The sensitivity of SME's investment and employment to the cost of debt financing

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Abstract

We use variation in the access to a credit certification program in Portugal to estimate the sensitivity of small and medium sized firms (SMEs)´ investment and employment to the cost of debt financing. This government program provides a two-tier credit certification and a loan guarantee to firms with a minimum credit quality. The program design allows for a multidimensional regression discontinuity methodology to estimate its real effects over a decade. We find that eligible firms increase their borrowing, and obtain bank loans at significantly lower rates than non-eligible firms during crises. These firms increase investment and employment by more when compared to non-targeted firms. A decrease of 1 percentage point (p.p) in the cost of debt financing is associated with a contemporaneous increase of 1 p.p in fixed assets growth, 0.5 p.p in working capital growth and 0.25 p.p increase in employment growth. Fixed capital investment and employment effects persist for two years. Targeted firms also show an increase in sales growth, including exports. While these effects are mostly observed during the crisis period, ensuring that small firms continued to invest, financial and real effects of the program are modest post-crisis. Last, we exploit variation in the two certification tiers to estimate the effect of having the top rating. Rating effects mostly impact sales growth directly in the post-crisis period.

Keywords: SME financing, Credit Rating, Credit Access, Certification

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1 Introduction

Mutual guarantee programs, where governments offer a guarantee on bank loans, are common stimulus measures to the economy (Columba et al., 2010, Lelarge et al., 2010, Bach, 2014, Beck, 2014, Gonzalez-Uribe and Wang, 2020). Through these programs, governments offer (partial) guarantees on loans granted by financial institutions to small firms with the purpose of subsidizing the cost of borrowing and alleviating financing frictions, which are known to be larger for firms that are small and more informationally opaque. These programs are often used to respond to financial crises, when supply of credit is limited (Carpenter and Petersen, 2002, Campello et al., 2010a, DeYoung et al., 2015, Brown and Earle, 2017) [1]. Nonetheless, some of these programs are still active during non-crisis periods. Despite their popularity among governments and policy-makers, the real effects of these programs remain understudied, including potential heterogeneous effects over the business cycle. Estimating their causal effects is challenging due to the endogenous selection of firms into the programs. Data availability also hinders the analysis of the effects of the programs, as medium and small firms are mostly private. Despite these challenges, understanding how investment and employment respond to changes in the cost of subsidized credit is of first order importance given the resources devoted by governments around the world.

We exploit a stimulus program adopted in Portugal for small and medium enterprises (SMEs) to study the sensitivity of small firms investment and employment to the cost of borrowing. The *SME-Leader Program* offers firms a loan guarantee and a credit certification (rating) issued by a government agency. A distinctive feature of this program is that it targets SMEs with a minimum credit quality. Through the program, eligible firms have access to subsidized bank credit and to a public credit rating, which potentially reduces financing frictions. SMEs are typically opaque, which makes the process of collecting information and establishing a relationship with creditors long and expensive (Beck and Demirguc-Kunt, 2006). Moreover, unlike large and public firms, these companies do not benefit from the certification mechanism offered by the main credit rating agencies.

A relevant feature of the program, which started in 2008, is that certification and rating criteria are multiple and change on a yearly basis. This allows for the implementation of a Multidimensional Regression Discontinuity Design (MRDD) to estimate its real effects. The multidimensional and time-varying criteria generate exogenous variation in firms' costs of funding allowing to estimate its impact on investment and employment decisions by SMEs. Because the program certifies eligible firms with one of two ratings, we also exploit variation around the top rating cut-off to estimate the impact of an additional credit rating notch for SMEs. The richness of the data on the population of Portuguese firms make possible a detailed analysis of

[1] Government credit guarantee programs were also widely used as a response to the COVID19 pandemic (Core and Marco, 2020)

financing conditions and usage of the borrowed funds.

Our analysis covers one decade, from 2008 to 2018, including a period of crises and the period of expansion that followed. The size of the subsidy is likely to change with overall economic conditions and the severity of existing financing frictions, and so are its real effects. For this reason, we analyse both periods separately. We define the crisis period in Portugal as the period between 2008 and 2013. In 2008, the Portuguese economy suffered the consequences of the failure of Lehman Brothers, which reverberated worldwide. It was precisely to mitigate the impacts of the crisis that followed that the program was implemented. When the economy was beginning to recover, a second and much larger shock hit the Portuguese financial system and, later, the economy. In the spring of 2010, Portuguese banks lost access to wholesale debt market funding, due to investors' concerns associated with the euro area sovereign debt crisis. Banks became largely reliant on European Central Bank funding and the government faced increased difficulties in access to debt markets, leading up to an international request for financial assistance in the spring of 2011. Portugal successfully exited this assistance program in 2014. We thus define the post-crisis period as 2014-2018.

Eligibility to the program is based on financial information reported on the previous fiscal year. The criteria for eligibility are announced only after the financial information has been reported, which means that firms cannot be sure *ex-ante* whether they will be part of the program in a given year. If approved, the certification is valid for a year. Because firms have discretion and endogenously choose whether to apply to the program, we estimate the intention to treat effect (ITT), i.e., we compare eligible firms' outcomes with the ones of non-eligible firms. The multidimensional criteria design has the advantage of estimating the effect using different groups of firms around different cut-off points. This improves on the external validity of unidimensional regression discontinuity designs, which usually rely on a limited and small number of observations around a single cut-off point. In order to define a single running variable based on multiple criteria and thresholds we follow Ferreira et al. (2018). We first determine the binding criteria for each firm-year and then standardize the distance to threshold across criteria. For our baseline estimates, we follow Calonico et al. (2014) to choose the optimal bandwidth around the cutoff points and the order of polynomials for the functional form.

We first document that firms that are eligible to participate in the program have access to significantly lower costs of debt financing and increase their borrowing. This effect is perhaps not surprising, as certified firms are offered subsidized loans. However, it could also be that 1) firms would simply substitute existing loans for loans at the subsidized rate; 2) firms would expand their borrowing beyond the credit offered through the program at a higher cost and we would observe no change or an increase in borrowing costs; or 3) banks participating in the program would capture this subsidy. When comparing firms around the cutoff point for the program, we find that eligible firms have access to credit that is 2.3 percentage points (p.p) cheaper

than non-eligible firms on the year of the certification. We also document that eligible firms increase their borrowing by 8 p.p more than non-eligible firms during the crisis period. This effect is not observed during the post-crisis period.

We then test if eligible firms make use of borrowed funds during the crisis period for investment purposes. We find that during the crisis, eligible firms invest more in total assets, including fixed capital and working capital, and increase their employment by more than non-eligible firms. We find that eligible firms invest 2.2 p.p more in fixed capital than non-eligible firms. Taking into account an average take up rate of 36% during the crisis period this represents a treatment on the treated (TOT) effect of 6.1 p.p. This effect persists for another year after certification with a similar magnitude, but is not persistent beyond that period. As for working capital, we find weaker sensitivities: eligible firms invest 1.1 p.p more than non-eligible, which represents a TOT effect of 3.1 p.p. This is a non-persistent effect. The overall impact measured by the change in total assets is consistent with these measured effects: eligible firms increase their total assets by 1.1 p.p on the certification year, for a TOT of 3.1 p.p. As for human capital, we find that eligible firms increase their employment by an extra 0.15 employees on the year of certification and by another 0.17 employees the year after, which represents a TOT effect of 0.42 and 0.47 employees respectively. Cumulatively, certified firms retain, in case of the crisis period, approximately 1 employee.[2]

In summary, our results show that a decrease of 1 percentage point (p.p) in the cost of debt financing is associated with a contemporaneous increase of 0.5 p.p in total assets growth, 1 p.p. in fixed assets growth, and 0.5 p.p. in working capital growth. A decrease of 1 p.p in the cost of debt financing is also associated with a contemporaneous increase in employment growth of 0.25 p.p.

We also find a positive impact of the program on firm growth and performance during the crisis period. Growth in sales is between 0.6 and 1 p.p higher for eligible firms when compared to non-eligible ones around the threshold in the two years after certification. We also find that these firms increased their exports by significantly more than non-eligible firms around the eligibility threshold. This effect is positive and economically significant. Program eligible firms export up to 9.5 percentage points more when compared to others over the two years after being eligible. We do not find these effects in the post-crisis period. Overall, our results suggest that this program has a positive impact on firm growth, with real effects in terms of firm investment and employment. Noteworthy, these are mostly observed during the crisis period and are much less salient in the post-crisis period.

The real effects of the program estimated using the comparison of firms around the eligibility threshold are corroborated with the perception of SME managers. To elicit more details about the impact and implementation of the program, we conducted a survey of certified and non certified firms for which we obtained

[2]The median firm has 19 employees.

5,413 responses. SME managers confirm that the program allows them to lower their financing costs and boost investment and employment. Further, the survey results allow to gain insights not available on the financial data. More than one third of the managers report an increase in the competitive advantage of the firm, 30% mention a positive effect on the firms' ability to innovate, and 19% improved relationships with clients.

The *SME-Leader Program* assigns two different credit ratings to SMEs (*SME Leader* and (*SME Excellence*), which allows to identify the impact of reducing informational frictions through the provision of a public rating. When comparing firms with different levels of rating, in order to evaluate the value of an extra notch in certification, we find no significant effects on financial outcomes, but we find significant results on sales growth. This result suggests that the overall impact of the program is not limited to the improved access to credit but also due to the certification itself, which might be perceived as a positive signal by other stakeholders, including clients. This idea is supported with the evidence collected through the survey, as reputation benefits were considered a very important reason to apply to the program by more than half of the respondents that obtained a certification. Nevertheless, our quantitative results suggest that the effects arising from access to subsidized credit seem to dominate those arising from decreasing information asymmetries about firm quality during the crisis, as evidence of a credit rating effect is mostly observed in the post-crisis period.

Our paper revisits a classical question in corporate finance, evaluating how sensitive are firms' investment and growth decisions to changes in the cost of funding. Using data on corporate bond prices, Gilchrist and Zakrajsek (2007) find that a 1 p.p increase in the user cost of capital implies a decrease of 50 to 70 basis points in the investment rate. More recently, Sharpe and Suarez (2014) analyze a survey addressed to CFOs and find that most firms actually claim to be mostly insensitive to decreases in interest rates. However, these results are based mainly on large firms. Fazzari et al. (1998) show that information asymmetries can significantly increase the cost of funding for firms, thereby constraining investment. Graham and Harvey (2001) argue that investment decisions are often determined by the cost of funding rather than by the net present value of the project, notably for smaller firms. These constraints were more binding during the global financial crisis, with 86% of financially constrained CFOs reporting to have foregone attractive investment opportunities during this period (Campello et al., 2010b). We contribute to this literature by examining the sensitivity of investment to the cost of debt for a universe of firms that remains largely unexplored in this literature: SMEs.

Relatedly, our paper contributes to the literature on financial constraints faced by small firms. Credit-constrained firms are limited in their ability to grow (Beck and Demirguc-Kunt, 2006). Often small firms have limited access to capital markets, so typically their most important source of external finance are bank

loans (Ferrando et al., 2015). During the global financial crisis, banks were forced to significantly adjust their portfolios in response to negative shocks, implying that SMEs' access to credit became severely constrained (Blattner et al., 2021, Carbo-Valverde et al., 2016, DeYoung et al., 2015). Demirgüç-Kunt et al. (2020) show that small firms around the world were more severely affected by these constraints during the global financial crisis, especially in countries with weaker information sharing mechanisms. This was not a unique feature of this crisis, as small firms are generally more exposed to cyclical fluctuations (Crouzet and Mehrotra, 2020) and credit crunches (Gorton and He, 2008). We contribute to this literature by showing that a targeted program designed to alleviate the financial constraints of SMEs had a positive impact on their investment and growth during a profound economic and financial crisis.

Finally, our paper contributes to the literature examining how government interventions can address the market failures that make SMEs become financially constrained. These constraints arise from vulnerability to information problems, as well as from the market power of the banks (Carbo-Valverde et al., 2009, Ryan et al., 2014). Government and national financial structures affect credit availability mainly through lending technologies (Berger and Udell, 2006, Behr et al., 2013, Kahn and Wagner, 2021), so several measures have been developed to improve the SMEs' access to finance through bank loans at different levels. Gonzalez-Uribe and Paravisini (2017) study the Seed Enterprise Investment Scheme in the UK, which consists of an exemption on capital gains and income tax relief offered to individual investors in small entrepreneurial firms. They find that this program had a positive impact on investment. Gonzalez-Uribe and Wang (2020) examine a loan guarantee program implemented also in the UK, during the Great Recession, and find positive effects on performance, survival and job retention. For the U.S., there is abundant evidence that the Small Business Administration loans were helpful in eliminating constraints in credit supply (Bachas et al., 2021), creating jobs (Brown and Earle, 2017), and promoting economic growth (Denes et al., 2021). There is also evidence on the broadly positive effects of government guarantee programs in France (Lelarge et al., 2010, Bach, 2014, Barrot et al., 2019), Italy (Columba et al., 2010, Bartoli et al., 2013, D'Acunto et al., 2018, D'Ignazio and Menon, 2020), and Chile (Mullins et al., 2018). In a recent paper Crouzet and Tourre (2020) estimate a structural model of investment, financing and default to examine the trade-offs of credit support programs during crises and in their aftermath. They show that supporting firms' access to credit during crises may be helpful to avoid their liquidation, but that this support can create debt overhang problems during recoveries, slowing down investment and growth. Our paper contributes to the literature on government interventions in credit markets by estimating the impact of access to subsidized bank credit on firm growth and performance, as well as documenting the real economic effects in terms of investment and employment. The program design allows for a precise estimate of its causal impact, as selection, manipulation, and anticipation effects that often hinder identification can be dealt with by exploring several features of the program. The program

also differs from most government interventions as it is targeted towards good quality SMEs. By focusing on a subset of firms, the fiscal costs of the program are necessarily smaller. Our results show that a targeted program improves the outcomes for the treated firms. Given that the program has been at work for more than one decade, we can also evaluate its effects both during a crisis and in the subsequent recovery period. The effects arising from better access to credit prevail mainly during financial crisis, as suggested by Crouzet and Tourre (2020).

Our results have relevant policy implications. SMEs represent an extremely large part of the European economy: according to the "Annual Report on European SMEs" by the European Union (EU) in 2016 they represented almost all (98%) of non-financial enterprises, two-thirds (66%) of total EU employment and accounted for almost three-fifths (57%) of the value added generated by the non-financial sector. Because of their importance in the economy these firms are given particular attention by researchers and policy-makers, who recognize the challenges associated to SME access to credit. Our research design helps us to understand how relevant financial and informational frictions are on hampering firms' access to credit and growth, leading to different outcomes in terms of investment on physical and human capital. This allows policy-makers to understand the potential impacts of enacting policies to alleviate financial and informational constraints on SMEs, notably for the best performing ones. This can be particularly relevant during financial crises, or other economic distress events such as the recent COVID19 pandemic. While in the first wave of the pandemic governments around the world hurriedly offered indiscriminate support to small firms to offset the impacts of lockdowns and demand shocks, as it became clearer that the pandemic would have lasting and uncertain effects, a consensus emerged on the fact that support should be targeted (Bartik et al., 2020), so as to avoid the proliferation of zombie firms, unmanageable public finances imbalances and to promote the efficient reallocation of resources in the economy. This paper offers causal evidence that supporting the best quality small firms during a financial crisis has positive and lasting effects on investment and growth.

The paper proceeds as follows. In section 2 we describe the institutional setting, the program and the data. In section 3 we explain the empirical strategy and in section 4 we present the results. Section 5 presents robustness tests and extensions and section 6 discusses the main results making use of survey evidence. Finally, section 7 concludes the paper.

2 Institutions and Data

2.1 The SME-Leader Program

The *SME-Leader Program* offers SMEs a credit certification (rating) issued by a governmental agency (IAPMEI). The program was introduced in 2008 with the main objective of ensuring that the best performing SMEs had access to financing during the global financial crisis. To make sure that would happen, the program was designed to work through two channels. First, the certification mechanism allows for a public recognition of the firms' financial health. In this respect, the program mimics the benefits of the assignment of credit ratings by international credit rating agencies, but focusing on SMEs rather than on large companies. This certification should allow the firm to boost its relationships with stakeholders, including customers and lenders.

The second channel deals with the lending dimension more explicitly. Though the certification in itself may alleviate informational frictions and improve firms' access to credit, the program includes an explicit mechanism to facilitate this. Once in the program, firms have enhanced access to credit lines with partial guarantees provided by mutual guarantee societies funded by the government. This allows firms to borrow at lower rates, and in a more streamlined and standardized process for credit approval. The terms and conditions applied vary across credit lines and change throughout the sample period. For illustration purposes, the maximum spread that banks could apply on credit lines granted to (*SME-Leader firms* in 2015 ranged between 2.7 and 3 p.p. over the 6-month Euribor (banks can charge lower spreads). For reference, the average spread for new loans under 1 million euros was 3.8 p.p. in the same period. Firms had to pay a commission for access to the mutual guarantee, which was 0.65% for the most expensive credit lines. The maximum government guarantee varies across credit lines. In 2015, the maximum guarantee was 70% and the maximum maturity allowed was 10 years. But in the same year, some credit lines had a maximum guarantee of 50% and a maximum maturity of 1 year. The program includes other benefits, such as support in firms' access to capital markets, access to training and partnerships with service providers.

Even though the program was originally designed to mitigate constraints in access to credit during the global financial crisis, the perceived success of the program lead to its continuation.[3] In 2021, the program is still active. However, the conditions under which firms can have access to the program changed materially over the years. To be eligible as (*SME Leader*, the firm has to be among the best SMEs in the country, fulfilling a set of criteria based on its most recent financial and operational performance. To be eligible in a

[3] In 2016 the success of the initiative was recognized with the European Enterprise Promotion Awards (EEPA), where it won the "Improving the Business Environment" award. The EEPA rewards initiatives that promote entrepreneurship and business growth. According to IAPMEI, "this award reflects the strong impact that the (*SME Leader* program had on companies awarded the statute, in terms of company financing, recognition of SMEs and in improving the flow of information.

given year, a firm must satisfy the criteria with respect to the previous' year financial statements.

The criteria defined for eligibility have changed in every year since the creation of the program. Over time, the set of criteria included the following financial variables and ratios: total assets, number of employees, total sales, net income, EBITDA, net income/assets, net income/equity, equity/assets, EBITDA/assets, EBITDA/sales, debt/EBITDA, sales growth and EBITDA growth. The program criteria for each year in our sample are reported in Table B1, in the Appendix.[4] Overall, the criteria have become more demanding over time, which means that a firm that is certified as (*SME-Leader* in a given year might not necessarily be eligible in the following year.

Besides the financial criteria, firms must meet a set of more general qualifying criteria that are the same every year. These include being officially classified as an SME firm by IAPMEI (this is solely based on firm size measured by number of employees, revenue and assets, according to the EU recommendation 2003/361), have three consecutive years of complete financial statements, and have no conflicting situations (e.g. late payments) with the Portuguese tax authorities, IAPMEI or Social Security.[5]

To get a certification firms must apply through a bank that sponsors its application. The bank has to check if the firm fulfills the eligibility criteria, assess its credit quality, and submit the application to the government agency. The sponsor bank obtains a smaller margin on these loans, but it benefits from significant regulatory capital savings, given the partial government guarantees attached to these credit lines. That said, the fact that there is a cap on the guarantee ensures that incentives are properly aligned and that the bank exerts sufficient monitoring of the loan (Chemla and Hennessy, 2014). The bank may choose to offer other financing benefits to the firm beyond those defined in the associated credit lines with public guarantee.

