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Abstract

Based on extensive literature review, this paper proposes to define social banks (SBs) as social enterprises that run banking activities with the social mission of supplying credit to other social enterprises, which are typically less profitable than for-profit firms. This definition is our starting point for developing a theoretical framework for explaining how SBs survive without subsidies in the banking market. We build on a two-pillar business model of value-based financial intermediation: an ownership structure limiting residual ownership claims and preferential credit conditions associated with financial sacrifices from motivated depositors. We also clarify the link between SBs and stakeholder banks and weigh the importance of market interest rates for facilitating the business of SBs. The empirical analysis based on panel regressions on 5,400 European banks over the 1998-2013 period attests to the relevance of our theoretical framework. It confirms that a low interest rate environment raises concern about the sustainability of the SB business model.

1.   Introduction

Social orientation makes a significant difference in banking (Barigozzi & Tedeschi, 2015). Yet, scholars struggle to understand the business model of social banks (SBs). This paper attempts to fill the gap. To do so, we suggest defining SBs as social enterprises (SEs) that finance other SEs. Accordingly, SBs are the intersection of banks and SEs. In line with this definition, our contribution is twofold. First, we suggest a two-pillar business model of value-based financial intermediation. The proposed model combines funders' financial sacrifices and favorable credit conditions for socially oriented borrowers. Second, we bring the theoretical predictions to the data by exploiting a rich dataset on European banks.

Social banking has developed spectacularly worldwide in the last twenty years (GABV, 2012). Rough estimations indicate that, over the 1998-2013 period, the total assets of SBs grew twice as fast as those of the other banks. Surprisingly, studies on SBs are still scarce and the literature lacks a universally accepted rigorous definition of social banking. Europe is SB stronghold, which explains why previous research focused mainly on social banking in a European context. Existing work uncovers key features of SBs, which are often portrayed as double bottom-line institutions (Becchetti et al., 2011; Benedikter, 2011; San-Jose et al., 2011; Weber & Remer, 2011). SBs support their communities and the common good through transparent, prudent, and simple intermediation principles. The financial transactions of SBs focus on funding the real economy rather than trading in speculative markets. SBs drew attention in the aftermath of the 2007-2008 financial turmoil. Many regular banks turned out to be insufficiently capitalized; they took excessive risks and had to be bailed out by taxpayers. This prompted a search for alternative business models. Scholars have taken up this challenge and investigated the crisis performance of stakeholder banks (Ferri et al. 2015), Islamic banks (Beck et al., 2013a; Gheeraert & Weill, 2015), community banks (Hudon & Meyer, 2016), and other religiously oriented financial institutions (Mersland et al., 2013). Similarly, the double

bottom-line of SBs implies that profit making is a way to achieve economic sustainability while sticking to social goals.

Our study broadens the literature on alternative banking into social banking. The question that motivates this paper is: How can SBs survive without subsidies in banking market? This question stems from the fact that SBs finance SEs, which are known to be less profitable than for-profit firms. To explain the apparent incoherence of SBs, this paper builds on a business model with three groups of agents: owners, borrowers and depositors. The funders of SBs include the owners and depositors, who are motivated agents accepting a below-market return on their capital as long as the bank invests in social projects. The beneficiaries are SEs enjoying preferential credit conditions (Borzaga & Defourny, 2001). We test the relevance of this theoretical construct by using sample matching and panel regressions on 5,400 European banks over the 1998-2013 period. The empirical results confirm that SBs benefit from a lower cost of funding, both from owners and from deposit holders, and charge borrowers below-market interest rates. Our findings are consistent with the story of investors and depositors passing on their earnings to social borrowers at sub-market rates. In addition, we reveal that SBs are not only different from conventional banks (CBs), but they also share characteristics with stakeholder banks. Last, our results emphasize that SBs counteract on increasing interest rates to keep offering affordable rates to SE borrowers. Logically, their business model suffers when market interest rates go down because it is difficult to grant loans with preferential rates when the market rates are close to zero.

The paper is organized as follows. Section 2 introduces our suggested definition of SB. Section 3 develops the theoretical predictions. Section 4 introduces the database and describes the empirical design. Section 5 discusses the regression results. Section 6 checks their robustness. Section 7 concludes.

2. What is a Social Bank?

We define SBs as SEs that finance other SEs by running banking activities. On the one hand, SBs are genuine banks, which has legal and practical consequences. From a legal perspective, our definition excludes several vehicles of social funding, such as many European microfinance institutions, which are non-bank financial institutions (Cozarenco & Szafarz, 2019). Accordingly, SBs are subject to the same fiscal and regulatory frameworks as their same-jurisdiction counterparts. Like the latter, SBs develop a credit activity, which is known to be plagued by informational asymmetry. In line with the theory of financial intermediation (Diamond, 1984; Bhattacharya & Thakor, 1993), SBs are required to overcome information asymmetries in order to channel capital from (social) investors to (social) borrowers efficiently. The typical devices to do so include screening, selection, and monitoring mechanisms. In sum, SBs can be viewed as banks with a special pool of borrowers.

On the other hand, SBs are SEs, and SEs are endeavors set up in pursuit of the common good (Peredo & Chrisman, 2006). Profit maximization is not their prime objective—although generating profits is not necessarily illegitimate (Besley & Ghatak, 2017; Ghatak, 2019). They aim to internalize social costs and create positive externalities (Doherty et al., 2014). SEs vary substantially in size, scale, and purpose due to the broad spectrum of products and services they supply (Borzaga & Defourny, 2001). They typically promote inclusion of disadvantaged people through work, ethical trade, organic food, renewable energies, recycling, community services provision (e.g. health and education services), subsidized housing, etc. (Dart, 2004; Di Domenico et al., 2010).

The definition of SE varies substantially from one side of the Atlantic to the other (Kerlin, 2006).[1] In the European context—which is the focus of our study—, the concept of SE was born in Italy with the advent of social cooperatives in 1990s. An authoritative and consensual formalization of the SE "ideal-type" is provided by the EMES research network with a set of nine definitional characteristics organized in two groups. The first group comprises four characteristics accounting for the private-sector, entrepreneurial nature of SEs: (*i*) continuous activity producing goods and/or services, (*ii*) large autonomy, (*iii*) significant risk level, (*iv*) minimum amount of paid work. The five characteristics in the second group encapsulate the social orientation of SEs: (*v*) explicit social mission, (*vi*) initiative from collective dynamics, (*vii*) democratic decision-making loosely related to ownership, (*viii*) stakeholder involvement, and (*ix*) limited profit distribution (Defourny & Nyssens, 2008 & 2010).

To prove the relevance of defining SBs as SEs, we must explain how the institutions calling themselves SBs do indeed meet all these requirements. First, as banks, SBs have the economic and entrepreneurial characteristics associated with SEs, that is they fulfil conditions (*i*) to (*iv*). Second, SBs fulfil criterion (*v*) since they pursue the explicit social mission of funding other socially oriented organizations. This pivotal criterion is the divide between cooperative or mutual organizations on the one hand, and social organizations, on the other. Third, their ownership and governance attributes make SBs fulfil criteria (*vi*) to (*ix*). Profit is not their main objective, it is rather a means for achieving economic sustainability (Becchetti et al., 2011; Benedikter, 2011; Weber & Remer, 2011; Mykhayliv & Zauner, 2018). Many SBs operate with a stakeholder-ownership structure, either as a cooperative or as a savings bank. The SBs owned by shareholders use self-regulatory arrangements to restrain their owners' capitalistic power.

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[1] American SEs are hybrid organizations (Austin et al., 2006), which tend to disconnect their business activity from their social goal. By contrast, SEs in continental Europe are more inclusive. Perhaps for this reason, social entrepreneurship still lacks an established epistemology (Nicholls, 2010), and its legitimation refers to actors, discourses, and narrative logics (Mair et al., 2012).

For example, shareholders' voting rights at *Alternative Bank Schweiz* (ABS, Switzerland) and *Triodos Bank* (The Netherlands and Belgium) are capped. Alternative forms of stakeholder involvement are also promoted, such as the participation of non-shareholders in governing and executive bodies (San Jose et al., 2009). In a nutshell, SBs are *enterprises* because they are banks, and they are *social* enterprises because they have a social mission.

Defining SBs as SEs helps understand their *raison d'être* in the economy. By providing capital to SEs, SBs address a market gap since the regular credit market fails to meet SEs' demand for credit. Although SEs' activities cover a broad spectrum, their funding is plagued by two major issues.[2] First, SEs cannot afford expensive credit. As double—or multiple—bottom-line firms, SEs tend to create trade-offs between social mission and financial constraints (Wry & York, 2017; Wry & Zhao, 2018). Their businesses are typically less profitable than those of for-profit firms (Defourny & Nyssens, 2008 & 2010). Second, in an asymmetric information context, the social orientation of SEs makes them more opaque as borrowers than for-profit small and medium enterprises (SMEs), already known to be opaque (Berger & Udell, 2002). SEs carry on businesses unfamiliar to standard bankers, such as supplying welfare-related and environmental services and hiring disadvantaged workers (Defourny & Nyssens, 2008). Their financial sustainability depends on key features that are hard-to-quantify, such as relational capital, acquisition of non-market resources, and social value creation (Cornée, 2019). Regular banks are therefore ill-adapted to funding SEs, which they unsurprisingly ration severely. This mismatch creates the opportunity that SBs wish to seize.

