Research article

Do personal characteristics of manager affect Smes' Access to Bank Loan?

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Abstract

The response is yes. The purpose of this paper is to find out the effect of manager personal characteristics on SMEs' access to bank loan in order to highlighting whether the lending decision-making process is influenced by behavioral biases. In particular, we analyzed the impact of gender, educational level, age and ethnicity of the applicant on the probability for the firms to be funded. Indeed, SMEs accesses to finance are dependent on the ability of a single individual (that is the owner/manager) to access to bank loans. Data was collected through face-to-face questionnaires which were personally administered to managers of SMEs during the period February-June 2018. The chosen setting was the south of Italy and in particular of the Campania region. Data collected have been analyzed using the binary logistic regression model. Our empirical results show that characteristics of owner/manager affect firms' capability to access bank loan.   **Copyright © IJEBF, all rights reserved.**

Keywords: biases, gender, SMEs, lending process

Introduction

It is accepted that the growth of SMEs contributes to the economic development of Italy, by creating employment and encouraging entrepreneurship. Financial resources, both internal and external are necessary for SMEs firms to be able to grow, expand and develop.

In finance literature, it is widely recognized that external resources are generally composed of equity and loans debt, especially in Italy (Tardivo,Miglietta,Schiesari,Battisti;2012). When internal funds are insufficient, firms first prefer asking for bank loans, while will use more costly external equity only as a last resort.

Several studies have studied the link between the firm characteristics and the accessibility of bank loan, according to two different perspective. In general, prior studies argued that smaller firms are less likely to have access to bank credit but there are two different perspectives: structural and behavioral.

From a structural perspective, some researchers (Beck, Demirgüç-Kunt & Maksimovic,2008; Beck & Demirguc-Kunt,2006;Cassar,2004; Berger & Udell,1994; Coleman,2000;Cooley & Quadrini,2001; Faulkender & Petersen,2006) have suggested that different structural elements of a company influence the business debt level. These elements may include firm' age, corporate size, the organizational model assumed, the industry of activity.

From a behavioral perspective, different studies (Blanchflower, Levine & Zimmerman.,2003; Coleman & Cohn,2000; Ongena & Popov,2016; Popov & Udell,2012) argued the existence of bias affecting credit decision making for lending firms. Although studies concerning the behavioral finance date back to the late 1970s, it is only in recent years that this field has gain significant attention among researchers. This growing body of literature tries to explain how the biases may determine, in the lending decision making process, choices different from the ones suggested by the rational finance. However, this study will focus on only behavioral perspective, highlighting the link between owner/manager (individual) specific characteristics and the probability of the firm to get the loan.

Several authors argued that some personal characteristics of firm manager (gender, age, education, race/ethnicity) may affect the choice made by lending officers when they have to decide whether reject or accept a loan application (Alesina, Lotti & Mistrulli.,2013; Bellucci, Borisov & Zazzaro,2010; Ogubazghi & Muturi, 2018). In this sense, behavioral biases may affect banks officers during their decision-making process. Because SMEs access to finance is dependent on the ability of a single individual (that is the owner/manager) to access to bank loans (Chakraborty & Mallick, 2010), this study aims to link the owner' characteristics to probability for firms of being funded by banks.

Furthermore, the small and medium enterprises tend to be heavily reliant on banks when they need of additional resources, because of high cost of registering and issuing securities related to the bond market. The rationale for the study to emphasize the impact of owner/manager characteristics on the credit access for SMEs comes from these assumptions.

This empirical research is guided by the following research question: *What are the personal characteristics of manager that influence credit decision making for lending SMEs?*

The aim of this paper is to establish whether, within the banking system, the decision-making process regarding loan applications may be affected by behavioral biases, related to characteristics of manager.

The evidences suggest that in a bank-centered country as Italy is, the banking system discharges its important role of lender to real and enterprise economy (Forestieri, 2014; Marotta, 1997). Thus, Italy is an ideal candidate for testing

our research question regarding the impact of personal characteristics of the manager on the credit access. Then our paper is focused on SMEs because they represent the heart of the Italian production system and are recognized as a main source of economic growth and creation of jobs.

The remainder of the paper is organized in 5 paragraphs. The next section reviews the literature concerning the bias affecting the credit decision making and presents our hypotheses. In Section 3, we described our sample and the approach used, while in Section 4 we present the empirical results. In the last section, we discuss our findings.