The certification is valid for one year. To remain in the program, the firm must comply with the set of criteria defined for that year and submit an application through the sponsor bank. The timeline is as follows. Firms have to submit their annual financial reports to the relevant authorities until mid-July. In 2020, this deadline was exceptionally extended to mid-September, due to the pandemic. Firms had to submit an application until end-October. Decisions on the 2020 (*SME Leaders*, which are based on information for the 2019 fiscal year, were announced in February 2021. The certification remains valid until December 2021. Access to new credit lines with public guarantees is valid only until September 2021.

In 2020, 9955 firms were certified as (*SME Leaders* (more 1398 than in the previous edition). These firms account for more than 40 million euros of turnover and more than 325 thousand jobs. Most firms belong to retail (34.4%), manufacturing (24.4%), food and accomodation (10.8%), and construction (10.8%) sectors.

[4]Firms in the tourism sector are subject to a different set of criteria. The program is managed by a different institution, Tourism Portugal. We exclude firms in this sector from our analysis.

[5]According to the EU recommendation 2003/361, for a firm to be classified as SME it should have less than 250 employees and less than 50 million euros of turnover (or less than 43 million euros of total assets).

The majority are small firms (71.9%). Medium firms account for 22.2% of the total, and micro firms 6%.

A unique feature of the program is a two-tier certification (rating). While most eligible firms are distinguished with the *SME-Leader* certification, the best performing among these are classified as *SME-Excellence*. To benefit from the top rating, firms have to meet an even more demanding set of criteria, which also changes on an annual basis. The formal financial benefits of being in the program are identical for (*SME-Leader* and (*SME-Excellence* firms. As such, the additional benefits from being a (*SME-Excellence* firm derive from the certification effect. By being part of the program, the firms can publicize on their websites and other communication platforms that they are among the best performing small firms in the country, what might offer reputational advantages with their customers and other stakeholders. This idea is supported with the evidence collected through the survey we implemented, as reputation benefits were considered a very important reason to apply to the program by more than half of the respondents that obtained a certification (Section 6).

Table A1 shows the number of eligible firms for each of the two certification categories as well as the number of *SME-Leader* and *SME-Excellence* firms in a given year. The program started in 2008 only with one level of certification *SME-Leader*. The top rating certification (*SME-Excellence*) was added in the following year. The number of certified companies has increased until 2012, which is possibly due to an increased awareness about the program, and became overall stable since then. The number of eligible, non-certified firms decreases over time as the program criteria become tighter and, possibly, awareness increases. The average take-up rate, measured as the number of certified firms as a percentage of the number of eligible firms, is at 41.5%, being at 30% during the crisis period and 63.4% after the crisis (post 2013). Figure 1 shows the number of firms entering the program for the first time, which decreases over time and is consistent with firms being certified for more than one year during the sample period. In section 6 we discuss the selection of firms into the program and present survey evidence on the costs and benefits of the program as perceived by firm managers.

2.2 Data

The government agency responsible for the program makes publicly available the list of firms that are certified in each year, as well as the criteria to be certified as *SME-Leader* and *SME-Excellence*. We collect data on certified firms and program criteria between 2008 and 2018 from IAPMEI. This allows to know if a firm is certified as *SME-Leader* or *SME-Excellence* in a given year.

We merge this data with detailed accounting data on the firms, using their unique fiscal identification number. The Portuguese Central Balance Sheet database covers all non-financial firms operating in Portugal.

The data is sourced from *Informação Empresarial Simplificada* (IES), a joint project of the Ministry of Finance, Ministry of Justice, Statistics Portugal and Banco de Portugal. The aim of this project is to integrate most of the information that all Portuguese firms have to report for legal, fiscal and statistical purposes. This is the information used in the program to confirm if a firm meets the eligibility criteria. Banco de Portugal revises the data for economic and statistical analysis purposes (this revised version of the data is the *Central de Balanços* database). We collect this data from 2007 to 2018.

This data, together with detailed criteria data, allows to identify all firms that are eligible for the program. The granular and detailed information in the dataset also allows to measure firm outcomes, including investment, employment and sales growth.

We merge this data with the Central Credit Register dataset, owned and managed by Banco de Portugal. This includes monthly information on all loans outstanding in Portugal, granted by resident credit institutions. The reporting threshold is among the smallest in the world (50 euros). This virtually universal coverage is key for the analysis of SME financing. Most credit registers worldwide typically have higher reporting thresholds, sometimes excluding smaller firms from the analysis. This dataset has information on the total outstanding bank loans of each firm and on the status of each loan (for instance, if it has become overdue or if it was renegotiated). There is also information on unused credit lines, loan products, maturity and collateral.

Finally, we collect data on interest rates using a database on loan flows, available at Banco de Portugal. For each new loan originated, banks report the interest rate, maturity, existence of collateral and loan amount. This dataset is available only since mid-2012, which implies that it cannot be used to fully assess the effects of the program in the entire period.

3 Empirical Strategy

We exploit the eligibility to the "*SME-Leader Program*" as a source of variation in the cost of debt for SMEs. We make use of the variation around the different criteria thresholds of the program to define a counterfactual for changes in debt issues, investment and employment in the absence of the subsidy and credit certification. While we observe the firms that are certified and the ones that are not in a given year, we do not have information on applications and therefore we cannot explicitly account for selection into the program. We thus estimate an intention to treat (ITT) effect, i.e., we compare eligible firms with non-eligible firms around different cut-off points, defined by the multiple eligibility criteria.

We also exploit the eligibility to *SME-Excellence* (top rating) as a source of variation in credit certification level for SMEs. We make use of the discontinuity between Excellence-eligible and Leader-eligible firms to estimate the effect of the top rating.

3.1 Sample and Summary Statistics

Our main sample comprises 229,778 firm-years and 55,041 unique firms from 2007-2018 for which eligibility data is available. Table 1 shows summary statistics for all firms in our sample including criteria (Panel A), and outcome variables (Panels B and C). Non-SME firms (large firms and micro firms) are excluded from the sample. We also exclude financial firms, non-for profit and state-owned firms, as well as firms in the tourism sector as this sector has its own stimulus program. The median firm in our sample has 19 employees, sales of 1.23 million euros, assets of 1.22 million euros and is 17 years old.

Table A2 in the appendix shows the summary statistics for *SME-Leader* and *SME-Excellence* eligible, non-eligible and certified firms. Overall, Leader and Excellence certified firms are larger and better performing. This is consistent with the notion that firms are eligible into the program based on accounting performance, credit quality and size.

3.2 Methodology

We use a multidimensional regression discontinuity design to estimate differences in debt issuance, investment and employment between eligible and non-eligible firms. Therefore, the analysis is restricted to a set of firms that lie around the eligibility threshold. In other words, we compare firms that are eligible to the (*SME-Leader Program* but only meet the criteria by a small margin, with firms that are not eligible to get the certification by a small margin. The 'just below the threshold' firms are used as counterfactual for firms that are 'just above the threshold'. Likewise, to estimate the top rating effect we compare firms that are eligible to the SME-Excellence certification just by a small margin, with the firms that did not get eligible to the top rating by a small margin. In a one-dimensional regression discontinuity design, the sample bandwidth definition and distance to threshold is determined by a single criterion. In a multidimensional design, there are multiple criteria and multiple thresholds. Therefore, we need to define a single running variable and threshold. We define the distance to threshold of a given firm in a given year using the criterion that is the most binding.[6]. We follow the approach of Ferreira et al. (2018) to define the binding distance to threshold across criteria. We first calculate the distance to threshold for all criteria and standardize these distances. Second, we define as binding criteria the one that has the furthest distance to threshold. Last, we aggregate the standardized distances to threshold across criteria to define the running variable (standardized distance to threshold). Figure 2 shows that the probability of being treated (certified as (*SME-Leader* in this case) significantly increases at zero for our running variable. The econometrics literature on regression discontinuity

[6]As an example, to be eligible to the program in a given year firms must have positive net income, and equity-to-assets ratio greater or equal to 25%. For a firm that has positive net income, but very close to zero, and an equity-to-assets ratio of 100%, the most binding criteria is net income

design provides detailed guidance on the choice of optimal bandwidth (Imbens and Kalyanaraman, 2012); the choice of local polynomial order to include in the regression (Pei et al., 2020); and the inclusion of covariates (Frölich and Huber, 2019). We follow Calonico et al. (2014) for the choice of optimal bandwidth and order of polynomial.

Formally, we estimate the following model:

$$y_{it} = \beta v_{it} + \sum_{p=1}^{P} [\gamma_{p0} + \gamma_{p1} v_{it}] D^p + \epsilon_{it} \tag{1}$$

Where y_{it} is a firm outcome (eg., interest rate of new loans), v_{it} is an indicator variable that takes the value of 1 if a firm is eligible to be (*SME-Leader* in year t (i.e., $v_{it} = 1 \; if \; D_{it} \geq 0$) and $\sum_{p=1}^{P} [\gamma_{p0} + \gamma_{p1} v_{it}]^p$ is a polynomial of order P of the distance to threshold. The coefficients γ_{p0} and γ_{p1} can differ on the left- and right-hand sides of the threshold.[7]

The coefficient of interest is β, which measures the average difference in the outcome variable y_{it} between eligible and ineligible firms as determined by the program criteria in year t. A positive coefficient indicates that the average of the outcome variable for eligible firms is larger than for non-eligible firms. Because there is only partial take-up of the program, β is an Intent-to-Treat (ITT) estimate. The Treatment-on-the-Treated (TOT) estimate is obtained by scaling up the ITT by the take-up rate.

An underlying assumption in the regression discontinuity design is that firms' assignment around the eligibility threshold is as good as random and that y_{it} would be a smooth function around threshold absent treatment (*local continuity assumption*). This implies that firms do not manipulate their financial statements to meet the program criteria. The design of the program makes it arguably hard to manipulate eligibility for the following reasons: 1) the program is multi-criteria and these change on a yearly basis; 2) eligibility criteria for a given year are always based on the financial statements of the previous year and only announced after the date firms have to file their financial reports to the authorities; 3) all SMEs must have a certified accountant who files and signs the financial reports; 4) there are penalties for late filing of financial reports, and firms must pay fees to file for restatement.[8]

A second implication of this assumption is that program thresholds are not standard restrictions to participate in other programs or subsidies. This is indeed the case, which reduces the concern of sorting around the cut-off points. Although the local continuity assumption cannot be formally tested, we study the distribution of eligibility criteria around each of the cut-off points using McCrary tests (McCrary, 2008). Figure 3 shows the distribution of criteria around cut-off points for the year before its introduction to the

[7] For estimation we follow Calonico et al. (2017).

[8] In Portugal all firms, irrespective of size, must submit detailed financial statements (balance sheet, income statement and cash flow statement) to the authorities.

program.[9] Overall, we do dot find significant discontinuities around the relevant thresholds except for *Net Income*. Earnings discontinuity has been extensively documented in the accounting literature (see for instance Burgstahler and Dichev (1997) or Beaver and Nelson (2007), who show that discontinuity in earnings can be observed in the absence of discretion). This observed discontinuity in net income is thus plausibly unrelated to the program. Nevertheless, because firms above and below the cut-off for *Net Income* may differ in other observable and unobservable characteristics in a systematic way, in section 5 we conduct robustness tests where we exclude *Net Income* as criteria, as well as the criteria with the lowest p-values in the density tests.

Other potential bias of our estimates might arise from the choice of bandwidth and order or polynomial. We discuss this possibility in greater detail in section 5 and perform robustness tests where we choose alternative bandwidths and orders of polynomial.

4 Results

We make use of the *SME-Leader* program to estimate the sensitivity of investment and employment to the cost of debt financing. The first step in our empirical evaluation is to examine changes on the cost of debt financing to check whether firms have access to cheaper bank financing due to the offered government guarantees and credit certification. Second we look into financial responses: changes in debt and equity financing. Third, we analyse investment and employment effects. We perform this analysis during the crisis period as well as in the period post-crisis.

4.1 Cost of Debt Financing and Financial Responses

Firms that are eligible to participate in the program have significantly lower costs of debt financing during the crisis period. Table 2 shows the results from estimating equation (1) using loan flow data. Columns (1)-(2) show the impact of the program on the cost of new loans. The costs of debt for eligible firms is 2.3 percentage points (p.p) lower than for non-eligible firms during the crisis period (Panel A). Figure 4 shows that this decrease corresponds to a drop from approximately 11 p.p for non eligible firms to 9 p.p for eligible firms around the eligibility threshold.[10] Taking into account that loan flow data is available since 2012 and the average take-up rate for the 2012-2013 period is at 60%, the estimated treatment on the treated (TOT) effect is 3.8 percentage points. These effects are persistent one year post certification, but not significantly different from zero during the post crisis period (Panel B). Because firms may decide to increase borrowing

[9] We also present p-values of Cattaneo et al. (2018) density tests for discontinuity around the thresholds in Table A4 in the appendix.

[10] Figure 4 shows visual representation of the RD estimates using a fixed bandwidth of 0.25 across all outcomes and a polynomial of order 2.

with non-sponsor banks at market rate on top of the subsidized credit through the program, the overall impact of the program on the cost of financing for firms is not trivial.[11]

In terms of the maturity of new loans, we find that eligible firms have shorter loan maturity. The intention-to-treat estimated coefficients are -0.330 for the year of eligibility and -0.201 the year after (see columns (3)-(4)). This corresponds to a contemporaneous decrease in debt maturity of approximately 4 months. This effect is persistent over time, including in the post-crisis period.

Columns (5)-(6) show the impact on the probability of default. We find that eligible firms show significant lower probability of default when compared to its counterfactual during the crisis (Panel A). The coefficient magnitude is at -0.003 in the year of eligibility and -0.005 one year after. The TOT is thus between 0.5 p.p and 0.8 pp Similarly to the results for interest rates we do not find an effect in the post crisis period (Panel B).

Last we look at collateral. Columns (7)-(8) show the results. We find that the use of collateral in bank loans is greater for eligible firms than non-eligible firms around the eligibility threshold. This is expected because all the loans granted through the program have associated a government guarantee, which makes them being classified by the bank and in the data as having collateral.

To evaluate if firms increase their borrowing at the new rates, we look at changes in bank loans. Because firms can access other sources of financing such as issuing equity, we also look at changes in issued equity. Table 3 shows the results from estimating equation (1) using balance sheet data to measure financial responses. We estimate these effects in levels but also in logarithmic transformation to mitigate the impact of potential outliers.

We first look at changes in bank loans. Columns (1)-(4) show the results. We find that firms that are eligible to the program increase their borrowing when compared to non-eligible ones during the 2008-2013 period (Panel A). The estimated ITT effect for contemporaneous variables is at 8,995 EUR, which represents 3.9% of a standard deviation. The effect is stronger at 22,202 EUR one year after, representing 9% of a standard deviation. The TOT effect for an average take-up rate of 36% during the crisis period is 24,986 EUR for eligibility year and 61,672 EUR one year after. The effects on the log transformed variable are similar across the two periods. The estimated difference in growth rates is 8 pp From figure 4 we see that the increase at the eligibility cutoff point is between zero to 8 pp The TOT effect for the log transformed variable is estimated at 0.22.[12]

The estimated effects are overall smaller and not as robust for the period post-2013 (Panel B). The estimates in levels are statistically significant with a magnitude of 17,207 EUR for the eligibility year, and

[11] Table A3 shows that the estimated effect on the interest rate is similar when loan-level covariates are included in the estimation.

[12] Figure A1 shows similar regression discontinuity plots for the variables without the log transformation.

15,789 EUR for one year after (see columns (1) and (2)). These results are not robust to using the log-transformed variable, in columns (3)-(4). One possible explanation for the post-crisis results is that target firms do not effectively benefit from the subsidy, as their probability of default is already low enough during good times.

Last, we look at equity issues, as firms might also respond to this debt subsidy by issuing equity to re-adjust their capital structure or as a necessary complement to finance investment. Columns (5)-(8) show the results. We find modest effects on equity issues both during the crisis (Panel A) and during the post-crisis period (Panel B). The estimated effects in levels are significant and between 829 EUR and 2,096 EUR, but mostly not significant for the log-transformed variable. These estimated effects are of an order of magnitude significantly smaller than the loan effects (between 5 to 10 times smaller). For this reason, and because only a small fraction of firms issue equity in a given year (less than 25%) we do not consider them as first order.

Taken together, these results show that the program effectively changes targeted SMEs' access to credit, allowing them to borrow more and at significantly lower rates, but mostly during the crisis period.

4.2 Investment and Employment

In the previous section we show that eligible firms increase their borrowing by more than non-eligible firms because they have access to significantly lower interest rates during the crisis period. In this section, we test whether eligible firms grow their investment and employment by more than non-eligible firms and calculate its sensitivity to the change in interest rate.

Table 4 shows the results from estimating equation (1) using investment as the main outcome variable. Results for changes in total assets are shown in columns (1)-(4), for changes in fixed capital in columns (5)-(8) and for changes in working capital in columns (9)-(12). Eligible firms invest significantly more in total assets than non-eligible firms during the crisis period (Panel A). The ITT estimate is 26,095 EUR when considering the year of eligibility, and 35,746 EUR the year after, which represents 6% and 9% of a standard deviation change in total assets respectively. The TOT effect for a take-up rate of 36% corresponds to 72,486 EUR and 99,572 EUR, respectively. When considering the log-transformed variable for changes in total assets, which mitigates the effect of potential outliers, we find that only the contemporaneous effect is significant with a magnitude of 1.1 pp A difference of 1.1 p.p evaluated at the mean value of total assets corresponds to 53,442 EUR. The post-crisis estimates for changes in total assets presented in columns (1)-(2) in Panel B are mostly not significant.

Next, we analyse investment in fixed assets. We find that eligible firms significantly increase their fixed assets during the crisis period by 3,080 EUR more than non-eligible firms (Panel A). This effect is similar

in magnitude one year after eligibility is considered (2,914 EUR). These effects represent 3% of a standard deviation. The TOT effect is 8,556 EUR for contemporaneous variables, and 8,094 EUR on the year after eligibility is considered. Results are robust to using the log-transformation of the variable, with a significant coefficient of 2 p.p in both specifications. A difference of 2 p.p in fixed assets growth evaluated at the mean represents 13,305 EUR. The post crisis estimates for fixed assets growth are presented in Panel B and, overall, are not statistically significant.

Last, we show the results for investment in working capital. We find that eligible firms increase their investment in working capital by more than non-eligible firms. The estimated ITT coefficient is 11,105 EUR when considering contemporaneous effects and 17,421 EUR one year after eligibility is considered. This is admittedly small at only 1% of a standard deviation. The TOT is 30,597 EUR and 48,392 EUR, respectively. The results are only robust to using the log-transformed variable for the first year with an estimated coefficient of 1.1 p.p, which represents 12,608 EUR evaluated at the mean value of working capital. Interestingly, working capital is the only variable with persistent post-crisis effects (Panel B). Effects are very similar in terms of magnitudes to the ones obtained for the pre-crisis period.

Overall, these results suggest that eligible firms increase their investment by more than non-eligible firms, and that these effects are more pronounced during the crisis. The improved access to bank loans in a period of contraction of credit supply ensured that targeted firms continued to invest even during a prolonged and severe crisis (or that, at least, they do not decrease investment as much as other firms that had a similar starting point but that could not benefit from the support program). Figure 4 suggests that eligible firms did not cut investment in fixed assets as much, and increased their investment in working capital by more during the crisis.