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[2] To cope with the pervasive lack of funds, SEs may undertake financial "bricolage", a term referring to improvisation and ingenuity used in circumventing financial obstacles (Di Domenico et al., 2010; Halme et al., 2012). SEs may also turn to crowdfunding opportunities and socially-minded funders, such as impact investors (Lehner & Nicholls, 2014; Kickul & Lyons, 2015), who encourage social entrepreneurs to deliver observable social outcomes (Doherty et al., 2014). In addition, the mutual funds driven by the principles of socially responsible investing claim to deliver both financial and social performances to investors (Barnett & Salomon, 2012). Yet, a positive relationship between these performances raises doubts about the social accountability of the funds' issuers (Laufer, 2003).

To sum up, the nature of social banking is closely intertwined with that of SEs. Unlike regular banks, SBs do not maximize profit, they rather target financial sustainability. And unlike conventional stakeholder banks, SBs purse an explicit social mission. Their very existence is motivated by the unmet demand for credit of non-bank SEs. Our definition of SBs leaves however unaddressed the business model that allows these banks to be sustainable in a competitive credit market. The next section addresses this issue by building a theoretical framework rationalizing the existence of SBs in a capitalistic banking market.

3. Hypothesis Development

Defining SBs as banks with a social mission has consequences. This section theorizes consequences that pertain to both financial sustainability and banking activities, and groups them along three directions. Section 3.1 hypothesizes a business model that allows SBs to survive thanks to financial sacrifices made by motivated stakeholders. This core business model involves two pillars: benevolent ownership and special intermediation mechanisms. Hypothetically, these pillars make SBs able to fill the market failure of supplying affordable credit to SEs. The business model of SBs would thus consist in channeling the charitable contributions of socially minded agents to borrowing SEs. Sections 3.2 and 3.3 describe further our theoretical framework by clarifying the link between SBs and stakeholder-based ownership and by examining the impact of market interest rates on the SBs' intermediation scheme, respectively. The resulting set of hypotheses will be brought to the data in Section 5.

3.1. The Core Business Model of Social Banks: The Two Pillars

The first pillar relates to ownership. Conditions (*vi*) to (*ix*) of the definition of SE state that ownership rights and profit distribution are limited, thereby implying that the owners of SEs are motivated by the social mission rather than by financial earnings. A direct consequence for SBs is that their ownership is made up of motivated agents consenting to make a financial effort

in order to serve the social mission of providing affordable credit to other SEs. We therefore hypothesize that SBs collect capital at below-market conditions from motivated owners willing to support the development of SEs. Our first hypothesis states that the financial sacrifice of SBs' owners makes the return of SBs smaller than that of their conventional counterparts.

Hypothesis H1: The returns on assets delivered by SBs to their owners are smaller than those provided by conventional banks (CBs):

$$\Delta\ ROA = ROA(SB) - ROA(CB) < 0 \qquad\qquad (1)$$

where $ROA(x)$ represents the return of owners of bank x, where $x \in \{SB, CB\}$.

The second pillar concerns the intermediation design. Like other banks, SBs carry out delegated monitoring on behalf of investors (Diamond, 1984). We contend that their distinctive feature is the role played by values in the intermediation process. The owners provide the funds and, under H1, make financial sacrifices with respect to the market return available for same-risk investment opportunities. Yet, benevolent or motivated ownership can be found in any industry, including banking. The next mechanism we aim to put forward relates specifically to the banking sector, it revisits the intermediation model when exposed to social purpose, which is rather unusual. We consider the two sides of socially minded intermediation.

SBs explicitly claim to finance SEs by establishing strong lending relationships and charging below-market interest rates. To address the severe information asymmetry in SE financing, SBs have gained experience in screening and monitoring social projects; their hands-on experience stems both from social ties and from human connections with the social entrepreneurship milieu. That embeddedness is key to negotiating financial deals in informational environments where hard information[3] is insufficient to assess credit risk

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[3] Hard information is defined by Berger et al. (2005) as quantitative facts derived from audited financial statements, personal data, and history of repayments.

confidently (Uzzi & Lancaster, 2003; Duffner et al., 2009). According to their mission, SBs offer more favorable credit conditions to their borrowers, as supported by micro evidence. In a lab setting, Cornée et al. (2012) show that social bankers charge a lower interest rate than commercial bankers. Using institution-specific data, Cornée and Szafarz (2014) find that borrowers considered as 'social' by the bank benefit from lower interest rates, and Becchetti et al. (2011) document that that the bank has an extremely high share of uncollateralized loans (around 42%). In all these studies, borrowers receiving fair credit offers have a lower propensity to behave opportunistically. This is in line with reciprocity and social identification—either alone or in conjunction—being increasingly recognized to be powerful mechanisms to combat moral hazard problems (Fehr et al., 1997; Akerlof & Kranton, 2005; Chen & Li, 2009). In sum, our hypothesis H2 theorizes that SBs master the lending technology that allows them to fulfill faithfully their mission. It lies at the heart of the SB's purpose.

Hypothesis H2. *SBs support SEs by granting them loans at below-market interest rates:*

$$\Delta intloan = intloan(SB) - intloan(CB) < 0 \tag{2}$$

where $intloan(x)$ is the interest charged to borrowers of bank x, where $x \in \{SB, CB\}$.

Let us now turn to the depositors of SBs. To supply cheap credit to SEs, SBs need to collect resources at below-market rates. Some providers of social loans, such as microfinance institutions, fill the financial gap with subsidies and concessionary loans (Morduch, 1999; D'Espallier et al., 2013). This is not the case of SBs, which evolve in a competitive banking environment and rely on socially responsible investors who accept lower financial returns (Riedl & Smeets, 2017). In addition to motivated owners, SBs need depositors willing to give up some remuneration of their capital to support the cause of funding social endeavors. Yet, the banking industry is plagued by asymmetric information and SBs need credible commitments to convince depositors that low interest rates on deposits is not just another way for the owners to

make more money. The main commitment devices relate to ownership structure and managerial design. Depositors are protected from owners' opportunism by statutory or self-designed provisions (San Jose et al., 2009) while managerial strategies include social screening of borrowers, operation transparency, simple intermediation principles, and reasonable staff compensation (Cornée et al., 2016 & 2018; Mykhayliv & Zauner, 2018).[4] The next hypothesis echoes recent evidence from Krause and Battenfeld (2019, p. 889) that the clients of German SBs have "weaker preferences for financial, but stronger preferences for social return than conventional banking customers."

Hypothesis H3. *The remuneration of depositors by SBs is below-market interest rates:*

$$\Delta intdep = intdep(SB) - intdep(CB) < 0 \tag{3}$$

where $intdep(x)$ represent the remuneration of deposits in bank, $x \in \{SB, CB\}$.

From an organization standpoint, the three hypotheses emphasize that SBs are hybrid entities (Billis, 2010), in the sense that they address social issues while ensuring their own financial sustainability. We also contend that this business model is specific to SBs. Absent a social orientation, banks are unable to attract investors or depositors willing to make financial sacrifices.

3.2. The Differential Effect of Ownership: Social Banks vs. Stakeholder banks

Ownership is a broad concept, which can cover different practices depending on the legal status of the company at stake. Since we view SBs as SEs (with a limited profit distribution), we also expect that SBs would adopt an ownership structure restricting the opportunities for profit

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[4] Intuitively, using dual—social and financial—screening based on a relational approach should be more expensive than resorting to a single, standard screening method (De Young et al., 2008). The issue of whether these additional costs are fully supported by the social investors is still under debate. Cornée et al. (2018) find that SBs' costs are not significantly different from those of their mainstream counterparts. A plausible interpretation is that the extra time of screening is compensated by cheaper labor: The employees in SBs are motivated by their social mission and accept below-market wages.

distribution. Owners of SBs can be either members-owners of stakeholder banks—a group that comprises savings banks and, predominantly, cooperative banks—or shareholders of a capitalistic bank. The literature shows that stakeholder banks are less profitable than shareholder banks and exhibit less-risky investment strategies (Iannotta et al., 2007; Périlleux et al., 2016). They offer lower returns in absolute terms, but higher risk-adjusted returns (Hesse & Čihák, 2007). However, not all SBs are governed by a stakeholder ownership. In our sample, 39% of the SBs are governed by a shareholder status. As explained in Section 2, these SBs adopt self-regulatory arrangements aimed at limiting capital holders' residual claims in terms of remunerations and power, and by the same token reassuring the various stakeholders, chief among them the depositors. In contrast, SBs with a stakeholder-based governance design have no specific ownership structure when compared to their same-governance conventional counterparts. Thus, in complement to H1, we expect that the lower profitability feature takes place predominantly, if not exclusively, within the group of shareholder banks. We therefore formulate the hypothesis that the profitability gap of SBs is similar to that of stakeholder banks.

