

Social Banks and Reciprocity in the Credit Market: Evidence from Europe*

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Abstract

Social banks are financial intermediaries paying attention to non-economic (i.e., social, ethical, and environmental) criteria. This paper investigates the behavior of social banks in the European credit market. We use a unique hand-collected dataset on 389 business loans granted by a French social bank. Our results show that the social bank charges below-market interest rates to viable social projects. Moreover, regardless of their creditworthiness, motivated borrowers respond to advantageous credit conditions by significantly lowering their probability of default. We interpret this outcome as the first evidence of reciprocity in the credit market.

1. Introduction

Social or ethical banks¹ are financial intermediaries with a double bottom line. They share the commitment of paying attention to the non-economic (i.e. social and/or environmental) consequences of their financial activities (Green, 1989; Taupin and Glémain, 2007; Benedikter, 2011; Weber and Remer, 2011). This paper investigates both the social banks' behavior in the credit market and the resulting repayment conduct of their borrowers. To that end, we exploit a unique hand-collected dataset including detailed information on 389 business loans granted by a French social bank (see Cornée, 2012). Importantly, each borrower in our sample is graded on both a social and a financial scale.

Social banks contrast not only with typical capitalistic banks, but also with microfinance institutions active in developing countries (Armendariz and Szafarz, 2011). Indeed, social banks in developed countries evolve in a competitive environment where equilibrium interest rates are priced by the market. The main goal of social banks consists in serving community-oriented projects and social enterprises, which put the emphasis not only on financial returns, but also – and often as a priority – on social aims (Defourny, 2001). Even though social banks still remain niche institutions, they have dramatically spread over the last years. In Europe, which is their strong place, today's combined assets total about € 14 billion. They have doubled over the last years and continue to increase rapidly (Benedikter, 2011).

Social banking is a nascent area of research. Thanks to a theoretical model, Barigozzi and Tedeschi (2011) establish conditions under which ethically-motivated entrepreneurs can be matched with a social bank on a competitive credit market involving standard profit-maximizing lenders and borrowers. Starting from the assumption that profitability is lower for

¹ We will henceforth use the term “social bank” to refer to any bank claiming to pay attention to extra-financial criteria, regardless of the specific nature of these criteria.

social projects than for standard ones, they prove that the market for ethical projects is active and the credit market is fully segmented if the expected profitability of ethical projects is sufficiently close to that of standard ones, and/or the social responsibility premium of motivated borrowers is sufficiently high. In practice, however, social banks do not necessarily target projects with low profitability, and the credit market is not fully segmented. Moreover, our empirical study encompasses the scope of the model proposed by Barigozzi and Tedeschi (2011). On top of social and non-social existing firms, the pool of borrowers in our sample includes start-ups of which social outcomes are uncertain.

Social firms may actually support motivated borrowers in at least two different ways. First, they can subsidize social firms otherwise redlined by profit-oriented credit providers. Alternatively, they can provide below-market credit conditions (lower rate, higher loan size, lower collateralization) to profitable projects in order to increase their chances of success. While, these two strategies may be combined, their practical consequences are dramatically different. In the first case, the social bank acts as a substitute for public subsidy, and launches social but unprofitable activities. In the second one, it acts as a profit accelerator for already well-performing social firms, a target mostly disregarded by public funding schemes. To empirically disentangle these strategies, we suggest using the correlation between the financial and social levels of the selected projects. From our sample, we obtain a zero correlation, which rules out the possibility that the bank is softer on social projects. As a consequence, we claim the social bank does not target social projects with low profitability. Rather, it is concerned with enhancing the probability of success of viable social projects. By concentrating on profitable projects, the social bank acts as a complement rather than a substitute to public funding schemes.

Next, we gauge the intensity of the bank's social outcome in a multivariate framework explaining simultaneously loan sizes, collateralization requirements, and charged interest rates. Our estimation results show that the bank offers rebates in interest rates to motivated borrowers. Interestingly, these borrowers repay significantly better than others with equal *ex ante* creditworthiness. Hence, we argue that rebates in interest rates work as a commitment device from the social bank, which generates reciprocity from motivated borrowers. These borrowers put more efforts in the realization of their project because the bank has shown its social commitment through credit conditions.

This interpretation is in line with the reciprocity theory originally proposed by Rabin (1993). Experiments conducted in principal-agent settings indicate that reciprocity is a powerful motivation for contract enforceability. This is especially the case when the contract is incomplete and plagued by both *ex ante* and *ex post* moral hazards (Fehr *et al.*, 1997; Fehr *et al.*, 2007; Brown *et al.*, 2009). Ethical values shared by the bank and its borrowers act as a buffer against moral hazard problems.

The rest of this paper is organized as follows. Section 2 presents the state of the art on social banks, with a special attention to European banks. Section 3 introduces our database. Sections 4 and 5 investigate credit conditions and probabilities of default, respectively. Section 6 offers robustness checks. Section 7 concludes.

2. Social Banking in Europe: What Do We Know?

The recent financial crisis has revealed the limits of mainstream banking. As a consequence, alternative forms of banking are now in the spotlight. The worldwide social banking sector, however, presents strong geographic heterogeneity. To provide a meaningful comparison between social and mainstream banks, we focus on Europe, the strong place of social banking (Benedikter, 2011).² European social banks have experienced impressive growth before the onset of the recent crisis. Their activity has boomed since then. On the whole, the average annual growth rate of their assets is above 20% during the 2007-2010 period.

European social banks are characterized by a double – social and financial – bottom-line. Typically though, they advertize social achievements as their main goal. In this context, financial concerns are justified by the need for economic sustainability rather than profit maximization (Becchetti and Garcia, 2011; Becchetti *et al.*, 2011; San Jose *et al.*, 2011). In addition, social banks are ruled by key governance principles, such as transparency and responsibility (Cowton, 2002).³

Basically, a social bank transfers a social premium from motivated investors to motivated borrowers. This premium can be proxied by the difference between the average interest rates paid to the savers of the social bank and to those of a comparable mainstream bank. For *Banca Etica*, an Italian social bank, Becchetti and Garcia (2011) evaluate the premium around 150 basis-points in 2007. Moreover, San-Jose *et al.* (2011, p. 152) report that “*ethical banks*

² In the U.S., only few social banks exist, In addition, they have low levels of assets and heterogeneous mission statements. In contrast, European social banks share similar goals and practices.

³ Becchetti *et al.* (2011) identify the following foundational principles of social banks: 1) awareness of non-economic consequences, 2) access to finance as a human right, 3) efficiency and probity, 4) fair redistribution of profits, 5) full transparency, 6) encouragement of active involvement of shareholders and savers in decision making, and 7) ethical inspiration in all activities.

do not generally distribute benefits between shareholders and, if at all they do so, the distribution is very limited, and profit is, therefore, only residual.”

Table 1 provides synthetic figures for European social-versus-mainstream banks. The data is extracted from the annual report of the Global Alliance for Banking on Values (GABV, 2012).⁴ It encompasses the major European banking institutions in 2010. All of them present book total assets over \$ 1 billion, except for *Merkur* whose total assets amount \$ 300 million. Small social banks, like the *Norwegian Cultura Sparebank*, are therefore absent from Table 1.

Social banks prefer financing the “real economy” over undertaking purely financial transactions. T-tests performed on the data in Table 1 confirm that social banks have significantly larger loans-to-assets and deposits-to-assets ratios than commercial banks. While returns on assets (ROA) are not significantly different between the two types of banks, the returns on equity (ROE) are significantly lower for social banks. On average, social banks deliver ROEs reaching only a third of those of commercial banks (2.42 versus 7.42), testifying to the predominance of social mission over profitability concerns. This evidence is also associated with differences in levels of capitalization. Differences in the ratio of tier-1 capital over assets (see Table 1) show that social banks are significantly more capitalized than their commercial counterparts.