Literature review

There is growing recognition of the important role that small and medium enterprises (SMEs) play in economic development. Therefore, the issue of the small or medium enterprises represents a major concern in the literature. Several studies have attempted to define what constitutes a SME, but the definition varies from country to country among researchers, and there is not an universal definition. The definitions are based on different criteria such as number of employees, financial position, the value of sales or assets (Beck,Demirguc-Kunt & Levine,2005; Zindiye,2008). But none of these bases are tagged at the same level across national boundaries (Buckley,1989).

However, in Italy, number of employees is used as a cut-off to classify the sizes of firms. For the purpose of this study, the definition of SMEs is based on the number of employees of a firm. Specifically, in accordance with the EU definitions (European Commission, 2003), SMEs include all the businesses which have less than 250 employees. Then, the number of the employee is the cut off used for SMEs definition.

Financial resources, both internal and external, are necessary for SMEs firms to be able to grow, expand and develop (Ananzeh,2016). The pecking order theory (Myers,1984) implies that firms, when they need additional resources, prefer to use internal debt because it has important cost advantages than external debt sources, such as bank debt. Indeed, internal debt is owner-provided (Stein,1997), thus it can easily be renegotiated at low or zero costs and reduces monitoring costs due to asymmetric information (Gertner,Scharfstein & Stein 1994; Hoshi, Kashyap & Scharfstein 1990). However, access to finance is influenced by funding (Howorth, 2001), such as the pecking order theory, or risk aversion of banks.

Prior studies (Freel, 2007; Schneider & Veugelers, 2010; Lee, Sameen & Cowling, 2015) stated that small firms which face harder difficulties to obtain finance because they are not attractive to banks and excluded from accessing bank credit (Landier, Nair & Wulf 2009). Indeed, the real value of the smaller firms more resides in the intangible assets and, thus, in non-codified information that are difficult to quantify, verify, and communicate through credit scoring technologies adopted by banking system (Berger & Udell, 2002). Due to the opaqueness that characterizes SMEs (Landström, 1992), market to smaller firms can resemble Akerlof's (1970) 'market for lemons'.

Therefore, from a lender's perspective, the bank' risk aversion may exclude some businesses that are not appear credible to lenders due to owner/manager characteristics. Pettit and Singer (1985, p. 58) stated that the *'level of debt and equity in a smaller firm is more than likely a function of the characteristics of the firm and its manager*s'.

Munnell, Tootell, Browne and McEneaney (1996) found evidence of a discrimination in credit markets against firms with the same risk of default. This discrimination is due to personal characteristics of owner/manager, in particular to the race/ethnicity and gender of the firm's owners.

In the recent years, there has been an increased interest, among academics, on the effect of entrepreneurial characteristics on SMEs' access to external bank resources. Given the central role played by their managers, who are often the owners of the business, a growing body of literature has studied the effect of owner/manager

characteristics on access to finance. For the aim of this research, owner/manager characteristics are defined as those personal traits that are specific to the owner/manager of the firm. Ravina (2008) found evidence of taste-based discrimination in the banking system and showed how personal characteristics of manager affecting the lending decision-making process. These results are consistent with those of Bertrand, Chugh and Mullainathan (2005).

Neneh (2011) indicated that previous studies have classified characteristics of entrepreneur into five categories that are: learnable characteristics (such as innovativeness, tolerance of risk); ascribed characteristics (race, gender, age); achieved characteristics (such as education), demand and requirement characteristics (such as ethics, economic and professional values). In our study, from this categorization, we consider the ascribed and achieved characteristics as factors affecting firm' access to finance. In particular, we use the following personal characteristics: gender, educational level, age, and ethnicity.

About the gender problem, the literature in the field of behavioral finance has addressed the attention to the theme of gender discrimination. Indeed, several authors have found differences between men and women- run firms (Carter & Rosa, 1998) with evidence of a gender discrimination (Coleman, 2000; Coleman and Cohn,2000; Ennew & McKechnie, 1998; Muravyev Talavera, & Schäfer, 2009; Hertz,2011). Arzu and Mantovani (2016) showed the existence of differences in the way credit is allocated relating to the gender of manager. Indeed, there are more firms led by women that do not receive credit, even if they deserve it. In addition, some studies focused in Italy, confirmed the existence of a gender-based discrimination existing in credit markets that makes it difficult for women owned businesses to operate on an efficient scale (Alesina & Giuliano 2010 ; Bellucci *et al.* ,2010). This belief that there is a discrimination for women-led firms may lead potential borrowers not to ask for loans because they are discouraged (Cesaroni, Lotti & Mistrulli,2013; Kon & Storey, 2003). Similarly, Moro, Wisniewski and Mantovani,. (2017) argued that female firms can be financially constrained because women applicants anticipate the rejection and therefore are less likely to apply for a bank loan because more risk averse. In addition, Alesina and Giuliano (2010) evidenced the presence in Italy of high gender bias level, that is much higher than that of any other OECD country. Starting from these topics, we have formulated the following research hypothesis:

Hp1. Gender of the manager influences the probability to get bank loan.