Table 5 shows the results for investment in human capital. Column (1) shows that eligible firms increase their growth in number of employees when compared to non-eligible firms by an extra 0.148 employees during the period of the crisis (in Panel A), and by 0.168 employees in the post-crisis period (Panel B). This effect is persistent for one year after the award at 0.247 employees during the crisis and 0.189 post crisis. The magnitude of these effects ranges between 4% and 7% of a standard deviation. This represents a TOT effect between 0.41 and 0.47 employees pre-crisis, and between 0.3 and 0.39 employees post-crisis for a take-up rate of 36% during crisis and 63% in the post-crisis period. Figure 4 shows that during crisis this difference means that eligible firms are retaining their employees more than non-eligible firms, as opposed to hiring more than non-eligible.[13] The regressions with log-transformed variable show consistent results, with significant estimates during both periods between 0.005 and 0.01. These estimates represent between 0.15 and 0.31

[13]Figure A2 shows graphically this estimate in levels for a fixed bandwidth of 0.25, and suggests that at the cut-off this corresponds to keeping employee changes at zero as opposed to reducing the number of employees by 1.

employees evaluated at the mean.

Columns (5)-(8) show the effects for the growth rate in wages. Wages in eligible firms grow by 0.4 p.p more during the crisis period than for non-eligible firms (Panel A). This effect is only significant one period after eligibility. As for magnitudes, this represents 74.4 EUR, which is 3.5% of a standard deviation. The TOT corresponds to 205 EUR. This result is not significant during the period post-crisis, as shown in Panel B.

Overall, we find evidence that firms in the program make use of newly borrowed funds through the program to invest in fixed capital, working capital as well as retain employees during the crisis. Only employment effects seem persistent in the post crisis period, and wage effects are modest. In summary, our results show that a decrease of 1 p.p in the cost of debt financing is associated with a contemporaneous increase of 0.5 pp in total assets growth, 1 p.p in fixed assets growth, and 0.5 p.p in working capital growth. A decrease of 1 p.p in the cost of debt financing is also associated with a contemporaneous increase in employment growth of 0.25 pp

4.3 Sales Growth

One of the objectives of the program as stated by its agency is to promote the growth of targeted firms. This may be achieved through the subsidized cost of credit, relaxing potential financing constraints, or through advertising the certification status with clients and suppliers. For this reason we analyse sales growth. Table 6 shows evidence on sales growth, including exports. Columns (1)-(4) show that eligible firms grow their sales by more than non-eligible firms. When using changes in sales, the effect is only significant one year after the certification and during the crisis period, and it corresponds to 32,590 EUR. When using the log transformation of sales growth, the effect is significant during both periods with a magnitude of 1 p.p on the first year and 0.6 p.p one year after. The TOT effect during the crisis is thus between 1.7 and 2.8 pp This effect is not observed in the period post-crisis as shown in Panel B.

Columns (5)-(8) show a similar test using exports growth. During the economic crisis of 2008-2013, many Portuguese firms increased their exports as way to overcome the contraction in domestic demand. We test whether exports grew more for eligible firms during this period. We find that eligible firms increased their growth in exports by 11,074 EUR more than non-eligible firms during the certification year, and 14,148 EUR one year after. These represent approximately 10% of a standard deviation change. These effects are robust to using log transformations for the 1-year period after certification with a magnitude of 9.5 p.p and a TOT effect of 26 pp These magnitudes represent 59,907 EUR (ITT) and 163,895 EUR (TOT) evaluated at the mean. The delayed effects on exports seem reasonable taking into account that firms might have to invest or

adapt themselves to increase exports. Panel B shows these effects in the period post-crisis. We do no find significant post-crisis effects.

Overall the support offered to targeted SMEs was helpful in promoting exports, most notably when domestic demand was hampered. It is plausible that firms used financial support to adapt their activities towards international markets. At the same time, the certification provided by the program possibly facilitated the entry into new international markets and segments, ensuring new customers that the firm was among the best performing in its country of origin. This is consistent with survey replies.

4.4 Are the Effects Persistent?

Table 7 shows the result of estimating the intention-to-treat effect two years after eligibility is considered. We find a smaller but significant negative coefficient for interest rate at 1.8 pp in column (1) Panel A, suggesting that the effect on interest rate is persistent for at least two years during the period of the crisis. This might be related to the nature of the credit lines, that may be used beyond the year of certification. However, we do not find a corresponding effect on loans on column (2). In fact, the coefficient is negative and significant, suggesting that firms decrease their borrowing two years after certification. The magnitude of this decrease is smaller than the previously estimated effects for the increase during the first two years. This result is consistent with the hypothesis that firms do not want to become excessively indebted, as this would likely exclude them from future editions of the program. We do not find significant persistent effects on investment beyond two years post certification (columns (3)-(5)). The effect on employment growth is also not persistent (column (6)).

Panel B shows the results for the post crisis effects. Consistent with the previous tests we do not find significant impact of the program on interest rates and borrowing rates. Interestingly, we find a positive effect on total assets investment and working capital during the post crisis period. Because we do not find significant results on interest rates and debt responses, these real effects are unlikely determined by the debt subsidy. In the next section we discuss potential effects of the credit certification beyond the interest rate subsidy.

4.5 Is There a Top Certification Effect?

In this section we test the impact of the certification as *SME-Excellence* firm. Table 8 shows the results for financial outcomes. Top rating firms benefit from the same formal conditions in terms of guarantee, but they differ on the rating. This may still affect the conditions offered by the sponsor bank if the rating is expected to have an impact. It may also affect borrowing conditions with other banks or the relation of firms

with other stakeholders including clients and suppliers. Columns (1)-(2) show that there are no significant differences in the cost of financing around the threshold between Leader-eligible and Excellence-eligible firms. This is the case for both the period pre-crisis and post-crisis in panels A and B, respectively. We also find that Excellence-eligible firms do not borrow more than non-eligible. If anything there is some evidence that these firms borrow less (columns (2)-(4)). This is the case despite a small but significantly lower probability of default in the post crisis period (columns (5)-(6), Panel B).

In Table 9 we examine the impact of the extra rating notch on firm growth. Given that we do not reject the null hypothsis for financial effects, we focus only on sales growth and exports growth. The idea is that the certification might be a positive signal for clients and suppliers, which would allow firms to increase their sales by more. During the crisis period (Panel A) we only find significant effects on contemporaneous exports. However, these are not robust to using a log-transformed measure. In Panel B, for the post-crisis period we find robust evidence that Excellence-eligible firms increase their sales growth by more than non-eligible firms. The magnitudes are non-negligible at 120,262 EUR for the first year, and 107,841 EUR the year after. Using log-transformed variables the magnitudes are at an extra 2.4 p.p and 1.9 p.p in the certification year and one year after, respectively. As for exports growth we only find significant effects without log transformed variables. The effects correspond to 10,592 EUR in the first year and 18,402 one year after.

We conclude that most of the impact of the credit certification program during the crisis period is associated to the financial subsidy and access to less expensive bank loans and less so to the attributed credit rating. Interestingly, we do find an impact on growth associated to having the top credit rating during expansion periods. We further discuss the possible mechanism for this effect on section 6.

4.6 Heterogeneous Effects

In this section we study the heterogeneity of the impact of the subsidized credit by looking at sub-samples of firms that are expected to be exposed differently to financial frictions. The size of the subsidy and the benefits from the credit certification are expected to be larger for firms that face more financing frictions. Firms that ex-ante faced very little financial frictions are unlikely to derive great benefits from the program. Table 10 shows the results. We use default probability, size, tangibility and age to classify firms into high and low financial frictions. Smaller and younger firms and are expected to face more information asymmetry, while low tangibility firms have lower pledgeability of its assets.

Panel A and B show the results for firms with default probabilities above and below the median. These probabilities are estimated in an internal credit risk model managed by Banco de Portugal. We find that riskier firms experience a larger improvement in financing conditions, with a larger decrease in interest rates

and a larger increase in loans. However, the real effects of the program are larger for low risk firms, which show a larger increase in investment and employment.

Panel C and D show the results for small and large firms as measured by total assets. Interestingly, we find that the effect on interest rate is more pronounced for larger firms, but the increase in bank loans is more pronounced for smaller firms. This might be explained by banks still bearing some risk despite the guarantee, or banks appropriating a larger fraction of the subsidy when negotiating with smaller firms. As for the use of the funds, we find that while larger firms seem to invest both in fixed capital and human capital, small firms seem to mostly invest mostly in human capital.

Panels E and F show the results for firms with high and low tangibility with respect to the sample median. Low tangibility firms are expected to have less pledgeable assets and therefore to benefit the most from the subsidy. Consistent with this idea, we find the negative impact on interest rate of new loans to be larger from low tangibility firms but still significant for high tangibility firms. While the growth rate in bank loans is smaller for low tangibility firms, these firms show greater sensitivity in terms of fixed assets investment, but lower sensitivity with respect to employment. These results suggest that the subsidy alleviates frictions related to lack of pledgeable assets in smaller firms.

Panels G and H look at firms with age above and below the median age in the sample. The median age in the sample is 17 years. We find similar results for firms above and below median age in terms of interest rates, borrowing and investment. If anything, and consistent with the size results, older firms seem to have a larger decrease in interest rates, as well as greater investment growth in terms of fixed assets. Nevertheless the coefficients are overall of similar magnitudes for young an older firms in the sample.

The evidence on heterogeneous effects is consistent with the idea that firms that lack other sources of collateral are the ones that benefit the most from the program. This is reasonable as the program offers SMEs the government guarantee as an alternative source of collateral. Interestingly, we do not find the program to benefit mostly small firms in terms of the size of the subsidy. The estimated intention-to-treat effect on interest rates for the smaller firms in the sample is smaller than for large firms at 0.9 pp However, we do see the smaller firms increasing their borrowing at a higher rate (12.3 p.p), which suggests these firms are potentially financial constrained, and these constraints are being relaxed through the program. Smaller firms in the sample mostly use borrowed funds to invest in labor.

5 Identification and Robustness

In this section we present a set of robustness checks to address concerns related to the main identifying assumptions, sample selection and methodological choices.

5.1 Identification Tests

Our main identifying assumption is the *local continuity assumption*. This implies that firms assignment around the different eligibility thresholds is as good as random, and that firms' outcomes of interest, including interest rate, borrowing and investment, would all be a smooth function around thresholds absent treatment.

This also implies that firms do not manipulate their financial statements to meet the program criteria. Despite the design of the program making it arguably hard to manipulate eligibility for the reasons we discussed in sections 2 and 3, we conduct robustness tests where we exclude *Net Income* as criteria, as well as the criteria with the lowest p-values in the density tests (see table A4). Table 11 shows the results of excluding Net income (in Panel A) and Net Income, Equity/Assets and Ebitda growth as criteria (Panel B). In these tests we estimate our results only for firms that meet those criteria, and therefore use only the variation around the remaining thresholds. The main results are robust to restricting the analysis around cut-off points of the criteria that were less likely to be manipulated. We find a decrease in interest rate for new loans of 2 p.p., an increase in borrowing rates of 5.6 p.p, an increase in fixed assets investment of 1.5 p.p and 0.8 p.p increase in employment growth. These magnitudes are in line with our main estimates. Using all criteria in our main estimates has the advantage of increasing the external validity of our results as different firms are likely lo lie around different criteria thresholds.

5.2 Robustness to bandwidth selection, polynomial order and inclusion of covariates

In this section we test whether our results are robust to using alternative bandwidths, which results in a different estimation sample, as well as order of polynomial of the distance to threshold, and the inclusion of covariates. These results are presented in Appendix A.

Table A5 presents the results when using a fixed bandwidth of 0.2, 0.25 and 0.3 and a polynomial of order 2 of the distance to threshold. As a reference, one standard deviation in our running variable is 0.73. Overall the results are robust to using alternative and fixed bandwidth across outcomes. The investment in working capital estimate is the only that is not robust to alternative samples. The magnitudes for all of the other outcomes are similar to the ones estimated with the optimal bandwidth. Table A6 shows the results of estimating the coefficients of interest with an optimal bandwidth and including a polynomial of order 1 (Panel A) or a polynomial of order 3 (Panel B) of the distance to threshold. Overall the estimates are similar in magnitude to the ones previously estimated, except again for the investment in working capital.

Figure A2 shows the regression discontinuity plots for a fixed bandwidth at -0.25 to +0.25 for all variables and an order of the polynomial used is 1. Results are overall consistent with the previous estimates.

In Table A7 we include firm-level covariates to mitigate the concern that firms around the threshold of eligibility differ in a systematic way. In Panel A we control for firm size. In Panel B we control for firm size and net income over equity ratio, motivated by the fact that we observe a significant discontinuity of net income around the zero. In Panel C we control for Size, Leverage, Ebitda/Assets and Age. The results across panels in this table are overall similar in size and magnitude. When compared to our previous estimates, the effect on interest rate is smaller at 1.5 p.p approximately, but so is the estimate for investment in fixed assets at 1 p.p, which suggests a similar sensitivity.

Last, Table A8 shows the result of OLS estimation with a fixed bandwidth of 0.25. In this specification we do not account for the distance to threshold in our estimation, but include only the eligibility dummy:

$$y_{i,t} = \alpha_0 + \beta_1 \times Eligible\ (0/1)_{i,t} + \epsilon_{i,t} \tag{2}$$

Where i and t are firm and year indexes, respectively. The identifying assumption in this case is local random assignment of firms around the threshold. The effects are similar in signs and magnitudes to the previously estimated, supporting the idea that out estimates are not driven by a specific choice of RD specification or running variable.

5.3 Alternative Running Variables and Estimation Sample

In this section we use alternative running variables to the one used in our baseline results. First, we use the euclidean distance of criteria variables to threshold in the $\mathbb{R}^n$ space, where n corresponds to the number of criteria in each year. The euclidian distance has the advantage of using all the criteria in a given year, and does not requires the choice of a single criteria for each firm in a given year. Table A9 shows the results. Overall, the results while using the euclidean distance to threshold as running variable are consistent with our baseline estimates. Financial effects are mostly significant when considering contemporaneous effects, while real effects are mostly observed one year after eligibility. The estimated effect on interest rate is approximately 1 p.p, while the impact on fixed assets growth is at as large as 2.3 p.p one year after the firm is eligible. The impact on employment growth is at 0.7 p.p.

Second, we use a single accounting variable each year to determine the distance to threshold. The accounting variable corresponds to the criterion that most firms fail to achieve in a given year. Table A10 shows the results. The estimates are in line with the baseline results: for an average decrease of 1.5 p.p in interest rates, investment in fixed assets increases 3.3 p.p and growth in employees increases by 1.9 p.p.

Last, we exploit the introduction of new criteria to the program over time. Table A11 shows the results. In Panel A we restrict the sample to firms that meet all the previous year criteria and only use the newly

introduced criteria to define the running variable. In Panel B we only use the newly introduced criteria in each years to define the running variable but do not impose that firms have to meet existing criteria. Overall the results are consistent with the previously estimated.

5.4 Firm Fixed Effects Estimates

In this section we present firm fixed effects regressions using the whole sample to estimate the intention to treat effects. We want to be sure that the main results are not driven by methodological choices underlying the use of multidimensional regression discontinuity design. Because in firm fixed effects estimates we exploit within firm variation, i.e., firms that become eligible/ineligible to the program, we use the full sample period in order not to limit this variation. All variables are observed one year post eligibility to the award. Besides firm fixed effects (δ_i), the regressions include year (δ_t), industry-year ($\delta_{j,t}$) and region (δ_r) fixed effects. The regressions include also a set of firm-level covariates ($X'_{i,t}$): size, age, leverage and profitability:

$$y_{i,t} = \alpha_0 + \beta_1 \times Eligible_{i,t} + \gamma X'_{i,t} + \delta_i + \delta_t + \delta_{j,t} + \delta_r + \epsilon_{i,t} \tag{3}$$

Where *i, t, j,* and r are firm, year, industry and region indexes, respectively. There are 11 administrative regions in Portugal.

Results from estimating equation (3) are shown in Table A12. In column (1) we show the result for financing costs estimated using data from financial statements. We make use of financial data as opposed to loan flows to have data for the whole sample period, and not only for the years when the firm contracts a new loan. This is relevant because with firm fixed effects we are using the firm as its own counterfactual. We find a negative and significant coefficient at -1.2 percentage points, which is consistent with our RDD estimate but of smaller magnitude. In columns (2)-(3) we show the impact on bank loans growth, which increases by 8,635 EUR or 0.013 percentage points. This result is also consistent with the RD estimate despite the smaller magnitude.

In columns (4)-(5) we estimate the impact on investment. We find a positive effect on changes in fixed assets of 6,447 EUR, and 0.012 p.p. when using the log-transformed variable. The estimated sensitivity of investment in fixed assets to the cost of debt financing is similar: for a 1 p.p. decrease in interest rate we find an increase of 0.01 p.p. in fixed assets investment, which is of identical magnitude to our RD estimates.

Last, columns (6) and (7) show the results for employment. We find a positive impact on changes in the number of employees of 0.168 and 0.7 p.p. when using the log-transformed variable. The sensitivity of employment to the cost of debt financing is larger when using firm fixed effects.

These fixed effects estimates are overall consistent with the results obtained with the RDD.

6 Survey Evidence and Discussion

6.1 How do Firms Perceive the Program?

The design of the program and the richness of the data available allow for an encompassing and precise characterization of the financial and real effects of the *SME-Leader* (and *SME-Excellence*) certification. That said, not all the effects of the program may be measured by these outcomes. To further inform the discussion of the results, we complement the analysis based on our quasi-experimental setting with a survey directed at managers of Portuguese SMEs.

The survey aims at collecting managers' perceptions about the *SME-Leader Program* including the application process, benefits and costs. First, it includes questions to assess whether the firm applied to the program or has received any certification in the past, and the motivation to do so. This helps us understand the selection of firms into the program. Second, it includes questions on the respondents' perception about the application process, advantages and disadvantages of the program, and perceived impact on firms' access and cost of credit.

The survey was distributed via email to all the firms with contact information (email address) in the ORBIS database.[14] A link to the online survey was emailed to all these firms.[15] Out of the 189,135 firms invited to participate in the survey, we obtained 5,413 responses, of which 3,584 are completed surveys. This corresponds to a 3% response rate.

The sample of respondents is mostly composed by firms that have never been certified (78%). From those that were certified as *PME-Leader* in the past (22%), 42% were also awarded with the *PME-Excellence* status (figure C1). The sample is representative of the Portuguese corporate sector.[16]

Among the reasons that prompt the application, managers highlight the *reputation benefits* of the program (considered as *very important* by 50% of the managers) (figure C5). This confirms that the program is perceived to a large extent as a certification mechanism, in a way similar to a credit rating. The second most important reason to apply is related to *lower financing costs* (considered as *very important* by 38% of the managers). Our quantitative results confirm that the decrease in the cost of debt financing is meaningful for the certified firms, thereby leading to more investment and employment. Banks also play an important role in encouraging the firms to apply: 77% of the managers consider that the *bank's proposal* was at least *important* for starting the application process. When the firms become certified and gain access to loans with public

[14] We carried out a web search for companies that have been certified in the past in case a valid email address was not available in the ORBIS dataset. These cases amount to 4,372 firms.

[15] Due to quota constraints, the survey was distributed over four weeks starting in the first week of June 2020.

[16] Using data from ORBIS, we characterize the sample of respondents according to: 1) sector; 2) firm's size; 3) geographical distribution. The sample is primarily composed of micro and small firms operating in the services sector (figures C2 and C3). As for the geographical distribution, we observe a concentration of respondents in the coast of Portugal, particularly around Lisbon and Porto and nearby the capital cities of the autonomous regions of Madeira and Azores (figure C4).

guarantees, the banks granting these loans benefit from a significant relief in capital requirements associated with these exposures, as the component where the risk is ultimately borne by the sovereign has attached a zero risk-weight. The certification of firm's competitors is the least relevant factor in firms decision to apply to the program, though it is still mentioned as at least *important* by 44% of the firms.