Hypothesis H4: The returns on assets delivered by stakeholder SBs (SBstake) to their owners are equal to those provided by stakeholder conventional banks (CBstake):

$$\Delta\ ROA\ (stake) = ROA(SBstake) - ROA(CBstake) = 0 \qquad (4)$$

where $ROA(x)$ represents the return of owners of bank x, where $x \in \{SBstake, CBstake\}$.

But if H4 holds true, how do SBs stand out from other stakeholder banks? The answer to that question can be found in criterion (*v*) of the definition of SEs: They pursue a stated social mission. While cooperative and mutual organizations are primarily oriented toward their members' interests, SBs serve a broad community and target the general interest (Gui, 1991; Kalmi, 2007). In the context of banking, cooperative banks carry out financial intermediation

maximizing the interest of their membership by setting, for instance, borrowing rates favorable to their members (Angelini et al., 1998). SBs, on the other hand, finance projects of general interest and seek to offer attractive conditions to loans promoting the common good (Cornée & Szafarz, 2014).[5] In other word, we expect that the difference between *conventional* stakeholder banks and *social* stakeholder banks is to be found in their intermediation design, which in turn depends on the pool of borrowers.

The two next hypotheses are therefore similar to H2 and H3, but they apply to the restricted set of stakeholder banks exclusively.

Hypothesis H5. *SBs support SEs by granting them loans at below-market interest rates:*

$$\Delta intloan(stake) = intloan(SBstake) - intloan(CBstake) < 0 \qquad (5)$$

where $intloan(x)$ *is the interest charged to borrowers of bank x, where* $x \in \{SBcoop, CBcoop\}$.

Hypothesis H6. *The remuneration of depositors by SBs is below-market interest rates:*

$$\Delta intdep(stake) = intdep(SBstake) - intdep(CBstake) < 0 \qquad (6)$$

where $intdep(x)$ *represent the remuneration of deposits in bank, where* $x \in \{SBstake, CBstake\}$.

3.3. The Impact of Market Interest Rates on the Intermediation Design of Social Banks

Different types of institutions provide funding to SEs. According to the classification developed by Cornée et al. (2018), the continuum of social finance institutions includes foundations

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[5] Nonetheless, we do not mean that in pursuing the mutual interest (conventional) stakeholder banks does not generate positive externalities. But these positive externalities are of a different nature (i.e. financial and economic), such as stabilizing the financial sector (Hesse & Čihák, 2007) and mitigating the decrease in loan supply caused by monetary policy contractions (Ferri et al., 2014).

offering pure grants, "quasi-foundations" granting loans requiring only partial repayment, and social banks supplying soft loans. These institutions operate under a budget constraint dictated by their funders' generosity. SBs fall thus between charities that waive at least part of the capital reimbursement and standard commercial banks charging the market interest rate to their borrowers. Following this logic, the most social SBs charge near-zero interest while the least social ones grant loans with just-below-market rates. Consequently, the leeway of SBs may be represented by the interest rate segment bordered by the zero lower limit and the market interest rate as the upper limit. Inevitably, this interval shrinks during periods of low interest rates. We take advantage of this variability to prolong our theory about the business model of SBs.

Let us consider the impact of the interest rates prevailing in the interbank market. These rates are the external factors with the potentially largest impact on the business model of banks. The banking literature investigates how bank characteristics, such as size, capitalization, and liquidity, influence the lending channel, i.e. how financial institutions adjust their credit supply and pricing following changes in monetary policy (Kashyap and Stein, 1995; Gambacorta 2008). We complement the investigation by focussing on how SBs' social mission interferes with these adjustments, and contend that SBs counteract on increasing market rates for two reasons. First, their main borrowers, SEs, cannot afford paying high interest on their loans, so that SBs tend to hold back the price they charge. Second, like for stakeholder banks, using relational lending technology encourages SBs to smooth interest rate movements to help their clients manage transitions (Ferri et al., 2014).

H7. The market interest rate has a negative moderating effect on the lending rate of SBs:

$$\frac{\partial intloan(SB)}{\partial market\ rate} < \frac{\partial intloan(CB)}{\partial market\ rate} \tag{7}$$

Another manifestation of this strategy should be observable during periods where market interest rates experience an increasing trend. Mirroring H7 stating that SBs tend to smooth their

lending rates, we contend that SBs do also smooth their deposit rates more than do other banks in response to raising market rates.

H8. *The market interest rate has a negative moderating effect on the deposit rate of SBs.*

$$\frac{\partial intdep(SB)}{\partial market\ rate} < \frac{\partial intdep(CB)}{\partial market\ rate} \quad (8)$$

The unconventional monetary policy carried by central banks in the aftermath of the 2007 Great financial crisis offers a fertile ground to examine the effect of dramatically low interest rates on the intermediation features of SBs (Gerlach & Lewis, 2014; Borio & Gambacorta, 2017).[6] Arguably, SBs are affected more seriously than others when the interest rates tend toward their zero bound. They cannot keep the social spread on the loans they grant unless they set negative rates on deposits, which is hardly feasible. Therefore, we predict that in a low-interest-rate environment, the second pillar of SBs' business model is less efficient than during normal periods. Our last two hypotheses formulate these predictions.

H9. *A low rate environment has a positive moderating effect on the lending rate of SBs.*

$$intloan(SB, normal) - intloan(SB, low\ rate) < intloan(CB, normal) - intloan(CB, low\ rate) \quad (9)$$

H10. *A low rate environment has a positive moderating effect on the deposit rate of SBs.*

$$intdep(SB, normal) - intdep(SB, low\ rate) < intdep(CB, normal) - intdep(CB, low\ rate) \quad (10)$$

Table 1 summarizes the set of hypotheses that will be investigated in our empirical exercise.

Insert Table 1 about here

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[6] Specifically, after the collapse of Lehman Brothers, central banks—among which the European Central Bank (ECB)— cut aggressively their interest rates (Gerlach & Lewis, 2014). These interest rates remained low at least until the end of our sample period, i.e. December 2013 (Borio & Gambacorta, 2017).

4. Data and Methods

4.1. Data

Our data are retrieved from the Bankscope database provided by Bureau van Dijk.[7] The period covered by the sample stretches from 1998 to 2013. For sample homogeneity, we retained the banks located in the group of 20 countries classified as "Western Europe" (the fifteen pre-2004 European Union members, plus Cyprus, Iceland, Malta, Norway, and Switzerland) and for which financial information is available. Eastern European countries are excluded from this study because their banking market differs considerably from that of Western Europe, and SBs seldom exist in Eastern Europe. From the set of 6,524 pre-selected banks, we excluded real-estate banks, public banks, and the central institutions of cooperative groups. Real-estate and public banks are hardly comparable to commercial, cooperative, and savings banks (Hesse & Čihák, 2007; Ferri et al., 2014 and 2015), while central cooperative institutions deal almost exclusively with intra-group transfers.

Next, as there exists no official status of SB, we selected the SBs in two steps. First, we assume that being a member of an organization of SBs guarantees the existence of a social mission. There are two such organizations: The *European Federation of Ethical and Alternative Banks* (FEBEA) and the *Global Alliance for Banking on Values* (GABV). FEBEA has 25 members out of which 12 fulfill the necessary conditions for being in our sample: being in Western Europe and having the legal and fiscal status of a regular bank. Among the 55 banks that are members of GABV worldwide, we selected the 15 ones operating in Western Europe.[8] Since six banks belong to both FEBEA and GABV, we end up with 21 SBs.

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[7] Bankscope is a standard data source for banks' financial statements, with a special focus on non-listed institutions (e.g. Gambacorta, 2005; Ashcraft, 2006; Iannotta et al., 2007; Ferri et al., 2014).

[8] This set includes two banks (*Ökobank eG* and *IntegraBank eG München*), taken over by GLS in 2003 and 2008, respectively.

In the second step, we acknowledged that the literature (San Jose et al., 2001; Karl, 2015) recognizes as social some institutions that are affiliated neither with FEBEA nor with GABV. Using our geographic and statutory filters to these additional banks brought 25 potential SBs. However, the literature is still vague about the definition, and hence the selection, of SBs. Therefore, we double-checked whether the additional banks fulfilled our definition of social bank. To do so, we perused institution-specific information (webpage, annual reports, etc.) for each candidate whether their social mission was to serve SEs. Eight out of the 25 candidates passed the bar (see Table A1 in Appendix A). Most of the excluded banks are directly managing money of religious institutions. Adding these eight SBs to the 21 previously selected members of FEBEA and/or GABV yielded a final selection of 29 SBs.