⁴ The conventional banks are classified according to the Global Systemically Important Financial Institutions by the Financial Stability Board. They are representative of the European mainstream banking sector. Getting exhaustive data is, nevertheless, a difficult task, and the financial European financial landscape evolves rapidly.

Table 1: Social vs. Commercial banks in Europe: Descriptive Statistics (in %)*Source: Global Alliance for Banking on Values (2012), own calculations.*

| Bank | Loans /Assets | Deposit /Assets | Tier 1 capital / Assets | ROA | ROE | Asset Growth (2007-10) |
|--|---------------------|---------------------|-------------------------|--------------------|--------------------|------------------------|
| Social Banks | | | | | | |
| ABS (Switzerland) | 74.7 | 92.78 | 11.90 | 0.04 | 0.7 | 60.32 |
| Banca Etica (Italy) | 58.44 | 58.56 | 8.63 | -0.07 | -1.48 | 29.21 |
| GLS Bank (Germany) | 76.28 | 85.91 | 9.25 | 0.4 | 8.32 | 111 |
| Merkur (Denmark) | 64.14 | 81.48 | 13.37 | 0.04 | 0.33 | 54.87 |
| Triodos (Netherlands & Belgium) | 60.88 | 86.95 | 14.96 | 0.36 | 3.4 | 66.83 |
| Crédit Coop (France) | 81.11 | 52.12 | 11.56 | 0.34 | 3.28 | -1.75 |
| Unweighted average^a | 69.26 (3.79) | 76.3 (6.64) | 11.61 (0.98) | 0.18 (0.08) | 2.42 (1.40) | 53.41 (15.46) |
| Commercial Banks | | | | | | |
| Barclays Bank (UK) | 28.73 | 23.21 | 7.78 | 0.2 | 7.2 | -5.96 |
| BNP (France) | 34.27 | 29.07 | 9.13 | 0.39 | 12.3 | 6.17 |
| BPCE (France) | 53.66 | 37.58 | 7.54 | 0.35 | 7.97 | 98.65 |
| Commerzbank (Germany) | 43.45 | 34.84 | 7.00 | 0.18 | 4.7 | 10.16 |
| Credit Suisse (Switzerland) | 21.21 | 27.86 | 14.48 | 0.49 | 14.4 | -9.18 |
| Deutsche Bank (Germany) | 21.4 | 28.02 | 7.83 | 0.14 | 5.5 | -10.87 |
| Dexia (Belgium) | 62.16 | 22.42 | 11.99 | 0.14 | 3.8 | -15.6 |
| Crédit Agricole (France) | 24.05 | 31.46 | 8.60 | 0.08 | 2.9 | 1.45 |
| HSBC (UK) | 39.04 | 50.02 | 10.13 | 0.59 | 9.77 | 4.27 |
| ING (Netherlands) | 49.17 | 41 | 9.80 | 0.28 | 9.7 | -14.45 |
| Lloyds (UK) | 59.76 | 39.7 | 9.30 | -0.03 | -0.7 | 117.43 |
| Nordea (Sweden) | 54.1 | 30.37 | 8.15 | 0.49 | 11.5 | 34.41 |
| RBS (UK) | 38.2 | 35.13 | 8.20 | -0.07 | -0.7 | -40.74 |
| Santander (Spain) | 59.48 | 50.63 | 7.79 | 0.76 | 11.8 | 20.07 |
| Société Générale (France) | 32.84 | 29.8 | 9.18 | 0.27 | 6.58 | -4.84 |
| UBS (Switzerland) | 19.96 | 25.23 | 13.25 | 0.57 | 16.7 | -30.59 |
| Unicredit (Italy) | 59.78 | 62.75 | 7.33 | 0.14 | 2.7 | -18.1 |
| Unweighted average^a | 41.25 (3.67) | 35.24 (2.63) | 0.25 (0.51) | 0.29 (0.05) | 7.42 (1.22) | 8.37 (10.09) |
| T-tests for differences between social and commercial banks | | | | | | |
| | -4.21*** | -6.90*** | -2.25** | 1.00 | 2.23** | -2.32** |

^a: standard deviations in brackets .

T-tests for differences in means between subsamples:

*: equality rejected with $p < 10\%$, **: equality rejected with $p < 5\%$, ***: equality rejected with $p < 1\%$

Four out of six social banks in Table 1 have the legal status of cooperatives. The two remaining ones, namely ABS and Triodos, have a capitalistic ownership structure, but their shareholders' voting rights are capped. In ABS, each shareholder must remain below the three-percent voting-right threshold. Triodos Bank's shares are trusted by an *ad hoc* foundation, of which board is appointed by depository receipt holders with limited voting rights.

Although they do not fully overlap, social banks and financial cooperatives share similar characteristics. This is important to our study as financial cooperatives are extensively analyzed in the literature, while survey data is still lacking for social banks. Based on a sample of 181 large European banking companies, Iannotta *et al* (2007) observe that financial cooperatives distribute fewer benefits than mainstream banks. Cooperatives also tend to adopt less risky investment strategies. Hesse and Cihac (2006) confirm that European cooperatives bring more stability to the financial sector than their for-profit counterparts. In particular, cooperative banks tend to smoothly absorb conjunctural shocks. This accomplishment is driven by financial strategies based on simple intermediation.

Capturing the way social banks operate on the credit market is complex for at least two reasons. First, as demonstrated by Stiglitz and Weiss (1981), in imperfect markets with asymmetric information, interest rates fail to clear the market. The credit market is thus characterized by credit-rationing, and the demand side of the market is partially unobservable. Second, credit conditions are multiple. To face informational asymmetries banks combine policy instruments such as collateralization, loan size, and interest rate, in a fashion that varies across institutions and loan purposes. Accordingly, credit scoring is bank-specific, even for small-business lending alone (Cowan and Cowan, 2006). For social banks, the issue is even more acute due to the presence of a double bottom-line. The interaction of social and financial

missions is still poorly elucidated. Stylized facts are scarce regarding the credit conditions of social banks.

As emphasized by Hudon (2007) in the context of microcredit,⁵ the level of interest rates is instrumental from an ethical standpoint. In an experimental long-term relationship setting, Cornée *et al.* (2012) show that social bankers do not take advantage of their oligopolistic situation and offer fair interest rates. Unlike their commercial counterparts, they stick to steady interest rates, avoiding the so-called “hold-up effect” typically associated to relationship banking (Boot, 2000). Cornée *et al.* (2012) also find that social bankers exhibit a higher propensity to grant loans to their incumbent borrowers. Along the same line, Becchetti *et al.* (2011) show that 20.42% of the loans granted by *Banca Etica* are subject to rationing, while loans are denied to 15.36% of the applicants. These figures point to a less stringent rationing than that of mainstream banks (Guiso, 2003; Minetti and Zhu, 2011). This evidence confirms that social banks facilitate access to credit to borrowers rationed by the conventional banking system.

Low collateralization is also claimed to be a distinctive feature of social banking. While mainstream banks typically require collateral from the vast majority of small-business borrowers,⁶ Becchetti and Garcia (2011) mention that *Banca Etica* tolerates around 42 percent of uncollateralized loans. The authors also show that the requested collateralization depends positively on *ex ante* risk, and negatively on existing relationship. This incentive-based strategy seems fruitful since the excess-risk brought by uncollateralized borrowers is washed out in repayment conduct.

