Market concentration measures and investment decisions in Mexican manufacturing firms.

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MARKET CONCENTRATION MEASURES AND INVESTMENT DECISIONS IN MEXICAN MANUFACTURING FIRMS

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ABSTRACT

We study how alternative measures of market concentration may explain investment decisions of Mexican manufacturing firms. The measures include the Herfindahl-Hirschman Index and the Dominance one. The first one is the traditional measure of market structure concentration. The Dominance Index is a competition measure used by Mexican regulators. The econometric assessments suggest that investment decisions of Mexican firms can be better explained by the Dominance Index measure than by the Herfindahl-Hirschman one. Thus our results suggest that the Mexican Dominance Index might be useful as a measure of market structure and competition. Such conclusion is based on several econometric assessments. In all cases we use certain characteristics of the firms (size, cash flows, investment opportunities and capital intensity) as control variables.

JEL: L40; L22; L60

KEYWORDS: Investment, , Dominance Index, Herfindahl-Hirschman Index, Manufacturing, Mexico

INTRODUCTION

Traditional economic theory indicates that the maximization of profits explains the behavior and decisions of firms. Particularly, from the view of financial economics, firms are considered as flows of financial streams that depend on investments. Such view explains why the study of optimal investment decisions and its determinants is considered an important research field for economists.

Here we study the determinants of investment decisions in Mexican manufacturing firms because studies for emerging economies are relatively scarce. Particularly, we focus our investigation on how market concentration, as a proxy of market structure and competition, influences investment decisions. The assumption underlying our study is that the Mexican firms face constraints imposed by its competitors and by nature.

In the literature, competition constraints are analyzed with market concentration indexes. In this study we follow this practice. The Herfindahl-Hirschman Index (HHI) is the usual measure of competition. However it is not the unique one. An alternative measure is the Dominance Index (DI) proposed by Garcia Alba (1990). The main difference between these measures is that the DI explicitly accounts the size of firms to measure competition.

Here we analyze how alternative measures of market concentration may explain investment decisions of Mexican manufacturing firms. Particularly, we focus on the HHI and the DI indexes as investment determinants. We analyze micro, small, medium and large size firms. We control the assessments by certain firm characteristics that capture the constraints that firms face by nature. They include firm size, cash flow, capital intensity and investment opportunities.

The contributions of this research focus on two areas. The former contributions relate to the literature on corporate finance in developing economies. Traditional studies on investment determinants focus on developed economies, not in emerging ones. The second contribution is methodological in the context of regulatory issues. Econometric comparisons of the HHI and the DI as market concentration measures have not been developed, at least among manufacturing firms.

The paper is organized as follows. Section 2 discusses the relevant literature. Section 3 describes the methodological design: data, variables and model specification. Section 4 shows our regression results. Section 5 discusses them. Section 6 concludes.

LITERATURE REVIEW AND BACKGROUND

Here we review the economic literature about firm investment decisions. The review follows the guidelines of the Structure-Conduct-Performance (SCP) paradigm. We begin our review by describing the concentration indexes analyzed in this investigation. Then we indicate some theoretical studies that have analyzed the determinants of investment decisions.

Traditional industrial organization studies analyze firms under the basis of the SCP paradigm. This paradigm explains firms´ decisions and their performance in terms of the notion of market structure. In such studies, the Herfindahl-Hirschman Index (HHI) is the standard measure of market structure and concentration. However it is not the unique one. The HHI is an alternative measure that combines information about the number of firms in an industry and the inequality of market shares (Martin, 1999).

The HHI measures market structure under the assumption that firms of a market are identical and that competition among them is symmetric. Thus the HHI is an adequate measure of concentration and competition when big differences do not exist among the firms. Methodologically, the index is measured as the inverse of the number of firms. Its construction only takes into account the concentration of output.

The Dominance Index (DI) is a measure used by Mexican regulators since the nineties. Garcia Alba (1990) developed it to assess how differences among firms´ size may affect the strategic interactions in a market. In fact, the DI aims to assess the capacity of two o more small firms to compete against large firms. Thus it is an index that considers how total output is allocated among the firms

Since long, market concentration indexes have been subject to criticism under methodological basis. Particularly, Ten Kate (2006) argues that the DI is a hybrid between a concentration index and an inequality index. He also argues that changes in strategic interactions may not be properly taken into account with the index. Moreover he argues that equal firms are not necessarily better competitors than unequal ones.