Last, we excluded the banks located in the nine countries, such as Ireland, for which we identified no SBs. All the large European Union countries are represented in the final sample, which covers eleven countries. Ultimately, our analysis starts with around 40,000 points-observations, around 300 of which relate to SBs (see Table 3).[9] For all the banks, we use micro-level unconsolidated balance-sheet observations, for two reasons. First, relying on unconsolidated data substantially increases the number of observations, especially for SBs for which consolidated data are scarce. Dealing with unconsolidated data provides access to information from SBs belonging to conglomerates. For example, *Crédit Coopératif* is a subsidiary of France's *BPCE*, and *Algemene Spaarbank voor Nederland* (*ASN*) belongs to the Dutch bank *SNS REAAL*. Second, comparing SBs, which are presumably small, with the global players in the financial system could hamper our conclusions. Therefore, resorting to unconsolidated data automatically breaks down the networks and holding companies formed by large banking groups into smaller entities, making our comparison between social and

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[9] To avoid outliers, we removed the observations corresponding to the first and last percentiles of all variables, except *Loans to assets*, *Deposits to assets*, *Liquidity,* and *Log of assets* (see Table 2).

conventional banks more germane. Admittedly, size differences can still affect our analysis, and so create a mismatch between the two groups in our study.

4.2. *Sample Matching*

Although the number of SB point-observations (300) is statistically sufficient for further analysis, they make up less than 1% of all the point-observations in the full sample. To address potential biases stemming from both missing data and sample imbalance between SBs and CBs (Rubin, 1973), we rely on sample matching.[10] The idea is to match each SB with up to four nearest neighbors of the other group (Imbens & Wooldridge, 2009).

To address the typical bias-variance trade-off in matching while sticking to the lessons learned from the banking literature, we use a matching method based on the most relevant characteristics (Pearl, 2000; King et al., 2011), namely country, ownership and size, in that order. First, the dominance of country relates to the key impact of jurisdiction on banks' performance, market structure, and stability. As confirmed by Beck et al. (2013b), cross-country heterogeneity stems from regulatory and institutional features. Second, ownership structure is a distinctive characteristic that enacts banks' *legal* social orientation, which interplays with *value-based* social orientation. This variable takes three modalities: shareholder bank, cooperative bank, and savings bank (e.g. Ferri et al., 2014).[11] Last, bank size is instrumental in shaping features such as diversification (Demsetz & Strahan, 1997), funding strategies (Demirgüç-Kunt & Huizinga, 2010), interest rate setting (Kishan & Opiela, 2000), and profitability (Bourke, 1989). Matching is based on bank size computed in 2005, the midpoint of our time interval.

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[10] Yet, we run full-sample estimation as a robustness check.

[11] The only UK-based SB having a legal status of a building society was matched with non-social building societies. Common in the UK, building societies are financial cooperatives that originally provided mortgage loans only but that currently supply a wide range of financial services. In the empirical analysis, we group together cooperative banks and savings banks under the label of "stakeholder banks".

Our matching procedure consists of two steps. In the first, the banks are sorted by country, ownership, and size. In the second, we match each SB with up to four same-country, same-ownership-type CBs by using nearest-neighbor matching based on size (two above, and two below).[12] To rule out CBs with too few year-observations, we require at least four occurrences in the dataset. Some SBs are matched with fewer than four CBs because above or below neighbors were missing in the same-country, same-ownership class. In sum, 24 SBs ended up with four comparison banks, three with three, and the last two banks with only two.

4.3. Regression Model

We use multiple balance-sheet proxies for the three theoretical variables in Equations (1) to (8). Table 2 lists the proxies as well as the control variables used in regressions. Following the empirical design suggested by Beck et al. (2013a), we run the following regression for each independent variable, Z, in Table 2:

$$Z_{i,j,t} = \alpha + \beta_1 SB_{i,j} + \beta_2 X_{i,j,t} + \beta_3 M_{j,t} + C_j + T_t + \varepsilon_{i,t} \tag{11}$$

where indices i, j, and t stand for bank, country, and year, respectively; SB is a dummy that takes value 1 if the bank is social, X is a vector of characteristics that can vary according to the specification; M is vector of macroeconomic conditions; C and T are country and year fixed effects, respectively.

We use panel estimation because the banks in our sample are observed over several years. Hence, we run random-effect (RE) generalized-least-squares (GLS) models with standard-errors clustered at the bank-level. Treating the residual bank effect as random (random bank effects) rather than fixed is suitable because our SB dummy of interest is time-invariant. The

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[12] The only exception to the "same-ownership type" principle concerns the Dutch savings SB *ASN*, which is matched with Dutch shareholder banks of similar sizes. In fact, there is only one only Dutch stakeholder bank in our sample, *Rabobank*, which is a cooperative bank, and whose size is far too large to provide any relevant comparison.

RE estimator is the most efficient but its consistency requires the stringent assumption that the bank effects are uncorrelated with the X vector. [13] To gain consistency, we include country fixed effects.

Insert Table 2 about here

Our main goal is to test for differences between SBs and CBs. We have six proxy variables: two for Eq. (1), two for Eq. (2), and two for Eq. (3). The two proxies for owners' remuneration are: return on assets (*ROA*) (net income over total assets) and risk-adjusted ROA (*RAROA*). *ROA* is the standard profitability measure. So we use it in the main regressions. Yet, it fails to reflect the risk associated with the bank's business activity. As suggested by Mercieca et al. (2007), we therefore complement the analysis with risk-adjusted ROAs, which are sample means divided by the corresponding standard deviation as a robustness measure. Eq. (2) conjectures that SBs charge SEs below-market interest rates. The challenges in testing this hypothesis stem from two facts: we do not observe loan portfolios, and the interest that borrowers are charged depends on the riskiness of their projects. We use two proxies for the borrower interest rate: *Interest rate on loans* (interest income on loans over gross loans), and *Interest rate on all earning assets* (interest income over all earning assets). The first proxy is both accurate and unaffected by missing data, we use it in the baseline estimations. Last, depositors' remuneration can be represented by two proxies: the interest expenses on all liabilities (*Interest rate on liabilities*), and the interest expenses on customer deposits (*Interest rate on customer deposits*). The second proxy is more accurate, but its use is plagued by missing data. For this reason, we prefer using the first proxy in the main regressions.

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[13] The relevance of the all the estimated RE-GLS models, as compared to OLS, is attested by the Lagrangian Multiplier (LM) test (Breusch and Pagan, 1980). The null hypothesis that the individual effect, μ_i, equals zero is uniformly rejected at the 1% significance level.

Vector X in Eq. (4) includes controls that could muddle the relationship between our dependent variables and *Social bank*. The list of controls, which comprises the above-mentioned variables *Log of assets* and *Stakeholder Ownership*, follows the state of the art in the banking literature. Regarding *Equity to assets*, a positive link is often established between capitalization and ROA (e.g. Demirgüc-Kunt & Huizinga, 2010). Bank efficiency, proxied by *Overhead*, contributes to profitability (Goddard et al., 2004), and low *Overhead* ratios should reduce the interest rate on loans and increase that of deposits (Gambacorta, 2008). Arguably, both bank owners and depositors may be inclined to ask for a premium on their remuneration as a function of the bank's liquidity (Diamond & Dybvig, 1983), which also impacts lending strategies (Kashyap et al., 2002).

Asset and liability composition (*Loans* and *Deposits*) translates the bank's business orientation, which is key to its rate-setting policy and performance (Demirgüç-Kunt & Huizinga, 1999). The impact of *Credit risk*—i.e. loan loss provisions over gross loans—on profitability is ambiguous (Iannotta et al., 2007). On the one hand, it might be positive to a certain extent as riskier loans lead to higher interest rates. On the other, high workout fees on defaulting loans harm profitability, and asset quality impairment raises the cost of funding (Mester, 1996). In line with the literature, we add macroeconomic factors that are the most likely to impact banking activities: the Herfindahl-Hirschman market concentration index (*Mkt concentration*), the inflation rate, the overnight interbank rate, and the GDP growth rate (Bertray et al., 2013). Finally, the dummy variable *Low Interest Rates* captures the shift in monetary policy that followed the outbreak of the Great financial crisis: It equals zero until 2007 and one from 2008 on (Borio & Gambacorta, 2017).

4.4.Descriptive Statistics

Table 3 presents means for both the SBs and the matched CBs and runs t-tests for equal means. All the significant differences between the means of dependent variables for SBs and CBs have the signs predicted by our theoretical hypotheses. Yet, in the two profitability measures (*ROA*, *RAROA*), the difference in means is not statistically significant.

Insert Table 3 about here

Table 3 provides insights into the variables that serve as controls in the next section. Because of matching, stakeholder banks are equally prevalent among CBs and SBs. Matching narrows the gap in bank size between the two groups, both in level from €3.3 billion in the full sample to –€1.2 billion in the matched sample, and in standard deviation from €52.59 billion in the full sample to €5.28 billion in the matched sample. SBs have higher deposit-to-asset ratios and lower loan-to-asset ratios than CBs. Cornée et al. (2016) argue that this excess liquidity is indirect evidence that SBs stick to their mission and select their borrowers rigorously. High selectivity may, however, be costly both financially and from a reputational stance as it restrains the bank's ability to transform deposits from motivated savers into loans.

5. Regression Analysis

This section addresses the predictions about the business model of SBs described in Subsections 5.1, 5.2, and 5.3, respectively.