When we ask firms that were certified about the impact on the cost of credit, 46% of the respondents confirm that there was a decrease in funding costs (figure C6), supporting the quantitative results obtained in the empirical estimations. That said, 50% of the certified respondents mention that financing costs *remained unchanged* after obtaining the certification. The decrease in financing costs often comes from the partner bank, i.e., the bank that submitted the firms' application to the program and through which the firm can access loans with government guarantees. Almost one third of the certified firms also benefit from lower financing costs when borrowing from other banks.

Finally, when comparing the *SME-Leader* with the *SME-Excellence* certification, managers highlight that the latter encompasses higher benefits than the former, in particular in terms of *financing costs* (figure C7). However, only 28% of the managers mention this factor, what might explain why this perception is not supported by our quantitative analysis. Managers perceive many other benefits attached to having the top quality certification: *relationships with customers* (19%), *relationships with suppliers* (19%), and *access to markets* (9%).

6.2 Do Leader Firms Perform Better?

Our main empirical results focus on financial outcomes, investment, employment, and sales growth. In figure C8 we report managers' perceived impact of the certification on other corporate outcomes. We find that more than 30% of the survey respondents consider that the *SME-Leader* certification entails positive effects in terms of *competitive advantage over firm's competitors, investment, firm's profitability* and *innovation*. The perceived competitive advantage is consistent with the positive effects on sales growth observed in the empirical analysis. The effects on investment are also in line with the empirical estimates.

In table A13 we examine the effects on firms' risk and profitability. We find that eligible firms become less likely to default on their bank loans, though only in the crisis period. Profitability, measured as ROA, also increases for eligible firms during the crisis period. However, the positive effects on EBITDA are only felt during the recovery period of the Portuguese economy. EBITDA growth is never statistically significant. Taken together, these results support positive effects on firms' profitability, although not remarkably strong nor consistent.

6.3 What Happens When Firms Stop Being Eligible?

The empirical results show that some of the effects of the program are long-lived (table 6). On the one hand, this is consistent with the fact that the decrease in financing costs takes time to be reflected in firms' investment and growth decisions. On the other hand, it also reflects the fact that many firms are certified for more than one consecutive year. An important question is then to understand what happens when firms stop being eligible to the program.

In table A12 we report the results of a fixed-effects panel estimation where we examine outcomes in the year firms stop being eligible, for the entire sample period. In the exit year, financing costs do not change, possibly because firms lock-in most of their immediate financing needs before exiting the program. This is confirmed by the lack of significant growth in bank loans in this period. That said, the real effects of the program persist for at least one year after the firm stops being eligible, as both investment and employment continue to increase. As mentioned above, this might reflect the protracted effect of relieving financing costs on firms' decisions. Nevertheless, given that financing costs remain lower than they were before firms became eligible, firms may feel equipped to pursue their growth strategies.

6.4 Why Do Not All Eligible Firms Apply?

Table A1 shows that not all firms that are eligible are certified as *SME-leader*. In the early years of the program take-up rates were below 20%, possibly due to lack of awareness about the program. Over time take-up rates increased, with around two thirds of eligible firms being certified in the most recent years.

One of the reasons to conduct the survey was precisely to understand why not all eligible firms become part of the program. General awareness about the program in 2020, when the survey was implemented, was relatively high, with 70% of the managers of non-certified firms mentioning that they knew about the *SME-Leader Program* (figure C10). However, only 20% of these managers actively looked for information about it and even a smaller percentage (4%) applied for the certification in the past.

When asked about the reasons for not applying to the program, managers highlighted factors related to the application process. These include the lack of *compliance with the criteria* (16%), the *bureaucracy of the process* (15%) and lack of *availability of manager's time* (14%) (figure C11). Several managers also mentioned that the firm does not need financing (13%). The percentage of respondents that claim to not have applied due to the perception that the financial and reputational benefits of the program are not relevant is smaller (8 to 9%)

Banks play an important role in the promotion of the program. Almost two thirds of the firms first heard about the program from their bank (figures C12). IAPMEI, the agency that runs the program, also has an

important role in raising awareness about the program.

In most cases, the application process is initiated by the firms' main bank (44%) or one of the other banks of the firm (20%) (figure C13). For 27% of the respondents, it was the firm that started the process.

6.5 Policy Implications and External Validity

Government guarantees on loans to small firms (or other forms of support to SME) were an important tool around the world to help firms facing sudden liquidity shocks at the onset of the COVID-19 pandemic (Gourinchas et al., 2020, Granja et al., 2020). Our results on the *SME-Leader Program* may offer relevant insights for policy in the current setting, notably when building the recovery.

The program was implemented in 2008 to mitigate the effects of the global financial crisis. The initial goal of policymakers was to ensure that the best quality SMEs were not excluded from credit markets, against a background of tighter credit supply. Nevertheless, the program remained active even when the economy was recovering both from the global financial crisis and later from the euro area sovereign debt crisis. When the pandemic started, the access to loans with government guarantees was largely expanded beyond the universe of *SME-Leader* firms, but the technology and institutional knowledge offered by the program were helpful in quickly rolling out the loans to firms in need.

That said, the empirical results show that the program was effective in improving firms' outcomes, notably investment and employment, while credit supply remained tight and macroeconomic conditions challenging. Once the economy started to recover, most of the effects of the program became more muted. As such, the program has a strong countercyclical effect during recessions.

Even though the effects of the program were smaller during the recovery period of the Portuguese economy, that does not mean that it was useless. The results show that there were still some positive effects in terms of bank borrowing, asset growth, mostly through working capital, and growth in the number of employees. However, during the economic recovery period the benefits of the program accrued more from its certification component than from the subsidy (table 9). The reputational benefits of being a *SME-Leader* or *Excellence* were more meaningful than the access to cheaper loans.

The fact that the program is targeted is an important feature to explain this outcome. Most public support programs for SMEs are untargeted, covering virtually all the small firms in a country. The targeted nature of this program allows it to offer a certification component, in a way similar to that that larger firms have when rated by credit rating agencies.

The targeted nature has another crucial feature, that allowed the program to remain operational even during the recovery period. Given that only SMEs with a minimum defined credit quality have access to

these government guaranteed loans, the fiscal costs are much smaller than those underlying a universal access program, as these firms are significantly less likely to default in good times. This allows fiscal policy to act counter cyclically, with higher costs attached to the program during crises and recessions, but with negligible costs when aggregate default risk is low.

Another important dimension of the program is that the allocation is decided involving both the government, through IAPMEI, and the banks. Indeed, even though the criteria are established by the government every year, banks also play an important role in the process. As shown in the survey results, banks are often those that initiate the process and invite firms to apply, thereby suggesting that banks exert further screening on which firms should be supported through the program (figures C12 and C13).[17]

In terms of external validity, the effects of the *SME-Leader Program* are within the range obtained for other programs with government guarantees. We find that loan growth increases 8% in the year firms become eligible, and another 7.7% in the following year (table 2). Lelarge et al. (2010) find that debt growth increases 0.69 pp in the first two years for French firms with government guarantees and Gonzalez-Uribe and Wang (2020) find a 0.032 increase in the probability of external debt issuance (table B3). Mullins et al. (2018) document an increase of 2.6% in debt growth for Chilean firms, while de Blasio et al. (2018) find a 50% increase in debt growth for Italian firms over two years.

We find a 14.8% increase in the number of employees in the first year and an additional 24.7% in the second year. This compares to a 49 pp increase in employment growth in France (Lelarge et al., 2010), to 3 to 4 additional employees per million dollars of SBA loans in the U.S. (Brown and Earle, 2017), to 4.8% more employees for a 10% increase in bank debt in Chile (Mullins et al., 2018) and to 2.3 pp in employment growth in the U.K. (Gonzalez-Uribe and Wang, 2020).

7 Conclusion

Small firms often face frictions in access to external financing that may limit their ability to invest. This is especially true during crisis periods, when these frictions may be more acute. In this paper we estimate the sensitivity of small firms' investment and employment growth to the cost of bank financing. To this purpose, we exploit the variation in the cost of debt financing generated by eligibility to a stimulus program adopted in Portugal for small and medium enterprises (SMEs). The *SME-Leader Program* offers firms a loan guarantee and a credit certification (rating) issued by a government agency. An important distinctive feature of this program is that it targets SMEs with a minimum credit quality. Eligible firms have access to subsidized bank credit, and to a public credit rating that potentially reduces financial frictions.

[17] Due to the selection problems arising from this, all the reported results are anchored on intention to treat estimates, as discussed in section 3.

The rich design of the program allows for the use of a multidimensional regression discontinuity design. In this setting, we are able to establish a causal effect between access to finance through the program and firm-level outcomes, which has so far proven hard to be achieved in the literature. The program design also allows to estimate the effect of credit certification for small firms by exploiting variation in the level of ratings around the eligibility threshold for the top certification. The importance of ratings is well established for large and listed companies but not for private and small firms. A public credit certification can potentially be more important given higher frictions for these companies when it comes to access external financing.

Overall, we find that the program has a positive impact on SME's investment, employment and revenue growth. These effects are more pronounced during the crisis, but modest in the post-crisis period. During the crisis, a decrease of 1 percentage points in the cost of debt financing for SMEs is associated with a contemporaneous increase of 0.5 p.p. in total assets investment, 1 p.p in fixed assets investment, and 0.5 p.p. in working capital investment. A decrease of 1 percentage points in the cost of debt financing is also associated with a contemporaneous increase in employment growth of 0.25 p.p. These estimates do not consider potential positive or negative externalities to non-eligible firms, nor the potential heterogeneity of these effects across firms that ex-ante face different levels of financial frictions.

We find modest effects of being attributed the top credit rating by the program during the crisis, perhaps because most of the frictions are alleviated by the credit guarantee. This might leave little room for the effect of an extra credit rating notch. We conclude that most of the impact of credit certification program during the crisis period is associated to the financial subsidy and access to less expensive bank loans and less so to the attributed credit rating. Nevertheless, we find a top rating effect on sales and exports growth during the post crisis period, which suggests that the top rating might signal quality for other stakeholders such as clients during expansion periods.

These results have relevant policy implications, as they suggest that government programs promoting access to credit during economic downturns can successfully help firms to continue to invest. Similar programs were implemented around the world at the onset of the COVID-19 pandemic. However, most of these programs are not targeted. This is important to avoid large fiscal costs, as well as to avoid the proliferation of zombie firms and promote an efficient reallocation of resources in the economy. Our paper offers causal evidence that supporting the best small firms with a minimum credit quality during a financial crisis by providing them with subsidized credit has a positive and lasting effects on firms' investment and growth.

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8 Tables

Table 1: Summary Statistics

	Mean	Std. Dev.	p25	p50	p75	p99	Obs.
Panel A: Criteria							
Assets	4,858,376.63	58,245,234.17	514,327.75	1,219,336.63	3,083,930.50	41,708,396.00	299,778
Employees	30.55	32.33	13.00	19.00	33.00	180.00	299,778
Sales	2,652,841.08	3,309,253.95	548,205.75	1,230,184.00	3,142,243.00	12,368,278.00	299,778
Net income	98,287.26	4,237,568.72	360.26	12,978.50	69,587.75	2,113,984.00	299,778
EBITDA	311,064.94	4,344,458.35	20,276.36	77,602.25	234,175.55	3,922,594.25	299,778
Net income-to-assets	0.01	0.08	0.00	0.01	0.05	0.17	299,778
Net income-to-equity	0.09	0.27	0.01	0.06	0.17	0.83	299,778
Equity-to-assets	0.33	0.26	0.16	0.31	0.51	0.79	299,778
EBITDA-to-assets	0.08	0.10	0.03	0.07	0.13	0.29	299,778
EBITDA-to-sales	0.07	0.10	0.03	0.06	0.12	0.28	299,778
Debt-to-EBITDA	3.04	4.81	0.30	1.93	5.04	15.17	265,205
Sales growth	0.03	0.24	-0.11	0.01	0.13	0.84	299,778
EBITDA growth	-0.12	1.09	-0.48	-0.08	0.30	2.54	299,774
Firm age	19.61	11.66	10.00	17.00	27.00	45.00	299,778
Distance to threshold (Leader)	-0.31	0.73	-0.51	-0.07	0.01	0.73	299,778
Distance to threshold (Excellence)	-0.79	0.80	-1.06	-0.58	-0.27	0.19	264,712
Eligible (0/1)	0.39	0.49	0.00	0.00	1.00	1.00	299,778
Panel B: Debt and equity							
Interest rate (new loans)	0.08	0.06	0.04	0.06	0.10	0.24	123,382
Loan maturity	4.65	1.40	3.74	4.52	5.46	7.36	95,291
Probability of default	0.04	0.07	0.00	0.01	0.04	0.36	274,409
Collateral (0/1)	0.79	0.40	1.00	1.00	1.00	1.00	123,382
Bank loans	733,799.89	1,114,929.99	68,549.00	250,882.23	804,613.56	4,177,265.50	265,209
Δ Bank loans	27,345.81	233,502.42	-50,060.48	-1,219.41	64,891.33	682,159.81	251,940
Issued capital	797,138.43	1,206,426.52	83,815.06	272,175.94	858,973.19	4,495,807.50	299,778
Δ Issued capital	9,195.17	29,244.06	0.00	0.00	0.00	120,001.41	299,778
Panel C: Other firm variables							
Δ Total assets	64,025.62	410,110.28	-80,637.63	11,064.53	148,581.63	1,207,098.00	299,778
Fixed assets	665,229.18	976,707.95	62,925.52	240,344.63	766,187.88	3,612,822.75	299,778
Δ Fixed assets	2,746.16	111,226.35	-34,401.34	-6,924.46	14,193.19	332,044.22	299,778
Working capital	1,146,216.10	1,512,542.26	201,797.77	515,689.30	1,344,165.50	5,692,936.50	299,778
Δ Working capital	36,492.55	286,637.62	-57,697.83	12,679.91	109,070.94	790,215.50	299,778
Δ Employees	0.19	3.73	-1.00	0.00	2.00	9.00	299,778
Wage	17,547.81	11,509.23	11,347.23	14,971.32	20,334.12	57,936.05	299,776
Δ Wage	257.97	2,112.47	-854.98	238.91	1,368.94	4,797.97	299,776
Δ Sales	37,535.94	523,965.34	-136,131.16	5,311.85	167,545.53	1,423,912.00	299,778
Exports	621,075.29	2,660,845.27	0.00	0.00	153,392.00	11,339,650.00	299,778
Δ Exports	12,915.73	146,676.15	0.00	0.00	1,396.75	452,253.00	299,778

This table shows the summary statistics for the full sample of firms. EBITDA is defined as earnings before interest, taxes, depreciation, and amortization. Interest rate on new loans, loan maturity and collateral are computed with information available only from 2012 on-wards.

Table 2: Financing Conditions and Default Probability

	Interest rate (new loans)		Loan maturity		Collateral (new loans)		Probability of default	
	T	T+1	T	T+1	T	T+1	T	T+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: 2012-2013								
Eligible	-0.023***	-0.021***	-0.330***	-0.201***	0.104***	0.106***	-0.003***	-0.005***
	[0.002]	[0.002]	[0.067]	[0.051]	[0.015]	[0.011]	[0.001]	[0.001]
Obs.	16,795	25,241	12,215	20,275	16,467	28,431	93,515	89,780
Bandwidth	0.191	0.130	0.144	0.150	0.178	0.223	0.183	0.223
Panel B: 2014-2018								
Eligible	0.001	-0.001	-0.229***	-0.145**	0.041***	0.028**	0.001	-0.001
	[0.001]	[0.001]	[0.048]	[0.049]	[0.010]	[0.010]	[0.001]	[0.001]
Obs.	38,764	33,321	30,626	25,693	44,079	35,804	40,141	33,412
Bandwidth	0.090	0.129	0.086	0.111	0.122	0.169	0.081	0.108

This table shows the intention to treat estimates for the impact of firm certification as Leader/Excellence on the interest rate on new loans (columns (1)-(2)), loan maturity (columns (3)-(4)), the collateral on new loans (columns (5)-(6)) and the probability of default (columns (7)-(8)). Panel A reports results for the period 2012-2013 (except in columns (7)-(8), where the period is 2008-2013) and Panel B reports results for the period 2014-2018. Columns (1), (3), (5) and (7) show estimates where the dependent variable is observed at the year of award and columns (2), (4), (6) and (8) one year after the award. All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Financial Responses

	Δ Bank loans		Δ Log(Bank loans)		Δ Issued Equity		Δ Log(Issued Equity)	
	T	T+1	T	T+1	T	T+1	T	T+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: 2008-2013								
Eligible	8,995*	22,020***	0.080***	0.077***	2,096***	1,928***	0.003	0.004
	[3,683]	[3,518]	[0.011]	[0.010]	[353]	[388]	[0.006]	[0.006]
Obs.	67,546	72,597	70,011	77,092	105,587	97,639	34,939	33,770
Bandwidth	0.136	0.198	0.155	0.242	0.268	0.288	0.190	0.223
Panel B: 2014-2018								
Eligible	17,207***	15,789***	0.015	0.023	829*	1,086*	-0.007	0.019**
	[4,045]	[4,546]	[0.010]	[0.012]	[423]	[471]	[0.007]	[0.006]
Obs.	60,602	45,217	65,198	46,138	67,417	50,354	21,667	16,939
Bandwidth	0.147	0.165	0.209	0.183	0.159	0.158	0.126	0.164

This table shows the intention to treat estimates for the impact of firm certification as Leader/Excellence on bank loans growth (columns (1)-(4)) and issued equity growth (columns (5)-(8)). Panel A reports results for the period 2008-2013 and Panel B reports results for the period 2014-2018. Columns (1), (3), (5) and (7) show estimates where the dependent variable is observed at the year of award and columns (2), (4), (6) and (8) one year after the award. All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Investment

	Δ Total assets		Δ Log(Total assets)		Δ Fixed assets		Δ Log(Fixed Assets)		Δ Working capital		Δ Log(Working Capital)	
	T	T+1	T	T+1	T	T+1	T	T+1	T	T+1	T	T+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: 2008-2013												
Eligible	26,095***	35,746***	0.011***	0.005	3,080*	2,914*	0.022***	0.023***	11,015**	17,421***	0.011*	-0.002
	[4,816]	[4,673]	[0.003]	[0.002]	[1,342]	[1,274]	[0.005]	[0.004]	[3,495]	[3,225]	[0.004]	[0.004]
Obs.	100,762	99,121	104,978	108,768	101,615	101,962	100,677	105,394	98,655	101,751	109,450	110,874
Bandwidth	0.232	0.303	0.263	0.400	0.238	0.330	0.232	0.365	0.217	0.328	0.320	0.460
Panel B: 2014-2018												
Eligible	14,211	27,556***	0.002	0.003	1,538	5,293*	-0.003	0.006	10,078*	15,638**	0.014**	0.006
	[7,278]	[7,667]	[0.003]	[0.004]	[2,136]	[2,420]	[0.006]	[0.007]	[4,787]	[5,660]	[0.005]	[0.006]
Obs.	63,820	50,809	62,610	48,870	66,271	49,867	67,229	50,055	67,201	49,322	66,617	50,670
Bandwidth	0.131	0.167	0.123	0.140	0.148	0.153	0.157	0.155	0.157	0.146	0.159	0.175

This table reports the intention to treat estimates for the impact of firm certification as Leader/Excellence on total assets growth (columns (1)-(4)), fixed assets growth (columns (5)-(8)) and working capital growth (columns (9)-(12)). Panel A reports results for the period 2008-2013 and Panel B reports results for the period 2014-2018. Columns (1), (3), (5), (7), (9) and (11) show estimates where the dependent variable is observed at the year of award and columns (2), (4), (6), (8), (10) and (12) one year after the award. All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Employment