The relevance of the discussion regarding market concentration indexes is not only methodological. Some theoretical studies explicitly suggest how market structure may affect the behavior of firms. Particularly, the paper of Akdoğu and MacKay (2006) is relevant for our purposes because they argue that investment decisions depend on the strategic interactions among firms. Moreover, they also argue that investment depends on industry concentration [Akdoğu and MacKay (2008)]

Empirical evidence is not conclusive. For example, Lee and Hwang (2003) do not find any relationships between market structure determinants and investment decisions in the Korean telecommunication industry. Indeed they conclude that market structure (measured by the HHI) is not a determinant of R&D. However, in another study Escrihuela-Villar (2004) reaches exactly the opposite conclusion.

Interestingly both studies, Lee and Hwang (2003) and Escrihuela-Villar (2004), indicate that certain determinants seem necessary to analyze the relationship between market structure and investment.

Particularly, the Lee and Hwang (2003) indicate that firm size and investment opportunities determine investment decisions. This conclusion is supported by Escrihuela-Villar (2004). Indeed, he finds that large firms invest more than small ones.

Evidence from developed economies suggests that further determinants are necessary to analyze issues regarding market structure and investment. Mishra (2007) and Czarnitzk and Binz (2008) find linkages among investment intensity, market structure and firm size. Bøhren, Cooper and Priestley (2007), D'Erasmo (2007) and Ughetto (2008), also find direct relationships among investment decisions and cash flow, firm size and capital intensity. De Marzo and Fishman (2007) find that investments for small and medium firms are sensitive to cash flows.

Empirical research on the relationships between market structure and investment is scarce for emerging economies. Existing studies mostly focus on other determinants of investment decisions. For example, Adelegen and Ariyo (2008) and Bokpin and Onumah (2009) find that firm size, cash flow and investment opportunities may explain investment decisions.

We conclude by indicating that further studies are necessary to understand the relationships among market structure and investment decisions. Here we propose an econometric analysis based on the HHI and DI measures of market concentration to analyze such relationship. The methodological issues and outcomes regarding such analysis are developed in the following sections.

METHODOLOGY

Here we describe the methodological design of the investigation. Specifically, we describe the sources of data and the indicators used in the econometric assessments. Furthermore we describe the econometric modeling and testing procedure used to analyze the relationships among market structure and investment decisions in the Mexican manufacturing firms.

Data sources

We use data from the "Economic Census 2003" reported by the Mexican Bureau of Statistics (INEGI). Such census is constructed accordingly to the North-American-Industry-Classification-System (NAICS). We use a longitudinal data set because data of previous censuses are constructed with non-comparable methodologies. In Mexico census data are collected every five years. Currently, data for the census collected in 2008 is not available.

In the census, firm-level data are not available due to confidentiality reasons. We deal with such constraint by constructing a set of four representative firms for each of the 182 industries. We build the representative firms accordingly to the number of employees. A micro firm has no more than 10 employees. A small firm has between 11 and 50. A medium firm has between 51 and 250. A large firm has at least 251 employees. This classification follows the Mexican standard for manufacturing firms.

The census classifies firms of each industry into groups according to the number of employees. For example, the first group includes firms with 0 to 2 employees. The second group includes firms with 3 to 5, and so on. The census has 12 classificatory groups for each of the 182 industries. INEGI uses a different classification for the firms. The classification of INEGi distinguishes between micro, small, medium and large firms. Table 1 shows the relationships between both classifications for each industry.

Table 1: The census and the INEGI classifications for the firms of an industry

Census´ Classification of Firms in the Industry i (t)	Employees in the Firms that Belong to Group t	Median of Employees in the Firms that Belong to Group t (Mit)	Type of Firm According to INEGI	Firms´ Size According to the Type of Firm (j)
1	0-2	1	Micro	1
2	3-5	3	Micro	1
3	6-10	8	Micro	1
4	11-15	13	Small	2
5	16-20	18	Small	2
6	21-30	25.5	Small	2
7	31-50	40.5	Small	2
8	51-100	75.5	Medium	3
9	101-250	125.5	Medium	3
10	251-500	375.5	Large	4
11	501-1000	750.5	Large	4
12	1000+	1000	Large	4

This table shows the relationships between the Economic Census´ classification and the one of INEGI. (Mexican Bureau of Statistics).

