skills and knowledge either through advise or social cues provided by role models (Minniti, 2005) .

This article is organized as follows. The next section presents a review of the literature on financial literacy, human capital theory, role models and previous research linked to microenterprise performance. We then present the method used and the empirical setting, which is followed by the results and a concluding discussion.

Theory

The resource-based view holds that a microenterprise's resources, tangible or intangible, are critical to its performance (Barney 1991). In the context of microenterprises, the enterprise's resources are nearly synonymous with the entrepreneur's resources (tangible and intangible) as these businesses are usually centered around one individual. To sustainably outperform the competition, it is important that this skill or resource be unique and non-imitable. Apart from business-related assets and finances, the entrepreneur´s own *human capital*, defined as knowledge and skills, is considered vital to success (Unger et al., 2011), but when lacking skills or feeling ambiguous about a decision, entrepreneurs may also turn to known role models (Minniti, 2005).

Human capital is often enhanced through education or experience. In many developing countries, such as Ecuador, Sri Lanka and Tanzania, many individuals leave school after five years, implying that the perceived marginal benefit of more schooling does not outweigh the perceived incremental cost. Unger et al. (2011) argue that education and experience are only *indirect* measures of human capital, instead showing that the *direct* outcome of human capital investments, such as skills and knowledge, provides a better link to performance. In other words, *what you learn* is more important than *how many years of education* you have. Hanushek and Woessmann (2008) argue that:

> *"there is strong evidence that the cognitive skills of the population – rather than mere school attainment – are powerfully related to individual earnings, to the distribution of income, and to economic growth."* (p.607)

Unger et al. (2011) find no support for human capital being more important to microenterprise performance in less developed countries than in developed ones. However, Van der Sluis et al. (2005) find that one year extra of entrepreneurship education in the developing world leads to an increase in enterprise income by 5.5%. Yet,

one of the more frequently cited studies on the value of human capital in the informal economy of Jamaica (Honig, 1998) finds no clear linkage between formal education level and the income levels of individuals, where in fact those with only primary education earned more money than those who had junior secondary education. This suggests a negative relationship between education and performance. However, those with vocational training or college training earned more, suggesting again that skills are more critical. Moreover, in another mostly informal context, Berge, Bjorvatn, and Tungodden (2014) find a positive impact among male entrepreneurs when learning business skills in Tanzania.

Research in general points to the importance of human capital investments and, specifically, to the outcome of such investments. However, in developing countries, many people leave school early, leading to undeveloped basic skills. There are many reasons for leaving school early, including the cost of schooling (even indirect costs such as food, uniforms, travel, etc.), the cost of extra tutoring to make up for poor-quality teaching or the opportunity cost of not being able to provide extra income to one's family (Ardiente & Guiking, 2015).

However, despite a lack of schooling, we argue that a rudimentary understanding of basic finance is still expected to help entrepreneurs make decisions via mental accounting, which suggests that the perceived value of undertaking an opportunity surpasses the perceived loss. In the space between the discovery phase and the exploitation phase of the entrepreneurial process (Scott Shane & Venkataraman, 2000), an entrepreneur´s *ability to evaluate* the perceived opportunity demands a certain level of financial literacy that, even in developed markets, is not universal (Lusardi & Mitchell, 2011d). Financial literacy is generally described to be important to human economic decision-making (Lusardi & Mitchell, 2014). We have too often seen the cost of financial ignorance, for instance in the US subprime crisis (Gerardi, Goette, & Meier, 2010) or the microfinance crisis in Andhra Pradesh (CGAP, 2010). This is particularly important in an informal economy with frequently high interest rates and high inflation. For instance, in microfinance, the interest rate charged may be 30-50%, or even higher, with an inflation rate of 6-8%.

Prior research on financial literacy is linked to intended pension planning or saving behavior. This line of research shows a meaningful impact on pension and saving behavior, i.e., that causality begins with knowledge (of finance) and ends with a behavior (a decision in this case). Assessing an opportunity requires the ability to make numerical calculations (Lusardi, 2012). In a qualitative study, Bruton et al. (2011) find that an important characteristic of borrowers in better-performing businesses is their "awareness

of interest rates and the time value of money" (p. 727), suggesting that financial literacy is vital to success. However, there is no a consensus around the utility of financial literacy. In the developing world, for example, in India, research on microenterprises indicates that the cognitive ability of microentrepreneurs is low and that rather than thinking about interest rates, they think about how much they owe on a weekly or monthly basis (Tiwari, Khandelwal, & Ramji, 2008), thus calling into question whether financial literacy as a concept is even meaningful. The theory of mental accounting (Thaler, 1985) suggests that individuals make decisions based on a higher expected value based on the perceived benefit (concave curve) vs. the perceived loss (convex curve). This implies that an individual must be able to assess an opportunity based on how much cash it will bring in relative to the investments needed. This qualitative approach seems to suggest that those who are more financially literate would indeed perform better.

Secondly, the ability of an entrepreneur to engage in *planning* is positively related to performance (Baum, Locke, & Smith, 2001; Frese et al., 2007), and in this process, financial literacy is a prerequisite for successful financial planning (Lusardi, 2012). An entrepreneur must be able to weigh the expected return from making an investment in one category against the expected return from making the same investment in another category, where the risk/return characteristics should be the basis for the evaluation (Fama & MacBeth, 1973). Thus, in this study, we explore the degree to which better performing entrepreneurs in the informal economy understand the basic financial concepts of compound interest rates, inflation and risk diversification, such that human capital investment positively affects financial literacy, which in turn positively affects the discovery and exploitation of opportunities that is manifested through improved microenterprise performance.

However, the economics of financial literacy have not been researched (Lusardi & Mitchell, 2014), especially in the developing world, where the extension of microcredit is still experiencing double-digit growth globally, reaching hundreds of millions of individuals, not the least through the recent growth of mobile currencies. To address this research gap, and in line with previous research on pension and savings in the formal economy (Lusardi & Mitchell, 2014), we argue:

Hypothesis 1: Among microenterprises in the informal economy, there is a positive association between an entrepreneur´s financial literacy and microenterprise financial performance.

Entrepreneurship research traditionally assumes that individuals in a financial decision-making situation are faced with uncertainty, such as the probability of failure. The entrepreneur knows that there is a chance that the opportunity may not work. In an informal economy, the consequences of failure are not subject to a judicial system. Consequently, failure may haunt an individual on a personal level for the rest of his or her life. Although the range of possible outcomes is known to the entrepreneur, and although he or she may be able to do simple numeric exercises as described above, he or she may still face ambiguity about which decision to take (March & Olsen, 1976). The future road map is simply too fuzzy or complex to the individual. We argue that this is even more important in an informal economy, where human capital is less developed, where financial literacy is relatively poor, and where many entrepreneurs are likely faced with much ambiguity. Therefore, lacking a key decision-making resource, such as advice or vital information, the entrepreneur may need to look for advice, either directly or indirectly, from a role model.