5.1. The Core Business Model

The predictions formulated about the core business model of SBs includes three hypotheses (H1, H2, H3), which all relate to the sign and significance level of the SB dummy variable in different regressions.

We start with the first pillar of the business model by testing that SBs are less profitable than other banks (H1). This is a theoretical consequence of socially minded investors being ready to accept a financial sacrifice to make the SB's mission possible. The regression results indicated in Columns (1) and (2) of Table 4 support the idea of motivated ownership: Being an SB is associated with a decrease in *ROA* of about 20 basis points, regardless of the inclusion of the bank and macro control variables. H1 is empirically validated.

Insert Table 4 about here

We now turn to the specific intermediation mechanism viewed as the second pillar of the SB core business model. On the lending side, we investigate whether SBs manage to offer more advantageous credit conditions than other banks. The intuition in H2 is that SB borrowers are SEs, and the banks' mission is to support these enterprises. The estimations reported in columns (3) and (4) of Table 4 focus on the loan interest rates. Both regressions confirm (at the 1% level) that SBs charge lower rates than their non-social counterparts do. They suggest that SBs are passing their funders' financial sacrifice along to their borrowers, who benefit from an interest rate rebate of at least 120 bps per annum. It could be argued that the interest rate differential between social and conventional banks is chiefly driven by differences in credit quality. To address this potential issue, we control for credit risk. Overall, H2 receives empirical confirmation.

We then scrutinize the funding side of the SB to check for a sacrifice by SB depositors posited in H3. In columns (3) and (4) of Table 4, the dependent variable is a proxy of the interest rate on deposits, *Interest rate on liabilities*. Regarding sign and significance (at the 1% level), both regressions deliver the same outcome: depositors' returns are significantly smaller in SBs than in their non-social counterparts. The point-estimates in columns (3) and (4) point to a sacrifice of around 40 bps per annum, in line with H3. One could object that the results could

be driven by depositors of SBs choosing distinctive, shorter-term, savings products making liabilities of SBs less remunerative when compared to those of their conventional counterparts. We cannot rule out this possibility, but it would contradict the evidence that socially responsible investors have a typically long-term focus (Cox et al., 2004). Taken together, the results support the hypotheses that both investors and depositors are willing to make financial sacrifices when putting money into SBs.

5.2. Social Banks and Stakeholder Banks

Table 5 highlights similarities between SBs and stakeholder banks. Despite low levels of significance imputable to the matching procedure (see the full-sample regressions in Appendix B), the loadings of the *Stakeholder ownership* dummy have the same signs as those of the SBs. Hence, stakeholder banks have low profitability and use below-market lending interest rates. This can be attributed to their ability to address efficiently information asymmetries while renouncing to use the resulting bargaining power to "hold up" their borrowers (Angelini et al., 1998). Low rates on the liability side are, however, counterintuitive for cooperative banks, which constitute 71% of the stakeholder banks in our sample. Standard theory predicts that cooperative banks are expected to maximize the return on deposits (Smith et al., 1981). In a historical perspective, Banerjee et al., (1994) and Guinnane (1994) contend that high rates on deposits can help cooperative banks attract local savings and so prevent imbalances between net borrowers and net savers.

To disentangle the direct impacts of SBs and those of the stakeholder status that 61% of them have, we rerun our baseline regressions in the sub-sample of stakeholder banks. In this sample, H4 predicts a zero impact on ROA while H5 and H6 mimic the full sample predictions about the loan and deposit rates. In Column (1) of Table 5, we observe that the return on assets delivered by SBs is not significantly different from that of other stakeholder banks, which

validates H4. Columns (2) and (3) of Table 5 show that the levels of interest rates should be lower on both sides of the balance sheet given the explicit social orientation of SBs, thereby validating H5 and H6, respectively.

Insert Table 5 about here

5.3. Social Banks and Market Interest Rates

The monetary environment is key to financial intermediation. Our previous estimations acknowledge this evidence by controlling for the interbank interest rate, which conditions the interest rates set by banks on both sides of their balance sheets. We explore whether and how monetary environment affects the business model of SBs. In Table 6, we capture potential effects in two ways. First, we interact the *Interbank rate* with the *Social Bank* dummy in Columns (1) and (3). Second, we exploit the post-2007 low-interest period by interacting two dummies: *Low interest rates* and *Social Bank*, in Columns (2) and (4). The empirical results support Hypotheses H7 to H10, however sometimes with frail significance. The overall message is twofold. First, when market interest rates move upwards, SBs adopt smoothing strategies to offer affordable rates to SE borrowers, and subsequently set lower deposits rates. Second, low interest rates can push the SB model toward its limits. Even socially oriented depositors would not accept capital meltdown because of negative interest rates. As a consequence, SBs cannot keep the social spread on lending rates.

Insert Table 6 about here

6. Robustness Checks

6.1. Alternative Samples

The regression results from the matching procedure support our theoretical framework. Yet, this procedure drastically reduces the size of our dataset from 5,448 banks to 145. In this

section, we check whether the results from full-sample estimation are consistent with the matched-sample ones. Full-sample estimation (in Tables B1 and B2) allows us to exploit data on a large set of banks, but it exposes the results to sample imbalances linked to the small share—less than 1%—of SBs in the set.

According to Table B1, our key findings on the impact of the *Social bank* dummy survive the results obtained from both the full, all-bank sample (Panel A) and the sample made up of all stakeholder banks (Panel B). Table B2 reports the effects of market rates. The findings are aligned with the baseline results. In addition, the loading of the *SB*low interest rate* interaction term gains statistical power.

Despite missing-data issues, the full-sample estimators have higher significance levels. The increase is particularly strong with some control variables, including the stakeholder-bank dummy. The loadings of controls are in line both with the literature (see Section 4.3) and with the results from our matching procedure (see Sections 5.1 to 5.3). *Equity* influences *ROA* positively. The cost variable *Overhead* pushes the loan interest rate upwards and the interest rate on deposits downwards; it is negatively related to profitability. *Credit risk* has a positive impact on both loan and deposit rates, and a detrimental effect on profitability. Overall, meaningful control coefficients add consistency to our main results.

Our selection of SB is described in Section 4.1. Yet, the second step of this selection might be plagued by subjectivity. To address this concern, we carried a robustness check by restricting the sample to the 21 SBs that are members of FEBEA and/or GABV. The results shown in Table B3 are similar to those of the baseline regressions, albeit with a reduced statistical power attributable to the smaller sample size.

6.2. Alternative Variables

Our hypotheses can be tested with alternative proxies for the dependent variables. In the baseline estimations, we used our preferred specifications for reasons pertaining to both accuracy and data availability. In Table B4, we replicate the exercises with alternative dependent variables while keeping the same regressors. Specifically, we replace *ROA, Interest rate on liabilities, and Interest rate on loans* with risk-adjusted ROA (*RAROA*). *Interest rate on customer deposits*, and *Interest rate on all earning assets*, respectively. In both Columns (1) and (4) explaining *RAROA*, we are bound to use OLS estimation because *RAROA* is time invariant as it is the mean value of ROA divided by its standard deviation. By consistency, we also averaged the control variable over the sample period. Fixed country effects are still relevant.

Overall, the estimations displayed in Table B4 are consistent with our baseline results. Yet, it worth mentioning that in the *RAROA* equation in Panel A, Column (1), the loadings of the SB and stakeholder-bank dummies have opposite signs. Likewise, Panel B, restricted to stakeholder banks, shows that SBs are less profitable (at the 10% level) than stakeholder banks when risk is accounted for in profitability. Our findings confirm the findings of Hesse and Čihák, (2007) that conventional stakeholder banks have both low profitability and low return volatility. In addition, the SBs with stakeholder ownership have a higher return volatility than their conventional counterparts. This effect may stem from the inherent risks associated with the funding ventures from the social sector. In Columns (9) and (10) of Panel C, the low significance levels of the interactions terms of interest are probably due to the limited sample size. Last, a complementary regression analysis in which ROA is replaced either by the return on equity (*ROE*), or by the risk-adjusted ROE (*RAROE*), delivers (unreported) estimates well aligned with the baseline results, both economically and statistically.

Table B5 investigates the moderating effect of market concentration to assess the validity of our results when accounting for the competition on the banking market (Fungácová et al., 2014). Banks active in a concentrated market tend to use their price-setting power in line with their bottom lines (Meyer, 2018). For profit-oriented banks, market power can typically translate into raising lending rates (D'Auria et al., 1999). By contrast, our results confirm previous findings (Cornée et al., 2012) that SBs do not take advantage of increased market power to boost the interest they charge. On the funding side, however, the negative and significant coefficient of the *SB*mkt concentration* interaction term is puzzling, it would indicate that depositors of SB in concentrated markets are keener than others to accept smaller deposit remuneration. Hypothetically, in little concentrated markets, small community or stakeholder banks compete with SBs to attract the money of socially minded depositors. An alternative rationale points at behavioral factors, such as depositors' inattention, since SBs do not communicate on deposit remuneration. Overall, the estimated interaction effects add credibility to the theorized business model of social banking.