The first step to build a variable that describes the behavior for a representative firm of size j of industry i is to calculate a weight indicator. We use the median of the number of employees by group to calculate it. This is calculated as follows:

$$P_{ijt} = \frac{n_{ijt}M_{jt}}{\sum_t n_{ijt}M_{jt}} \qquad i = 1,...,182 \qquad j = 1,2,3,4 \qquad t = 1,...,12 \tag{1}$$

Where P_{ijt} is the weighted indicator of the industry i, size j, group t. n_{ijt} is the number of firms of the industry i, size j, group t. M_{jt} is the median of the number of employees of size j in group t. The subindex i refers to the i-th industry. The subindex j refers to the firm of size j (micro, small, medium and large firms). The subindex t refers to the t-th groups included in the size-j classification.

The second step is to use the weighted indicator of each one of the four representative firms of industry i to estimate each variable assessed econometrically. We multiply P_{ijt} by each variable included in the census classification for each one of the twelve groups of firms V_{ijt} (see Table 2 for a list of variables) Such multiplications added accordingly to each subindex t will provide us with a variable each representative firm of size j of the industry i.

$$RF_{ij} = \sum_t P_{ijt}V_{ijt} \qquad i = 1,...,182 \qquad j = 1,2,3,4 \qquad t = 1,...,12 \tag{2}$$

Where RF_{ij} is a variable to be assessed econometrically associated to the representative firm of the industry i, size j. P_{ijt} is the weighted indicator of the industry i, size j, group t.

Variables

Here we describe the main variables used in our study. We use the ones proposed by Bøhren, Cooper and Priestley (2007) and Akdoğu and Mackay (2008). The set of variables used in the econometric assessments is summarized in the following table:

Table 2: Investment and its determinants (variables)

Variables	Definition	Indicator
Investment	Fixed capital expenditures	Gross fixed capital formation (Value of fixed assets bought during 2003 minus the value of fixed assets sales)
External determinants of investment		
Investment opportunities	Ratio of output to capital	Ratio of production value to fixed capital stock
Market concentration	Market concentration measures	Herfindhal-Hirschman Index Dominance Index
Internal determinants of investment		
Cash flow	Earnings	Net earnings
Firm size	Fixed assets	Total value of fixed assets
Capital intensity	Ratio of capital to labor	Ratio of fixed capital stock to number of employees

This table shows the variables and indicators used in the econometric assessments. The dependent variable is investment. The other variables are the independent variables used in this investigation. The table includes the definitions of the variables according to the Economic Census of INEGI (Mexican Bureau of Statistics).

The measures of market concentration that we use are the HHI and the DI indexes. We do not use representative firms to calculate them. We get 21 sub-sector level measures. We use total number of firms by sub-sector. So we define the HHI as follows:

$$HHI_s = \sum_{k=1}^{n} m_{ks}^2 \qquad (3)$$

Where m_k represents the share of the firm "k" in the total product of the sub-sector "s"; n is the number of firms in the sub-sector "s". The alternative measure called Dominance Index is calculated taking on basis the 12 groups by number of employees reported by INEGI. We get 21 sub-sector level measures in the same way that we calculate the HHI. Firms using similar raw material inputs, similar capital equipment, and similar labor are classified in the same sub-sector. So the DI is defined as:

$$DI_s = \sum M_{ts} \overline{Y}_{ts} \qquad (4)$$

Where M_{ts} is the share of the production of the group "t" in the production of the sub-sector "s"; $\overline{Y}_{ts}$ is the firm average production of the group t, sub-sector s.

Modeling specification and econometric techniques

We use a log-linear functional form specification to describe the relationship between market structure and investment. Such specification allows the regression coefficients to measure the elasticity of investment with respect to each independent variable. Moreover, the log transformation reduces the possibility of heteroscedasticity problems. Thus the model specification is:

$$\log I_{ij} = \alpha_0 + \alpha_1 \log IO_{ij} + \alpha_2 \log CF_{ij} + \alpha_3 \log S_{ij} + \alpha_4 \log MC_{ij} + \alpha_5 \log KI_{ij} + \varepsilon_{ij} \quad (5)$$

where I_{ij} is investment. IO_{ij} represents the investment opportunities. CF_{ij} is cash flow. S_{ij} is the size of the firm. MC_{ij} is the market concentration. KI_{ij} represents the capital intensity. e_{ij} is the random error term.