Lacking financial advisors, or lacking trust in the financial advisors that do exist, entrepreneurs may instead benefit from role models. On the one hand, role models may provide concrete advice, but the presence of others also helps to provide social cues (Aldrich & Zimmer, 1986), thus helping to reduce the ambiguity in a decision (Minniti, 2005). We argue that this is particularly important in the informal economy, where we know that human capital and financial literacy skills are less developed. That an external network is beneficial in an informal economy was shown by Honig (1998), who studied the impact of semiweekly church attendance and found that marital status had a positive effect on entrepreneur income. However because social capital, often used by sociologists, can be used to describe a variety of things (Durlauf, 2002), such as good behavior (Putnam, 2000) or labor market conditions (Cooper, Woo, & Dunkelberg, 1989), in this study we specifically focus on the existence of role models.

Prior research on role models has mostly focused on the influential aspects of role models, such as their impact on entrepreneurial intentions (Bosma et al., 2012). However, role models continue to be influential even after the entrepreneurial intention stage. Entrepreneurs use role models as a source of information, and lacking specific skills may cause them to turn to the role model for advice or even to be inspired to follow the role model. With more entrepreneur role models available, more information about frustrations, benefits and other requirements is available. The social environment therefore "contributes to reducing the ambiguity associated with entrepreneurial decisions" (Minniti 2005, p.5). As such, we argue that it is important to have role models

as part of one´s network as they may lower the ambiguity in decision-making. We therefore hypothesize that:

Hypothesis 2: Among microenterprises in the informal economy, there is a positive association between the usage of role models and microenterprise financial performance.

Method

Sample

We draw upon a unique sample of microenterprises in Ecuador, a country with widespread informality covering more than 80% of the working population (Canelas, 2014; World Bank, 2012). It therefore offers a valid context to understand firms in the informal economy. Moreover, our study focuses specifically on microenterprises, which provide jobs and income to more than one-third of all households in western and mostly informal parts of Ecuador. By collaborating with the leading microfinance institution in Ecuador[11], Banco D-Miro, we were able to not only use their detailed financial data collected from their credit analyses, including data from a national credit bureau, but also to conduct a complementary telephone survey, reaching 750 microentrepreneurs. In other words, we have a full picture of the total financial position of the clients (including debt with other banks), as well as credit analysts' best assessments of the value of assets, such as machines, cars, inventories, or houses. Given our focus on microenterprise financial performance, we have excluded the value of family assets.

Measures

Dependent variable. Our dependent variable is microenterprise performance. The literature suggests a multidimensional approach to measuring performance (Combs, Crook, & Shook, 2005), separating performance into financial and operational measures. Performance can also be measured at different levels, that of the entrepreneur, the microenterprise or society. In this study, we are concerned with the levels of the entrepreneur and the microenterprise. The rich dataset allows us to measure performance across several dimensions (e.g., in line with Bosma et al. 2004). Because these microenterprises are small, typically self-employed or with one or two employees, our

[11] According to a global ranking by Microfinance Investment Exchange (Martínez, 2014).

first measure of performance is the annual *profit* generated by the microenterprises. Profit relates to the amount of money the entrepreneur has left at the end of the day. This money may be used in various ways, such as for consumption, to invest in a house or education, or, alternatively, it may be reinvested into the business. However, by only looking at the profit number, we ignore assets that are used to generate those profits. For instance, it is difficult to say that one firm generating USD 100 is performing equally as well as another business generating USD 100. For example, one business may employ USD 500 to generate that USD 100 and another might employ USD 1,000. Therefore, we also employ a second measure relating profits to the assets employed in the business, i.e., *return on assets* (ROA). This is a measure of performance that relates more directly to the microenterprise and its use of assets. It is therefore a measure of efficiency. ROA is calculated as net income divided by total assets. Because these are microenterprises, the assets are typically very low, which may create huge variations in returns. In line with other research (e.g., Hvide and Møen 2010), we have Winsorized the assets at the 5% level and replaced asset values below USD 3,200 with USD 3,200 (Hvide & Møen, 2010). Moreover, in most of these businesses, the entrepreneur is not being paid a salary, wherefore the opportunity cost of labor accordingly needs to be deducted (Scott Shane & Venkataraman, 2000). By comparing the wages of workers in the formal sector versus those in the informal sector, it is estimated that the informal wage is 91% of the actual minimum wage in Ecuador during the period 2010-2012 (Canelas, 2014), or $289. By adding an opportunity cost of labor, the average returns in our sample dropped from 141% to 68%. The Winsorization removed another 7% from the average, but halved the standard deviation to 93%. Lastly, we use a longitudinal third measure of microenterprise performance. Given that all credit assessments are not done every year, we use a binary dummy variable where we compare average sales in 2014 and 2015 with average sales during the period 2009-2013, whereby firms growth is coded as 1 if firms grow their sales and as 0 if there is no improvement or a decrease in sales levels. This method allows us to circumvent missing data issues resulting from the informal nature of the firms and their financial assessment. Growth as a measure of performance is important such that we may understand whether or not the microentrepreneur is able to grow, with the assumption that with more growth, the microenterprise will be able to earn higher profits. Research on new venture growth shows that few jobs actually evolve into larger firms (Z. J. Acs & Armington, 2006), particularly smaller businesses suffering from the liability of smallness (Carroll, 1983).

Independent variables. Our first independent variable is *financial literacy*. Building upon a previously tested concept (Lusardi & Mitchell, 2011a), we used three questions to test the entrepreneurs' understanding of financial concepts. The first question was designed to capture the ability to perform simple calculations (numeracy) and the understanding of the idea of compound interest. The second question incorporated the concept of inflation. The third addressed risk and diversification. In our test, the third question is modified compared to the original questions (Lusardi & Mitchell, 2011a, 2011c) to be relevant to the informal economy. In the original question, the concept of "stock" or "mutual fund" was used, i.e., share investment, and by changing this to "opportunity", it became more synonymous with the word used when taking a loan and using the money for a hopefully value-enhancing opportunity. The survey, which included questions for the test, was conducted using a professional call center at Banco D-Miro that was supervised by a team of three researchers and a manager during the entire process. By first pre-testing the questions on a sample of 60 individuals, we obtained sufficient variability in the responses and were able to validate that our modified question number fulfilled the same criteria of being simple, relevant, brief and differentiable among individuals. In addition to the survey carried out in Ecuador, the same questions were also tested in another informal context, in microfinance clients in Dar es Salaam and Arusha, Tanzania. The questions, which for our survey in Ecuador were translated into Spanish by the research team in close collaboration with the head of the call center, were as follows:

1. Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than $102, exactly $102, less than $102?
2. Imagine that the interest rate on your savings account was 1% per year and that inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?
3. Do you think that the following statement is true or false? Investing everything in one opportunity usually provides a more certain economic reward than investing smaller amounts in many different opportunities.[12]

[12] In studies of developed countries, the question read: "Do you think that the following statement is true or false? Buying a single company stock usually provides a safer return than a stock mutual fund." (Lusardi & Mitchell, 2014)

Our second independent variable is *role models*. Many previous studies equate exposure to entrepreneurs to having "role models" (BarNir, Watson, & Hutchins, 2011; Bosma et al., 2012; Franco, Haase, & Lautenschläger, 2010; Liñán & Chen, 2009; Van Auken, Stephens, Fry, & Silva, 2006) without considering whether or not the role models were seen to be successful. To us, exposure does not equate to an individual having a role model. To circumvent this issue, we developed four items that reflect both exposure to and usage of role models. On a scale from 1 through 5, interviewees were asked to indicate their level of agreement with the following four statements:

1. I am personally familiar with successful entrepreneurs.
2. In my network of friends and colleagues, there are successful entrepreneurs.
3. I regard some of the entrepreneurs I know as role models.
4. Some entrepreneurs I know have been a source of influence for me.

