Essays in Empirical Finance

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To Anders

Foreword

This volume is the result of a research project carried out at the Department of Finance at the Stockholm School of Economics (SSE).

This volume is submitted as a doctor's thesis at SSE. In keeping with the policies of SSE, the author has been entirely free to conduct and present his research in the manner of his choosing as an expression of his own ideas.

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Introduction

This dissertation consists of four independent empirical research papers in the field of financial economics, that I wrote during my Ph.D. studies at the Department of Finance at the Stockholm School of Economics. The papers are self-contained and can be read individually.

The first paper — *Going Online? The Motive of Firms to Borrow from the Crowd* — studies the recent financial innovation of crowdfunding, particularly lending-based crowdfunding or crowdlending, and investigates its role in entrepreneurial financing. I link directly the new online market to the traditional financial intermediaries and investigate firms' motivation to seek crowdlending. Using a novel Swedish dataset, I analyze the determinants of firms to borrow from the crowd by comparing the ex-ante characteristics of those firms with other private limited liability firms that borrow from banks. The results show that firms that borrow from the crowd have higher growth rates and external financing demand, but fewer tangible assets to pledge as collateral, compared with firms that borrow from banks. In terms of the motivation of firms to seek crowdlending, it is more likely that financially constrained small businesses, especially those that require small-sized loans, become rationed by banks and the emergence of crowdlending completes the missing credit market as an alternative financing provider.

Regarding the pricing of commercial loans in the crowdlending market, interest rates are primarily determined by the credit and financial information of firms, while non-standard information, such as campaign representative profiles emphasized in the peer-to-peer lending studies (e.g., Herzenstein et al., 2008; Pope and Sydnor, 2011; Duarte et al., 2012; Ravina, 2012), has little impact on pricing determination. This could be attributed to the fact that firms are the borrowing entities in the commercial crowdlending market, which means that the fundamental information of firms determines the borrowing costs.

This is the first study on the role of lending-based crowdfunding in business financing, especially small business financing, through providing empirical evidence on borrowers' profile and motivation to seek credit from the crowd. It also provides a reference point for policy makers considering the ongoing debates on regulating the crowdfunding market. As crowdfunding is still a very young research area, more studies are needed in the future to further explore the new online market.

The second paper, entitled *Monetary Policy, Lending Standard, and Bank Risk-Taking: Evidence from the Swedish Mortgage Market*, is co-authored with Peter van Santen. Since the recent global financial crisis, a growing literature has investigated how monetary policy rates affect banks' risk-taking incentives and lending standards. However, previous studies have focused on corporate lending, meaning that there is scant evidence linking policy rates and bank risk-taking in the mortgage market.[1] This study fills this gap by using the population of new mortgage loans granted by the eight largest banks in Sweden.[2] A novel feature of this study is that we observe the most important formula for each bank, which is used to check repayment ability of the loan applicant and determine the credit limit during the lending decision process. The key component in the formula is the stressed rate, which drives the variation in the credit limits across banks and links to the policy rate. We identify the effect of policy rates on bank risk-taking by exploring the differences in lending outcomes to high-risk borrowers relative to low-risk borrowers among banks using different stressed-rate settings. We find a shift of the composition of credit supply towards risky borrowers, especially for banks using market rates in setting credit limits. This may be driven by the risk-taking incentives to achieve higher returns under the low-rate environment. However, the setup of the stressed rate was predetermined long before the low-rate environment, and banks with different stressed-rate settings have similar ex-ante characteristics. Hence, the heterogeneous effect of policy rates on risk-taking among banks with different stressed-rate settings may be related to the differences in banks' business models or risk culture.

[1]See, e.g., Jiménez et al. (2014), Ioannidou et al. (2015), Dell'Ariccia et al. (2016), Heider et al. (2016), and Paligorova and Santos (2016).

[2]The mortgage loans originated by the eight major banks cover 94% of the total mortgage lending in Sweden (Winstrand and Ölcer, 2014).