The analysis relies on several estimations of equation (5). Concretely it relies on two sets of regressions. The first set includes estimations that use the HHI index as measure of market concentration. The second set uses the DI index. Each set is conformed by four regressions that assess how market concentration relates to investment decisions for firms of a specific size (micro, small, medium and large).

We use Ordinary Least Squares (OLS) for estimation purposes in both sets of regressions. In addition, we use specification-error Ramsey tests to validate them. These tests allow us to validate the econometric assumptions regarding the functional specification form and to detect omitted-variable bias. We use them to validate the econometric analysis developed.

EMPIRICAL ASSESSMENT

Table 3 reports the summary of descriptive statistics of the variables. Variable means seem to depend on the size of the firms. This fact supports the necessity to differentiate firms by size. The biggest differences refer to investment opportunities.

Table 3: Summary statistics

	Obs	Mean	Std. Dev.	Min.	Max.	Obs	Mean	Std. Dev.	Min.	Max.
Variables	**Micro firms**					**Medium firms**				
Investment	118	16.66	5.61	3.82	31.48	147	16.91	3.44	5.29	24.98
Cash flow	118	28.28	5.24	9.11	42.73	147	24.53	3.39	8.67	30.90
Firm size	118	26.45	5.01	12.76	40.00	147	22.79	3.40	7.48	31.60
Capital intensity	118	8.86	1.77	0.16	13.65	147	8.51	1.86	3.32	16.52
Investment opportunities	118	-2.09	1.75	-14.01	1.11	147	0.24	1.17	-4.28	2.97
HHI	118	-5.65	0.77	-6.74	-2.04	147	-5.45	0.87	-6.74	-2.04
DI	118	-3.21	1.01	-5.35	-1.11	147	-3.16	1.10	-5.35	-1.11
Variables	**Small firms**					**Large firms**				
Investment	107	24.10	6.18	5.25	38.00	118	22.04	8.57	5.86	37.63
Cash flow	107	40.43	5.67	10.04	51.46	118	31.04	11.11	10.32	47.82
Firm size	107	36.32	5.76	6.51	49.51	118	29.07	10.46	9.44	44.52
Capital intensity	107	12.42	2.44	3.17	21.33	118	10.32	3.72	3.14	19.97
Investment opportunities	107	-1.82	1.60	-5.07	3.53	118	-0.46	1.87	-4.63	3.86
HHI	107	-5.53	0.92	-6.74	-2.04	118	-5.47	0.89	-6.74	-2.04
DI	107	-3.17	1.05	-5.35	-1.11	118	-3.28	1.14	-5.35	-1.16

This table shows summary statistics. It presents measures of central tendency. Also, this table shows the independent and dependent variables used in model specification. The dependent variable is investment. Summary statistics is presented for micro, small, medium and large firms. Values are expressed in natural logarithms.

Table 4 reports the regression outcomes for the first set of regressions. Apparently, the HHI coefficient is positive and significant only for micro firms. Firm size coefficients are positive and significant, independently of the type of firm. In most cases, the coefficients associated to cash flows and investment opportunities are significant.

Investment opportunities and firm size coefficients are positive and significant for small firms. The cash flow coefficient is negatively correlated with investment decisions and is statistically significant. Medium and large firms show similar patterns. In all cases, the results show high values of R^2. In addition, F tests suggest that the independent variables are necessary to explain investment decisions.