	Δ Employees		Δ Log(Employees)		Δ Wages		Δ Log(Wages)	
	T	T+1	T	T+1	T	T+1	T	T+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: 2008-2013								
Eligible	0.148**	0.247***	0.005*	0.010***	26	74*	0.003	0.004*
	[0.047]	[0.045]	[0.002]	[0.002]	[28]	[29]	[0.002]	[0.002]
Obs.	109,557	108,214	109,219	105,976	109,271	101,316	111,359	106,276
Bandwidth	0.300	0.394	0.297	0.371	0.298	0.324	0.316	0.374
Panel B: 2014-2018								
Eligible	0.168**	0.189**	0.005*	0.006*	-32	-61	-0.002	-0.003
	[0.065]	[0.071]	[0.003]	[0.003]	[40]	[45]	[0.002]	[0.002]
Obs.	66,411	51,461	66,131	51,092	67,402	50,445	67,334	51,906
Bandwidth	0.150	0.178	0.147	0.171	0.159	0.159	0.158	0.187

This table reports the intention to treat estimates for the impact of firm certification as Leader/Excellence on the evolution of the number of employees (columns (1)-(4)) and wage growth (columns (5)-(8)). Panel A reports results for the period 2008-2013 and Panel B reports results for the period 2014-2018. Columns (1), (3), (5) and (7) show estimates where the dependent variable is observed at the year of award and columns (2), (4), (6) and (8) one year after the award. All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Sales Growth

	Δ Sales		Δ Log(Sales)		Δ Exports		Δ Log(Exports)	
	T	T+1	T	T+1	T	T+1	T	T+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: 2008-2013								
Eligible	442	32,590***	0.010**	0.006*	11,074***	14,148***	0.012	0.095***
	[5,158]	[5,649]	[0.003]	[0.003]	[1,619]	[1,459]	[0.023]	[0.025]
Obs.	117,540	105,835	106,484	122,250	109,541	120,048	133,530	119,702
Bandwidth	0.370	0.370	0.275	0.573	0.300	0.540	0.536	0.536
Panel B: 2014-2018								
Eligible	7,225	9,594	0.001	-0.001	4,284	2,351	0.037	-0.011
	[8,674]	[9,911]	[0.004]	[0.004]	[2,588]	[2,804]	[0.037]	[0.040]
Obs.	66,759	50,429	66,894	50,532	69,465	53,134	69,122	52,921
Bandwidth	0.154	0.160	0.155	0.162	0.187	0.211	0.183	0.207

This table reports the intention to treat estimates for the impact of firm certification as Leader/Excellence on sales growth (columns (1)-(4)) and exports growth (columns (5)-(8)). Panel A reports results for the period 2008-2013 and Panel B reports results for the period 2014-2018. Columns (1), (3), (5) and (7) show estimates where the dependent variable is observed at the year of award and columns (2), (4), (6) and (8) one year after the award. All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Year T+2

	Interest Rate (new loans) (T+2)	Δ Log(Bank loans) (T+2)	Δ Log(Assets) (T+2)	Δ Log(Fixed Assets) (T+2)	Δ Log(Working capital) (T+2)	Δ Log(Employees) (T+2)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 2008-2013						
Eligible	-0.018***	-0.027**	-0.003	0.005	-0.008	-0.005*
	[0.001]	[0.010]	[0.003]	[0.005]	[0.005]	[0.002]
Obs.	44,792	75,399	83,198	95,323	88,117	88,513
Bandwidth	0.339	0.266	0.236	0.361	0.308	0.287
Panel B: 2014-2018						
Eligible	-0.003	0.025	0.008*	0.004	0.019**	0.003
	[0.002]	[0.014]	[0.004]	[0.007]	[0.006]	[0.003]
Obs.	24,080	32,243	36,278	37,074	36,640	36,295
Bandwidth	0.144	0.192	0.175	0.198	0.199	0.176

This table shows the regression discontinuity estimates of the impact of firm certification as Leader/Excellence two years after the award (T+2). Panel A reports results for the period 2008-2013 and Panel B reports results for the period 2014-2018. The outcome variables are the interest rate on new loans (column (1)), loan growth (column (2)), assets growth (column (3)), fixed assets growth (column (4)), working capital growth (column (5)) and employment growth (column (6)). All regressions include a polynomial of order 2. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Credit Certification - Financial Effects

	Interest rate (new loans)		Δ Log(Bank loans)		Probability of Default	
	T	T+1	T	T+1	T	T+1
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 2008-2013						
Excellence Eligible	-0.022	-0.001	-0.106	-0.111*	-0.001	-0.002
	[0.013]	[0.007]	[0.057]	[0.048]	[0.001]	[0.002]
Obs.	1,952	3,367	5,516	8,570	5,673	6,050
Bandwidth	0.237	0.248	0.257	0.342	0.246	0.263
Panel B: 2014-2018						
Excellence Eligible	-0.001	-0.003	0.019	0.026	-0.001***	-0.002***
	[0.001]	[0.001]	[0.015]	[0.018]	[0.000]	[0.000]
Obs.	11,094	10,416	21,113	15,100	10,470	10,771
Bandwidth	0.249	0.306	0.434	0.362	0.215	0.316

This table reports the intention to treat estimates for the impact of firm certification as Excellence when compared to Leader on the interest rate on new loans (columns (1)-(2)), bank loans growth (columns (3)-(4)) and probability of default (columns (5)-(6)). Panel A reports results for the period 2008-2013 and Panel B reports results for the period 2014-2018. Columns (1), (3) and (5) show estimates where the dependent variable is observed at the year of award and columns (2), (4) and (6) one year after the award. All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Credit Certification - Sales Growth

	Δ Sales		Δ Log(Sales)		Δ Exports		Δ Log(Exports)	
	T	T+1	T	T+1	T	T+1	T	T+1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: 2008-2013								
Excellence Eligible	83,262	-55,993	0.012	-0.006	43,043*	6,291	0.169	0.165
	[53,516]	[60,640]	[0.015]	[0.016]	[16,847]	[17,530]	[0.219]	[0.152]
Obs.	6,338	6,149	9,111	7,759	5,572	5,390	5,766	11,183
Bandwidth	0.266	0.265	0.336	0.310	0.243	0.241	0.249	0.414
Panel B: 2014-2018								
Excellence Eligible	120,263***	107,841***	0.024***	0.019***	10,592*	18,402**	-0.058	0.018
	[15,849]	[17,858]	[0.004]	[0.005]	[5,134]	[6,166]	[0.046]	[0.052]
Obs.	14,821	14,599	15,781	13,035	20,485	13,367	17,844	16,748
Bandwidth	0.251	0.328	0.273	0.291	0.371	0.300	0.318	0.389

This table shows the intention to treat estimates for the impact of firm certification as Excellence on sales growth (columns (1)-(4)) and exports growth (columns (5)-(8)). Panel A reports results for the period 2008-2013 and Panel B reports results for the period 2014-2018. Columns (1), (3), (5) and (7) show estimates where the dependent variable is observed at the year of award and columns (2), (4), (6) and (8) one year after the award. All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: Heterogeneous effects (period 2008-2013)

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)
Panel A: High probability of default				
Eligible	-0.024***	0.093***	0.018**	0.006*
	[0.003]	[0.012]	[0.006]	[0.003]
Obs.	9,261	34,709	51,204	48,669
Bandwidth	0.140	0.311	0.574	0.515
Panel B: Low probability of default				
Eligible	-0.017***	0.059***	0.023***	0.011***
	[0.002]	[0.016]	[0.006]	[0.002]
Obs.	16,702	43,794	63,096	63,588
Bandwidth	0.165	0.199	0.344	0.355

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)
Panel C: Larger				
Eligible	-0.022***	0.031*	0.023***	0.016***
	[0.003]	[0.014]	[0.006]	[0.003]
Obs.	17,270	46,174	62,834	63,119
Bandwidth	0.179	0.255	0.455	0.462
Panel D: Smaller				
Eligible	-0.009**	0.123***	0.005	0.009***
	[0.003]	[0.012]	[0.005]	[0.002]
Obs.	8,518	35,292	56,031	46,321
Bandwidth	0.086	0.339	0.613	0.352

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)
Panel E: High Tangibility				
Eligible	-0.019***	0.098***	0.012*	0.012***
	[0.003]	[0.014]	[0.005]	[0.003]
Obs.	8,518	35,292	56,031	46,321
Bandwidth	0.151	0.209	0.298	0.374
Panel F: Low Tangibility				
Eligible	-0.024***	0.025*	0.025***	0.006*
	[0.003]	[0.012]	[0.007]	[0.003]
Obs.	14,437	39,474	52,060	50,300
Bandwidth	0.135	0.395	0.528	0.475

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)
Panel G: Old				
Eligible	-0.023***	0.079***	0.025***	0.009***
	[0.002]	[0.012]	[0.006]	[0.002]
Obs.	15,343	42,999	56,152	57,259
Bandwidth	0.167	0.289	0.393	0.419
Panel H: Young				
Eligible	-0.017***	0.081***	0.019**	0.013***
	[0.003]	[0.014]	[0.006]	[0.003]
Obs.	10,456	38,006	53,854	51,043
Bandwidth	0.122	0.279	0.432	0.376

This table reports the heterogeneity of the regression discontinuity estimates for the impact of firm certification as Leader/Excellence in terms of: firm default probabilities, based on an internal credit risk model managed by Banco de Portugal (Panels A and B); firm size, given by total assets (Panels C and D); tangibility, defined as the ratio of tangible assets to total assets (Panels E and F); firm age (Panels G and H); firm age (panel D). The dependent variables are: interest rate on new loans (column (1)), loan growth (column (2)), fixed assets growth (column (3)), and employment growth (column (4)). All columns show estimates where the dependent variable is observed one year after the award. All regressions include a polynomial of order 2. No covariates are included in the estimation. The period considered for the estimation is 2008-2013. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

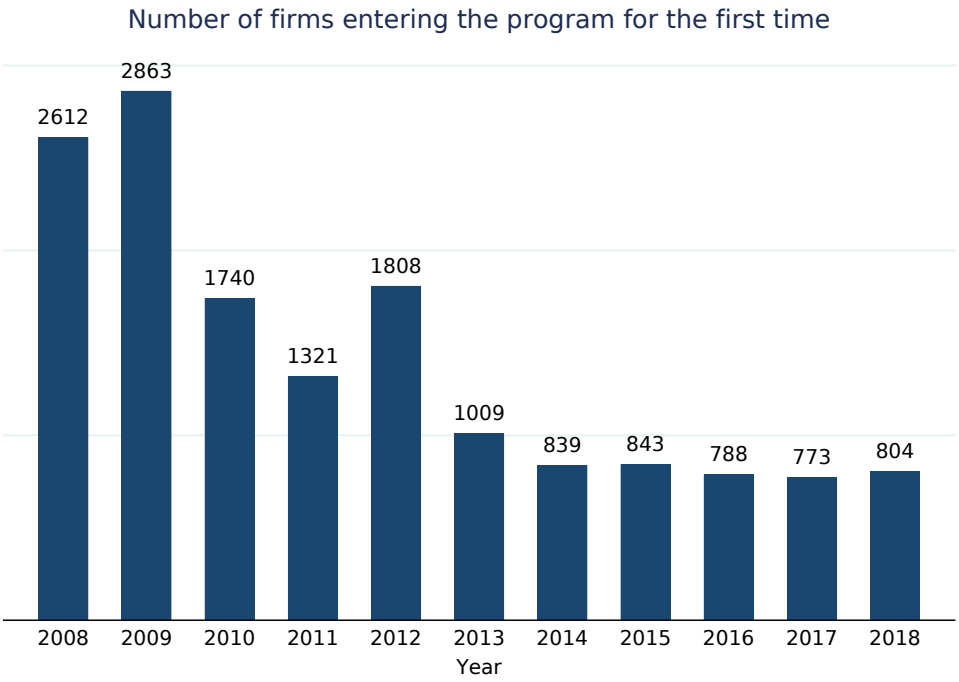
Table 11: Robustness to manipulation around the thresholds

	Interest rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)
Panel A:				
Net income>0				
Eligible	-0.020***	0.056***	0.015**	0.008***
	[0.002]	[0.012]	[0.005]	[0.002]
Obs.	21,225	61,802	89,034	89,780
Bandwidth	0.130	0.209	0.391	0.403
Panel B:				
Net income>0,				
Eq./Assets>0.25,				
EBITDA growth>0				
Eligible	-0.020***	0.064**	0.021*	0.008*
	[0.004]	[0.022]	[0.008]	[0.004]
Obs.	7,840	20,365	30,202	28,294
Bandwidth	0.101	0.224	0.489	0.361

This table reports the regressions discontinuity estimates for the impact of firm certification as Leader/Excellence imposing a set of restrictions (related to the eligibility criteria), namely: positive net income (Panel A); positive net income, equity/assets>0.25 and positive EBITDA growth (Panel B). The dependent variables are: interest rate on new loans (column (1)), loan growth (column (2)), fixed assets growth (column (3)) and employment growth (column (4)). The time period considered for estimation is 2008-2013. All columns show estimates where the dependent variable is observed one year after the award (T+1). All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

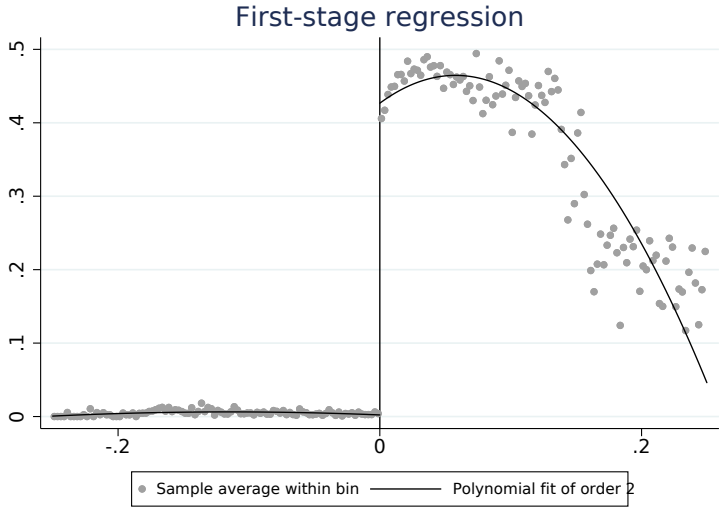
9 Figures

Figure 1



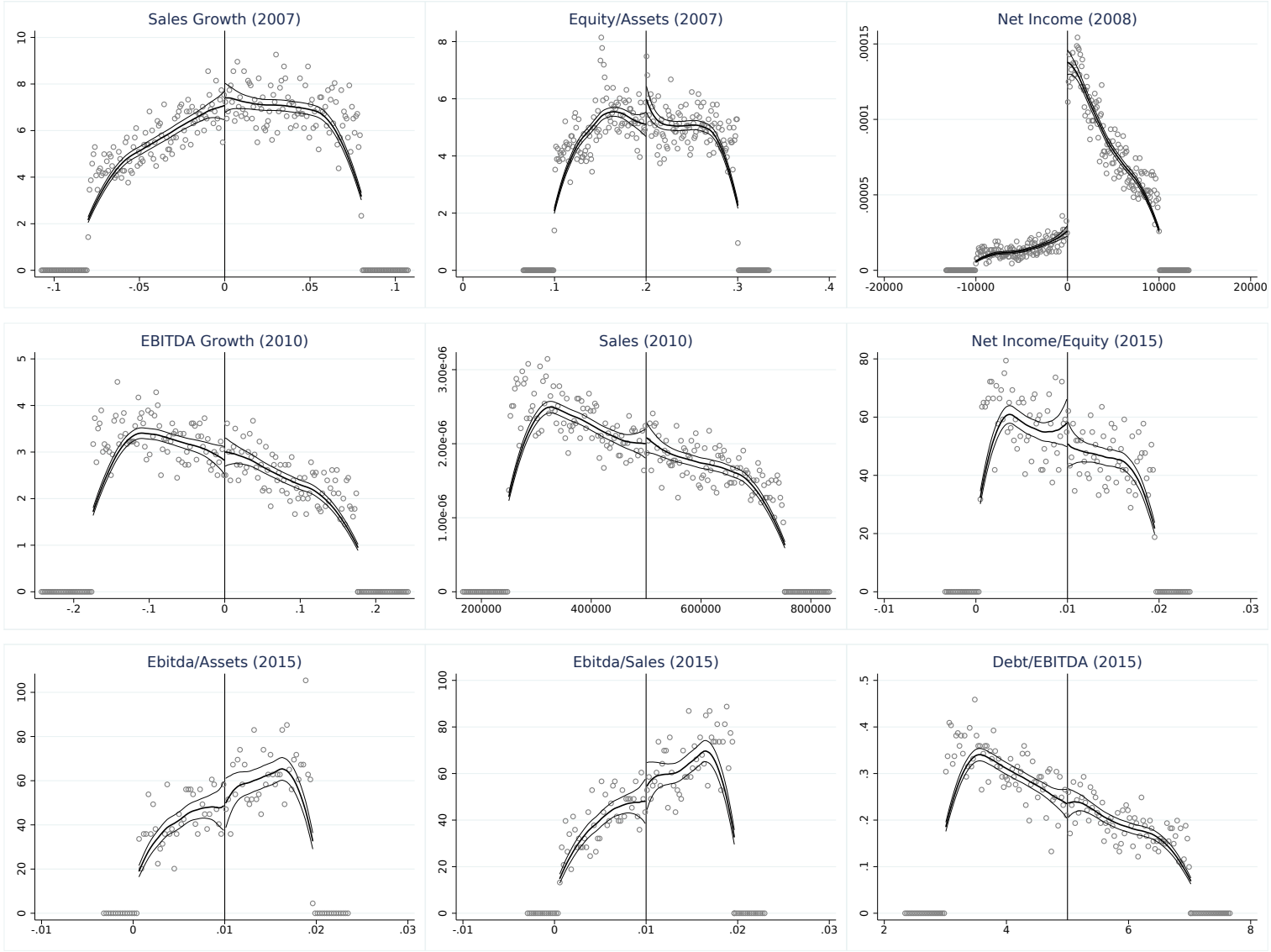
This figure shows the number of firms certified as Leader or Excellence for the first time in each year.