We offered respondents the response scale of strongly disagree, disagree, neither disagree or agree, somewhat agree and fully agree, rather than the numerical statements of a 5-point scale. We elected to do this as the numerical statements resulted in poor variability in our pilot test. Through this modification we saw improved the variability in the responses. The results of these four questions were averaged to obtain a single measure of role model.

Control variables. Because firm performance can be affected by numerous other factors, we control for microenterprise specific measures, including *leverage* (debt / equity), *size of assets*, *industry, number of employees* and *degree of urban location*. The informal economy is often dominated by certain industries, and for industry specifications, we created dummy variables using the standard industrial classifications relevant to the informal economy (United Nations, 2008), such as wholesale, construction, repair shops, restaurants, etc. For degree of urban location, we used data from national statistics in Ecuador (INEC, 2011) combined with the location of the particular entrepreneur in our study. This gave us a degree (e.g., a percentage) of urbaneness in the specific location. In addition, we control for various entrepreneur characteristics, such as *gender*, *age*, and *level of education*, as well as previous *loan experience*, measured as the number of previous loans taken.

Results

In terms of understanding the concepts of financial literacy, as seen in Table 1, only 2.6% of the individuals answered all three questions correctly. On the other hand, only 5.5% answered no questions correctly. The interest question was answered correctly by 45.3% of respondents; the inflation question, by 37.8%; and the risk question, by 29.2%. The interest rate question therefore appears to have been the easiest, followed by the inflation question and, finally, by the risk question.

Table 1. Financial literacy compared across economies

	Informal Economy	US	Italy	Romania
Interest question				
More than $102 (correct)	45.3%	64.9%	40.0%	41.3%
Exactly $102	4.5%	11.3%	25.0%	11.5%
Less than $102	2.5%	9.2%	6.8%	8.2%
Do not know	47.3%	13.5%	28.2%	34.4%
Refused to answer	0.4%	1.0%	na	4.6%
Inflation question				
More	14.7%	11.2%	6.2%	11.5%
Exactly the same	8.6%	9.0%	3.8%	11.4%
Less (correct)	37.8%	64.3%	59.3%	31.8%
Do not know	38.8%	14.2%	30.7%	40.4%
Refused to answer	0.1%	1.4%	na	4.9%
Risk question				
False (correct)	29.2%	51.8%	52.2%	13.5%
True	48.3%	13.3%	14.2%	14.7%
Do not know	22.1%	33.7%	33.6%	63.5%
Refused to answer	0.4%	1.2%	na	8.3%
Cross question consistency				
Interest & inflation	41.5%	46.2%	31.5%	20.5%
All correct	2.6%	30.2%	24.9%	3.8%
None correct	5.5%	12.3%	26.4%	40.1%
At least one "does not know"	60.9%	42.4%	44.9%	75.5%
All do not know	11.4%	4.7%	19.9%	29.8%
Year of data	2013	2009	2007	2011
Number of observations	755	1488	3992	1030

Source: The US data are as reported in Lusardi and Mitchell (2011d), Italian data are from Fornero and Monticone (2011), and Romanian, from (Beckmann, 2013).

The correlation matrix (Table 2) reveals a strong correlation between two of the three dependent variables. Profits and ROA are 40% correlated, whereas sales growth is not correlated with our other performance measures. Other research on new ventures highlights a positive relationship between sales and profitability (Delmar, McKelvie, & Wennberg, 2013), although this research tends to involve formal economy and non-microenterprises. We have not been able to find other research that has this level of detail. This negative relationship was therefore unexpected but does not necessarily affect our hypotheses. It nevertheless highlights the importance of using difference measures of firm performance. In terms of the independent variables, we observe a positive correlation between Role Models and Financial Literacy. The correlation table shows a significant and negative correlation between financial literacy and a squared age term (J. A. Mincer, 1974), suggesting that although younger persons are more financially literate, there is also improvement as people become older. It is encouraging to see that level of education correlates positively with financial literacy, thus perhaps indicating that higher financial literacy can be achieved through more education. Although we highlight some of the statistically significant relationships, on the whole, they are all very small (i.e., lower than 0.3), with the only exceptions being select relationships with our performance variables. As a result, we do not view multicollinearity as a significant concern for our data. This is furthered by the fact that the VIFs are under 1.3, which is well below the recommended cut-off of 10 (Hair et al., 2010).

Table 2. Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 ROA													
2 Profit	.401**												
Sales growth													
3 (1/0)	-.048	-.322**											
Financial													
4 literacy	.076*	.130**	-.046										
5 Role models	.113**	.089*	-.096	.158**									
6 Loan experience	.041	.259**	.121	-.006	-.001								
7 Age	-.156**	.058	-.084	-.034	-.009	.220**							
8 Age2	-.065	-.126**	.013	-.096**	-.027	-.041	.121**						
9 Education level	-.019	.001	-.021	.092*	.041	-.077*	-.109**	.033					
10 Gender	.036	.116**	-.127	.003	.049	-.077*	.003	-.083*	.057				
11 Leverage	.150**	.157**	-.026	-.005	-.050	.037	-.010	-.062	.051	.037			
12 Size	-.314**	.573**	-.309**	.069	.015	.213**	.299**	-.066	.038	.081*	.035		
Nr of													
13 employees	.041	.179**	-.030	.051	.051	.023	.021	-.066	.017	.175**	.018	.149**	
14 Urban location	-.144**	-.062	.087	.015	-.074*	.095**	.034	-.028	.037	-.050	-.019	.090*	.014

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

In the regression analysis, shown in Table 3, we find significant relations between financial literacy and ROA (Model 1) and financial literacy and profits (Model 2). However, no statistically significant relationship was found with sales growth (Model 3). As such, we have only partial support for Hypothesis 1, which argues that higher levels of financial literacy are positively associated with microenterprise financial performance. Furthermore, role models are seen to be significantly and positively related to ROA (Model 1) but have no impact on profits (Model 2) or sales growth (Model 3). Again, this provides partial support for Hypothesis 2.