6.3. Tests on Selection on Unobservables

To address the issue of potential omitted variables, we run tests on selection on unobservables following the developments of Oster (2019), based on Altonji et al. (2005). The Oster test exploits the information in R-squared changes when moving from uncontrolled to controlled regressions. We carry out the analysis from Eq. (11). Let $\hat{\beta}_1$ and $\breve{\beta}_1$ denote the estimated coefficients of *Social bank* with and without the observable controls, respectively, and $\hat{R}$ and $\breve{R}$ the corresponding R-squared. To gauge the omitted variable bias of our estimates, we use the approximation of the bias-adjusted effect suggested by Oster (2019):[14]

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[14] The implementation of the Oster (2019) test is proposed as a Stata command ("psacalc") developed by the author. Since this general procedure is still unavailable for our baseline RE-GLS model, we use the simple

$$\beta_1^* \approx \tilde{\beta}_1^* = \hat{\beta}_1 - \delta(\breve{\beta}_1 - \hat{\beta}_1)\frac{R_{max}-\hat{R}}{\hat{R}-\breve{R}} \tag{12}$$

where R_{max} is the R-squared of a hypothetical regression on the *Social bank* variable and both observed and unobserved controls. The test goes as follows: If the interval delimited by $\hat{\beta}_1$ and $\tilde{\beta}_1^*$ excludes zero, then the value of $\hat{\beta}_1$ is not driven by omitted variables. As recommended by Oster (2019), we set δ to 1, suggesting that the observables are at least as important as the unobservables, and we use the values of 1 and 1.3 as R_{max} bounds. Based on the estimates from Table 4, Table B6 (in Appendix B) shows that, the results of all our baseline equations cannot be attributed to omitted variables.

7. Conclusion

SBs have developed rapidly since the recent financial crisis, and their asset growth has outpaced that of the conventional sector (Weber & Remer, 2011), although they still are a relatively small part of the banking sector. Their success justifies the increased scholarly interest in a business model that apparently manages to "bank" on values. On the other side of the credit market, the future of the SE sector in Europe depends on the availability of funding. Much of this sector has been reliant on public funding. Mainstream banks are often reluctant to lend to SEs. An emerging alternative to public funding and mainstream banks consists of SBs, which attract motivated fund providers willing to make financial sacrifices for social causes.

To remain in business, SBs need to be financially sustainable. While the market gap they fill is delivering credit to SEs that are typically not profitable enough (or too risky) to obtain loans from CBs, their business model, which takes advantage of social motivation, allows them to survive in a competitive credit market. This is a remarkable achievement, which

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approximation formula obtained under the assumption that the unobservable and observables are equally related to the treatment (Oster, 2019).

brings additional proof that the fruitful development of social economic initiatives in a market-oriented economy is possible without public subsidies. Our results however raise awareness about the fragility of the original business model of social banking when it faces an environment of low interest rates. Low interest rates puts social banking is at risk because they compromise the sustainability of supplying below-market conditions to socially oriented borrowers.

The topic of social banking is recent in the academic literature, and both the boundaries of social banking and the differences between social and stakeholder (cooperative) banks are still unclear to many scholars. This paper contributes to clarifying those issues. It shows that, despite essential differences, SBs and stakeholder banks share key characteristics. Indeed, our results suggest that both types of institutions serve the two sides of financial intermediation with interest rates that are lower than those prevailing on the banking market—even though the patterns exhibited by SBs are stronger. Possibly, these results stem from similarities in identity-based economic relationships. With both types of bank, non-financial considerations—shared social values for SBs, mutual interest and local embeddedness for cooperatives—can motivate investors and depositors to make financial sacrifices. The financial support to the common good or to the community is then channeled to borrowers by bankers who avoid diverting the deposited funds into speculative and premium-generating transactions. Our results also emphasize that limiting residual ownership rights is instrumental to the success of this alternative intermediation mechanisms.

Interestingly, our results offer promising avenues to address socially oriented financial institutions around the World. By giving a new and broader perspective on how SBs operate, the business model described in this paper proposes a framework for analyzing closely related organizations such as microfinance institutions from Southern countries, some of which already belong to GABV. Like SBs, microfinance institutions have often access to cheaper resources

on the liability side of their balance sheet enabling them to target vulnerable borrowers and so increase their social performances. Yet, extending our framework to microfinance institutions requires addressing specifically two types of issues specific to the microfinance sector. First, most microfinance institutions still rely on subsidies to push forward their social agenda their business model (D'Espallier et al. 2013; Cull et al., 2018). Second, formalizing the social mission is probably more complex for microfinance institutions than for SBs due to the prevalence of multiple heterogenous objectives in the sector (Armendariz & Szafarz, 2011; Mersland et al., 2019).

Our work cannot be blamed for endogeneity, since the social character of banks is chosen when they are founded. Yet, sophistications of our conceptual approach could help elucidate both sides of the intermediation model presented in this paper. On the funding side, one could specify a dynamic model to scrutinize the development over time of the features that make SBs special. To check whether the reputation of SBs takes time to build, one could monitor the sacrifices that funders are willing to make. A fruitful avenue to explore the lending side further consists in gauging how SE heterogeneity impacts the SB business model. In addition, the success of SBs and their propagation into mainstream banking groups raises new questions. For instance, what are the managerial consequences of SBs joining conventional banking groups? This issue and many others deserve further examination, for instance through case studies.

Our results revive the debate about how to regulate social banking. The current situation, i.e. the one-size-fits-all Basel framework, meant to level the playing field in international capital markets, is probably poorly adapted to the SB business model (Ferri & Neuberger, 2015). First, the Basel framework compels banks to rely exclusively on hard information to monitor credit risk and fulfill the regulatory capital requirements (Rajan et al., 2010). This view contradicts the fundaments of the relational approach needed to carefully serve SEs. Second, the Basel

principles encourage banks to securitize their loan portfolios and use sophisticated financial products (Diamond & Rajan, 2009), which is opposed to the transparency principle dear to SBs. Last, access to the bank status is demanding in terms of compliance costs (Ferri & Neuberger, 2015), which can explain why many European socially oriented financial intermediaries opt for the "non-bank" status.

Adopting a holistic approach, this paper contributes to a better understanding of the business model of SBs. Considering the recurrent issues faced by the mainstream financial system, much more can doubtless be learned from nascent efforts to explore alternative paths such as social banking.

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List of Tables

Table 1: Business Model: Predicted Signs

Outcome / Treatment	Return on assets (ROA)	Rate charged to borrowers	Rate paid to depositors
Social bank (SB)	H1: negative	H2: negative	H3: negative
SB * stakeholder ownership	H4: null	H5: negative	H6: negative
SB * market rate		H7: negative	H8: negative
SB * low interest rates		H9: positive	H10: positive

Table 2. Definition of Variables

DEPENDENT VARIABLES	
Owners' sacrifice	
Return on assets (ROA, %)	Net income / Total assets
Risk-adjusted ROA (RAROA, %)	Mean ROA / Standard deviation of ROA over 1998-2013
Lending rates	
Interest rate on loans (%)	Interest income from loans / Gross loans
Interest rate on all earning assets (%)	Al interest income / All earning assets
Depositors' sacrifice	
Interest rate on liabilities (%)	All interest expenses / All liabilities
Interest rate on customer deposits (%)	Interest expenses from deposits / Customer deposits
INDEPENDENT VARIABLES	
Bank-specific characteristics	
Social bank	Dummy=1 if the bank is a social bank
Stakeholder bank	Dummy=1 if the bank is a cooperative or savings bank
Log of assets	Log (total assets)
Equity to assets (%)	Equity / Total assets
Overhead (%)	Operational costs / Total assets
Liquidity (%)	Loans / Deposits
Loans to assets (%)	Loans / Total assets
Deposits to assets (%)	Deposits / Total assets
Credit risk (%)	Loan loss provisions / Gross loans
Macroeconomic variables	
Mkt concentration	Herfindahl-Hirschman market concentration index for assets
Interbank rate (%)	Overnight interbank rate
Inflation (%)	Inflation rate
GDP growth (%)	Growth rate of gross domestic product