Figure 2



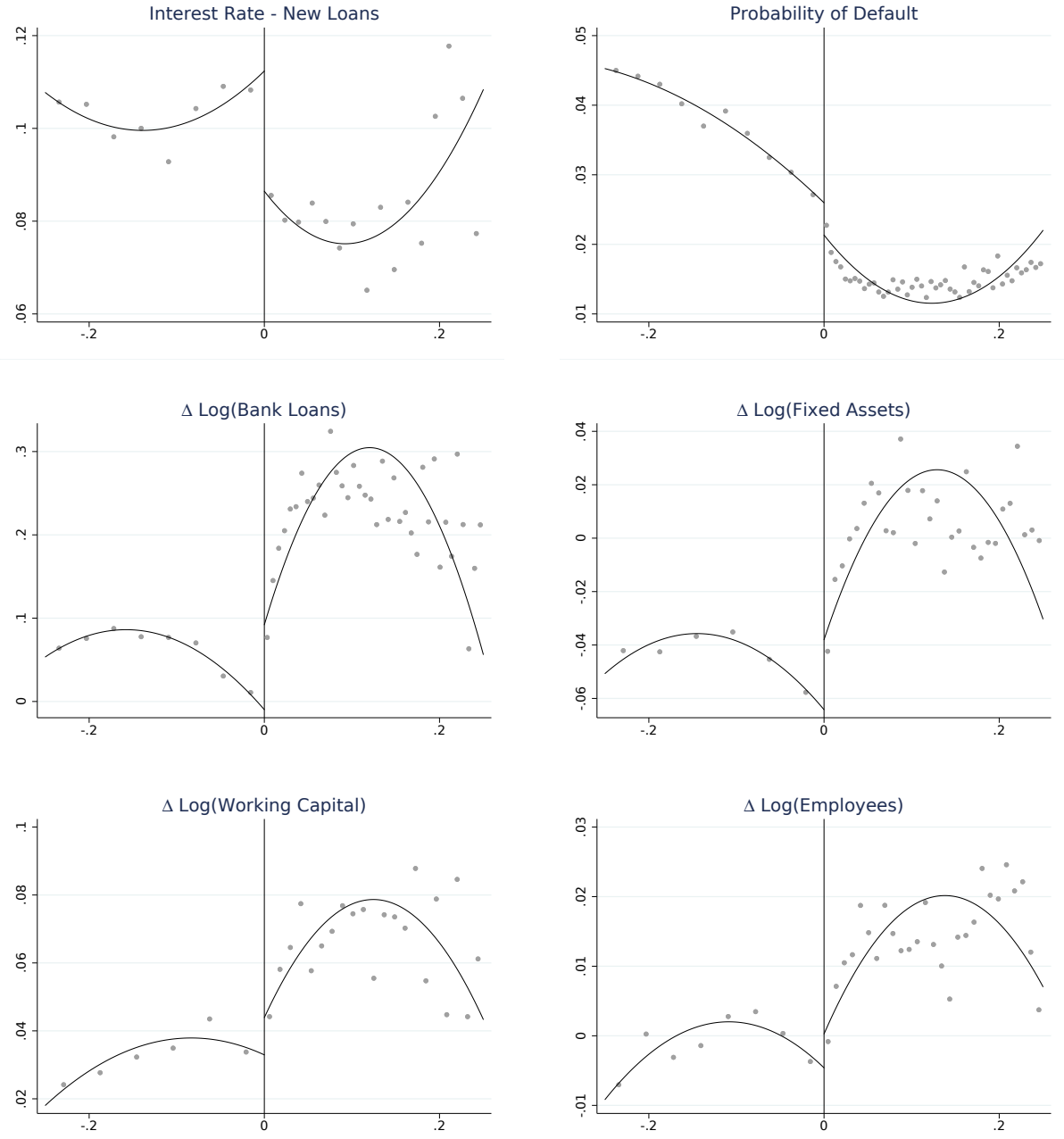
This figure shows the second order polynomial fit of regressing the treatment variable (certification as *SME-Leader* or *SME-Excellence*) on the distance to threshold.

Figure 3. McCrary plots - density tests around the thresholds



This figure shows the McCrary plots for the density test around the thresholds of eligibility criteria, on the year before the criteria is first introduced.

Figure 4. Regression Discontinuity Plots (2008-2013)



This figure shows RD plots for firm-level outcomes. The bandwidth is fixed at -0.25 to +0.25 for all variables. The order of the polynomial used is 2. The time-period considered for estimation is 2008-2013.

10 Appendix A

Table A1: Program take-up per year

Year	Leader	Excellence	Leader Eligible, Non-Rated	Excellence Eligible, Non-Rated	Non-Eligible	Take Up	Obs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2007	0	0	0	0	40,035		40,035
2008	2,612	0	13,018	0	24,463	16.7%	40,093
2009	4,443	324	18,441	2,638	12,750	18.4%	38,596
2010	4,992	932	17,279	1,568	13,189	23.9%	37,960
2011	4,768	1,238	8,112	1,515	20,581	38.4%	36,214
2012	6,200	1,091	5,607	938	19,249	52.7%	33,085
2013	5,276	912	2,674	492	22,131	66.2%	31,485
2014	5,421	1,561	3,533	805	20,393	61.7%	31,713
2015	5,077	1,277	3,622	1,223	21,746	56.7%	32,945
2016	4,614	1,471	2,621	350	24,980	67.2%	34,036
2017	4,489	1,459	2,691	445	26,040	65.5%	35,124
2018	4,812	1,765	3,221	596	25,421	63.3%	35,815
Obs.	52,704	12,030	80,819	10,570	242,863	41.5%	427,101

This table shows the number of awards of *SME-Leader* and *SME-Excellence* certifications in each year. It also shows the number of firms in each year that meet the criterion for "Leader" certification and are not certified ("Leader eligible, non-rated"), and the number of firms in each year that meet the criterion for "Excellence" certification and are not certified ("Excellence eligible, non-rated"). All firms not included in these four categories are classified as non-eligible. Take-up corresponds to the percentage of eligible firms (columns 1 to 4) that are certified (columns 1 and 3). Firms for which eligibility data was not available were also considered as non-eligible in this table.

Table A2: Summary statistics by firm category

	Leader	Excellence	Eligible	Non-Eligible
Panel A: Criteria				
Assets	4,301,957.49	4,316,869.04	4,255,064.97	4,597,387.74
Employees	38.20	40.93	29.45	27.83
Sales	4,021,377.34	4,367,388.89	2,694,970.55	2,173,110.31
Net income	153,186.32	423,884.31	164,259.85	497.78
EBITDA	399,215.55	723,633.69	367,563.22	185,669.73
Net income-to-assets	0.03	0.09	0.03	0.00
Net income-to-equity	0.08	0.17	0.12	0.09
Equity-to-assets	0.46	0.56	0.38	0.25
EBITDA-to-assets	0.10	0.17	0.10	0.06
EBITDA-to-sales	0.09	0.14	0.09	0.05
Debt-to-EBITDA	3.16	1.37	2.67	3.23
Sales growth	0.04	0.05	0.10	0.03
EBITDA growth	0.02	-0.01	-0.02	-0.15
Firm age	23.28	21.12	17.57	18.86
Panel B: Debt and Equity				
Interest rate (new loans)	0.06	0.05	0.07	0.09
Loan maturity	4.68	5.15	4.84	4.58
Probability of default	0.01	0.00	0.03	0.06
Collateral (0/1)	0.86	0.79	0.77	0.79
Bank loans	932,390.41	703,890.86	644,352.07	717,302.34
Δ Bank loans	60,100.42	57,469.30	51,242.72	10,579.70
Issued capital	1,196,178.51	1,173,041.46	767,670.15	661,228.46
Δ Issued capital	8,689.71	6,105.85	8,061.52	10,180.66
Panel C: Other firm variables				
Δ Total assets	157,457.23	292,683.36	127,069.61	21,391.22
Fixed assets	949,221.01	917,854.92	615,475.23	588,575.79
Δ Fixed assets	19,559.90	48,851.52	13,440.29	-4,238.87
Working capital	1,769,094.68	1,934,221.05	1,177,199.65	915,987.90
Δ Working capital	88,228.57	171,367.35	71,850.39	12,258.96
Δ Employees	0.69	1.74	0.62	-0.04
Wage	18,750.71	20,091.19	17,387.26	16,781.10
Δ Wage	307.59	376.47	364.65	210.72
Δ Sales	93,250.28	151,328.45	83,719.52	27,660.31
Exports	1,015,250.63	1,410,452.52	647,227.22	456,570.47
Δ Exports	28,607.93	36,195.35	18,657.32	9,995.37

This table shows the variables' mean for subsamples of firms. Besides Leader and Excellence firms, the table also reports summary statistics for firms that meet the criterion for "Leader" (classified as Eligible), and non-eligible firms. EBITDA is defined as earnings before interest, taxes, depreciations, and amortization. Interest rate on new loans,loan maturity and collateral are computed with information available only from mid-2012 onwards.

Table A3: Interest rate on new loans, with the inclusion of covariates

	Interest rate (new loans)		
	T	T+1	T+2
	(1)	(2)	(3)
Period 2008-2013			
Eligible	-0.015***	-0.020***	-0.018***
	[0.002]	[0.002]	[0.002]
Obs.	13,649	11,478	10,418
Bandwidth	0.230	0.202	0.167

This table shows the intention to treat estimates for the impact of firm certification as Leader/Excellence on the interest rate on new loans, controlling for loans' maturity, firm's probability of default and collateral. Columns (1), (2) and (3) show estimates where the dependent variable is observed at the year of award, one year after the award and two years after the award, respectively. All regressions include a polynomial of order 2. Standard errors are reported in brackets. Significance Levels: * p $<$ 0.10, ** p $<$ 0.05, *** p $<$ 0.01.

Table A4: P-value of the density tests around the thresholds

	Year before the criteria is first introduced	**P-value**
Sales Growth	2007	.638
Equity-to-Assets $\geq$ 20%	2007	.115
Net Income $>$ 0	2008	.000
EBITDA growth $>$ 0	2010	.130
Business Turnover $\geq$ 500k	2010	.164
Net Income-to-Equity $\geq$ 1%	2015	.000
EBITDA-to-Assets $\geq$ 1%	2015	.647
EBITDA-to-Sales $\geq$ 1%	2015	.353
Debt-to-EBITDA $\leq$ 5	2015	.273

This table shows the p-value of the density tests around the thresholds for each criteria on the year before it was first introduced.

Table A5: Robustness: bandwidth (period 2008-2013)

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Assets) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Working capital) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A:						
Bandwidth = 0.2						
Eligible	-0.024***	0.074***	0.008*	0.020***	0.005	0.012***
	[0.002]	[0.011]	[0.003]	[0.006]	[0.006]	[0.002]
Obs.	27,733	72,833	86,964	86,966	85,045	86,966
Panel B:						
Bandwidth = 0.25						
Eligible	-0.025***	0.077***	0.006*	0.023***	0.001	0.011***
	[0.001]	[0.010]	[0.003]	[0.005]	[0.005]	[0.002]
Obs.	29,269	77,876	93,243	93,245	91,098	93,245
Panel C:						
Bandwidth = 0.3						
Eligible	-0.025***	0.075***	0.006*	0.024***	-0.000	0.011***
	[0.001]	[0.009]	[0.003]	[0.005]	[0.005]	[0.002]
Obs.	30,830	82,409	98,832	98,834	96,484	98,834

This table shows the regression discontinuity estimates of the impact of firm certification as Leader/Excellence for different levels of bandwidth (standardized distance to threshold). Panel A estimates are built with a bandwidth of 0.2, Panel B with 0.25, and Panel C with 0.3. The outcome variables are the interest rate on new loans (column (1)), loan growth (column (2)), assets growth (column (3)), fixed assets growth (column (4)), working capital growth (column (5)) and employment growth (column (8)). The time period considered for estimation is 2008-2013. All columns show estimates where the dependent variable is observed one year after the award (T+1). All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Robustness: polynomial order (period 2008-2013)

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Assets) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Working capital) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A:						
Polynomial order=1						
Eligible	-0.024***	0.075***	0.005*	0.022***	-0.002	0.010***
	[0.001]	[0.008]	[0.002]	[0.004]	[0.004]	[0.002]
Obs.	24,723	70,866	88,028	94,610	89,839	92,656
Bandwidth	0.114	0.183	0.208	0.262	0.239	0.245
Panel B:						
Polynomial order=3						
Eligible	-0.020***	0.075***	0.005	0.023***	-0.002	0.010***
	[0.002]	[0.010]	[0.003]	[0.005]	[0.004]	[0.002]
Obs.	27,182	88,585	121,901	116,188	124,630	118,962
Bandwidth	0.185	0.376	0.567	0.488	0.675	0.525

This table shows the regression discontinuity estimates of the impact of firm certification as Leader/Excellence for different polynomial orders. Panel A estimates are built with a polynomial of order 1, and Panel B with a polynomial of order 3. The outcome variables are the interest rate on new loans (column (1)), loan growth (column (2)), assets growth (column (3)), fixed assets growth (column (4)), working capital growth (column (5)) and employment growth (column (8)). The time period considered for estimation is 2008-2013. All columns show estimates where the dependent variable is observed one year after the award (T+1). No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Robustness: inclusion of covariates (period 2008-2013)

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Assets) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Working capital) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Size						
Eligible	-0.016***	0.093***	0.012***	0.010**	0.008*	0.011***
	[0.002]	[0.010]	[0.003]	[0.004]	[0.004]	[0.002]
Obs.	26,274	75,778	103,063	114,427	107,324	105,113
Bandwidth	0.160	0.229	0.341	0.467	0.416	0.362
Panel B: Size, Net Income/Equity						
Eligible	-0.015***	0.091***	0.009***	0.008*	0.006	0.009***
	[0.002]	[0.010]	[0.002]	[0.004]	[0.004]	[0.002]
Obs.	26,738	76,230	113,213	119,506	116,181	116,295
Bandwidth	0.173	0.233	0.451	0.533	0.533	0.490
Panel C: Size, Leverage, Ebitda/Assets and Firm age						
Eligible	-0.014***	0.087***	0.006**	0.011**	0.001	0.008***
	[0.002]	[0.010]	[0.002]	[0.004]	[0.004]	[0.002]
Obs.	25,174	78,918	104,317	105,128	92,667	105,210
Bandwidth	0.150	0.261	0.568	0.582	0.427	0.584

This table shows the regression discontinuity estimates of the impact of firm certification as Leader/Excellence with the inclusion of covariates. Panel A estimates are built controlling for firm size (defined as the natural logarithm of total assets); Panel B estimates are built controlling for firm size and net income/equity; Panel C estimates are built controlling for firm size, leverage (debt/assets), EBITDA-to-assets, and firm age. The outcome variables are the interest rate on new loans (column (1)), loan growth (column (2)), assets growth (column (3)), fixed assets growth (column (4)), working capital growth (column (5)) and employment growth (column (8)). The time period considered for estimation is 2008-2013. All columns show estimates where the dependent variable is observed one year after the award (T+1). All regressions include a polynomial of order 2. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: OLS with Fixed Bandwidth

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Assets) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Working capital) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)	(5)	(6)
Eligible (0/1)	-0.018***	0.059***	0.014***	0.023***	0.007**	0.011***
	[0.001]	[0.004]	[0.001]	[0.002]	[0.002]	[0.001]
Obs.	29,269	77,876	93,243	93,245	91,098	93,245
R-Squared	0.025	0.002	0.001	0.001	0.000	0.001

This table shows the OLS regression estimates for the impact of firm certification as Leader/Excellence, where the independent variable is a dummy variable = 1 if the distance to threshold is between]0;0.25] and = 0 if the distance to threshold is between [-0.25;0] . Panel A reports results for the period 2008-2013 and Panel B reports results for the period 2014-2018. The outcome variables are the interest rate on new loans (column (1)), loan growth (column (2)), assets growth (column (3)), fixed assets growth (column (4)), working capital growth (column (5)) and employment growth (column (8)). All columns show estimates where the dependent variable is observed one year after the award (T+1). Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Alternative running variable: Euclidian distance (2008-2013)

	Interest Rate (new loans)	Δ Log(Bank loans)	Δ Log(Assets)	Δ Log(Fixed Assets)	Δ Log(Working capital)	Δ Log(Employees)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: T						
Eligible	-0.006*	0.083***	0.011**	0.013*	0.010	-0.005
	[0.003]	[0.011]	[0.004]	[0.005]	[0.006]	[0.003]
Obs.	17,999	79,730	75,184	101,968	92,243	67,076
Bandwidth	1.353	1.311	1.070	1.406	1.328	0.974
Panel B: T+1						
Eligible	-0.011***	0.018	0.002	0.023***	-0.007	0.007***
	[0.002]	[0.010]	[0.003]	[0.004]	[0.006]	[0.002]
Obs.	31,349	78,379	81,528	139,012	95,172	106,635
Bandwidth	1.617	1.378	1.268	2.348	1.531	1.652

This table shows the regression discontinuity estimates of the impact of firm certification as Leader/Excellence with an alternative running variable: the euclidian distance between the firm's accounting values (for each eligibility criteria) and the eligibility point in the $\mathbb{R}^n$ space, where n corresponds to the number of criteria in each year. The outcome variables are the interest rate on new loans (column (1)), loan growth (column (2)), assets growth (column (3)), fixed assets growth (column (4)), working capital growth (column (5)) and employment growth (column (8)). The time period considered for estimation is 2008-2013. Panel A shows estimates where the dependent variable is observed at the year of the award (T). Panel B shows estimates where the dependent variable is observed one year after the award (T+1). All regressions include a polynomial of order 1. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: Alternative running variable: distance to threshold based on the criteria that most firms *fail* per year

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Assets) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Working capital) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)	(5)	(6)
Eligible	-0.015***	0.024**	0.025***	0.033***	0.029***	0.019***
	[0.001]	[0.008]	[0.002]	[0.004]	[0.004]	[0.002]
Obs.	40,321	78,066	117,634	110,630	108,744	112,696
Bandwidth	0.634	0.533	0.912	0.796	0.843	0.827

This table shows the regression discontinuity estimates of the impact of firm certification as Leader/Excellence with an alternative running variable: the standardized difference to the threshold of the criteria that most firms *fail* to achieve, per year. The outcome variables are the interest rate on new loans (column (1)), loan growth (column (2)), assets growth (column (3)), fixed assets growth (column (4)), working capital growth (column (5)) and employment growth (column (8)). The time period considered for estimation is 2008-2013. All columns show estimates where the dependent variable is observed one year after the award (T+1). All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: Introduction of new criteria (2008-2013)

	Interest Rate (new loans) (T+1)	Δ Log(Bank loans) (T+1)	Δ Log(Assets) (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Log(Working capital) (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Conditional Sample						
Eligible	-0.020***	0.066***	0.008*	0.036***	0.001	0.015***
	[0.003]	[0.016]	[0.004]	[0.006]	[0.006]	[0.003]
Obs.	11,167	29,138	42,439	47,101	44,988	46,428
Bandwidth	0.099	0.211	0.323	0.436	0.405	0.418
Panel B: Alternative distance variable						
Eligible		0.200***	0.028***	0.020***	0.030***	0.016***
		[0.006]	[0.002]	[0.003]	[0.003]	[0.001]
Obs.		68,480	90,072	95,284	85,334	97,566
Bandwidth		0.487	0.695	0.907	0.651	1.039

This table shows the regression discontinuity estimates of the impact of firm certification as Leader/Excellence exploiting the introduction of new criteria. Estimates in Panel A are built using only the subsample of firms that fulfill all eligibility criteria in the year *before* the introduction of new criteria. Panel B uses an alternative running variable, considering only the standardized difference to the threshold of the criteria that is introduced, in a given year. If more than one criteria is introduced in a given year, we consider the distance to the one that most firms *fail*. The outcome variables are the interest rate on new loans (column (1)), loan growth (column (2)), assets growth (column (3)), fixed assets growth (column (4)), working capital growth (column (5)) and employment growth (column (8)). The time period considered for estimation is 2008-2013. All columns show estimates where the dependent variable is observed one year after the award (T+1). All regressions include a polynomial of order 2. No covariates are included in the estimation. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Firm Fixed Effects

	Bank financing costs (T+1)	Δ Bank loans (T+1)	Δ Log(Bank loans) (T+1)	Δ Fixed Assets (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Employees (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Period: 2008-2018							
Eligible	-0.012***	8,635***	0.013***	6,447***	0.012***	0.168***	0.007***
	[0.003]	[1,341]	[0.003]	[660]	[0.002]	[0.021]	[0.001]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	196,516	224,849	224,849	232,039	232,039	232,039	232,039
R-Squared	0.562	0.311	0.338	0.280	0.275	0.287	0.264

This table shows firm fixed effects estimates for the effect of being eligible to the program on bank financing costs (column (1)), loan growth (columns (2)-(3)), fixed assets growth (columns (4)-(5)) and employment growth (columns (6)-(7)). Bank financing costs are defined as total interest expense during year t divided by average total bank loans in years *t-1* and *t*. All columns show estimates where the dependent variable is observed one year after the award (T+1). All regressions include the following covariates: firm size, firm leverage, EBITDA-to-assets and firm age. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: Performance outcomes