Among the controls, we find that at loan experience, leverage, size (smaller) and location (rural) are all statistically significant related to ROA (Model 1). Loan experience, age (younger), gender (being a male), leverage, size (larger), number of employees and location (rural) all have a statistically significant relationship with profit (Model 2). Lastly, loan experience and size (smaller) are related to sales growth (Model 3).

Table 3. OLS regression relating Financial Literacy and Role Models with Micro-enterprise performance

	Model 1 **ROA**	**Model 2** **Profit**	**Model 3** **Sales growth (Logit)**
H1: Financial literacy	.090**	.082**	-.011
	(2.617)	(2.834)	(0.180)
H2: Role models	.091**	.048	-.273
	(2.614)	(1.681)	(0.281)
Controls			
Loan experience	.132***	.173***	.182*
	(3.678)	(5.717)	(0.074)
Age	-.066	-.138***	-.011
	-(1.805)	-(4.488)	(0.019)
Age²	-.032	-.031	.000
	-(0.916)	-(1.085)	(0.002)
Level of education	-.018	-.034	-.123
	-(0.520)	-(1.114)	(0.291)
Gender (male = 1)	.064	.064*	-.271
	(1.768)	(2.105)	(0.398)
Leverage (debt / equity)	.159***	.125***	.161
	(4.694)	(4.407)	(0.769)
Size ln	-.336***	.558***	-1.322***
	-(9.061)	(17.914)	(0.321)
Nr of employees	.066	.083**	.114
	(1.890)	(2.834)	(0.106)
Urban location (%)	-.105**	-.100**	1.325
	-(3.055)	-(3.480)	(1.069)
n	755	755	219
F statistic	8.77***	27.569***	
R^2	.196	.434	
Adjusted R^2	.174	.418	
-2 Log likelihood			208.9
$\chi 2$			40.2***
Cox and Snell R2			.167
Nagelkerke R2			.246
ΔR^2 (H1)	.011**	.008**	
ΔR^2 (H2)	.008**	.002	

Displayed beta is standardized. t-value within parenthesis. Profits are winsorized at 5% level. Industry controls are included but not reported. ΔR^2 is over and above control variables.

∗ Significant at the 5% level; ∗∗ significant at the 1% level; ∗∗∗ significant at the .1% level.

Discussion and conclusion

Our assessment shows that financial literacy has a very important impact on microenterprise performance when measured as ROA or profits. Sales growth, however, is not related to financial literacy. However, it is not negatively related to financial literacy, as was previously found by Webb, Morris, et al. (2013). We argue that our sample of microentrepreneurs, all of whom were approved for credit by a microfinance institution based on their past performance (i.e., is not forward looking), indicates that in the evaluation of an opportunity, those who are more financially literate make better investment decisions, possibly by taking more calculated business risks. In addition, those microentrepreneurs who know another successful entrepreneur as a role model also make better investment decisions and achieve a higher ROA, similar to the effect of financial literacy. However, for role models, we did not see any impact on profits or sales growth.

Furthermore, adding to previous research on financial literacy (Lusardi & Mitchell, 2014), our empirical results reveal a consistent pattern of positive results for the effects of financial literacy on microenterprise performance, specifically ROA and profits. Sales growth, however, remains unaffected, which indicates that neither microfinance or teaching financial literacy will help microenterprises grow out of poverty. Our results confirm the idea that in the informal economy, level of education or previous experience has no impact whatsoever on microenterprise performance, although previous loan experience is positively related to all three measures of performance. However, in contrast to studies that capture human capital through measures such as higher education and previous entrepreneurial experience (Bosma et al., 2004; Unger et al., 2011), our applied and context appropriate view of financial literacy has stronger predictive power. Our findings suggest that in contrast to previous research on highly impoverished markets and the role of financial knowledge (Webb, Morris, et al. 2013), an emphasis on basic financial literacy skills has an impact on subsequent microenterprise performance. Specifically focusing on the left tail of human capital, where we find low levels of financial literacy compared to the formal economy, our findings show that basic numeric skills and the ability to understand basic financial concepts adds significant value to the microenterprises and their owners through improved operating efficiency (ROA) and higher profits. However, sales growth was unaffected. Future research may therefore wish to study the implications of other skills, such as improved marketing skills, which some research indicates have a positive effect on microenterprise growth (Webb, Morris, et al. 2013).

In terms of the levels of financial literacy, as seen in Table 1, the results are for the most part comparable to those of other developing countries, such as Romania (Beckmann, 2013). A more striking difference is the number of individuals who answered

"do not know", 47.3%, which is significantly higher than that reported in the other studies (Lusardi & Mitchell, 2014). However, the number of individuals answering none of the questions correctly was relatively low at 5.5%. Together with the fact that 11.4% answered all questions with "I don´t know", which is low compared with Italy and Romania, we interpret this as a positive sign that the interviewed microentrepreneurs gave the questions serious thought. The interest rate question was answered in line with Romania and Italy (Beckmann, 2013; Fornero & Monticone, 2011); the inflation question, in line with Romania; and the risk question, better than Romania; we conclude that the levels of financial literacy that we observed are representative of the informal economy of Ecuador and are likely representative of many other similar contexts around the world. Other higher OECD countries generally score much higher than the informal economy, thus also confirming the link with improved financial literacy as a measure of a human capital skill and general economic development. As our comparison shows, the basic financial literacy of the informal economy is well below the basic understanding of higher income and more formal economies. It is important to note that the comparison of the results in Table 1 shows the results from a survey among the informal economy of Ecuador compared with the broad population of, to a degree, more formal economies from previous studies.

Working with a microfinance institution in Ecuador has allowed us to study the informal economy, partly addressing calls by Godfrey (2011) for research at the intersection between some formality and informality, the structural informal economy, and calls for research on legitimate forms of microenterprises transitioning to the formal economy (Webb et al. 2013). Our research shows that human capital, particularly skills such as financial literacy, is a key resource for microentrepreneurs in the informal economy. This is in line with the resource-based theory of the firm, and shows that it is applicable even in an impoverished informal economy, contrary to the findings of Webb, Morris, et al. (2013). Our research also highlights the importance of using different forms of performance measurement to better understand the effects of a resource. In addition, knowing successful entrepreneurs also helps generate better returns (ROA) through better investment decisions.

In terms of our results on role models, we did find support that knowing successful role models helped microentrepreneurs achieve a higher ROA than those who did not. This adds further evidence that the existence of role models may reduce the ambiguity in decision-making and possibly enhance returns through higher risk-taking. However, we did not see a significant relationship with profits (unless we allow a 10 percentage-point threshold). The explanation for this is that while profits (the numerator)

stay flat, the asset component (the denominator) is reduced. This implies that firms that use role models may not only make better investment decisions with higher ROAs, but these businesses also achieve improved asset utilization, i.e., a more efficient use of existing resources.