⁵ Paradoxically, more evidence is available on microfinance institutions active in developing countries than on social banks active in developing countries. Actually, the microcredit lending methodology is specific. It is based on the supply of standardized small loans without collateral (Armendariz and Morduch, 2010). Microfinance institutions charge identical interest rate to most – if not all – borrowers, and solely tailor loan size to their borrowers’ perceived creditworthiness (Agier and Szafarz, 2012).

⁶ Reported evidence includes: 86% of collateralized small-business loans in the U.S. (Federal Reserve Bulletin, 2004), and 85% in the U.K. (Coco, 2000).

Although privately owned in general, social banks perpetuate the tradition of credit subsidization.⁷ The cost associated to their social mission is borne by their investors. These motivated individuals constitute the driving force of the bank's social orientation. For the researchers, the main challenge is elucidating how the managers of social banks translate this orientation into everyday practice in the credit market. This paper aims to gain a glimpse into this practice by dissecting the loan portfolio and the repayment performances of a French social bank. To our knowledge, no study has extensively studied the contractual policies implemented by these banks. This paper intends to bridge this gap.

3. Data and Preliminary Analysis

The hand-collected data used in this study come from a French social bank established in 1988. It currently operates all over the country under the supervision of the *Banque de France*, the French Central Bank. This bank is a financial cooperative and does not belong to the GAVB. Therefore, it is absent from Table 1. In 2011, it counted 30,170 members, and its total assets were € 356 M. It is funded by savers and cooperative members motivated by ethical concerns. The pool of borrowers is mainly composed of small businesses, community-oriented project holders, and social enterprises. The bank remunerates both its savers and capital holders with returns but slightly above inflation.

⁷ Subsidized loans were originally designed in the US to help the development of specific sectors like the agriculture (Saulnier *et al.*, 1958). Later on, credit assistance was extended to other groups of borrowers like homeowners and students. In Europe, publicly subsidized credit is also granted. In particular, subsidized loans target disadvantaged segments of the population through student loans (Ziderman, 2009), social housing loans (UN-HABITAT, 2009), and start-up subsidy.⁷ In developing countries, development banks aim to alleviate capital constraints faced by corporate investors (Bulow and Rogoff, 2005). The impressive development of – still heavily subsidized – microcredit activities brings additional evidence to the relevance of double-bottom-line lending (Armendariz and Morduch, 2010).

Over the period stretching from 2001 to 2004,⁸ the bank granted 630 loans. Only 476 of them were effectively extended. We managed to have access to the complete credit files for 389 extended loans, which confers to our sample 81 percent representativeness.⁹ Missing files are proportionately less frequent in the second half of the sample period (see Table 1), due to improvements in the bank's information system.

Table 1: Sample Yearly Composition

| Year | Extended loans | Observed loans | Representativeness |
|-------------|-----------------------|-----------------------|---------------------------|
| 2001 | 87 | 50 | 57,47% |
| 2002 | 106 | 84 | 79,25% |
| 2003 | 143 | 129 | 90,21% |
| 2004 | 140 | 126 | 90,00% |
| | 476 | 389 | 81,72% |

All borrowers are small businesses. They are relatively young (5.34 years old, on average) and include 49% of start-ups. Their average turnover is about € 540,000. Their average number of employees is 7.59. They operate in four sectors: environment protection and ecology (46%), fair trade and community-based services (30%), culture and health (12%), economic inclusion and microfinance (12%). Regarding legal statuses, 44% are unlimited companies, 36% are limited companies, and 20% are cooperatives.¹⁰ Interestingly, all the loans are pledged with collateral. The average level of collateralization is equal to 84%, which is in line with figures from mainstream banking (see Becchetti and Garcia, 2011). This, however, contrasts with the 42% of uncollateralized loans reported by Becchetti and Garcia (2011) for *Banca Etica*. The difference is likely attributable to the fact that *Banca Etica* trades with borrowers belonging to consortiums. Hence, existing long-term relationships between

⁸ More precisely, our sample period stretches 01/01/2001 to 25/11/2004. The data were collected in November 2008. The four-year period from November 2004 to November 2008 is only used to record eventual default occurrences. In this way, we have a standardized four-year feedback period for all loans in our database.

⁹ Most likely, our sample does not suffer from a selection bias. The missing loans were excluded by accident, and not on purpose. Unfortunately, we have no information on denied loans.

¹⁰ Due to data unavailability, some statistics are obtained from sub-samples: 55 firms for turnover and staff size, 350 firms for age and firm status. The remaining figures are obtained from the whole sample.

these consortiums and the bank act as a substitute for collateral, even though the consortiums provide no formal guarantee for the loans.

Table 2 presents the variables used in the empirical study. The variables are broken down into five categories. First, each borrower is characterized by a financial rating (FIN) and a social-responsibility rating (SR). These ratings are established in-house by the bank. Both are given on a one-to-three scale, three being the best grade. The financial rating is determined by the credit officer in charge according to the bank's internal procedure.¹¹ The social-responsibility rating assesses the foreseen social and environmental accomplishments of the project. It is attributed by the credit committee¹² according to guidelines provided by the so-called "ethics committee" appointed by the Board of the bank. In contrast to FIN, SR is not determined along strict rules. Rather, it involves judgments on non-tangible characteristics, such as moral rectitude, social motivation, ethicality of business activity, corporate responsibility towards stakeholders, etc.

Second, the three contractual features of the loans are: charged interest rate (RATE), loan size in € 10,000 (LOANSIZE), and share of loan unpledged by collateral (NONCOLLATERAL). These features are fixed by the bank.

Third, like in previous studies (Petersen and Rajan, 1994; Berger and Udell, 1995; Elsas and Krahnert, 1998), for each loan we have collected the same-day three-month Paris Inter Bank Offered Rate (PIBOR3M), which proxies the bank's refinancing interest rate.

Fourth, three dummy variables account for the borrowing firm being a start-up (STARTUP), having a banking relationship prior to loan extension (RELATIONSHIP), and having

¹¹ The financial rating gives a general appraisal on both backward-looking and forward-looking perspectives. It assesses 1) business risks and prospects, 2) financial statements, and 3) profitability. Since the bank's clientele includes a large share of start-ups, this approach is more relevant to its practice than the conventional backward-looking point-in-time measure used to evaluate bankruptcy risks (Grunert *et al.*, 2005).

¹² The credit committee is composed of two persons: a bank (or branch) manager and the loan officer.

experienced a default within the four years following loan extension, respectively. The two first ones are observed by the bank when determining credit condition. The third one is observed *ex post*.

Table 2: The variables in our Database

| VARIABLES | DEFINITIONS |
|-------------------------------------|---|
| Financial and social ratings | |
| FIN | Financial rating: from 3 (excellent) to 1 (distress). |
| SR | Social-responsibility rating: from 3 (best) to 1 (worst). |
| Contractual features | |
| RATE | Nominal rate at which the loan is granted (100-point basis) |
| LOANSIZE | Amount extended in 10,000 €. |
| NONCOLLAT | share of the loan non-pledged by collateral (in %). |
| Refinancing interest rate | |
| PIBOR3M | Three-month Paris Inter Bank Offered Rate (100-point basis) |
| Additional characteristics | |
| STARTUP | = 1 if the loan is extended to a start-up, and 0 otherwise. |
| RELATIONSHIP | = 1 if the firm had a banking relationship prior to loan approval, and 0 otherwise. |
| DEFAULT | = 1 if the firm defaults within the four years after loan extension, and 0 otherwise. |

Figure 1 depicts the loan distribution according to both SR and STARTUP characteristics. It appears that 18% of the funded projects have a low SR level (SR = 1), 44% have a middle one (SR = 2), and 38% have a high one (SR = 3). In line with its mission, the bank favors socially-oriented projects, but its portfolio is not restricted to high-SR projects. This can stem from diversification motives and/or scarcity of such projects.