Table 4: HHI concentration measures and investment decisions in Mexican manufacturing firms (OLS regressions)

Firm size	Micro	Small	Medium	Large
Regression indicators				
Investment opportunities	0.39 (1.14)	1.91*** (5.36)	1.55*** (3.56)	1.60*** (4.86)
Herfindahl- Hirschman Index (HHI)	0.67*** (2.98)	0.24 (0.92)	-0.056 (-0.35)	-7.50 (-0.70)
Cash flow	-0.40 (-1.21)	-1.62*** (-4.60)	-1.27*** (-2.90)	-1.16*** (-3.55)
Firm size	1.47*** (4.63)	2.70*** (7.44)	2.26*** (4.75)	2.15*** (5.61)
Capital intensity	0.02 (0.24)	-0.06 (-0.44)	0.02 (0.19)	0.02 (0.18)
Constant	-6.57*** (-2.69)	-2.84 (-1.09)	-4.11*** (-3.45)	-3.76*** (-4.91)
Observations	118	107	147	118
F	225.16***	134.10***	109.58***	444.44***
Prob > F	0.00	0.00	0.00	0.00
R^2	0.91	0.86	0.79	0.95

*This table reports results for OLS regressions. They use the Herfindahl- Hirschman Index as a proxy of market structure. The dependent variable is investment. The results are presented for firm size. The t-statistics are given in parenthesis. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Table 5 reports the regression outcomes for the second set of regressions. Here we find that the DI coefficient is a negative and statistically significant for medium and large firms. The coefficients associated to investment opportunities are positive and significant in most cases. Cash flow coefficients are negative and statistically significant. The coefficients associated to firm size are positive and significant in all cases.

Again, the results show high values of R^2. Such values confirm that the explanatory variables can explain investment decisions. F tests confirm that the set of independent variables explains them. So, apparently both sets of regression may provide similar information. The only exception relies on the positive and significant coefficient associated to the market concentration variable for micro firms in the first set of regressions.

Table 5: DI concentration measures and investment decisions in Mexican manufacturing firms (OLS regressions)

Firm size	Micro	Small	Medium	Large
Regression Indicators				
Investment opportunities	0.17 (0.49)	1.87*** (5.23)	1.68*** (3.83)	1.57*** (4.80)
Dominance Index (DI)	0.11	-0.04	-0.20*	-4.43*

	(0.62)	(-0.19)	(-1.66)	(-1.82)
Cash flow	-0.21 (-0.64)	-1.58*** (-4.48)	-1.41*** (-3.18)	-1.15*** (-3.57)
Firm size	1.27*** (3.92)	2.64*** (7.35)	2.40*** (5.01)	2.13*** (5.63)
Capital intensity	0.17 (0.49)	-0.03 (-0.24)	0.02 (0.18)	0.05 (0.50)
Constant	-10.50*** (-4.82)	-4.34* (-1.81)	-4.42*** (-4.38)	-3.53*** (-4.62)
Observations	118	107	147	118
F	207.74***	132.86***	112.14***	456.12***
Prob > F	0.00	0.00	0.00	0.00
R^2	0.90	0.86	0.79	0.95

*This table reports results for OLS regressions. They use the Dominance Index as a proxy of market structure. The dependent variable is investment. The results are presented for firm size. The t-statistics are given in parenthesis. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

We need to support the robustness of our previous results with specification-error Ramsey tests. Such test will allow us to deal with the differences of information. Here we use two versions of such test. The first one, the traditional RESET test, uses powers of the estimated independent variable as regressors. The second one uses exponentials of the RHS variables. In both versions of the test, the null hypothesis is that the model is adequately specified.

The outcomes suggest that, in both sets, the econometric assessments for small, medium and large firms do not have specification errors. The modeled relationships between market concentration and investment decisions seem adequate in most cases. In both sets, the exception is referred to micro firms. For these firms, the regressions suggest the existence of omitted variable-bias and/or incorrect functional forms.

The Ramsey tests suggest that the differences reported between the two sets of regressions should not be considered relevant. In fact, the comparison of the reported outcomes and tests suggest that the regressions that include the DI index might be better than the ones that include the HHI index. We support this statement on the basis that the only significant coefficients associated to the concentration variables appear in the second set of regressions (see Table 5). As we have indicated, the regression of the first set that has significant coefficients has specification errors (see Tables 4 and 6).

Here is important to point out that the outcomes suggest that market concentration effects on investment decisions depend on the size of the firms. According to the regressions with the DI index, it seems that concentration significantly reduces investment for medium and large size firms. When firms are micro or small ones, the evidence is not conclusive due to specification errors and non significant variables.