The third paper, *House Prices, Home Equity, and Personal Debt Composition*, is co-authored with Xin Zhang. In this paper, we use high quality monthly panel data of Swedish individuals' debt balances to investigate how individuals respond to house price changes and management their personal debt composition. In contrast to previous studies (e.g., Mian and Sufi, 2011; Brown et al., 2015), which are based on the U.S. experience, this paper provides empirical evidence from a European perspective, where the fundamental legal and institutional settings differ from those of the United States. Moreover, we focus on the debt composition and the flow dynamics between long-term mortgage and short-term unsecured debt, rather than the stock of personal debt balances. This is because the personal debt composition determines the debt service ratio, which is a more accurate measure of personal debt burden than the debt-to-income ratio, and a reliable early warning signal ahead of systemic banking crisis, according to recent studies (e.g., Drehmann and Juselius, 2012; Ganong and Noel, 2017).

We show that, during a housing boom period, homeowners use home equity to pay down more expensive unsecured consumer debt in order to reoptimize their personal debt structure, rather than exhaust their debt capacity for consumption, which is found to be the case in the U.S. market. This may be because borrowers in Sweden face full liability for their personal debt, and therefore demonstrate credit-savvy behavior even during a housing boom. This can reduce the debt service burden and mitigate the negative consequences of undesirable income shocks. Moreover, we also find evidence that entrepreneurial financing is an important usage of home equity, consistent with previous studies (e.g., Corradin and Popov, 2015; Jensen et al., 2015; Schmalz et al., 2017).

The forth paper, *Entrepreneurs' Foreign Experience, Cultural Proximity, and Venture Capital Investments*, starts from the "liability of foreignness" challenges in cross-border VC investments addressed in the literature.[3] When VC investors expand their activities internationally, especially to emerging markets, they face disadvantages of higher screening and monitoring costs due to a lack of cultural proximity to portfolio firms. Previous evidence on the role of cultural proximity in cross-border VC investments is based on cross-country studies, and the measure of cultural distance between the countries where the VC

[3]See, e.g., Wang and Wang (2011), Dai et al. (2012), Humphery-Jenner and Suchard (2013), and Chemmanur et al. (2016).

and the portfolio firm are from.[4] However, the friction caused by cultural difference in cross-border VC investments could occur through two potential channels: the first is communication challenges between the VC and the portfolio firm due to different business philosophy or working styles; the second is the difficulties of adjusting to the new business environment, understanding the local market, and building local networks.

In this study, I investigate the first channel by using a dataset of VC-backed firms in China — the largest destination for international VC investments — together with the information on cultural proximity between VC investors and portfolio firms based on the measure of founders' foreign experience. Founders with (without) foreign study or work experience, which are called returnee (local) entrepreneurs, have tighter cultural proximity to foreign (domestic) VCs. Meanwhile, foreign VCs in China face the same business environment regardless of whether they invest in returnee or local entrepreneurs. I find that firms founded by returnee (local) entrepreneurs have a higher (lower) proportion of foreign VC investors. Regarding the exit performance, foreign VCs are associated with less successful investment outcomes on average; this is consistent with previous findings (e.g., Wang and Wang, 2011; Humphery-Jenner and Suchard, 2013). However, a portfolio firm backed by foreign VCs is more likely to succeed if the founder is a returnee. The effect is stronger for firms with a higher proportion of foreign VCs among all backing VC investors. The results are more likely driven by the increased cultural proximity due to the foreign experience of returnee entrepreneurs, which mitigates communication challenges between foreign VCs and portfolio firms, eases information collection and monitoring, and therefore enhances venture success.

The remainder of this dissertation consists of the four papers introduced above. Each of the four papers represents a separate chapter. Accompanying tables and figures, as well as a bibliography, follow each article.

[4] See, e.g., Dai et al. (2012), Nahata et al. (2014), Bottazzi et al. (2016), and Chemmanur et al. (2016).

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