Figure 1: Loan distribution according to SR and STARTUP characteristics

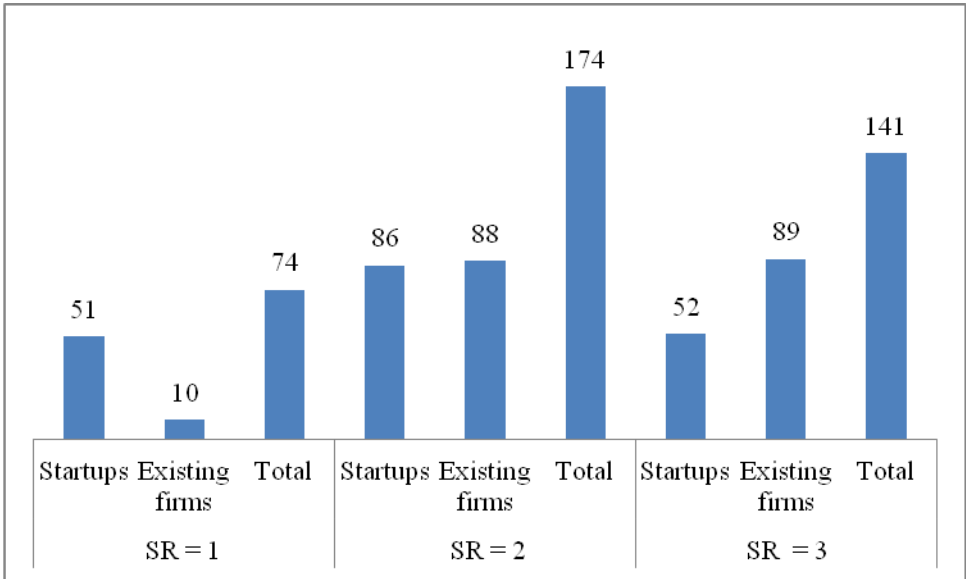


Figure 1 also shows that start-ups represent 83% of the firms with SR = 1, but only 57% of those with SR = 2, and 40% of those with SR = 3. The proportion of start-ups is thus inversely related to SR. A possible explanation relates to the bank’s prudence in assessing SR for the start-ups. Information asymmetries are evidently high for start-ups.

Tables 3 and 4 provide descriptive statistics. Table 3 gives an overview for the whole sample first globally, then split in start-ups and the existing firms, respectively. T-tests assess the differences in means between startups and existing firms, except for the relationship variable, which hardly makes sense for start-ups.¹³ Table 3 shows that SR is significantly higher for existing firms (2.33) than for start-ups (2.01). In contrast, FIN is similar for the two types of firms (1.97). The yearly interest rate charged by the bank is 5.87 % on average, while the average refinancing rate (PIBOR3M) is 2.70 % over the period. No significant difference in charged rates is observed for start-ups *versus* existing firms. The average loan size is € 46,800. Start-ups only get a € 36,000 average loan size, which is significantly smaller than the

¹³ In fact, six start-ups in our sample are endowed with an existing banking relationship. The reason for this apparent anomaly is that these start-ups belong to corporate networks already known by the bank.

€ 57,500 one extended to existing firms. The non-collateralized share of the loans reaches around 16 % on average for both types of firms.

Lastly, 23% of the borrowing firms experienced repayment issues within the four-year period following loan extension. These issues, grouped under the “default” denomination, are: moratoriums, allowances of loan provisions, credit withdrawals, dispositions of collaterals, and liquidations. The definition of default used by the bank is consistent with the recommendation issued by the Basel Committee on Banking Supervision (Second Consultative Document, 2001, recommendation 272). It is, however, quite broad. Unfortunately, we ignore the specific category which each default in our sample belongs to. Nonetheless, based on out-of-sample figures from year 2007, we estimate that around 15% of the defaulted loans are eventually liquidated. This would mean that only 3.5% of the bank’s loan portfolio ends up in liquidation. Expectedly, defaults are more frequent for start-ups (32%) than for existing firms (14%). Based on data from year 2007, we estimate that liquidation concerns about 2 % of the loans extended to existing companies and about 5% to start-ups.

Table 3: Descriptive Statistics: Startups versus Existing Firms

| | All firms | | Startups | | Existing Firms | | t-tests for differences in means between startups and existing firms |
|------------------------|-----------|------|-----------|------|----------------|------|--|
| | (n = 389) | | (n = 189) | | (n = 200) | | |
| | Mean | SD | Mean | SD | Mean | SD | |
| SR | 2.17 | 0.03 | 2.01 | 0.05 | 2.33 | 0.04 | 4.43*** |
| FIN | 1.97 | 0.02 | 1.94 | 0.02 | 2.00 | 0.03 | 1.08 |
| RATE (in %) | 5.87 | 0.03 | 5.91 | 0.05 | 5.84 | 0.04 | -1.04 |
| LOANSIZE (in € 10,000) | 4.68 | 0.23 | 3.60 | 0.02 | 5.75 | 0.38 | 4.73*** |
| NONCOLLAT (in %) | 0.16 | 0.00 | 0.17 | 0.01 | 0.15 | 0.01 | -1.11 |
| PIBOR3M (in %) | 2.70 | 0.03 | | | | | |
| RELATIONSHIP | - | - | - | - | 0.31 | 0.03 | - |
| DEFAULT | 0.23 | 0.02 | 0.32 | 0.03 | 0.14 | 0.02 | -4.35*** |

*: equality rejected with $p < 10\%$, **: equality rejected with $p < 5\%$, ***: equality rejected with $p < 1\%$

Table 4: Descriptive Statistics by Social-Responsibility Levels

| | SR = 1 (n = 74) | | SR = 2 (n = 174) and t-tests for differences in means w.r.t. SR = 1 | | SR = 3 (n = 141) and t-tests for differences in means w.r.t. SR = 2 | |
|---------------------------|--------------------|------|--|------|--|------|
| | Mean | SD | Mean | SD | Mean | SD |
| FIN | 1.89 | 0.04 | 1.99* | 0.03 | 1.99 | 0.04 |
| RATE (in %) | 6.09 | 0.07 | 5.94* | 0.04 | 5.67*** | 0.06 |
| LOANSIZE (in € 10,000) | 3.15 | 0.32 | 4.53*** | 0.34 | 5.67** | 0.44 |
| NONCOLLAT (in %) | 0.16 | 0.01 | 0.15 | 0.01 | 0.17 | 0.01 |
| STARTUP | 0.68 | 0.50 | 0.49*** | 0.03 | 0.36** | 0.04 |
| RELATIONSHIP | 0.06 | 0.02 | 0.17** | 0.02 | 0.22 | 0.03 |
| DEFAULT | 0.39 | 0.05 | 0.24** | 0.03 | 0.14** | 0.02 |

*: equality rejected with $p < 10\%$, **: equality rejected with $p < 5\%$, ***: equality rejected with $p < 1\%$

Table 4 presents figures averaged within fixed SR levels, and tests for differences across these levels. In line with the bank's social mission, the charged interest rate is negatively related to SR, while loan size is positively related to it. Collateralization, in contrast, is insensitive to SR. Most importantly, the social and financial ratings seem poorly related. Table 4 also confirms that the share of start-ups decreases with SR. This evidence points to the necessity of taking the start-up status explicitly into account in the regression analysis. In the same vein, benefitting from a relationship with the bank increases the likelihood of reaching higher SR, but this effect is significant only for the transition from SR = 1 to SR = 2. Lastly, the default occurrences drastically decrease with SR. Passing from SR = 1 to SR = 3 drops the probability of default from 0.42 to 0.13. This key figure will be further explored in Section 5.

