Financial Dependence and Economic Growth:
SME Evidence

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Abstract

This paper is intended to contribute to the debate on the consequences of the external financing needs of Small and Medium Enterprises (SMEs) for their economic growth. This paper differs from previous research in that it uses investment flows that cannot be financed with generated cash flows as a proxy of external financing. The results obtained show that financial dependence explains the economic growth of SMEs but there are also other important explanatory variables such as financial development.

The paper presents sounder conclusions for SMEs if the obtained results stem from independent subsectors in SMEs, especially in countries where there is a higher percentage of smaller companies, which do not respond to the model considered in the same way.

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Dependencia financiera y crecimiento económico: **Evidencia en PYME**

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Resumen

En este trabajo contribuimos al debate de los efectos de las necesidades financieras externas de las empresas sobre el crecimiento económico. Nuestra investigación se distingue por utilizar como proxy de dependencia financiera externa de pequeñas y medianas empresas (PYME) los flujos de inversiones que no pueden ser financiados con cash flows generados. Los resultados obtenidos indican que la dependencia financiera explica el nivel de crecimiento económico de las PYME, y que también son significativas otras variables de control como las de desarrollo financiero.

Aportamos, evidencia de que se consigue una mejor robustez de las conclusiones sobre PYME si los resultados provienen de subsectores independientes de pequeñas y de medianas empresas, sobre todo en países con alto porcentaje de compañías de muy pequeña dimensión que no responden de igual forma a la modelización planteada.

Palabras clave:

PYME, crecimiento económico, desarrollo financiero.

■ 1. Introduction

This paper studies the relationship between the economic growth of companies and the use that they make of external financing. Current research indicates that more efficient the the process of intermediation (financial development), the lower the costs of such intermediation and, consequently, the higher the economic growth. Furthermore, we consider that the use of external financing increase efficiency in capital allocation, because funds are channelled to more profitable companies.

Our aim in this paper is to contribute to the debate on the consequences of SME external financing and efficiency in capital allocation by analysing the above mentioned consequences on industrial SMEs.

In order to do so, we are going to develop a model in which the external borrowing requirements of a sector should have an effect on the efficiency of capital allocation. That is, the companies that use more external financing, increase their capital allocation efficiency. In the case of Spanish industrial SMEs, we present new evidence of the relationship between company growth and the level of external financing dependence using the measure proposed by Rajan and Zingales (1998).

We will demonstrate that external financing needs are positively related to efficient capital allocation, even after controlling with variables of financial development.

The model we propose complements previous models, which address the consequences of restricted financial market operations and efficient capital allocation (Levine, 1991; Bencivenga *et al.*, 1995; Almeida and Wolfenson, 2005; Beck *et al.*, 2008). In this context, our analysis differs due to using SME external financial dependence as a proxy of investment flows that cannot be financed with the cash flow generated, in line with the original measure of dependence proposed by Rajan and Zingales (1998). Therefore, the model presented here is not the first to examine the effect of external financing on (economic) growth. Both Rajan and Zingales (1998) and also Maudos and Fernández de Guevara (2006) used this relationship between variables, but did not analyse in detail the relationship between investments/cash flow generated in SMEs. The results regarding external financing needs and capital allocation provide strong evidence that in Spain the analysis may be of interest in certain industrial sectors and for small companies.

The paper is organised as follows: Section 2 reviews the existing specialised literature. Section 3 develops the applied methodology. Section 4 presents the data used and Section 5 the results obtained. Lastly, Section 6 presents the main conclusions of the research.

■ 2. Literature Review

Current research suggests that capital allocation efficiency depends, *inter alia*, on variables such as the external financing needs of SMEs (Almeda and Wolfeson, 2005). Likewise, there have already been several empirical studies relating economic growth to financial development (Rajan and Zigales, 1998; Levine and Loayza, 2000; Beck *et al.*, 2008).

Some other studies put the emphasis on the role played by banks within the system (Gershenkron, 1962) and the importance given to government policies relative to financial development and economic growth (Demirgüç-Kunt and Levine, 2008). There are also other pundits who put the emphasis on market advantages over banks, as far as capital allocation is concerned (Allen, 1993). Even the efficiency of the legal system when it comes to protecting external investors is defended as the main guide variable for the financial system (La Porta *et al.*, 1998). It has been shown that when the legal system protecting any country's investors is not too low, the financial resources released during the liquidation of companies, which has been induced by external investors, will find their own way to more productive activities (Almeida and Wolfenson, 2005). Likewise, Wurgler (2000) finds evidence that measures taken to help develop financial development and protect the external investor are positively related to efficiency in capital allocation. Studies by Levine (1991), Bencivenga *et al.* (1995), and Sheilfer and Wolfenzon (2002) obtain similar results.

As regards SMEs, current research has not yet resolved how to distribute the effects of financial development over economic growth. (Demirgüç-Kunt and Levine, 2008). The work by Galor and Zeira (1993) and Cestone and White (2003) uphold that frictions due to the cost of transactions and asymmetric information are offset by the development of the financial system proper, which has a positive impact on SMEs. These authors also state that an increase in the property rights of investors helps increase external financing in SMEs a lot more than in large companies (Beck *et al.*, 2004).

Notwithstanding the above, another line of research obtains different results, upholding that the greater transaction costs faced by SMEs result in large companies growing with a certain edge over the former (Greenwood and Jovanovic, 1990; Haber *et al.*, 2003).

So, external borrowing requirements can improve capital allocation, even when generating inefficiencies at company level, which will provoke, in the same manner, excessive growth. External investors would rather terminate mediocre projects as they can only obtain a small proportion of future returns from them. However, in the absence of external financing such investors prefer not to terminate such projects because they maintain the entirety of their returns. Thus, it would seem logical that

companies in need of an increase in external financing will be liquidated more often than those that are self-financed. While complete liquidation might seem appropriate for one company in particular, it could be socially beneficial due to the funds channelled from mediocre projects to highly productive projects, thereby improving capital allocation (Diamond, 1991).