Table 3. Summary Statistics: Social versus Conventional Banks

Variables	Social banks (SBs)	Conventional banks (CBs)	T-test for equal means
Dependent variables			
Return on assets (ROA, %)	0.31 (0.49), [N=304]	0.52 (0.67), [N=1,194]	5.18***
Risk-adjusted ROA (%)	1.37 (1.18), [N=26]	2.11 (2.29), [N=104]	1.58
Interest rate on loans (%)	5.46 (1.61), [N=187]	6.96 (3.37), [N=757]	5.91***
Interest rate on all earning assets (%)	4.42 (1.28), [268]	5.18 (2.24), [N=1,138]	5.34***
Interest rate on liabilities (%)	2.16 (1.09), [N=261]	2.74 (1.63), [N=1,131]	5.47***
Interest rate on customer deposits (%)	1.74 (1.13), [N=121]	2.53 (2.18), [N=413]	3.79***
Bank control variables			
Stakeholder bank	0.61 (0.48), [N=457]	0.61 (0.48), [N=1,744]	-0.007
Log of assets	6.15 (1.93), [N=307]	5.92 (1.77), [N=1,268]	-2.02**
Equity to assets (%)	7.56 (3.78), [N=300]	11.39 (8.48), [N=1,238]	7.62***
Overhead (%)	2.01 (1.18) [N=268]	2.53 (1.57) [N=1,168]	5.11***
Liquidity (%)	85.03 (38.60) [N=286]	124.85 (150.08) [N=1,164]	4.45***
Loans to assets (%)	54.48 (21.40) [N=296]	55.30 (25.55) [N=1,247]	0.51
Deposits to assets (%)	74.04 (19.90) [N=306]	61.08 (26.73) [1,242]	-7.95***
Credit risk (%)	0.50 (0.63) [N=239]	0.68 (0.94) [N=1,034]	2.76***
Macro control variables			
Mkt concentration	0.17 (0.13) [N=457]	0.17 (0.13) [N=1,712]	-0.56
Interbank rate (%)	2.40 (1.75) [N=457]	2.35 (1.70) [N=1,744]	-0.52
Inflation (%)	1.89 (0.92) [N=457]	1.86 (0.93) [N=1,744]	-0.57
GDP growth (%)	1.48 (2.19) [N=457]	1.51 (2.21) [N=1,744]	0.28

Note: ***: p<0.01, **: p<0.05, *: p<0.1. Standard errors are in parentheses. The number N of point-observations is in brackets.

Table 4. The Core Business Model of Social Banks

VARIABLES	ROA		Interest rate on loans		Interest rate on liabilities	
	(1)	(2)	(3)	(4)	(5)	(6)
Social bank	-0.29***	-0.24***	-1.44***	-1.61***	-0.47***	-0.44***
	(0.081)	(0.091)	(0.302)	(0.472)	(0.108)	(0.122)
Stakeholder ownership		-0.004		-1.83**		-0.06
		(0.139)		(0.786)		(0.175)
Log of assets		0.08**		-0.31		0.08*
		(0.032)		(0.230)		(0.045)
Equity to assets		0.03***		-0.08**		-0.02**
		(0.009)		(0.037)		(0.010)
Overhead		-0.07		-0.20*		-0.08**
		(0.049)		(0.118)		(0.036)
Liquidity		0.00				-0.00
		(0.000)				(0.00)
Deposits to assets						-0.01**
						(0.005)
Loans to assets		-0.000		-0.05***		
		(0.002)		(0.016)		
Credit risk		-0.23***		0.18		0.07**
		(0.039)		(0.124)		(0.029)
Mkt concentration		-0.35		5.38		1.19**
		(0.332)		(3.615)		(0.553)
Interbank rate		-0.10**		0.34***		0.36***
		(0.046)		(0.083)		(0.032)
Inflation		-0.01		-0.16		-0.07**
		(0.029)		(0.099)		(0.032)
GDP growth		0.03**		-0.05		-0.07***
		(0.014)		(0.050)		(0.021)
Constant	0.54***	0.81***	6.78***	13.48***	2.59***	2.99***
	(0.041)	(0.285)	(0.303)	(2.241)	(0.084)	(0.664)
Country fixed effects	No	Yes	No	Yes	No	Yes
Year fixed effects	No	Yes	No	Yes	No	Yes
LM test	480.66***	167.70***	1350.34***	518.19***	796.39***	1024.02***
# Observations	1,498	1,190	944	836	1,349	1,109
# Banks	135	124	115	111	132	124
R2	0.018	0.28	0.036	0.43	0.0246	0.71

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Random-effect GLS estimation with standard errors clustered at the bank level (in parentheses). LM = Lagrangian Multiplier.

Table 5. Social Banks and Stakeholder Ownership

	Stakeholder banks only		
	ROA	Interest rate on loans	Interest rate on liabilities
VARIABLES	(1)	(2)	(3)
Social bank (SB)	-0.05	-0.48***	-0.37***
	(0.070)	(0.187)	(0.131)
Constant	1.44***	8.41***	2.14***
	(0.339)	(0.831)	(0.529)
Bank & Macro variables	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
LM test	102.64***	371.27***	743.70***
# Observations	841	577	785
# Banks	83	76	83
R2	0.40	0.71	0.75

Note: *** p<0.01, ** p<0.05, * p<0.1. Random-effect GLS estimation with standard errors clustered at the bank level (in parentheses). LM = Lagrangian Multiplier.

Table 6. Social Banks and Market Interest Rates

	Interest rate on loans		Interest rate on liabilities	
VARIABLES	(1)	(2)	(3)	(4)
Social bank (SB)	-1.20***	-1.77***	-0.30**	-0.53***
	(0.385)	(0.495)	(0.122)	(0.135)
SB*interbank rate	-0.16*		-0.07	
	(0.085)		(0.043)	
SB*low interest rates		0.49*		0.18**
		(0.288)		(0.090)
Interbank rate	0.36***	0.32***	0.37***	0.36***
	(0.085)	(0.082)	(0.033)	(0.033)
Low interest rates		-3.40***		-1.28***
		(0.911)		(0.169)
Constant	11.19***	11.27***	2.97***	3.02***
	(1.854)	(1.886)	(0.650)	(0.651)
All other control var.	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LM test	523.67***	501.11***	1038.60***	892.63***
# Observations	836	836	1,109	1,109
# Banks	111	111	124	124
R2	0.43	0.44	0.71	0.70

Note: *** p<0.01, ** p<0.05, * p<0.1. Random-effect GLS estimation with standard errors clustered at the bank level (in parentheses). LM = Lagrangian Multiplier.

Appendix A: Selection of Social Banks

Table A1. Sample of Social Banks

Bank	Country	Legal status
Andelskassen OIKOS	Denmark	Stakeholder (coop) bank
Folkesparekassen*	Denmark	Stakeholder (savings) bank
Merkur - Den Almennyttige Andelskasse*	Denmark	Stakeholder (coop) bank
Crédit Coopératif*	France	Stakeholder (coop) bank
La Nef*	France	Stakeholder (coop) bank
Bank für Sozialwirtschaft Aktiengesellschaft*	Germany	Shareholder bank
GLS Gemeinschaftsbank eG*	Germany	Stakeholder (coop) bank
IntegraBank eG München*	Germany	Stakeholder (coop) bank
Ökobank eG*	Germany	Stakeholder (coop) bank
Steyler Bank GmbH	Germany	Shareholder bank
UmweltBank AG*	Germany	Shareholder bank
Banca Popolare Etica SPA*	Italy	Stakeholder (coop) bank
Cassa Padana Banca di Credito*	Italy	Stakeholder (coop) bank
Cassa Rurale di Bolzano Soc. Cooperativa*	Italy	Stakeholder (coop) bank
Eticredito-Banca Etica Adriatica SpA	Italy	Shareholder bank
APS Bank Limited*	Malta	Shareholder bank
Algemene Spaarbank voor Nederland - ASN Bank NV	Netherlands	Stakeholder (savings) bank
Triodos Bank NV*	Netherlands	Shareholder bank
Cultura Sparebank*	Norway	Stakeholder (savings) bank
Caja Laboral Popular Coop. de Credito	Spain	Stakeholder (coop) bank
Colonya, Caixa d'Estalvis de Pollença*	Spain	Stakeholder (savings) bank
Ekobanken medlemsbank*	Sweden	Stakeholder (coop) bank
Alternative Bank Schweiz ABS*	Switzerland	Shareholder bank
Freie Gemeinschaftsbank BCL*	Switzerland	Stakeholder (coop) bank
CAF Bank Ltd	UK	Shareholder bank
Charity Bank Limited (The)*	UK	Shareholder bank
Co-operative Bank Plc (The)	UK	Shareholder bank
Ecology Building Society (The)*	UK	Stakeholder (coop) bank
Reliance Bank Limited	UK	Shareholder bank

Note: * member of GABV or FEBEA.