On the whole, the descriptive statistics reveal that high-SR firms get more favorable credit conditions (lower interest rate and higher loan size), which is consistent with the claimed social orientation of the bank. At this stage, however, we cannot exclude that credit conditions are determined by other factors interacting with SR as well.

Table 5: Correlation Matrix: All Firms

| | SR | FIN | RATE | LOANSIZE | NONCOLL AT | STARTUP | RELATIO NSHIP | DEFAULT |
|------------------|----------|----------|-----------------------|-------------------|---------------|----------|------------------|---------|
| SR | 1.00 | | | | | | | |
| FIN | 0.05 | 1.00 | | | | | | |
| RATE | -0.27*** | -0.12** | 1.00 | | | | | |
| LOANSIZE | 0.19*** | 0.05 | -0.25*** ^P | 1.00 | | | | |
| NONCOLLAT | -0.00 | -0.08* | -0.18*** ^P | 0.07 ^P | 1.00 | | | |
| STARTUP | -0.22*** | -0.05 | 0.06 | -0.24* | 0.15*** | 1.0000 | | |
| RELATIONSH IP | 0.13*** | 0.17*** | -0.14*** | 0.02 | -0.00 | -0.36*** | 1.0000 | |
| DEFAULT | -0.20*** | -0.14*** | 0.04 | -0.02 | 0.07 | 0.21*** | -0.15*** | 1.0000 |

Subscript “p” means Pearson correlations, the other correlations are Spearman rank correlations.

*: zero correlation rejected with $p < 10\%$, **: zero correlation rejected with $p < 5\%$, ***: zero correlation rejected with $p < 1\%$

Table 5 gives the correlation matrix and provides a further glimpse on the links between the variables at stake. The first and foremost result concerns the correlation between the social and financial ratings. Because our sample is made of granted loans only, it is subject to an endogenous selection bias. Assuming that the pool of applicants is large enough to let the bank operate a meaningful selection, we view the correlation between the two ratings as a consequence of the selection mechanism. Accordingly, a negative correlation *in our sample* would signal that the selection is softer on motivated borrowers. In contrast, a positive correlation would be incompatible with the bank’s social mission.

Table 5 reveals that the correlation between the two ratings is not significantly different from zero. We interpret this key figure as the consequence of a selection mechanism that is not biased in favor of high SR ratings. In particular, this is consistent with the bank using a financial-based denial rule, such as rejecting below-break-even projects. This type of rule is frequent in mainstream banking. This way of doing, however, does not preclude that a similar denial rule is used for projects with below-standard social ratings. What matters to our point is that the social rating is not used to mitigate the importance of the financial rating in the selection phase.

The charged interest rate, loan size, and collateralization are the three decision variables of the bank. Table 5 indicates that larger loans tend to be associated with lower interest rates and higher collateralization. Actually, the charged interest rate exhibits significantly negative correlations with both ratings, social and financial. In addition, existing banking relationship seems remunerated by lower interest rates.

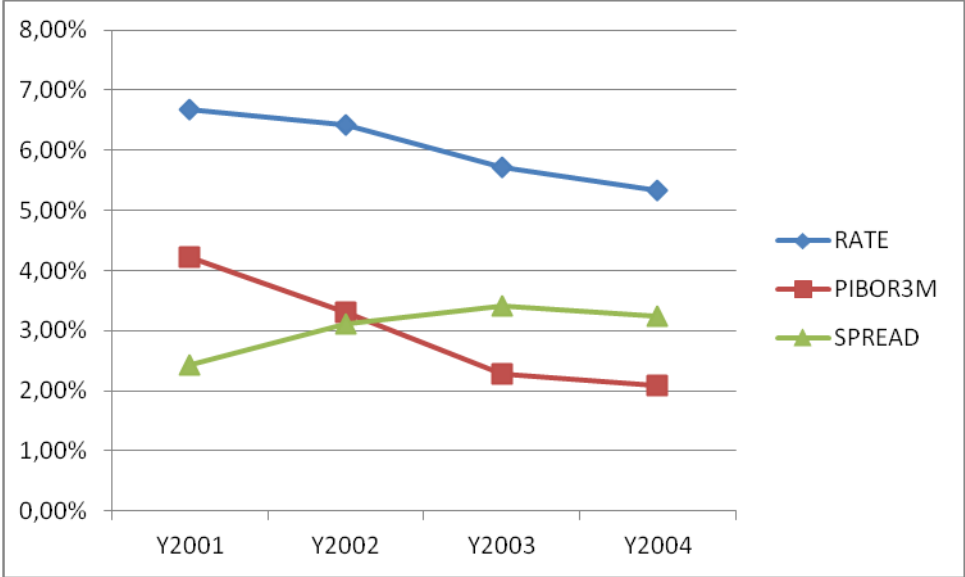
Start-ups tend to face lower collateral requirements. This striking correlation may be explained by two factors. First, the loan sizes are typically lower for start-ups than for existing firms. Second, loans to start-ups are often secured by public guarantee funds. Public collaterals are highly reliable because they are automatically released when loans are liquidated. As a result, the bank needs proportionately less public than private collateralization to reach a given level of guarantee.

The zero correlation between RELATIONSHIP and NONCOLLATERAL in Table 5 is counter-intuitive. Indeed, a large body of empirical studies strongly supports that relationship lending reduces collateral requirements (Berger and Udell, 1995; Petersen and Rajan, 1994; Dregryse and Van Cayseele, 2000; Chakraborty and Hu, 2006). In our sample, though, the raw correlation may be flawed by ignoring the STARTUP factor, which is correlated positively with NONCOLLATERAL and negatively with RELATIONSHIP. The regression analysis will indeed confirm that the apparent anomaly disappears when the start-up status is properly accounted for.

Unlike previous studies (Petersen and Rajan, 1994; Berger and Udell, 1995; Elsas and Krahen, 1998), we will use the charged interest rate (RATE) and the refinancing rate (PIBOR3M) as two distinct variables, instead of focusing on their difference – the spread – only. This way of doing is motivated by the joint evolutions of the variables at stake. Figure 2 draws the dynamics of three variables: RATE, PIBOR3M, and the spread. From 2001 to

2004, RATE steadily decreased, and roughly followed PIBOR3M. Over the same period, the spread experienced a dramatic shift, passing from 2.40% in 2001 to 3.39% in 2003.¹⁴ This shift likely results from the use of a rate-smoothing strategy by the bank. In periods of downward trends in market interest rates, banks may be tempted to charge higher spreads in order to rebuild their margins discretely. Eventually, this strategy is oft-used by banks (Machauer and Weber, 1998). Conservatively, we have decided to work with both the RATE and PIBOR3M variables, the former being a dependent variable, and the latter being an independent one. The resulting econometric specifications are more flexible than those built from the spread only.

Figure 2: Evolutions of Charged Interest Rate, Refinancing Rate, and Spread



¹⁴ The overall evolutions of the FIN and SR variables are stable. This excludes the possibility for the shift in spreads being driven by a change in the composition of the clientele.