About education, according to Abdulsaleh and Worthington (2013), banks perceive owner/manager with higher educational level as creditworthy. As noted by Fay and Williams (1993), *"Commercial banks are risk-averse lending institutions";* so, confronted by applications for finance from individuals with limited education and experience, banks refuse requests for finance. Therefore, human capital theory (Smith-Hunter, 2006; Zarook, Rahman & Khanam,2013) argued that entrepreneurs having higher education qualification have higher likelihood of accessing bank loan than those who don't have. In addition, Sena, Scott and Roper (2012) stated that a lower education level may prevent individuals from asking for bank loans, since the lack of education would result in a lack of confidence. However, other studies did not find that educational level of the owner/manage influence the application' probability of being accepted or rejected (Irwin & Scott, 2009). In order to verify these empirical verifications in Italy, we have formulated the following hypothesis:

Hp2. Educational level of the manager affects probability to be funded.

Regarding the age, there are several studies that investigated the effect of age on access to finance, but the are conflicting results. Some studies (Fatoki & Odeyemi,2010; Nguyen & Luu ,2013; Slavec & Prodan,2012) found no evidence about the effect of age on the capability to succeed in loan issuance. On the contrary, other studies provided evidence of age bias. Abdulsaleh & Worthington (2013) found out that firms managed by young owner or manager faced tighter difficulties to access debt financing. Starting from these considerations, we have formulated the following hypothesis:

Hp3. Age of the manager affects probability of the firm to get the loan.

About the ethnicity, in the behavioral finance field, several studies investigated the link between ethnicity and credit access. Blanchflower et al. (2003), using data from the 1993 and 1998 National Surveys of Small Business Finances, showed the existence of racial discrimination in the credit market. Particularly, the authors indicate that black-owned firms are more than twice as likely to have a loan application rejected compared to white owned firm. Cavalluzzo and Cavalluzzo (1998) found no unambiguous evidence of a racial discrimination in credit markets towards ethnic minorities. Substantial differences in denial rates between firms owned by African Americans and white managers arise from study made by Cavalluzzo, Cavalluzzo and Wolken (2002). Storey (2004) focusing his study in Trinidad and Tobago, found that firms owned by African are less likely to have a bank loan than those owned by individuals from other ethnic groups, highlighting a racial discrimination in credit market. Starting from these premises, we have formulated the following hypothesis:

Hp4. Ethnicity of the manager affects the probability of the firm to get bank loan.

Materials and Method

The analysis relies on a database constructed through questionnaires which were administered to manager of SMEs between February and July 2018. The sample consists of 214 SMEs located in the south of Italy. The sample was extracted from AIDA Database, drawn using proportionate systematic sampling (Hirzel & Guisan,2002).

A mixed design method of both qualitative and quantitative research methodology was used to response to our hypotheses.

As our dependent variable is a binary (0; 1), Qualitative Binary Response Model (QBRM) is appropriate (Horowitz and Savin,2001). Ordinary least square model (OLSM), Probit regression Model (PRM) and Logistic Regression Model (LRM) are the three major QBRMs. However, the linear probability model has the limitation that the conditional probability is not constrained to lie between zero and one. For this reason, LRM is selected for this study. According to different authors (Cox & Cox, 2005; Cox, 2018; Horowitz & Savin, 2001), logit and probit analysis are the most widely used statistical methods for estimating the preferences of an individual among discrete sets of alternatives. However, several scholars (Hosmer & Lemeshow,1989; Wasserman & Pattison,1996) argued that Logit Regression Model is easy and flexible, giving the researcher easy access to meaningful interpretation. Therefore, in this study we decide to use the LRM to make a rigorous analysis on the statistical impact that the personal characteristics of the owner/manager has on firm' access to finance. This model, particularly useful when the dependent variable is dichotomous, is exemplified by the following equation:

Equation 1

$$P(Y) = \frac{1}{1 + exp^{-[-\alpha + \sum_{i=1}^{k} \beta(X_i) + \varepsilon]}}$$

Where:

- P (Y) denotes the probability of the outcome of the firm to get the loan;

- β are the regression coefficient that determine the location, slope and spread of the curve, for respective variable at each observation;

- X the variable at each observation;

- α is the intercept;

- ε is the error term-assumed as the disturbance parameter, normally distributed.

To test the research hypothesis supposed, information on the variables was collected and input into SPSS 25, a statistical software package.