Lastly, our control variables show several interesting findings, which may be subject to future research. Our measure of loan experience, number of previous loans taken with this microfinance institution, is significantly and positively related to a higher ROA, higher profits *and* higher sales growth. Contrary to the meta-analysis by Unger et al. (2011), we do not observe any direct causal effect of human capital investments, such as education level and experience, apart from a significant and negative relationship between age and profits, implying that younger microentrepreneurs earn higher income. Honig (1998) even found a negative relationship between level of education and success. Our findings therefore illustrate that financial literacy is a better predictor of firm performance outcomes than broader measures of human capital investments, such as education, reinforcing the message that future researchers should focus more effort on measuring skills, rather than level of education. Gender shows a slight bias toward male entrepreneurs and income, but there is no effect on ROAs or sales growth. Our measure of size is showing that with increased size, ROAs and sales growth diminish, but profits increases. This seems consistent, especially because it is easier to make a higher return on assets and grow sales at higher rates when the business is very small. Our measure of the number of controls shows some association with profits, implying the existence of positive economies of scale. The urban location measure shows that firms located in more rural areas tend to have higher returns and profits than firms in urban locations. Sales growth was not impacted. This may be due to a selection preference by the local credit officer, who will prefer to spend time on larger and more profitable rural businesses rather than less profitable ones due to the time it takes to reach the rural entrepreneur.

This study is not without limitations. First, the study focuses on the informal economy of Ecuador, wherefore it becomes difficult to generalize the findings to the informal economy globally. Second, the sample of selected microentrepreneurs is not at the bottom of the pyramid (London & Hart, 2004) but is more concerned with stable cash-flow generating businesses that are able to receive financing. We therefore cannot generalize these findings to all microenterprises. This also means that our sample does not include those who are not running a sufficiently profitable business to be eligible for financing, although our sampling method made sure to also include microentrepreneurs who, despite having received a loan, experienced problems in paying the loan back. We also realize that we are attempting to draw conclusions based on partly cross-sectional

data, although we have sought to use more longitudinal dimensions in our dependent performance variables. For instance, sales growth became difficult to measure, as we did not have historic or future estimates of microentrepreneurs for all years.

To conclude, our findings send a signal to policymakers that although financial literacy can be expected to help firms run more efficiently, make better investment decisions and generate more profits, it has no impact on sales growth, which is the ultimate way to scale a business for more earnings and more employment. In addition to financial literacy, our results on role models show that being acquainted with a successful entrepreneurial role model has a positive impact on ROA but does not provide any effect on profits or sales growth. Therefore, mentorship programs linking experienced and successful (profitable) entrepreneurs with microentrepreneurs may be a complementary strategy in poverty alleviation programs. Lastly, although not tested here specifically, we conclude that there may be other relevant skills worthy of further research that are more important for helping microenterprises grow in the informal economy, such as, for instance, marketing skills.

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High security around the entrance to a branch office of Banco D-Miro

8. Appendix 1 – Complete Survey

8.1. Spanish version

Encuesta

Versión 1.6

Buenos días, Sr/Sra. (NOMBRE DEL CLIENTE). Soy (NOMBRE ENTREVISTADOR) y le estoy llamando de Banco D-MIRO. Estamos realizando un estudio de nuestros clientes. Estamos colaborando con la Universidad de Agder en Noruega en este proyecto. Toda la información que nos provea será confidencial. Su colaboración es muy importante para nosotros y nos ayudará a mejorar el servicio a nuestros clientes en el futuro. Por su colaboración va a recibir un obsequio que podrá retirarlo en su agencia. Me gustaría hacerle algunas preguntas, ¿contamos con su colaboración?

A. Razones por las cuales el cliente no ha renovado su crédito / *Razones por tener deuda pendiente*

Indíquenos su grado de acuerdo o desacuerdo sobre la razón por la cual usted no ha renovado su crédito.

	Totalmente en desacuerdo	Bastante en desacuerdo	Ni acuerdo ni desacuerdo	Bastante de acuerdo	Totalmente de acuerdo
A1. El servicio de D-MIRO es malo	☐	☐	☐	☐	☐
A2. Mi negocio está yendo mal	☐	☐	☐	☐	☐
A3. La tasa de interés de los préstamos en D-MIRO es demasiada alta	☐	☐	☐	☐	☐
A4. Últimamente he tenido problemas con mi familia	☐	☐	☐	☐	☐
A5. Últimamente he tenido problemas con mi salud	☐	☐	☐	☐	☐
A6. Últimamente he tenido problemas con la salud de mi familia	☐	☐	☐	☐	☐
A7. Últimamente alguien en mi familia perdió el empleo	☐	☐	☐	☐	☐
A8. Tengo demasiada deuda	☐	☐	☐	☐	☐
A9. Los otros bancos tienen productos mejores	☐	☐	☐	☐	☐
A10. D-MIRO me dio créditos de monto menor al que yo necesitaba	☐	☐	☐	☐	☐
A11. Es difícil llegar a las Agencias de D-MIRO	☐	☐	☐	☐	☐
A12. Pagar el crédito significa mucho estrés	☐	☐	☐	☐	☐
A13. El plazo es demasiado corto	☐	☐	☐	☐	☐
A14. No quiero deuda por ahora, quiero descansar	☐	☐	☐	☐	☐
A15. Mi negocio está produciendo suficiente dinero y por eso no necesito prestar por ahora	☐	☐	☐	☐	☐
A16. Los créditos anteriores no me ayudaron en el negocio	☐	☐	☐	☐	☐
A18. No puedo pagar a través de internet o mi celular	☐	☐	☐	☐	☐
A19. Últimamente en mi negocio he hecho inversiones con mucho riesgo y perdí dinero	☐	☐	☐	☐	☐
A20. Me robaron	☐	☐	☐	☐	☐
A21. Saqué el crédito y lo compartí con otras personas	☐	☐	☐	☐	☐
A22. Estamos esperando por la aplicación del seguro de vida	☐	☐	☐	☐	☐
A23. Tengo problemas con la fecha de pago que me dieron para el crédito	☐	☐	☐	☐	☐
A24. Falleció un familiar mío	☐	☐	☐	☐	☐

A25. Mi garantizado tiene deuda pendiente	☐	☐	☐	☐	☐
A26. Familiares míos tienen deudas pendientes con el banco	☐	☐	☐	☐	☐
A27. Soy un cliente antiguo y deseo obtener mi crédito sin garante	☐	☐	☐	☐	☐

A28. ¿Cuál de las declaraciones anteriores describen de la mejor manera el motivo por or el cual usted tiene una deuda pendiente?

Elija una: _____

A29. ¿Cuál de las declaraciones anteriores) describen de la mejor manera porque usted no ha renovado su crédito?

Elija una: _____

B. Servicio

Indíquenos su satisfacción con los siguientes servicios.