4. Social Rating and Credit Conditions

In this section, we analyze how social ratings influence credit conditions. The impact of social ratings is our focus because this is what makes social banks special among credit providers. Section 2 has summarized the current state of knowledge on the *modus operandi* of social banks in Europe. On the whole, little is known on the precise way social characteristics enter the determination of credit conditions. For this reason, we investigate this issue by means of regression analysis. The three credit conditions— the interest rate, loan size and collateralization – are examined simultaneously. Descriptive statistics indicate that these variables are correlated. Hence, we turn to multivariate regressions.

Table 7: Credit Conditions: SURE

| VARIABLES | (1) | | | (2) | | |
|--------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| | RATE | LOANSIZE | NONCOLLAT. | RATE | LOANSIZE | NONCOLLAT. |
| SR | -0.16*** (0.031) | 1.19*** (0.322) | 0.01 (0.011) | -0.15*** (0.032) | 0.90*** (0.323) | 0.01 (0.011) |
| FIN | -0.16*** (0.047) | -0.04 (0.483) | -0.01 (0.016) | -0.15*** (0.048) | -0.03 (0.479) | -0.02 (0.016) |
| PIBOR3M | 0.61*** (0.029) | -0.74** (0.297) | -0.04*** (0.010) | 0.61*** (0.029) | -0.83*** (0.293) | -0.04*** (0.010) |
| STARTUP | | | | 0.03 (0.049) | -2.13*** (0.497) | 0.03* (0.017) |
| RELATIONSHIP | | | | -0.02 (0.065) | -0.72 (0.656) | 0.04** (0.022) |
| Constant | 4.86*** (0.139) | 4.18*** (1.437) | 0.28*** (0.048) | 4.84*** (0.146) | 6.17*** (1.478) | 0.25*** (0.051) |
| Observations | 389 | 389 | 389 | 389 | 389 | 389 |
| R-squared | 0.57 | 0.05 | 0.04 | 0.57 | 0.10 | 0.06 |

*: significant at the 10% level, **: significant at the 5% level, ***: significant at the 1% level.

Our empirical strategy is based on reduced-form estimations. We use seemingly unrelated regression estimation (SURE). In this way, we assess the impacts of loan characteristics on credit conditions, while avoiding endogeneity biases. This in turn limits the possibility of

capturing the bank's global (structural-form) pricing policy involving the three credit conditions simultaneously, which is not our main concern here.

Additionally, loan size determination is most likely influenced by the requested amount, which is unobservable to us and might create a missing-variable distortion in the loan-size estimation. Reduced-form estimation has the merit of freeing the two other variables (RATE and NONCOLLAT) from this distortion.

Table 7 presents the results for two-specifications. Specification (1) concentrates on the social (SR) and financial (FIN) ratings. The benchmark interest rate (PIBOR3M) is added to account for the bank's refinancing rate. Specification (2) is more complete as it takes into consideration variables related to informational asymmetries (STARTUP and RELATIONSHIP). Typically, the borrowers know more about the social character of their own projects than the lender does.

Expectedly, the estimation of specification (1) shows that the social rating influences both the charged interest rate and loan size in a way that is favorable to the borrowers, namely higher ratings lead to lower interest rates and higher loan sizes. The financial rating does only affect the charged interest rate. Giving the mentioned missing-variable issue, this result should however be interpreted with caution, loan size being a loose indicator of credit rationing. It could simply indicate that financially highly-rated firms do not ask for larger loans than their lower-rated counterparts. Collateralization, on the other hand, seems insensitive to both the social and financial ratings.

Strikingly, the benchmark interest rate (PIBOR3M) influences not only the charged interest rate, but also the loan size and the requested share of collateralization, both in a negative way. This may be understood as a side effect of the bank's smoothing strategy during a period of decreasing market rates. To compensate for its partial adjustment in interest rates, the bank

would increase loan sizes and decrease collateral requirements to keep its overall credit menu attractive. To assess this hypothesis, one should however examine credit conditions on longer time-series including periods of increasing market rates.

Specification (2) confirms the impacts of both the social and financial ratings on credit conditions. Meanwhile, start-ups get significantly smaller loans. Again, we are unable to disentangle the demand-side component of this effect from its supply-side component. Actually, the occurrences of both are reasonable enough. First, start-ups likely ask for smaller loans than existing firms because their activities are smaller scaled. Second, in line with the well-known argument made by Stiglitz and Weiss (1981), asymmetric information enhances credit rationing.

STARTUP and RELATIONSHIP are the control variables allowing us to assess the impact of asymmetric information on credit conditions. As already observed from descriptive statistics, STARTUP influences negatively loan size. Interestingly, RELATIONSHIP influences collateralization only. Because collateralization is affected by neither the social nor the financial rating, we conclude that the bank uses this decision variable purposely to deal with informational asymmetries.

In sum, more social firms get cheaper and more generous credit from the bank, while firms known by the bank benefit from lower levels of collateralization. Higher financial ratings are also valued in credit conditions, but to a lesser extent. These findings prove that the social orientation of the bank is effectively put into practice in loan allocation. This orientation mainly results in interest-rate rebates to social firms. A one-unit increase in social rating is associated with a fifteen-to-sixteen basis-points premium in the charged interest rate.

5. Social Rating and Probability of Default

In this section, we examine how the social premium in credit conditions translates into default occurrences. In other words, we assess the reactions of motivated borrowers who benefit from favorable credit conditions. To do so, we exploit the information on defaults present in our database. A loan is said defaulted if the borrower experiences reimbursement issues within the four years following loan attribution.¹⁵

We estimate the probability of default through probit estimations under several specifications, for the sake of robustness. In specification (1), only the social rating is used to explain the default probability. In Specification (2), the financial rating is added. On top, specification (3) controls for the two variables associated with asymmetric information, namely the dummy variables standing for startups and banking relationships, respectively. Lastly, specification (4) also includes the credit conditions.

Table 8 reports marginal effects at the mean. There is overwhelming evidence of significantly negative impacts of both the social and financial ratings on the probability of default. Interestingly, these two effects share similar sizes in all specifications. This is confirmed by formal tests for equal coefficients. While the negative impact of financial rating on interest rate was expected, that of social rating was not; especially given that both ratings are uncorrelated. Moreover, these two effects are far from negligible. An additional unit of any rating brings around a 10% decrease in default probability.

¹⁵ The loans are extended for periods varying from one to twenty years. This four-year convention, fixed by the bank, is thus somewhat arbitrary. Still, 87 percent of defaults occur within the four years following credit granting.

Table 8: Probability of Default: Probit Estimations

| VARIABLES | (1) DEFAULT | (2) DEFAULT | (3) DEFAULT | (4) DEFAULT |
|--------------|---------------------|---------------------|---------------------|---------------------|
| SR | -0.12*** (0.029) | -0.11*** (0.029) | -0.09*** (0.029) | -0.09*** (0.029) |
| FIN | | -0.13*** (0.046) | -0.12*** (0.046) | -0.12*** (0.046) |
| STARTUP | | | 0.12*** (0.045) | 0.13*** (0.045) |
| RELATIONSHIP | | | -0.09 (0.056) | -0.10 (0.056) |
| RATE | | | | -0.02 (0.034) |
| LOANSIZE | | | | 0.00 (0.005) |
| NONCOLLAT. | | | | -0.01 (0.154) |
| Observations | 389 | 389 | 389 | 389 |
| Log (L) | -203.50 | -199.22 | -191.60 | -191.15 |

The table reports marginal effects at the mean.

*: significant at the 10% level, **: significant at the 5% level, ***: significant at the 1% level.