Appendix B: Robustness Checks

Table B1. Alternative Sample: Full-Sample Regressions (1)

VARIABLES	Panel A: Core business model			Panel B: Stakeholder banks only		
	ROA	Int. rate on loans	Int. rate on liabilities	ROA	Int. rate on loans	Int. rate on liabilities
	(1)	(2)	(3)	(4)	(5)	(6)
Social bank (SB)	-0.23**	-0.60***	-0.30***	-0.06	-0.37**	-0.34**
	(0.103)	(0.221)	(0.098)	(0.062)	(0.163)	(0.136)
Stakeholder ownership	-0.11***	-0.77***	-0.07**			
	(0.027)	(0.124)	(0.034)			
Log of assets	0.01***	-0.01	0.07***	-0.00	-0.01	0.05***
	(0.005)	(0.022)	(0.007)	(0.004)	(0.016)	(0.005)
Equity to assets	0.04***	0.00	-0.02***	0.06***	0.02**	-0.02***
	(0.003)	(0.009)	(0.003)	(0.003)	(0.008)	(0.002)
Overhead	-0.06***	0.22***	-0.06***	-0.14***	0.35***	-0.08***
	(0.012)	(0.038)	(0.011)	(0.011)	(0.025)	(0.011)
Loans to assets	-0.00	-0.04***		-0.00*	-0.04***	
	(0.000)	(0.002)		(0.000)	(0.001)	
Liquidity	0.00		0.00***	-0.00***		0.00**
	(0.000)		(0.000)	(0.000)		(0.000)
Deposits to assets			-0.01***			-0.01***
			(0.001)			(0.001)
Credit risk	-0.16***	0.04***	0.02***	-0.13***	0.05***	0.01**
	(0.006)	(0.015)	(0.004)	(0.006)	(0.011)	(0.003)
Interbank rate	-0.05***	0.39***	0.38***	-0.06***	0.42***	0.44***
	(0.009)	(0.030)	(0.017)	(0.008)	(0.020)	(0.015)
Constant	1.02***	8.24***	2.61***	1.18***	7.07***	2.47***
	(0.094)	(0.408)	(0.147)	(0.078)	(0.213)	(0.136)
Other macro variables	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations (#)	42,666	35,289	39,974	36,700	30,872	34,472
Banks (#)	4,728	4,503	4,679	3,860	3,740	3,840
R2	0.30	0.55	0.73	0.40	0.74	0.83

Note: *** p<0.01, ** p<0.05, * p<0.1. Random-effect GLS estimation with standard errors clustered at the bank level (in parentheses).

Table B2. Alternative Sample: Full-Sample Regressions (2)

Dependent variable	Social banks and market interest rates			
	Interest rate on loans		Interest rate on liabilities	
	(1)	(2)	(3)	(4)
Social bank (SB)	-0.46*	-0.77***	-0.23**	-0.40***
	(0.246)	(0.224)	(0.093)	(0.117)
SB*interbank rate	-0.08*		-0.04	
	(0.046)		(0.036)	
SB*low interest rates		0.27**		0.17**
		(0.116)		(0.069)
Stakeholder ownership	-0.77***	-0.77***	-0.07**	-0.07**
	(0.124)	(0.124)	(0.034)	(0.034)
Log of assets	-0.02	-0.02	0.07***	0.07***
	(0.022)	(0.022)	(0.007)	(0.007)
Equity to assets	0.00	0.00	-0.02***	-0.02***
	(0.009)	(0.009)	(0.003)	(0.003)
Overhead	0.22***	0.22***	-0.06***	-0.06***
	(0.038)	(0.038)	(0.011)	(0.011)
Loans to assets	-0.04***	-0.04***		
	(0.002)	(0.002)		
Liquidity			0.00***	0.00***
			(0.000)	(0.000)
Deposits to assets			-0.01***	-0.01***
			(0.001)	(0.001)
Credit risk	0.04***	0.04***	0.02***	0.02***
	(0.015)	(0.015)	(0.004)	(0.004)
Interbank rate	0.39***	0.39***	0.38***	0.38***
	(0.030)	(0.030)	(0.017)	(0.017)
Low interest rates		-2.10***		-1.34***
		(0.131)		(0.052)
Constant	8.24***	8.24***	2.61***	2.61***
	(0.408)	(0.408)	(0.147)	(0.147)
Other macro variables	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations (#)	35,289	35,289	39,974	39,974
Banks (#)	4,503	4,503	4,679	4,679
R2	0.55	0.55	0.73	0.73

Note: *** p<0.01, ** p<0.05, * p<0.1. Random-effect GLS estimation with standard errors clustered at the bank level (in parentheses).

Table B3. Alternative Sample: Social Banks Members of FEBEA and/or GABV

Dependent variable	Panel A: Core business model			Panel B: Stakeholder banks only			Panel C: Social banks and market interest rates			
	ROA	Int. rate on loans	Int. rate on liabilities	ROA	Int. rate on loans	Int. rate on liabilities	Int. rate on loans		Int. rate on liabilities	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Social bank	-0.16*	-0.77**	-0.45***	-0.04	-0.49**	-0.31*	-0.46	-1.15***	-0.41***	-0.52***
	(0.094)	(0.313)	(0.155)	(0.080)	(0.205)	(0.162)	(0.327)	(0.405)	(0.159)	(0.171)
SB*Interbank rate							-0.17*		-0.02	
							(0.097)		(0.042)	
SB*Low interest rates								0.64*		0.12
								(0.334)		(0.095)
Interbank rate	-0.10*	0.43***	0.35***	-0.07	0.32***	0.37***	0.49***	0.45***	0.36***	0.36***
	(0.054)	(0.125)	(0.036)	(0.047)	(0.108)	(0.038)	(0.126)	(0.116)	(0.038)	(0.038)
Low interest rates								-3.00***		-1.05***
								(0.825)		(0.201)
Constant	1.01**	9.14***	3.66***	1.54***	7.73***	2.63***	8.99***	9.23***	3.67***	3.72***
	(0.484)	(1.698)	(0.758)	(0.355)	(0.899)	(0.649)	(1.677)	(1.711)	(0.763)	(0.766)
Other bank & macro var.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations (#)	877	623	815	683	494	633	623	623	815	815
Banks (#)	92	81	92	68	63	68	81	81	92	92
R2	0.30	0.50	0.73	0.37	0.70	0.73	0.50	0.51	0.73	0.73

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Random-effect GLS estimation with standard errors clustered at the bank level (in parentheses).

Table B4. Alternative Dependent Variables

Dependent variable	Panel A: Core business model			Panel B: Stakeholder banks only			Panel C: Social banks and market interest rates			
	RAROA	Int. rate on all earning assets	Int. rate on customer deposits	RAROA	Int. rate on all earning assets	Int. rate on customer deposits	Int. rate on all earning assets		Int. rate on customer deposits	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Social bank	-1.01**	-0.52***	-0.70**	-1.03*	-0.39**	-0.37***	-0.32*	-0.66***	-0.54*	-1.09**
	(0.420)	(0.183)	(0.330)	(0.598)	(0.162)	(0.131)	(0.193)	(0.205)	(0.304)	(0.459)
SB*interbank rate							-0.11*		-0.10	
							(0.055)		(0.091)	
SB*low interest rates								0.24*		0.54
								(0.135)		(0.338)
Interbank rate	-0.54	0.39***	0.56***	-0.32	0.28***	0.35***	0.41***	0.39***	0.58***	0.56***
	(0.628)	(0.104)	(0.147)	(0.675)	(0.049)	(0.034)	(0.104)	(0.103)	(0.152)	(0.149)
Low interest rates								-1.90***		0.90
								(0.380)		(0.951)
Constant	2.92	3.14***	1.02	6.59	3.53***	2.14***	3.11***	3.19***	0.93	1.06
	(1.953)	(0.726)	(1.656)	(4.264)	(0.647)	(0.530)	(0.728)	(0.725)	(1.627)	(1.597)
Oth. bank & macro var.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Observations (#)	118	1,168	459	78	787	785	1,168	1,168	459	459
Banks (#)	118	125	74	78	83	83	125	125	74	74
R2	0.32	0.51	0.55	0.38	0.79	0.76	0.51	0.51	0.56	0.56

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Columns (1) and (4): Heteroscedasticity-robust OLS estimation. Other columns: Random-effect GLS estimation with standard errors clustered at the bank level (in parentheses).

Table B5. Alternative Interaction: Market Concentration

Dependent variable	Interest rates on loans		Interest rates on all deposits	
	(1)	(2)	(3)	(4)
Social bank (SB)	-1.34***	-1.16*	-0.31**	-0.15
	(0.455)	(0.649)	(0.127)	(0.141)
SB*mkt concentration		-3.11		-1.75***
		(2.728)		(0.632)
Mkt concentration	5.47	5.95	1.17**	1.44**
	(3.615)	(3.936)	(0.549)	(0.581)
Constant	13.41***	13.30***	3.02***	2.91***
	(2.221)	(2.278)	(0.660)	(0.662)
All other control var.	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations (#)	836	836	1,109	1,109
Banks (#)	111	111	124	124
R2	0.43	0.42	0.71	0.72

Note: *** p<0.01, ** p<0.05, * p<0.1. Random-effect GLS estimation with standard errors clustered at the bank level (in parentheses).

Table B6: Selection on Unobservable Variables

Dependent variable	ROA		Interest rate on loans		Interest rate on liabilities	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
	(1)	(2)	(3)	(4)	(5)	(6)
Social bank coefficient	-0.291	-0.244	-1.444	-1.605	-0.473	-0.436
R-squared	0.018	0.281	0.036	0.431	0.025	0.713
$\tilde{\beta}_1^*$ ($R_{max} = 1$ and $\delta = 1$)		-0.125		-1.835		-0.421
$\tilde{\beta}_1^*$ ($R_{max} = 1.3$ and $\delta = 1$)		-0.067		-1.957		-0.405

Note: This table is based on the specifications displayed in Table 4.