	Muy malo	Malo	Regular	Bueno	Muy Bueno
B1. La longitud de las colas	☐	☐	☐	☐	☐
B2. El profesionalismo del personal de D-MIRO	☐	☐	☐	☐	☐
B3. El proceso de renovación de un crédito (fácil, se demora mucho, etc.)	☐	☐	☐	☐	☐
B4. La amabilidad del personal de D-MIRO	☐	☐	☐	☐	☐

C. El crédito

C1. Imaginemos que usted pudiera pedir cualquier monto de crédito ¿qué monto solicitaría?
Monto: $_____

D. Deuda pendiente

Indíquenos su grado de acuerdo o desacuerdo.

	Totalmente en desacuerdo	Bastante en desacuerdo	Ni acuerdo ni desacuerdo	Bastante de acuerdo	Totalmente de acuerdo
D1. Tener una deuda pendiente con cualquier institución afecta mi calidad de mi vida	☐	☐	☐	☐	☐
D2. En qué medida hago mi mejor esfuerzo para pagar las cuotas de D-MIRO en la fecha de vencimiento	☐	☐	☐	☐	☐

E. Educación financiera

E1. Suponga que usted tiene $100 en una cuenta de ahorros y la tasa de interés en la cuenta es del 2% al año. Imagina que el dinero lo deja por 5 años en esa cuenta. Después de cinco años, ¿cuánto tendría en la cuenta?

Elija una:

☐ Más de $102 ☐ Exactamente $102 ☐ Menos de $102 ☐ No lo sé

E2. Imaginemos que la tasa de interés en su cuenta de ahorros es 1% al año y que la inflación es 2% al año. Después de un año, el dinero que está en la cuenta le permitiría ¿comprar más que hoy?, ¿lo mismo que hoy? o ¿menos que hoy?

Elija una:

☐ Más ☐ Lo mismo ☐ Menos ☐ No lo sé

E3. ¿Cree usted que la siguiente declaración es verdadera o falsa? Invertir el dinero en una sola oportunidad por lo general me da mayor ganancia económica que si invertiría el mismo dinero en pequeñas cantidades y en varias oportunidades diferentes.

☐ Verdadero ☐ Falso ☐ No lo sé

F. Intenciones de crecimiento

F1. ¿Quiere usted ampliar su negocio en los próximos años, por ejemplo introducir nuevos productos, servicios o contratar más personas? Responda Si o No. ☐Sí ☐ No

F2. Si quisiera ampliar su negocio ¿cuántas personas desearía tener trabajando *con usted*? _____

F3. ¿Cuántas personas ayudan en su negocio actualmente *aparte de usted*? _____

G. Experiencias

Por favor especifique el número de años:

G1. ¿Cuántos años usted ha trabajado en total, en su vida entera? (Considere incluso si ha trabajado en relación de dependencia.) Años: _____

G2. ¿Cuántos años usted ha trabajado en su negocio propio? (Sumar todos los negocios anteriores al actual si fuere el caso.) Años: _____

H. Éxito de emprendimiento

Califique de las siguientes opciones.

	Pésimo	Muy malo	Malo	Regular	Bueno	Muy Bueno	Excelente
H1. ¿Qué tan exitoso usted se considera como emprendedor?	☐	☐	☐	☐	☐	☐	☐
H2. ¿Qué tan exitoso usted considera el nivel de rendimiento de su negocio?	☐	☐	☐	☐	☐	☐	☐

H3. Aproximadamente, ¿cuánto vende al mes en su negocio? $_____

H4. Aproximadamente, ¿cuáles son los gastos mensuales de su negocio? $_____

I. **Imagen corporativa**

	Perfecto	Casi Perfecto	Cerca	Lejos	Muy lejos
I1. Imagínese el banco perfecto. ¿Qué tan cerca de este banco está D-MIRO?	☐	☐	☐	☐	☐

Señale su grado de acuerdo con las siguientes afirmaciones:

	Totalmente de acuerdo	Bastante de acuerdo	Ni acuerdo ni desacuerdo	Bastante en desacuerdo	Totalmente en desacuerdo
I2. D-MIRO es un banco que me cuida	☐	☐	☐	☐	☐
I3. D-MIRO personaliza sus productos a mis necesidades	☐	☐	☐	☐	☐
I4. Yo siempre recomendaré D-MIRO a otras personas.	☐	☐	☐	☐	☐
I5. Confío totalmente en D-MIRO	☐	☐	☐	☐	☐

Cómo usted siente que se aplican a D-MIRO los siguientes términos.

	Totalmente de acuerdo	Bastante de acuerdo	Ni acuerdo ni desacuerdo	Bastante en desacuerdo	Totalmente en desacuerdo
I6. Profesionalismo	☐	☐	☐	☐	☐
I7. Sirviendo a los pobres	☐	☐	☐	☐	☐
I8. Da a todos las mismas oportunidades	☐	☐	☐	☐	☐
I9. Eficiencia	☐	☐	☐	☐	☐
I10. Justicia	☐	☐	☐	☐	☐
I11. Moderno	☐	☐	☐	☐	☐
I12. Barato	☐	☐	☐	☐	☐
I13. Fomentando la igualdad de género	☐	☐	☐	☐	☐

J. Relaciones con otros bancos

Señale su grado de acuerdo o desacuerdo con la siguiente afirmación:

	Totalmente en desacuerdo	Bastante en desacuerdo	Ni acuerdo ni desacuerdo	Bastante de acuerdo	Totalmente de acuerdo
J1. Tener más de un banco le da a usted más posibilidades de acceder a un crédito	☐	☐	☐	☐	☐

J2. ¿Qué piensa usted acerca del servicio de Banco D-MIRO en comparación con otros bancos?

Elija una:

☐ Mucho peor ☐Peor ☐Igual ☐Mejor ☐ Mucho mejor

J3. ¿Qué piensa usted acerca de la tasa de interés de Banco D-MIRO en comparación con otros bancos?

Elija una:

☐ Más alto ☐Alto ☐Igual ☐Menor ☐Mucho menor

J4. ¿Qué piensa usted acerca de la flexibilidad con respecto al monto de los créditos de Banco D-MIRO en comparación con otros bancos? (en otros bancos le dan más dinero)

Elija una:

☐ Mucho peor ☐Peor ☐Igual ☐Mejor ☐ Mucho mejor

Responda Si o No

J5. ¿Usted ha recibido un nuevo crédito en un otro banco después de su último crédito en D-MIRO?

☐Si ☐ No

K. El grado de diferenciación entre TODOS los bancos incluyendo a D-MIRO

	Ninguna diferencia	Algunas pequeñas diferencias	Algunas diferencias	Muchas diferencias	Grandes diferencias
K1. Indique en qué medida usted cree que hay diferencias significativas entre los bancos en el Ecuador.	☐	☐	☐	☐	☐

L. Costos de cambiar

Señale su grado de acuerdo o desacuerdo con la siguiente afirmación.