There are two possible explanations for the impact of social rating on the probability of default. First, higher levels of social rating drive significant rebates in interest rates. This automatically decreases the borrower's financial burden and makes the loans easier to reimburse. This "rational" explanation is, however, contradicted by the estimation of specification (4), which controls for credit conditions in general, and interest rate in particular. None of the credit conditions has a significant direct influence on the probability of default. In addition, the financial benefits associated with interest-rate rebates are modest given the historically low levels of interest rates over the studied period.

The second and more convincing explanation involves a reciprocity effect driven by favorable credit conditions. A booming literature on social norms and cooperative behavior reveals that reciprocity is an important motivational drive in economic situations. Theoretical models by Rabin (1993), Fehr and Schmidt (1999) or Dufwenberg and Kirchsteiger (2004) are

underpinned by experimental evidence. Fehr and Schmidt (2003) show that between 40 and 60 percent of people do not systematically maximize their own self-interest, but favor pro-social outcomes even if it means foregoing personal gains. Similarly, Fehr and Fischbacher (2002) find that a substantial fraction of people are willing to sacrifice material payoffs to reward kind actions or punish unfriendly ones. Socially-minded agents tend to share windfall gains in equitable ways even though they stand no chance of benefiting from doing so. They also tend to sanction people who split gains unfairly.

In markets involving principal-agent relationships, moral hazard is an impediment to the contract enforcement. In contrast, reciprocity may act as an endogenous contract enforcement device (Fehr *et al.*, 1997; Gächter and Falk, 2004; Fehr *et al.*, 2007; Brown *et al.*, 2009). Specifically, in credit markets, two sources of moral hazard coexist (Fehr *et al.*, 2009). First, the lender rarely observes the borrowers' actual investment. Hence, borrowers may decide to use the loan for inefficiently high-risk projects (*ex ante* moral hazard). Second, the lack – or the limited efficiency – of legal enforcement mechanisms for repayment may push borrowers to withhold repayment even though they have successfully carried out their projects (*ex-post* moral hazard). Fehr and Zehnder (2004) and Brown and Zehnder (2007) mention that reciprocity may reveal instrumental in credit markets. The authors hypothesize that motivated borrowers could be willing to reciprocate fair credit conditions and repay their loans swiftly. However, empirical evidence supporting this theoretical hypothesis remains scarce.

So far, we only dispose of results from lab experiments (Fehr and Zehnder, 2004; Brown and Zehnder, 2007; Cornée *et al.*, 2012). In a nutshell, these experiments show that enforcement is not necessarily required to make borrowers repay their loans. A sensible fraction (more than 30%) of borrowers fulfill their moral obligations in the “pure reciprocity” treatment characterized by the absence of any exogenous or endogenous incentives. They also reveal that long-term credit relationships enhance reciprocity and lead to a better functioning of the

credit market. To some extent, opportunistic borrowers are incited to copy reciprocal ones. Although lab evidence is often consistent with real-life behavior in financial matters (Karlan, 2005), no field-data has ever confirmed the existence of reciprocity in credit markets. For this reason, we view the results in Table 8 as the first empirical confirmation of the intuition of Fehr and Zehnder (2004) and Brown and Zehnder (2007) that reciprocity exists in credit markets. In sum, our estimations demonstrate that motivated borrowers virtuously respond to fair credit conditions by increasing the effort they put in meeting their financial obligations toward the social lender.

6. Robustness Checks

This section offers three robustness checks performed along different directions. In the first check, we add year dummies to account for two so far neglected effects. First, incomplete – and subsequently excluded – files are proportionately more frequent during the first year of observation (i.e. 2001). Second, the global economic climate might have influenced both the bank lending strategy and the creditworthiness of its borrowers. Allowing for year effects is a way to correct for biases potentially introduced by these two facts.

Table 9 shows the results. Overall, the previous results resist the inclusion of year dummies. Interestingly, the influence of the benchmark interest rate (PIBOR3M) is restricted to the charged interest rate. This confirms our hypothesis that PIBOR3M indirectly impacts both loan size and collateralization through the smoothing policy adopted by the bank in response to time variations in market interest rates.

Table 9: Robustness Check: Adding Year Dummies

| VARIABLES | (1) | | | (2) |
|---------------|---------------------------------|---------------------|------------------|---------------------|
| | Multivariate Linear Regressions | | | Probit ^a |
| | RATE | LOANSIZE | NONCOLLAT. | DEFAULT |
| SR | -0.11*** (0.031) | 0.96*** (0.331) | 0.01 (0.011) | -0.09*** (0.108) |
| FIN | -0.15*** (0.045) | -0.03 (0.479) | -0.02 (0.016) | -0.12*** (0.047) |
| PIBOR3M | 0.44*** (0.090) | -0.79 (0.952) | -0.01 (0.033) | |
| STARTUP | 0.03 (0.047) | -2.15*** (0.499) | 0.03* (0.017) | 0.12*** (0.047) |
| RELATIONSHIP | -0.02 (0.063) | -0.74 (0.660) | 0.04* (0.023) | -0.10 (0.055) |
| RATE | | | | -0.01 (0.053) |
| LOANSIZE | | | | 0.00 (0.004) |
| NONCOLLATERAL | | | | -0.03 (0.154) |
| Y2002 | 0.15 (0.113) | 0.53 (1.191) | 0.04 (0.041) | 0.15* (0.094) |
| Y2003 | -0.11 (0.189) | 0.49 (1.995) | 0.06 (0.068) | 0.09 (0.096) |
| Y2004 | -0.36* (0.207) | 0.12 (2.184) | 0.08 (0.075) | 0.12 (0.113) |
| Constant | 5.34*** (0.395) | 5.66 (4.165) | 0.13 (0.142) | |
| Observations | 389 | 389 | 389 | 389 |
| R-squared | 0.60 | 0.09 | 0.05 | |
| Log (L) | | | | -189.46 |

^a: The column reports marginal effects at the mean.

*: significant at the 10% level, **: significant at the 5% level, ***: significant at the 1% level.

In the second robustness check, we use two-step estimations to clean the social rating from its interactions with other loan characteristics. First, an ordered probit regression model extracts the residuals of SR when regressed on FIN, STARTUP, and RELATIONSHIP. These residuals constitute “pure” social ratings (PSR). Column (1) in Table 10 shows that only the start-up dummy is significant in the first-path regression. This is consistent with the stylized facts from descriptive statistics. Second, the multivariate estimation of credit conditions (columns (2) in Table 10) is performed by substituting PSR for SR. The empirical results prove to be robust to this change. Lastly, the negative impact of PSR on the probability of default (column (3) in Table 10) is exactly the same as that of SR in Table 8. We thus exclude

any spurious effect due to accidental correlations between the social rating and other loan characteristics. Table 10 not only confirms our previous results, it also emphasizes that the latter are driven by purely social motives.

Table 10: Robustness Check: Pure Social Ratings

| VARIABLES | (1) | (2) | | | (3) |
|---------------|-----------------------------------|---------------------------------|---------------------|---------------------|--------------------------------|
| | Ordered Probit ^a SR | Multivariate Linear Regressions | | | Probit ^a DEFAULT |
| | | RATE | LOANSIZE | NONCOLLAT. | |
| PSR | | -0.15*** (0.032) | 0.90*** (0.323) | 0.01 (0.011) | -0.09*** (0.029) |
| FIN | 0.10 (0.122) | -0.16*** (0.047) | 0.03 (0.479) | -0.02 (0.016) | -0.13*** (0.046) |
| PIBOR3M | | 0.61*** (0.029) | -0.83*** (0.293) | -0.04*** (0.010) | |
| STARTUP | -0.45*** (0.123) | 0.07 (0.048) | -2.39*** (0.487) | 0.03* (0.017) | 0.16*** (0.046) |
| RELATIONSHIP | 0.19 (0.167) | -0.03 (0.065) | -0.61 (0.655) | 0.05** (0.022) | -0.10* (0.05) |
| RATE | | | | | -0.02 (0.034) |
| LOANSIZE | | | | | 0.00 (0.005) |
| NONCOLLATERAL | | | | | -0.01 (0.154) |
| Constant | | 4.51*** (0.126) | 8.13*** (1.269) | 0.27*** (0.043) | |
| Cut 1 | -0.89*** (0.257) | | | | |
| Cut 2 | 0.38 (0.254) | | | | |
| Observations | 389 | 389 | 389 | 389 | 389 |
| R-squared | | 0.57 | 0.10 | 0.06 | |
| Log (L) | | | | | -194.14 |

^a: The column reports marginal effects at the mean.