	Default T+1	ROA T+1	EBITDA T+1	Δ Log(EBITDA) T+1
	(1)	(2)	(3)	(4)
Panel A: 2008-2013				
Eligible	-0.016**	0.008***	8,215	0.005
	[0.006]	[0.001]	[76,534]	[0.016]
Obs.	94,616	91,543	125,484	73,902
Bandwidth	0.306	0.236	0.625	0.208
Panel B: 2014-2018				
Eligible	-0.003	-0.003	144,285**	0.001
	[0.007]	[0.002]	[51,259]	[0.016]
Obs.	44,732	43,232	45,116	46,437
Bandwidth	0.128	0.100	0.110	0.165

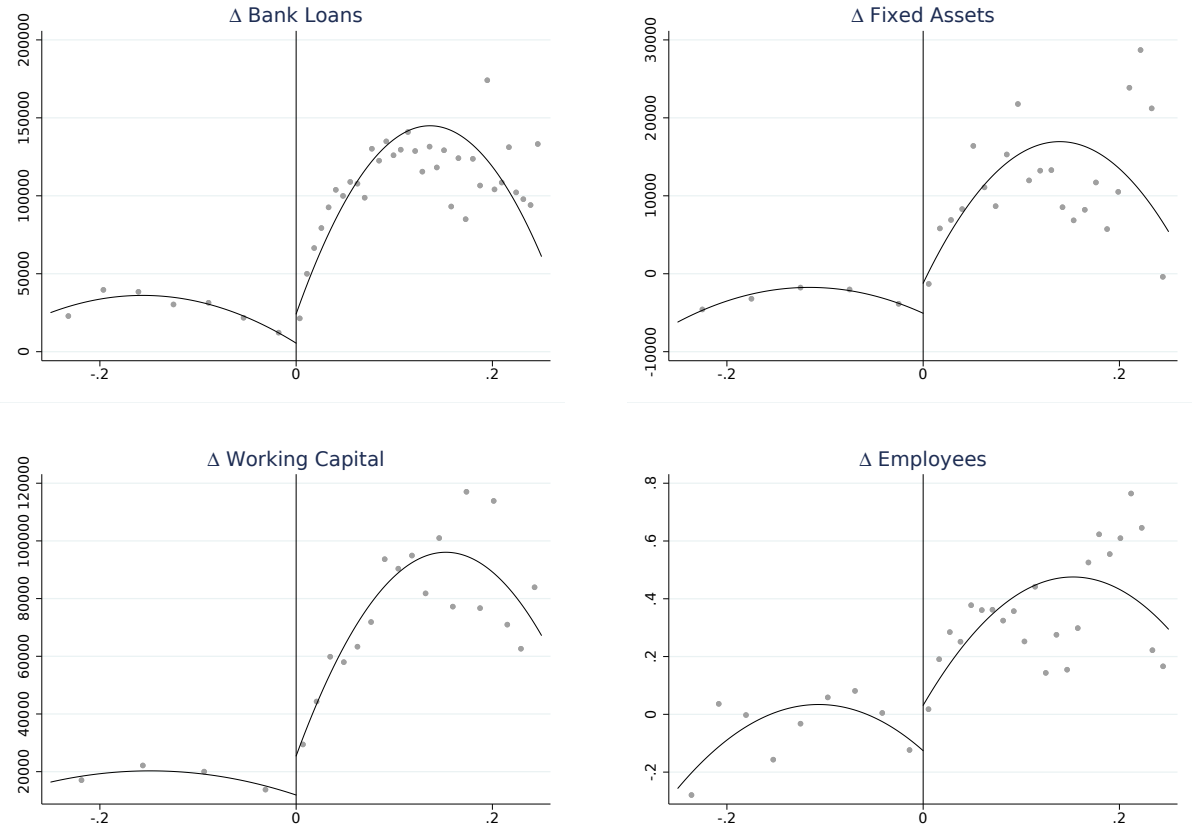
This table shows the intention to treat estimates for the impact of firm certification as Leader/Excellence on the firm's performance outcomes: Default, ROA and EBITDA. *Default* takes the value of 1 if a firm has at least one credit overdue for more than 90 days in a given year, and 0 otherwise. All columns show estimates where the dependent variable is observed one year after the award. All regressions include a polynomial of order 2. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A14: Exit Year

	Bank financing costs (T+1)	Δ Bank loans (T+1)	Δ Log(Bank loans) (T+1)	Δ Fixed Assets (T+1)	Δ Log(Fixed Assets) (T+1)	Δ Employees (T+1)	Δ Log(Employees) (T+1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Period: 2008-2018							
Eligible	-0.016***	10,363***	0.017***	9,413***	0.016***	0.219***	0.009***
	[0.004]	[1728]	[0.004]	[849]	[0.002]	[0.027]	[0.001]
Exit year	-0.006	2,884	0.008*	4,979***	0.006**	0.086**	0.003*
	[0.004]	[1819]	[0.004]	[896]	[0.002]	[0.029]	[0.001]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	196,516	224,849	224,849	232,039	232,039	232,039	232,039
R-Squared	0.562	0.311	0.338	0.280	0.275	0.287	0.264

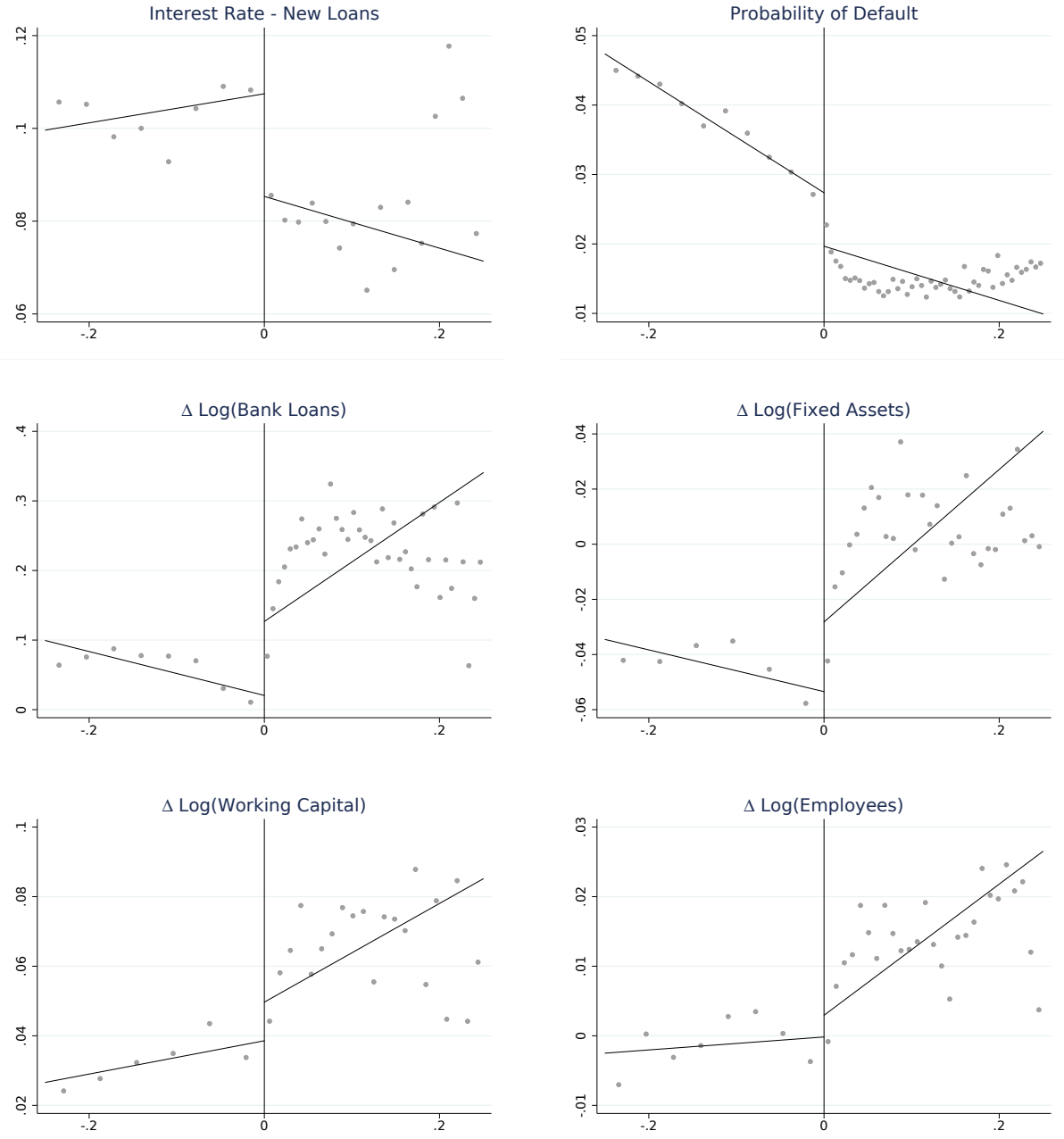
This table shows the effect of becoming non-eligible to the program (on the first year) on bank financing costs (column (1)), loan growth (columns (2)-(3)), fixed assets growth (columns (4)-(5)) and employment growth (columns (6)-(7)). Bank financing costs are defined as total interest expense during year *t* divided by average total bank loans in years *t-1* and *t*. All columns show estimates where the dependent variable is observed one year after the award (T+1). All regressions include the following covariates: firm size, firm leverage, EBITDA-to-assets and firm age. Standard errors are reported in brackets. Significance Levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure A1. Regression Discontinuity Plots (2008-2013)



This figure shows RD plots for firm-level outcomes, without the logarithm transformation. The bandwidth is fixed at -0.25 to +0.25 for all variables. The order of the polynomial used is 2. The time-period considered for estimation is 2008-2013.

Figure A2. Regression Discontinuity Plots (2008-2013): polynomial of order 1



This figure shows RD plots for firm-level outcomes. The bandwidth is fixed at -0.25 to +0.25 for all variables. The order of the polynomial used is 1. The time-period considered for estimation is 2008-2013.

11 Appendix B

Table B1. Program Criteria

This table summarizes the eligibility criteria for *SME-Leader* and *SME-Excellence* for the years between 2008 and 2018.

2008

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Credit rating: AAA, AA and A	
Accounting Criteria	- Positive growth in business turnover - Equity/Net assets > 20%	

2009

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Credit rating: AAA, AA and A - Regularized status with the fiscal authority, social security and IAPMEI	- Credit rating: AAA and AA
Accounting Criteria	- Net income > 0 **or** positive growth in business turnover - Equity/Net assets > 15%	- Equity/Assets ≥ 35% - Growth in business turnover ≥ 5% - Net income/Equity ≥ 10% - Net income/Net assets ≥ 3%

2010

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 1 fiscal year - Credit rating: AAA, AA and A - Regularized status with the fiscal authority, social security and IAPMEI	- Credit rating: AAA and AA
Accounting Criteria	- Net income > 0 **or** positive growth in business turnover - Equity/Net assets > 15%	- Equity/Assets ≥ 35% - Growth in business turnover ≥ 5% - Net income/Equity ≥ 10% - Net income/Net assets ≥ 3%

2011

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 3 fiscal years - Credit rating: AAA, AA and A - Regularized status with the fiscal authority, social security and IAPMEI	- Credit rating: AAA and AA
Accounting Criteria	- Net income > 0 - Positive growth in business turnover **or** EBITDA - Equity/Net assets ≥ 20% - Business turnover ≥ €500,000 - No. of employees (AWU) ≥ 5	- Equity/Assets ≥ 35% - Growth in business turnover ≥ 5% - Net income/Equity ≥ 10% - Net income/Net assets ≥ 3%

2012

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 3 fiscal years - Credit rating: AAA, AA and A - Regularized status with the fiscal authority, social security and IAPMEI	- Credit rating: AAA and AA
Accounting Criteria	- Net income > 0 - Positive growth in business turnover **or** EBITDA - Equity/Net assets $\geq 20\%$ - Business turnover $\geq$ €500,000 - No. of employees (AWU) ≥ 5	- Equity/Assets $\geq 35\%$ - Growth in business turnover $\geq 5\%$ - Net income/Equity $\geq 10\%$ - Net income/Net assets $\geq 3\%$

2013

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 3 fiscal years - Credit rating: AAA, AA and A - Regularized status with the fiscal authority, social security and IAPMEI	- Credit rating: AAA and AA
Accounting Criteria	- Net income > 0 **or** positive growth in business turnover **or** EBITDA (with positive EBITDA in 2011 and 2012) - Equity/Net assets $\geq 25\%$ - Business turnover $\geq$ €750,000 - No. of employees (AWU) ≥ 10	- Equity/Assets $\geq 35\%$ - Growth in business turnover $\geq 5\%$ - Net income/Equity $\geq 10\%$ - Net income/Net assets $\geq 3\%$

2014

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 3 fiscal years - Credit rating: AAA, AA and A - Regularized status with the fiscal authority, social security and IAPMEI	- Credit rating: AAA and AA
Accounting Criteria	- Net income > 0 **or** positive growth in business turnover **or** EBITDA (with positive EBITDA in 2012 and 2013) - Equity/Net assets $\geq 25\%$ - Business turnover $\geq$ €750,000 - No. of employees (AWU) ≥ 10	- Equity/Assets $\geq 35\%$ - Growth in business turnover $\geq 5\%$ - Net income/Equity $\geq 10\%$ - Net income/Net assets $\geq 3\%$

2015

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 3 fiscal years - Credit rating: 1, 2, 3, 4 and 5 - Regularized status with the fiscal authority, social security and IAPMEI	- Credit rating: 1, 2 and 3
Accounting Criteria	- Net income > 0 - Positive EBITDA in 2013 and 2014 - Equity/Net assets $\geq 30\%$ - Business turnover $\geq$ €1,000,000 - No. of employees (AWU) ≥ 8	- Equity/Assets $\geq 35\%$ - Positive growth in business turnover - Net income/Equity $\geq 10\%$ - Net income/Net assets $\geq 3\%$

2016

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 3 fiscal years - 2015 accounts closed and reported - Regularized status with the fiscal authority, social security and IAPMEI - Adequate risk profile (selected by the partner bank)	
Accounting Criteria	- Net income > 0 - Positive EBITDA in 2014 and 2015 - Equity/Net assets $\geq 30\%$ - Net income/Equity $\geq 1\%$ - EBITDA/Assets $\geq 1\%$ - EBITDA/Turnover $\geq 1\%$ - Net debt/EBITDA ≤ 5 - Business turnover $\geq$ €1,000,000 - No. of employees (AWU) ≥ 8	- Equity/Assets $\geq 37.5\%$ - Positive growth in business turnover - Net income/Equity $\geq 12.5\%$ - EBITDA/Assets $\geq 10\%$ - EBITDA/Turnover $\geq 7.5\%$ - Net debt/EBITDA ≤ 2.5

2017

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 3 fiscal years - 2016 accounts closed and reported - Regularized status with the fiscal authority, social security and IAPMEI - Credit rating: 1, 2, 3, 4, 5, 6 and 7	- Credit rating: 1, 2, 3, 4 and 5
Accounting Criteria	- Net income > 0 - Positive EBITDA in 2015 and 2016 - Equity/Net assets $\geq 30\%$ - Net income/Equity $\geq 2\%$ - EBITDA/Assets $\geq 2\%$ - EBITDA/Turnover $\geq 2\%$ - Net debt/EBITDA ≤ 4.5 - Business turnover $\geq$ €1,000,000 - No. of employees (AWU) ≥ 8	- Equity/Assets $\geq 37.5\%$ - Positive growth in business turnover - Net income/Equity $\geq 12.5\%$ - EBITDA/Assets $\geq 10\%$ - EBITDA/Turnover $\geq 7.5\%$ - Net debt/EBITDA ≤ 2.5

2018

	SME-Leader	*SME-Excellence*
Formal Requirements	- SME certification - Financial reports available for 3 fiscal years - 2017 accounts closed and reported - Regularized status with the fiscal authority, social security and IAPMEI - Credit rating: 1, 2, 3, 4, 5, 6 and 7	- Credit rating: 1, 2, 3, 4 and 5
Accounting Criteria	- Net income > 0 - Positive EBITDA in 2016 and 2017 - Equity/Net assets $\geq 30\%$ - Net income/Equity $\geq 2\%$ - EBITDA/Assets $\geq 2\%$ - EBITDA/Turnover $\geq 2\%$ - Net debt/EBITDA ≤ 4.5 - Business turnover $\geq$ €1,000,000 - No. of employees (AWU) ≥ 8	- Equity/Assets $\geq 37.5\%$ - Positive growth in business turnover - Net income/Equity $\geq 12.5\%$ - EBITDA/Assets $\geq 10\%$ - EBITDA/Turnover $\geq 7.5\%$ - Net debt/EBITDA ≤ 2.5

Notes: *Regularized status with fiscal authority, social security and IAPMEI* means that the firm does not have an irregular situation (for instance overdue debt) with any of these institutions. *Credit rating* is credit rating attributed by the sponsor bank to the company that is not publicly available. *SME certification* is based on European Union size criteria for SMEs and it is obtained electronically through IAPMEI website.