	Totalmente en desacuerdo	Bastante en desacuerdo	Ni acuerdo ni desacuerdo	Bastante de acuerdo	Totalmente de acuerdo
L1. Cambiarse a otro banco implica mucho esfuerzo	☐	☐	☐	☐	☐

Q. Ejemplos

Señale su grado de acuerdo con las siguientes afirmaciones.

	Totalmente en desacuerdo	Bastante en desacuerdo	Ni acuerdo ni desacuerdo	Bastante de acuerdo	Totalmente de acuerdo
Q1. Personalmente, estoy familiarizado con los empresarios exitosos	☐	☐	☐	☐	☐
Q2. En mi red de amigos y familiares hay empresarios exitosos	☐	☐	☐	☐	☐
Q3. Considero que algunos de los empresarios que conozco son ejemplo para mi	☐	☐	☐	☐	☐
Q4. Algunos empresarios que conozco han influenciado sobre mí	☐	☐	☐	☐	☐

R. Influencia de los padres

R1. ¿Por lo menos uno de sus padres alguna vez comenzó su propia empresa? ☐Sí ☐ No

	Pésimo	Muy malo	Malo	Regular	Bueno	Muy Bueno	Excelente
R2. En caso afirmativo, señale el nivel de éxitos en la empresa de sus padres.	☐	☐	☐	☐	☐	☐	☐

S. Satisfacción de la vida

Indique su grado de acuerdo o desacuerdo con las siguientes afirmaciones sobre la Satisfacción de la vida.

	Totalmente en desacuerdo	Bastante en desacuerdo	Ni acuerdo ni desacuerdo	Bastante de acuerdo	Totalmente de acuerdo
S1. En muchos aspectos mi vida está cerca de mi ideal	☐	☐	☐	☐	☐
S2. Las condiciones de mi vida son excelentes	☐	☐	☐	☐	☐
S3. Estoy satisfecho con mi vida	☐	☐	☐	☐	☐
S4. Hasta ahora he conseguido las cosas importantes que quiero en la vida	☐	☐	☐	☐	☐
S5. Si pudiera vivir mi vida de nuevo, cambiaría casi todo	☐	☐	☐	☐	☐

T. Productos nuevos

Si fuera posible; señale en qué medida habría usado los siguientes servicios.

	Nunca	Casi nunca	Algunas Veces	Frecuentemente	Muy frecuentemente
T1. Consultar el estado del crédito o el saldo de mi cuenta de ahorros en el internet.	☐	☐	☐	☐	☐
T2. Consultar el estado del crédito o el saldo de mi cuenta de ahorros en el celular.	☐	☐	☐	☐	☐
T3. Una cuenta de ahorros con una tarjeta de débito	☐	☐	☐	☐	☐

V. La probabilidad de dejar D-MIRO

0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
V1. Por favor indique la probabilidad de dejar de ser cliente de D-MIRO en los próximos 12 meses. Usar una escala de **0** (ninguna posibilidad) a **10** (completamente seguro).	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

10	Completamente seguro
9	Casi seguro
8	Muy probable
7	Probable
6	Muy buena posibilidad
5	Bastante buena posibilidad
4	Buena posibilidad
3	Alguna posibilidad
2	Leve posibilidad
1	Muy leve posibilidad
0	Ninguna posibilidad

Muchas gracias por su colaboración. Y no se olvide de acercarse a la agencia a retirar su obsequio. Indique a la persona de balcón de servicios que usted participo en una encuesta.

Note:

All questions were originally phrased in English before being translated into Spanish. Section E is from Lusardi & Mitchell (2014), where E3 is adapted to this context. Question F1 is adapted from Cassar (2004). I1, I4, I5, K, L is based on Beerli, Martin, & Quintana (2004) but adapted to this context. Section S is based on Diener, Emmons, Larsen, & Griffin (1985). Sections H, Q and R were developed in collaboration with Dr. Rotem Shneor. Section V is based on Juster (1966) and Garland (2002) but adapted to this context.

8.2. English version (transcribed)

Survey

Version 1.6

Good day, Mr. / Ms . (CUSTOMER NAME). I am (INTERVIEWER NAME) and I 'm calling from Banco D-MIRO. We are conducting a survey among our customers. We are collaborating with the University of Agder in Norway in this project, and all information is kept confidential. Your collaboration is very important to us and will help us improve our service to our customers in the future. For your participation you will receive a gift that you may pick up at your local bank office. I would like to ask you some questions, do we have your cooperation?

A. Reasons why the client has not renewed its loan / reasons for having outstanding debt
Please indicate their degree of agreement or disagreement on the reason why you have not renewed your credit.

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
A1. The service at D-MIRO is bad	☐	☐	☐	☐	☐
A2. My business is performing poorly	☐	☐	☐	☐	☐
A3. The interest rate on loans in D-MIRO is too high	☐	☐	☐	☐	☐
A4. Lately I have had problems with my family	☐	☐	☐	☐	☐
A5. Lately I have had problems with my health	☐	☐	☐	☐	☐
A6. Lately I have had problems with the health of my family	☐	☐	☐	☐	☐
A7. Lately someone in my family lost their job	☐	☐	☐	☐	☐
A8. I have too much debt	☐	☐	☐	☐	☐
A9. The other banks have better products	☐	☐	☐	☐	☐
A10. D-MIRO gave me less credit than I needed	☐	☐	☐	☐	☐
A11. It is difficult to reach the D-MIRO offices	☐	☐	☐	☐	☐
A12. Paying credit involves a lot of stress	☐	☐	☐	☐	☐
A13. The loan terms are too short	☐	☐	☐	☐	☐
A14. I do not want debt right now, I want to rest	☐	☐	☐	☐	☐
A15. My business is generating sufficient capital, where I do not need a loan	☐	☐	☐	☐	☐
A16. Previous loans did not help in the business	☐	☐	☐	☐	☐
A18. I cannot pay through internet or my mobile phone	☐	☐	☐	☐	☐
A19. Lately I have done some risky investments and lost money	☐	☐	☐	☐	☐
A20. I have been robbed	☐	☐	☐	☐	☐
A21. I used the credit and shared it with others	☐	☐	☐	☐	☐
A22. We are waiting for the application of life insurance	☐	☐	☐	☐	☐
A23. I have problems with the payment date that I have for my loan	☐	☐	☐	☐	☐
A24. A relative of mine has died	☐	☐	☐	☐	☐
A25. My guarantees have outstanding debt	☐	☐	☐	☐	☐

A26. My family has outstanding debts with the bank ☐ ☐ ☐ ☐ ☐

A27. I am on old customer and with to obtain credit without a guarantor ☐ ☐ ☐ ☐ ☐

A28. Which of the above statements describe the best way the reason why you have outstanding debt?

Select one: _____

A29. Which of the above statements describe in the best way why you have not renewed your credit?