Firm's access to bank loan can be noted from the capital structure of a firm in the balance sheet. However, it is difficult to measure SMEs' access to external finance from balance sheet. Indeed SMEs, that are more "informative opaque" than larger ones, do not regularly provide documents such as the balance sheet, sending only few information (Daskalakis & Psillaki,2008). For this reason, we have decided to make a survey-based research in order to collect data.

Using LRM model, we define the variables as follows:

Y represents the access to bank loan of a firm. It is a dummy variable. It takes on the value of "1" when the following two conditions are true: (1) If the firm has not applied for loan (2) If the firm applied for loan but his application was rejected or has received an amount less than claimed; otherwise it will take "0".

Gender (X1): is a dummy variable. It set at 1 if the manager is a man; 0 if the manager is a woman;

Age (X2) is a continuous variable and it measures number of years the owner/manager lived;

Education (X3) is a continuous variable and is measured in terms of the number of years the owner/manager spent studying. We measure the education level in this way based on the assumption that the quality of human capital increases as the years the individual spent in formation;

Ethnicity (X4): is a dummy variable. It takes value of 1 if the applicant belongs to Italian ethnicity; 0 otherwise.

The table 1 provides a description of the independent variables. In the following section of the paper, we display and discuss our empirical results obtained.

Table 1. Independent Variables Used in Logistic Regression Analysis

Variable	Description
Gender	Coded as" 1" for man-managed firm; "0" for women-managed firm
Education	Number of years the manager has been educated
Age	Number of years the manager lived
Ethnicity	Coded as" 1" if manager belongs to Italian ethnicity; o otherwise

Results

The data used in the regression analysis were collected from the primary data from field survey. The four independent variables were entered together at one step, as you can see in the following equation.

Equation 2

$$P(Y=1|X_1) = \frac{1}{1+exp^{-[-3.482+1.175(X_1)+0.065(X_2)-0.003(X_3)+0.686(X_4)]}}$$

Indeed, in Equation 2, we formalize our binary logistic regression inserting the β coefficients obtained by statistical results.

Before commenting on the panel analysis and answering the hypothesis of research, it is necessary to make some considerations regarding the correlation analysis between the variables distributed normally using the Pearson indices correlation matrix (Table 2).

Table 2 shows that many variables are significantly correlated, but often Pearson's indices are low.

Table 2. Pearson correlation

	Access	Gender	Education	Age	Ethnicity
Access	1				
Gender	0,152**	1			
Education	0,000	0,349***	1		
Age	0,297***	0,087	-0,063	1	
Ethnicity	0,217***	-0,073	-0,111	-0,047	1

***Correlation is significant at the 0.01 level
**Correlation is significant at the 0.05 level
*Correlation is significant at the 0.10 level

As next step, we tested the null hypothesis which shows a correct overall percentage of approximately 54%. This means that the model would predict credit acceptance or rejection, without any explanatory variable involved in the model, about 54% of times.

The Table 3 shows the omnibus test of model coefficients. As the significant level is 0.000 with a chi square of 37,408, the test clarifies that our selected variables have a good predictability for credit issuance.

Table 3. Omnibus test of model coefficients

		Chi-quadrato	df	Sign.
Step 1	Step	37,408	4	,000
	Block	37,408	4	,000
	Model	37,408	4	,000

The next table (Table 4) reports the model summary. The table shows much of the variance of the dependent variable can be explained by selected variables in our model. As reported below, we say the model is able to explain about the 21% of the variance in the dependent variable.

Table 4. Model summary

Step	−2log likehood	Cox e Snell R-Square	Nagelkerke R--Square
1	257,743	0,160	0,214

The Table 5 is the classification table. It shows that our model is doing well in the predictability. Indeed, our chosen variables can predict a higher percentage (66.8%) than to the null hypothesis, which would predict the 54%.

Table 5. Classification Table

Observed			Predicted		% correct
			0	1	
Step 1	Credit Access	0	58	40	59,2
		1	31	85	73.3
	Overall percentage				66.8

a. The cut off value is 0,500

The table 6 reports Hosmer-Lemeshow test and the contingency table. The HL test indicates a poor fit if the significance value is less than 0.05. Here, the model adequately fits the data. Here, this test says that our logistic model is correctly specified. The table shows that we have a good predicting model. Indeed, the test actually performed in a good way, reporting a p-value of 0.557 and a chi-square of 6.812.