*: significant at the 10% level, **: significant at the 5% level, ***: significant at the 1% level.

The third robustness check intends to rule out the possibility that our results are driven by outliers. Our database is indeed composed of many small loans and a few large ones. Loan size is thus skewed. We thus proceed by excluding from our sample the 45 loans that amount to more than € 100,000. In the censored sample, made of 344 loans, the average loan size is € 33,100, instead of € 46,800 in the full sample. Table 11 gives the estimation results obtained

from the censored sample. Compared to Table 8, it shows that the results are hardly sensitive to the exclusion of large loans.

Table 11: Robustness Check: Excluding Loans above € 100,000

| VARIABLES | (1) | | | (2) |
|---------------|---------------------------------|---------------------|---------------------|----------------------|
| | Multivariate Linear Regressions | | | Probit ^a |
| | RATE | LOANSIZE | NONCOLLAT. | DEFAULT ^a |
| SR | -0.16*** (0.033) | 0.34** (0.161) | 0.01 (0.011) | -0.09*** (0.031) |
| FIN | -0.15*** (0.050) | 0.38 (0.243) | -0.01 (0.017) | -0.08* (0.050) |
| PIBOR3M | 0.61*** (0.030) | -0.18 (0.145) | -0.04*** (0.010) | |
| STARTUP | 0.02 (0.052) | -0.93*** (0.253) | 0.03 (0.018) | 0.13*** (0.048) |
| RELATIONSHIP | 0.05 (0.070) | -0.69** (0.341) | 0.04* (0.024) | -0.16** (0.052) |
| RATE | | | | -0.03 (0.035) |
| LOANSIZE | | | | 0.00 (0.010) |
| NONCOLLATERAL | | | | -0.13 (0.178) |
| Constant | 4.88*** (0.153) | 2.95*** (0.746) | 0.24*** (0.053) | |
| Observations | 344 | 344 | 344 | 344 |
| R-squared | 0.58 | 0.07 | 0.06 | |
| Log (L) | | | | -169.96 |

^a: The column reports marginal effects at the mean.

*: significant at the 10% level, **: significant at the 5% level, ***: significant at the 1% level.

On the whole, the robustness checks confirm our previous findings on the impacts of social rating on both credit conditions and probability of default, respectively. Motivated firms benefit from advantageous interest rates and loan sizes from the social bank, and subsequently reimburse their loans swifter than regular firms, all things equal. We interpret this virtuous effect as reciprocity from the motivated borrowers to the social bank. In turn, the social bank succeeds in transforming purely social orientation into financial reward. It also benefits from a positive self-fulfilling effect. The lower profitability of social banks exhibited in Section 2, however, indicates that this effect is but partial. In the end, rewarding its borrowers' social

orientation is still costly to the bank, and ultimately to its shareholders. Financial sacrifices are only slightly compensated by the repayment conduct of motivated borrowers.

7. Conclusion

Social banks are committed to pay attention to non-financial outcomes of their investments. Their mission thus significantly differs from that of typical capitalistic banks. The accomplishment of this mission is made possible thanks to the specific orientation of the stakeholders. As savers, cooperative members, or shareholders, social investors accept lower-than-market financial returns provided that their money is poured into social projects. This foundational principle does, however, impose no clear-cut investment rules to the managers of social banks. As a consequence, it is worth studying how these institutions practically grant credit.

Based on a French case study, this paper examines how a social bank passes its investors' financial sacrifices on socially-minded borrowers. Our empirical analysis delivers two main messages. First, we show that the sacrifices consented by the social investors result in rebates in interest rates charged to borrowers aiming to fund profitable social projects. Well-run motivated firms are eventually able to decrease their cost of capital by borrowing from a social bank. Surprisingly, the growing literature on socially-responsible investment is silent on this achievement. Second, we document the existence of a reciprocity effect from motivated borrowers. While theoretical and experimental evidence has previously discussed this possibly, this paper is the first one to our knowledge to exhibit real-life reciprocity in the banking industry. This innovative result offers a promising ground for further investigations on the features that enhance repayment performances. Relationship lending is long recognized

as a way to reach such achievement. It nevertheless takes time, and evidently does not apply to startups, which are in dire need for funding opportunities.

Additionally, we show that the social bank is more concerned with increasing the probability of success of viable social projects rather than targeting projects otherwise redlined by commercial banks. Offering cheap credit to such projects likely entails lower financial sacrifices – in terms of both risk and expected returns – than funding below-break-even social projects. This result might explain why investment in social banks is safer but less profitable than investment in mainstream banks.

By keeping its activity to basic financial intermediation, social banking offers an attractive alternative to the “big bank” model undermined by the recent crisis. Is this a new model applicable to the whole industry or is it limited to double-bottom-line institutions? This issue is debatable. Indeed, social banks currently represent a limited segment of the banking industry, and their action affects the economy but marginally. Moreover, as observed in the microfinance industry, growth is sometimes associated with mission drift (Armendariz and Szafarz, 2011).

One can also wonder whether the development of social banking would crowd out standard borrowers from the credit market. Evidently, in a hypothetical world where a significant portion of banks value social performances and total credit is rationed, the share of credit left to non-social projects would shrink. Though, in a profit-driven capitalistic economy this scenario is unrealistic. Moreover, social and non-social firms naturally belong to different economic sectors. Therefore, social banking hardly distorts competition mechanisms.

The findings of this paper bring important but preliminary insights on social banking, a fast-growing industry. However, working with a single institution inevitably restricts the external validity of our conclusions. Further work is needed to assess their level of generality. Features

of social banks, such as country of origin, legal status, size, age, governance design, etc., probably influence their *modus operandi* in the credit market. This should be investigated in the future.

Technically, building a social rating raises specific issues. In the bank under scrutiny in this paper, the social rating is meant to measure idiosyncratic characteristics, such as the borrower's moral rectitude and social motivation, the ethicality of the business core activity, the corporate responsibility towards stakeholders, the environmental and social concerns, etc. The computation of this social rating does not abide by strict rules, and is therefore difficult to assess through a standardized procedure. It heavily relies on soft information, mainly collected by loan officers whose objectivity may be questioned (Agier and Szafarz, 2012a).¹⁶ This new type of agency problem may compromise the fulfillment of the bank's social mission.

On the whole, this paper contributes to the understanding of the way social banks operate in the European credit market, a topic hardly considered in the literature so far. In particular, it shows that the loans granted by social banks share characteristics with both commercial loans from mainstream banks and subsidized credit from public institutions. This new and promising model of banking activity undoubtedly calls for further investigation.

¹⁶ In other social banks, the social assessment is carried out according to distinct procedures. For example, in *Banca Etica* (Italy), a thorough social audit is conducted by the so-called "social auditors or experts", who are cooperative members specifically trained by the bank.

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