Select one: _____

B. Service

Indicate your degree of satisfaction with the following services

	Very bad	Bad	Regular	Good	Very good
B1. The length of the cues	☐	☐	☐	☐	☐
B2. The professionalism of the staff of D-MIRO.	☐	☐	☐	☐	☐
B3. The process of credit renewal (easy or much delays etc.)	☐	☐	☐	☐	☐
B4. The friendliness of the staff of D-MIRO	☐	☐	☐	☐	☐

C. The loan

C1. Imagine that you could ask for any loan amount, what amount would you ask for? $_____

D. Pending debt

Please indicate your degree of agreement or disagreement

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
D1. To have an outstanding debt with any institution affects my quality of life	☐	☐	☐	☐	☐
D2. To the best extent I do my best to pay fees of D-Miro on the due date.	☐	☐	☐	☐	☐

E. Financial literacy

E1. Suppose you have $100 in a savings account earning 2 percent interest a year. **After five years**, how much would you have?

Select one:

☐ More than $102 ☐ Exactly $102 ☐ Less than $102 ☐ I do not know

E2. Imagine that the interest rate on your savings account is 1 percent a year and inflation is 2 percent a year. After one year, would the money in the account buy more than it does today, exactly the same or less than today?

Select one:

☐ More ☐ The same ☐ Less ☐ I do not know

E3. Do you think that the following statement is true or false? Investing everything in one opportunity usually provides a more certain economic reward than investing smaller amounts in many different opportunities.

☐ True ☐ False ☐ I do not know

F. Growth intentions

F1. Do you intend to expand the business significantly over the next years, introduce new products or services or hire more people? Answer Yes or No. ☐Yes ☐ No

F2. If you want to expand your business how many people would be working with you? _____

F3. How many people help you in your business, *besides yourself*? _____

G. Work experience

Please specify the number of years:

G1. How many years have you worked in total, in your life? (consider also years where you have been employed). Years: _____

G2. How many years have your worked with your own business? (Add up the total of years from all your previous businesses). Years: _____

H. Entrepreneurial success

Please rate the following options:

	Appalling	Very bad	Bad	Regular	Good	Very good	Excellent
H1. How successful do you consider yourself as an entrepreneur?	☐	☐	☐	☐	☐	☐	☐
H2. How successful do you consider the performance level of your business?	☐	☐	☐	☐	☐	☐	☐

H3. Approximately, how much do you sell for each month? $_____

H4. Approximately, how much are the monthly expenses of our business? $_____

I. Image

	Very far from	Far from	Close	Almost perfect	Perfect
I1. Imagine the perfect bank. How close is this bank to D-MIRO?	☐	☐	☐	☐	☐

Please indicate your level of agreement with the following statements

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
I2. D-MIRO is a bank that takes care of me.	☐	☐	☐	☐	☐
I3. D-MIRO customizes its products to my needs.	☐	☐	☐	☐	☐
I4. I always recommend D-MIRO others.	☐	☐	☐	☐	☐
I5. I fully trust D-MIRO.	☐	☐	☐	☐	☐

How do you feel that the following statements/terms apply to D-MIRO?

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
I6. Professionalism	☐	☐	☐	☐	☐
I7. Serving the poor	☐	☐	☐	☐	☐
I8. Giving everyone the same opportunities	☐	☐	☐	☐	☐
I9. Efficiency	☐	☐	☐	☐	☐
I10. Justice	☐	☐	☐	☐	☐
I11. Modern	☐	☐	☐	☐	☐
I12. Inexpensive	☐	☐	☐	☐	☐
I13. Promoting gender equality	☐	☐	☐	☐	☐

J. Other bank relations

Please indicate your degree of agreement or disagreement with the following statement:

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
J1. Having more than one bank gives you more opportunities to access credit	☐	☐	☐	☐	☐

J2. What do you think about the service of Banco D-MIRO compared to other banks?

Select one:

☐ Much worse ☐ Worse ☐ Equal ☐ Better ☐ Much better

J3. What do you think about the interest rate of Banco D-MIRO compared to other banks?

Select one:

☐ Much higher ☐ Higher ☐ Equal ☐ Lower ☐ Much lower

J4. What do you think about flexibility regarding loan amounts of Banco D-MIRO compared to other banks? (who lend more money)

Select one:

☐ Much worse ☐ Worse ☐ Equal ☐ Better ☐ Much better

Answer Yes or No!

J5. Have you received a new credit in another bank after your last credit D-MIRO?

☐ Yes ☐ No

K. The degree of differentiation among all banks including D-MIRO

	No difference	Some small differences	Some differences	Many differences	Big differences
K1. Indicate to what extent you believe that there are significant differences between banks in Ecuador.	☐	☐	☐	☐	☐

L. Switching costs

Please indicate your degree of agreement or disagreement with the following statement.

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
L1. Switching to another bank involves much effort	☐	☐	☐	☐	☐

Q. Role models

Indicate your level of agreement with the following statements.

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
Q1. I am personally familiar with successful entrepreneurs	☐	☐	☐	☐	☐
Q2. In my network of friends and colleagues, there are successful entrepreneurs	☐	☐	☐	☐	☐
Q3. I regard some of the entrepreneurs I know as role models	☐	☐	☐	☐	☐
Q4. Some entrepreneurs I know have been a source of influence for me	☐	☐	☐	☐	☐

R. Parental influence

R1. Indicate if at least one of your parents has ever started their own business? ☐Yes ☐ No

	Appalling	Very bad	Bad	Regular	Good	Very good	Excellent
R2. If yes, please rate the level of success in the business of your parents.	☐	☐	☐	☐	☐	☐	☐

S. Satisfaction in life

Please indicate your level of agreement with the following statements about the Life Satisfaction.

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Fully agree
S1. In many ways my life is close to my ideal	☐	☐	☐	☐	☐
S2. The conditions of my life are excellent	☐	☐	☐	☐	☐
S3. I am satisfied with my life	☐	☐	☐	☐	☐
S4. So far I have gotten the important things I want in life	☐	☐	☐	☐	☐
S5. If I could live my life over, I would change almost nothing	☐	☐	☐	☐	☐

T. New products

Indicate to what extent you use the following services if they were available:

	Never	Hardly ever	Sometimes	Often	Very often
T1. Check the credit status or the balance of my savings account on the internet.	☐	☐	☐	☐	☐
T2. Check the credit status or the balance of my savings in my mobile phone	☐	☐	☐	☐	☐
T3. A savings account with a debit card in the phone.	☐	☐	☐	☐	☐

V. Likelihood of leaving D-MIRO

V1. Please indicate the probability of leaving D-MIRO over the next twelve months. Use a scale from zero (no chance) to ten (certain).

0	1	2	3	4	5	6	7	8	9	10
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

10	Certain, practically certain
9	Almost sure
8	Very probable
7	Probable
6	Good possibility
5	Fairly good possibility
4	Fair possibility
3	Some possibility
2	Slight possibility
1	Very slight possibility
0	No chance, almost no chance

Thank you very much for your cooperation, and please do not forget to pick up your free gift at the local bank office.