Table 6. Contingency Table for Hosmer-Lemeshow Test

		Y= 0		Y = 1		
		Observed	Expected	Observed	Expected	Total
Step 1	1	19	16,443	2	4,557	21
	2	16	15,554	6	6,446	22
	3	12	13,034	9	7,966	21
	4	10	11,628	11	9,372	21
	5	11	10,180	10	10,820	21
	6	8	8,950	13	12,050	21
	7	5	7,683	16	13,317	21
	8	5	6,205	16	14,795	21
	9	7	5,162	15	16,838	22
	10	5	3,161	18	19,839	23

χ^2 test statistic = 6,812(goodness of fit); degrees of freedom = 8; P = 0.557.

The analysis of the relation between the independent variables and the dependent variable (see Table 7) provides the answer to hypotheses. Furthermore, this model clarifies which variable can give higher probability of being accepted or rejected when applying for a loan.

With regard to statistical results obtained from logit regression, they show that there is a correlation between gender variable and the independent variable. This result suggests that of getting the application accepted by the bank officer is higher if the applicant/manager is a man. In particular, males applicant have about 2 times the probability of being accepted when applying for a loan. Instead, the results show no correlation between education level variable with the dependent variable. Thus, educational aspect is not significantly correlated with the probability for the firm to obtain bank loans.

About age variable, it is positively correlated with the probability of being accepted or rejected. This means that older applicant has higher probability of being accepted when applying for a loan.

Finally, ethnicity variable is s positively correlated with the dependent variable. This result indicates that Italian applicant has 3.2 times probability of being access to bank credit.

Table 7. The logit binary regression analysis results

		B	S.E.	Wald	df	Sign.	Odds Ratio
Step 1	Gender	0,686	0,325	4,445	1	0,035	1,985
	Education	-0,003	0,027	0,009	1	0,926	0,997
	Age	0,065	0,015	18,466	1	0,000	1,067
	Ethnicity	1,175	0,326	12,993	1	0,000	3,237
	Constant	-3,482	0,793	19,289	1	0,000	0,031

Discussion and Conclusion

The results of the statistical analysis displayed in this section show the evidence of cognitive biases affecting processes of bank officers when they have to make a valuation of their applicants. Particularly, we found that the probability of being accepted is higher when the applicant is a man (Hp1 is confirmed). Indeed, the statistical results emphasize that males applicant have about 2 times the probability of being accepted when applying for a loan. This et al, 2010; Marlow & Patton, 2005; Moro et al.,2017; Ongena & Popov, 2015).

Therefore, no evidence of education bias has been provided in this work (Hypothesis 2 is not confirmed). This means that the educational level of the applicant do not impact on the likelihood to obtain credit issuance. Our result is consistent with other studies that no found a significant influence of the education in SMEs' access to bank loan (Fatoki & Odeyemi, 2010; Irwin and Scott ,2010). However, unlike our findings, several authors (Zarook et al. ,2013; Slavec & Prodan,2012) had also found that education level, represents a prejudice in credit allocation.

Our empirical results show that age of the borrower impacts on the probability to be funded (Hypothesis 3 is confirmed). In other words, banks' perception of age affects access to bank loan because old entrepreneurs are generally perceived as non-innovative and more creditworthy. (Fang & Nofsinger, 2009). On the contrary, young entrepreneurs are perceived as more innovative and, because there is not innovation without risk (Merton, 2013), they are considered as riskier from the bank' point of view. Consistent with other studies (Nguyen & Luu,2013; Ogubazghi & Muturiwe,2014), we found that younger entrepreneurs face tighter obstacles in accessing to credit bank than older ones.

Finally, our analysis shows a significant influence of ethnicity on the accessing bank loan at firm level (Hypothesis 4 is confirmed). This is consistent with different studies that argued the existence of a racial discrimination -against the ethnic minorities- in the credit market (Bayer et al.,2013; Blanchflower et al,2013). The statistical model clarifies that an Italian applicant has 3.2 times the probability of being accepted when applying for a loan. This signifies that the effect that ethnicity of entrepreneur on SMEs' likelihood to access bank loan is very strong. Furthermore, as you can see, the ethnicity represents the major prejudice affecting the SMEs' probability of accessing bank loan.

In brief, we are led to the following conclusion: actually, there are behavioral biases about personal characteristics of the entrepreneur when it comes to lending officer's valuation of their applicants. In particular, it appears that lenders discriminate on the basis of gender, age and, mainly, ethnicity.

However, our work presents some limitations. Firstly, we rely solely on Italian data, which leaves us with the unanswered question of whether the conclusions are country-specific. A second limitation is that this study is limited on the examination of the effect of the entrepreneur characteristics to measure access to the bank loan. An opportunity for further research would be to include other bank measures financing, deriving from financial statements. Further opportunity would be to increase the size of the sample in order to cover the whole country.

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