Figure B1. Timeline

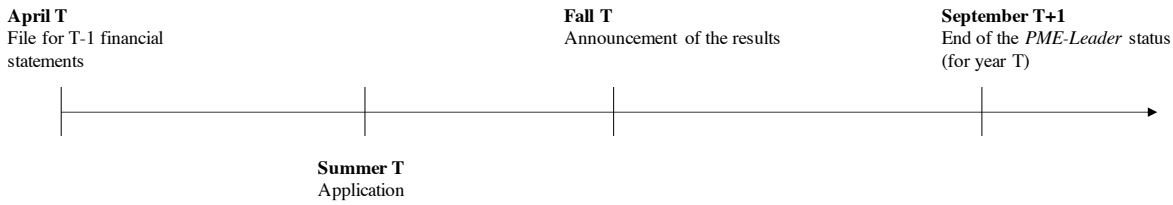


Table B3: Literature: summary of main results

Lelarge et al. (2010)	Debt growth	+0.69 percentage points in the first two years
	Interest rate	-23 percentage points in the first two years
	Employment growth	+49 percentage points in the first two years
	Capital growth	+55 percentage points in the first two years
	Probability of Bankruptcy	+6 percentage points in the first two years
de Blasio et al. (2018)	Debt growth	+50% (two-year cumulative)
	Interest rate	No evidence of impact
Brown and Earle (2017)	Employment	+3 to +4 additional employees per million dollars of SBA Loan (in the first three post-loan years)
Mullins et al. (2018)	Debt growth	+2.6% in the focal month relative to non-eligible firms
	Employment	+4.8% employees following a 10% increase in bank debt
Gonzalez-Uribe and Wang (2020)	Debt growth	0.032 increase in the probability of external debt net issuance, relative to non-eligible firms
	Interest rate	No evidence of impact
	Issued equity	No evidence of impact
	Employment growth	+2.3 percentage points among eligible firms

12 Appendix C

13 Results of the survey

Figure C1

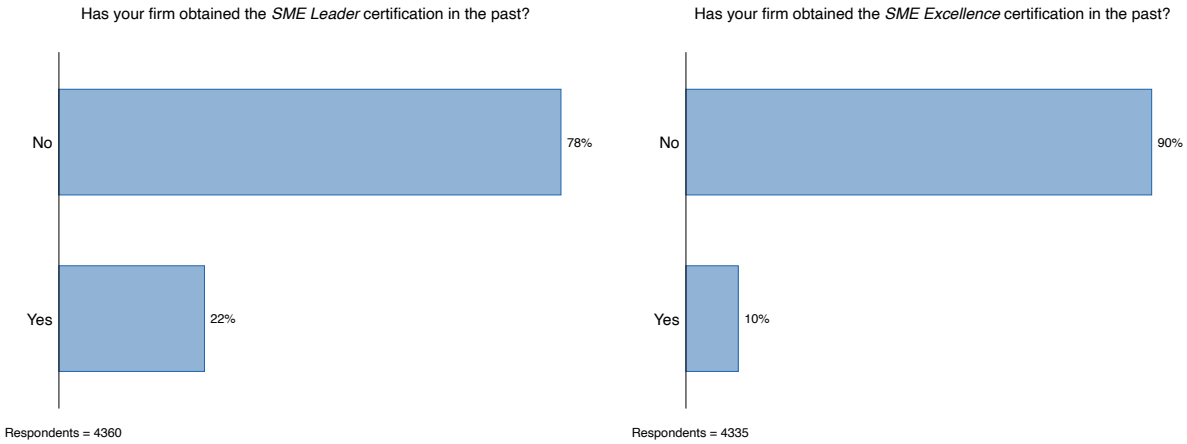
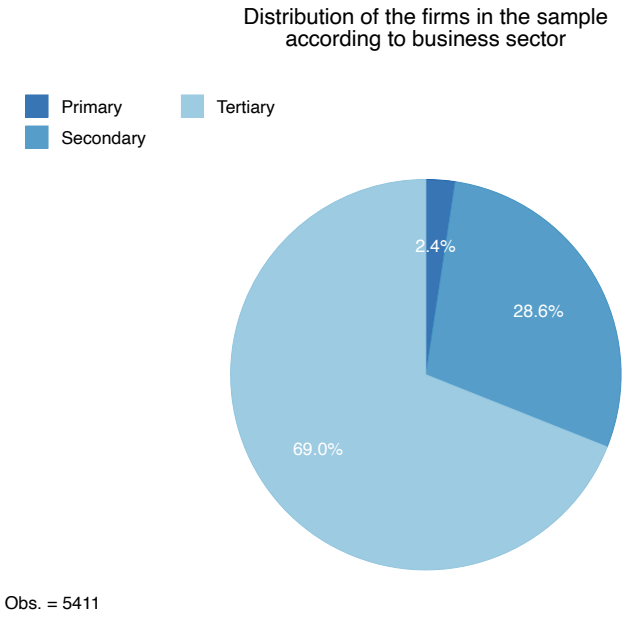
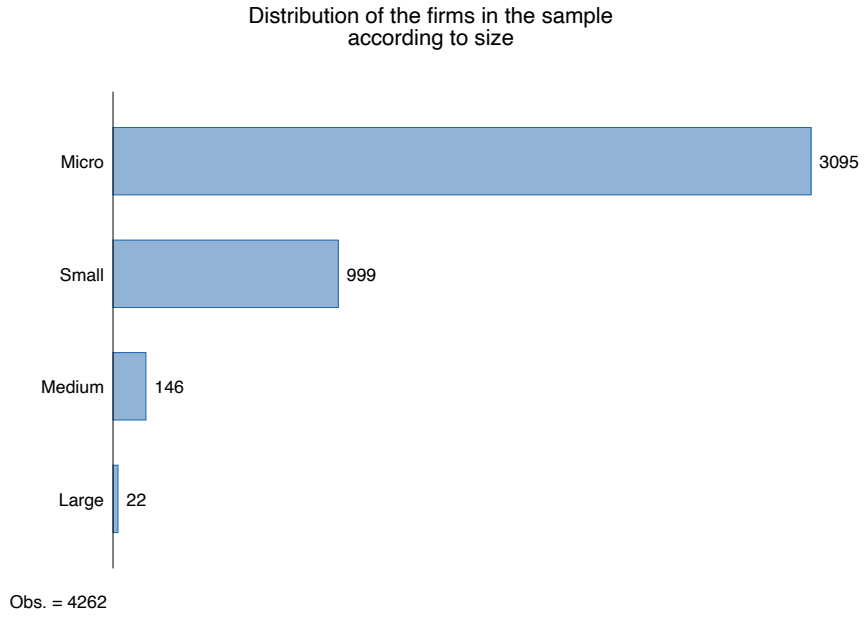


Figure C2



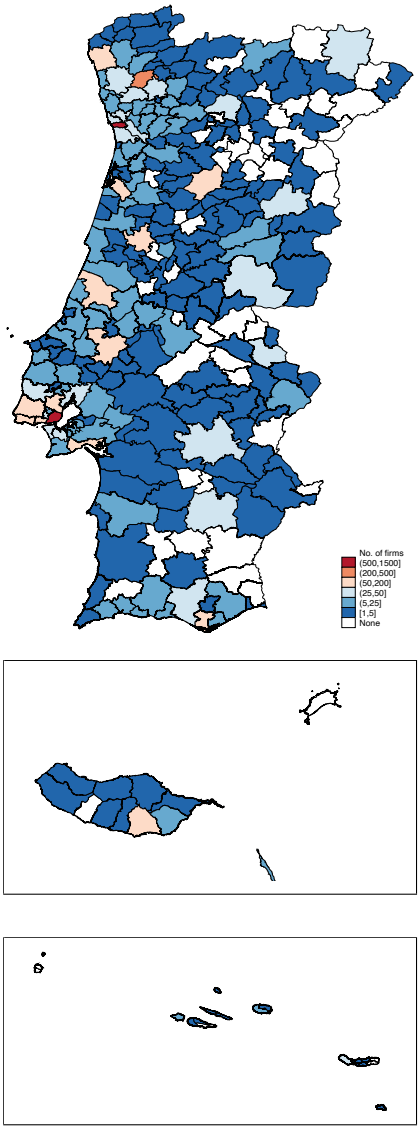
Source: Survey data (June 2020) and ORBIS database

Figure C3



Source: Survey data (June 2020) and ORBIS database

Figure C4



Fonte: Survey data (June 2020) and ORBIS database

Figure C5

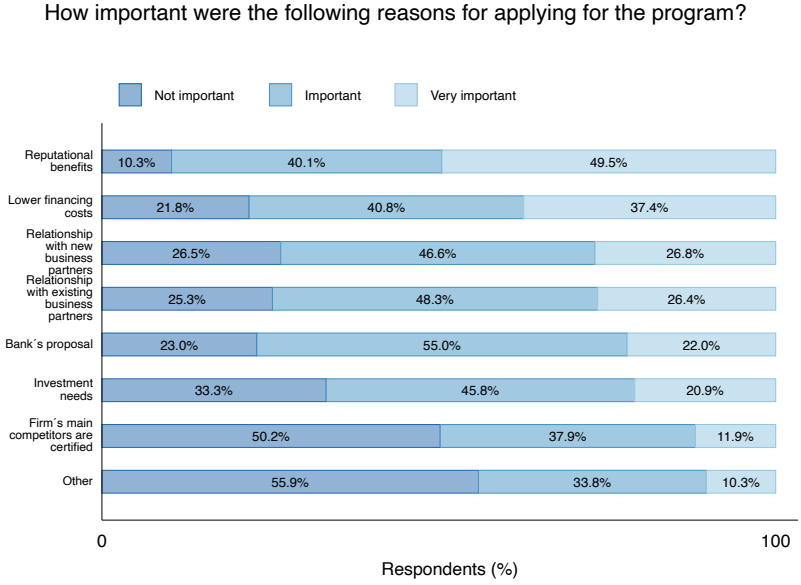


Figure C6

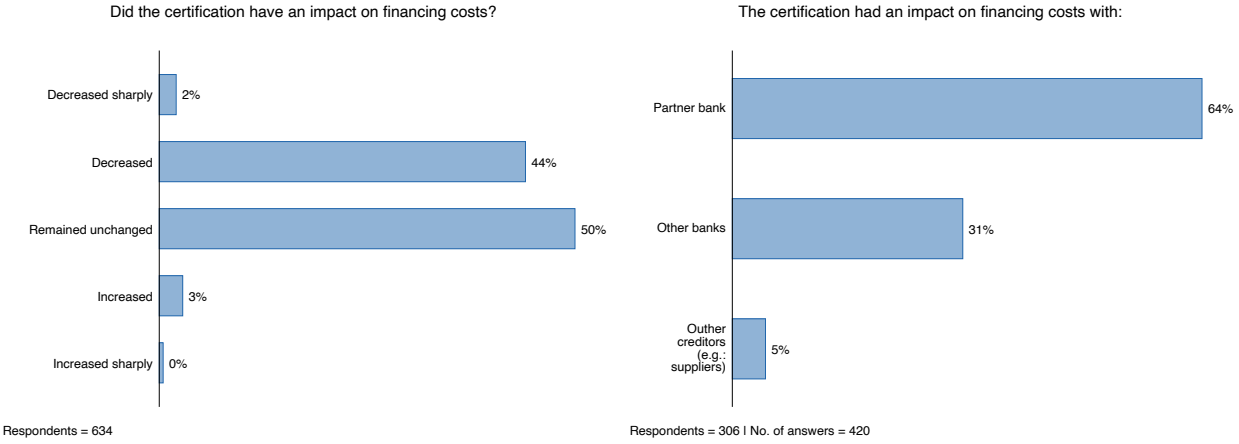
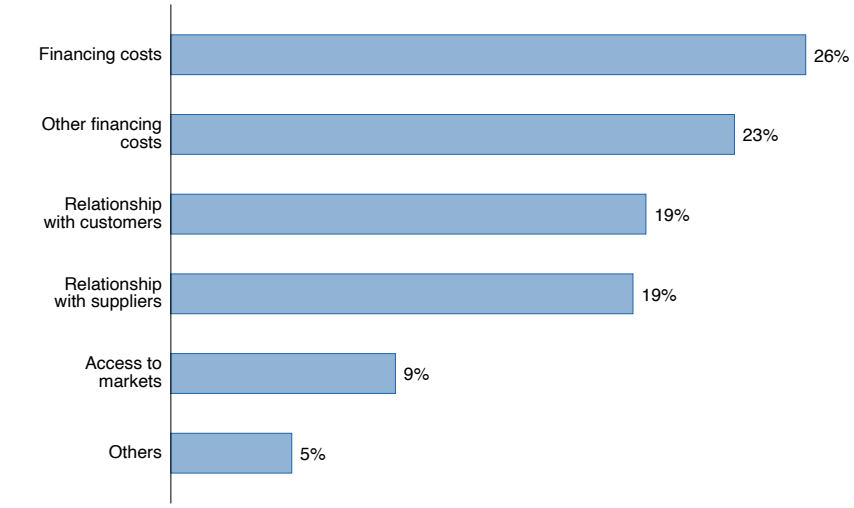


Figure C7

What are the main benefits of the *SME Excellence* status compared to *SME Leader*?



Respondents = 584 | No. of answers = 1149

Figure C8

To what extent has the certification affected each of the following dimensions?

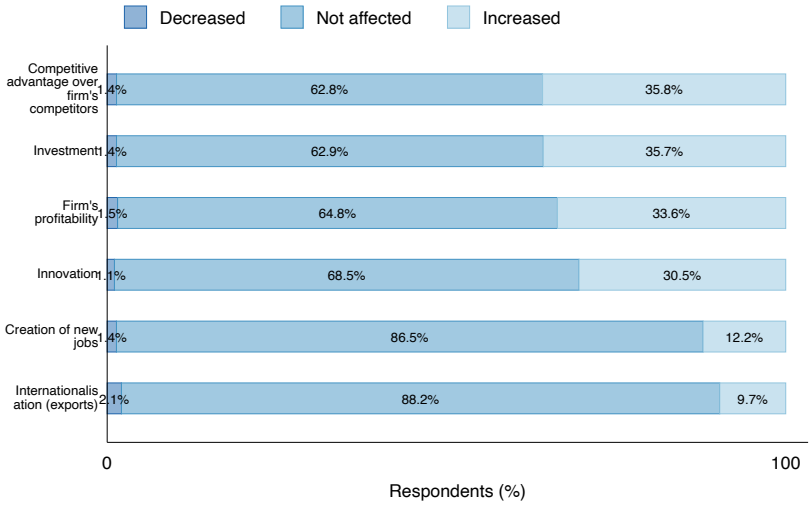
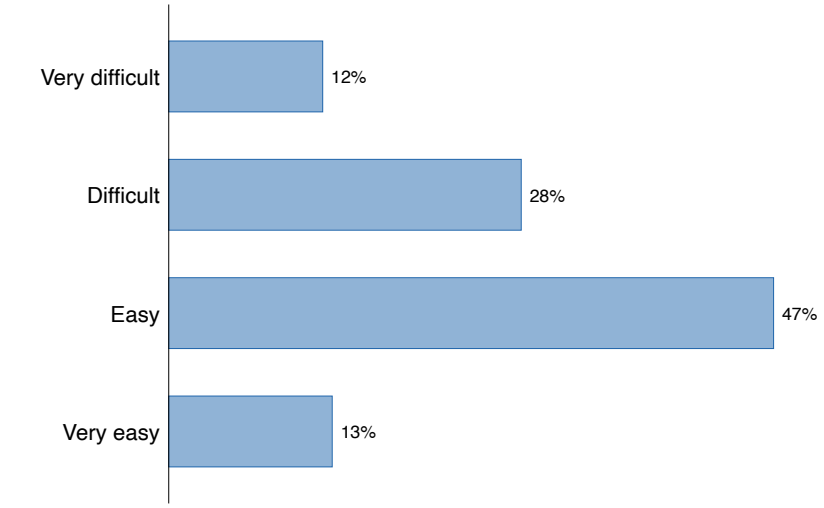


Figure C9

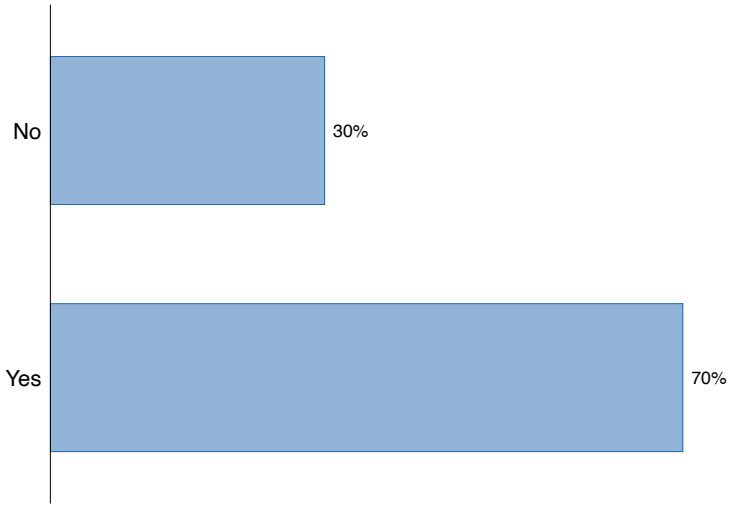
How would you classify your firm's situation with regard to credit access in 2019?



Respondents = 3345

Figure C10

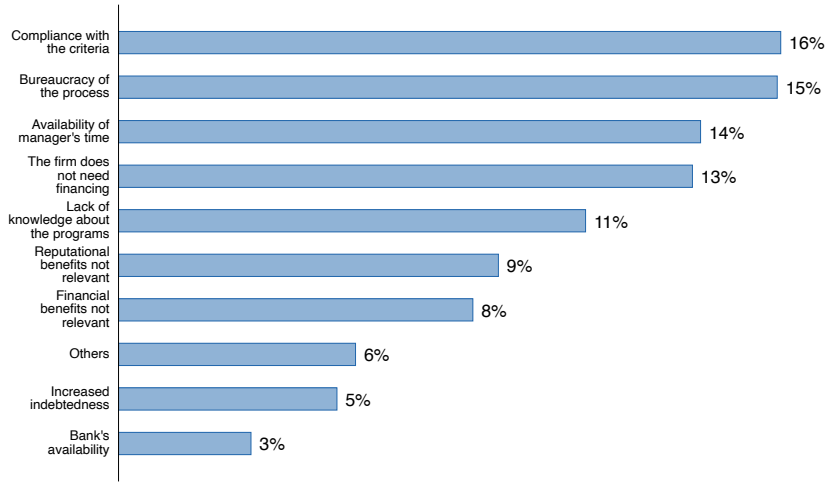
Do you know the *SME Leader* program?



Respondents = 3293

Figure C11

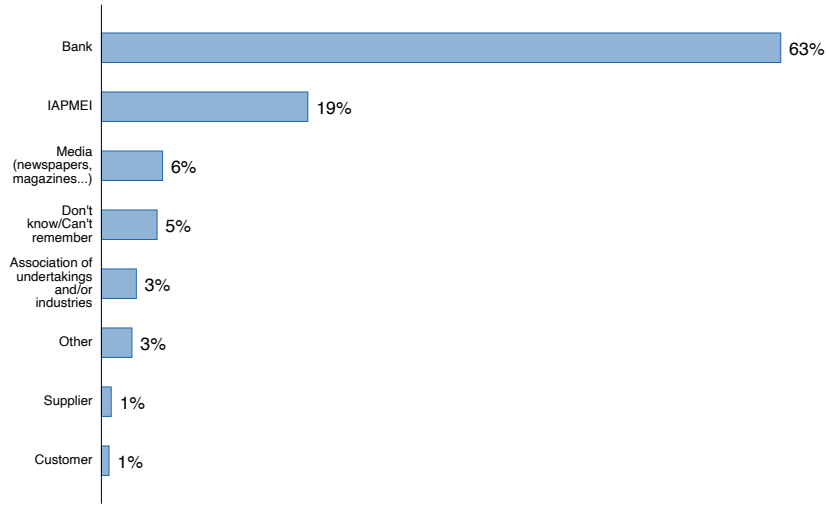
For what reasons has the firm never applied for the *SME Leader* or *SME Excellence* programs?



Respondents = 1976 I No. of answers = 3672

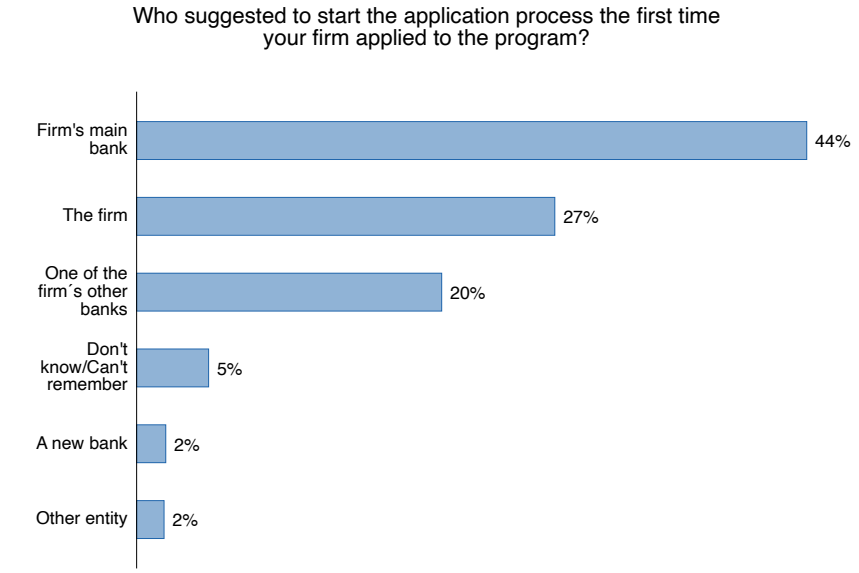
Figure C12

How did you find out about the program the first time your firm applied to it?



Respondents = 806 I No. of answers = 994

Figure C13



Respondents = 803 I No. of answers = 888