Table 6: Model validation (Specification tests)

Firm size	**Micro**	**Small**	**Medium**	**Large**
Models with Herfindhal-Hirschaman Index (HHI)				
Ramsey test (H_0: Model has no specification error)	7.06***	0.85	2.24*	0.82
Prob > F	0.0002	0.4720	0.0859	0.4875
Ramsey test, rhs (H_0: model has no omitted variables)	2.66***	0.76	0.80	0.81
Prob > F	0.0020	0.7197	0.6788	0.6655
Models with Dominance Index (DI)				
Ramsey test (H_0: model has no omitted variables	7.68***	0.90	2.35*	0.43
Prob > F	0.0001	0.4465	0.0750	0.7287
Ramsey test, rhs (H_0: model has no omitted variables)	2.84***	0.75	0.74	0.66

Prob > F	0.0011	0.7295	0.7434	0.8123

*This table shows results of Ramsey test. It is used to detect specification errors. This table shows two versions of the of the Ramsey test. Ramsey test (rhs) uses powers of the independent variables. Instead Ramsey test uses powers of the fitted values of the dependent variable. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

We conclude by indicating that the evidence supports the view that market concentration reduces investment, at least in medium and large firms. Thus, according to our results, competition may promote investment. Furthermore the evidence provides elements to support the statistical adequacy of the DI index as an alternative measure of market concentration. Moreover, the results suggest that the regressions that include the DI index might be better than the ones that include the HHI index.

DISCUSSION

Here we have assessed the relationships between market structure and investment decisions in the Mexican manufacturing firms. The assessments suggest that market concentration may reduce investment, at least in medium and large firms. Thus, competition may promote investment. Furthermore, they suggest that certain firm characteristics may be useful to explain investment decisions. Particularly, firm size seems an important determinant.

However, it is interesting to point out that some findings seem counter intuitive. For example, capital seems not to influence investment decisions. Furthermore, cash flows seem to have an inverse relationship with investment. We believe that such findings may be explained on the basis that manufacturing firms are intensive in labor. When firms are labor-intensive, investments may rely on new “costly” workers that reduce cash flows.

Methodologically, the assessment procedure seems useful to explain the investment decisions of small, medium and large firms. Furthermore, it supports the hypothesis that investment decisions in micro firms may depend on other determinants, in addition to the market structure ones. Ekanem and Smallbone (2007) include, among these determinants, the intuition, the social networks and the experience of the entrepreneurs.

Empirically, we believe that the most interesting findings relate to the usefulness of the different market concentration measures. Our econometric assessment suggests that the Dominance Index (DI) is a better determinant of investment decisions than the Herfindahl-Hirschman Index (HHI). In practice, this finding implies that the degree of competition can affected by differences in the size of the firms in the market. Thus regulators may need to consider these differences when dealing with competition issues.

We conclude by indicating that our findings have implications for regulatory and policy purposes. Probably, the most important one is associated to the necessity to promote the Dominance Index as an alternative measure of market competition. Another relates to the necessity to encourage competition among the Mexican firms in order to increase investments in the manufacturing sector. Finally, a third one relates to the necessity to encourage studies on the determinants of investment in micro and small size firms.

CONCLUSIONS

We have studied how alternative measures of market concentration, as proxy indicator of market structure, may explain investment decisions of Mexican manufacturing firms. Here we have focused on the HHI and the DI measures. We have developed an econometric analysis that uses data for the last census available in Mexico (2003). We have controlled by firm size, cash flow, capital intensity and investment opportunities.

Methodologically, the empirical study has relied on two regression sets. The first set includes estimations that use the HHI index as measure of market concentration. The second one includes estimations that use the DI index. We have used OLS techniques for estimation purposes. In addition, we have used Ramsey tests to validate the econometric outcomes. We have used the census to build the indicators of the 182 industries that integrate the Mexican manufacturing sector.

Our findings confirm that market structure may influence investment decisions. Concretely they suggest that concentration may reduce investment. They also suggest that the DI index is a better determinant than the HHI one. Furthermore, they suggest that firm size and investment opportunities have a direct relationship with investment. Cash flows, on the other hand, have an inverse one. Interestingly, capital seems not related to investment decisions.

We believe that our study provides some ideas for further research in addition to the ones regarding regulatory and policy issues. For example, extensions of our analysis may be used to analyze investment decisions in firms that provide financial and non-financial services. The "Economic Census 2008", when available, may provide data useful for comparison purposes. Finally, our results also suggest that further studies on the determinants of investments in micro and small firms may be necessary.

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