As we have mentioned, the models that relate the external financing dependence of companies to economic growth tend to consider that an increase in said dependence would lead to better capital allocation (Goldsmith, 1969; Levine and Zervos, 1998; Shleifer and Wolfenzon, 2002; Demirgüç-Kunt and Levine, 2008). Almeida and Wolfenzon (2005) explain how such relationships of dependence correlate with each otherthrough the possibility that companies with a low-productivity rate should tend to liquidate their projects. This is precisely the role that external financing plays at the outset. If financial requirements are high enough, the only way a business can pay investors is by means of liquidation at the cited initial stage. Accordingly, it is thought to be less expensive to liquidate a project when its productivity is low than when it is high. If liquidation is necessary for initial financing, the perfect contract will require the liquidation of low-productivity projects in the first place. According to this theory, the behaviour of market reassignment at the initial stage means that the existence of balance between supply and demand of funds is not guaranteed. On the supply side, there is a total of $K+T_a$ resources to be allocated, K being the total spare capital available to the market and T_a the capital from the projects liquidated at this initial stage. This quantity is determined by the contract that entrepreneurs register previously. In other words:

$$T_a = \int_{j \in C} d_j \qquad (1)$$

where C is the number of projects running and j identifies every investor. Thus, for a distribution r_j over the capital market, the balance has to agree with both the maximization of the investor and satisfy the market compensation condition:

$$\omega + \int_{j \in C} r_j d_j = K + T \qquad (2)$$

where ω is the number of resources allocated to technology in general.

In short, parts of the capital allocated to projects liquidated are now geared towards high-productivity projects, considerably improving the total sum. External investors demand liquidation due to this being the only way of recovering their investments. Although this compulsory liquidation is, in terms of an individual company, clearly inefficient, it is beneficial for the economy of the company as a whole, as the additional funds supplied to the external market will be in the hands of better users (Diamond, 1991).

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In order to illustrate the main mechanism of their model, Almeida and Wolfenzon (2005) use a similar expression to that shown in Figure 1. At an initial stage, (a), the return in the market, $x*$, is:

$$x* = x\,(K + T_a) \qquad (3)$$

K being the spare capital, and T_a the low-productivity liquidated projects' global collection over this period. In this case, even if high-productivity companies are the best users of that capital, they cannot attract any capital because market yield is higher than the highest yield they can provide, Y_H, that is to say:

$$x* > Y_H \qquad (4)$$

Then, bearing in mind that highly productive companies can no longer attract new capital, it would also be most appropriate, from a social perspective, to liquidate medium-to-low productivity projects in order to pass on their capital to high productivity projects. However, this reassignment does not happen voluntarily. Companies with medium productivity projects generate cash flows of Y_H if they continue. If these projects are liquidated and the capital recovered is invested in the market, they receive the quantity $x*$ of the expression (3). But if one corroborates that:
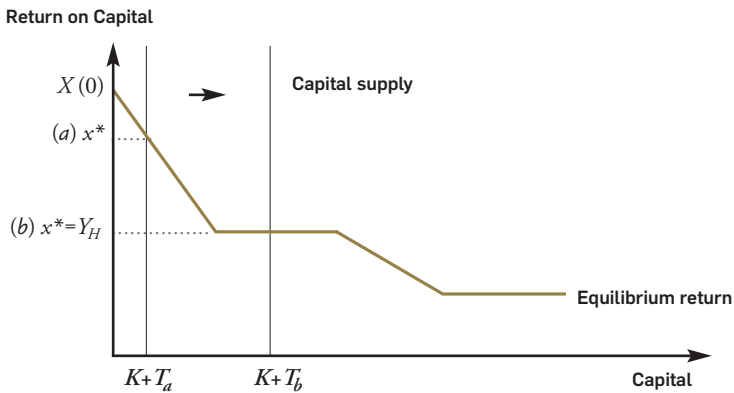
$$x\,(K + T_a) < Y_H \qquad (5)$$

then companies with projects of medium productivity will not be liquidated, but will rather continue. In keeping with the foregoing, capital allocation is misrepresented for two reasons: high-productivity companies cannot attract the capital that is available for assignment, and projects with medium productivity choose not to liquidate, allocating their capital instead to those high productivity companies.

The balance at a later time, represented by (b) in Figure 1, reflects the process when liquidation is necessary for financing and the new balance in the assignment of resources will demand that these projects of medium productivity be liquidated. That is why the new capital supply, $K + T_b$, is greater than in (a):

$$K + T_b > K + T_a \qquad (6)$$

In this case, the additional capital makes the market bearish in order for high productivity companies to attract resources. In other words, some of the capital released by liquidated projects finds its way to high productivity projects, potentially improving total profits.

■ Figure 1. **Equilibrium return as a function of capital supply**

■ 3. Methodology

In this paper, we intend to confirm the hypothesis that the external financing needs of Spanish industry help to increase the efficiency of capital allocation in SMEs. This is the same as considering the results of financial development on economic growth.

Furthermore, the level of dependence on external financing of all the companies analysed is based on considering the existence of a specific environment, such as a developed and qualified financial market, where companies should not face constraints in the access to financing. The choice of a developed country for the analysis is a way of avoiding the issue of distinguishing between supply and demand of financing, as the higher the level of financial development a country has, the less friction there will be in the access to financing (Rajan and Zingales, 1998; Maudos and Fernández, 2006).

In this regard, we believe that external financing needs have an exogenous component. Previous literature on this issue has argued that, due to technological reasons, the need for external financing at industry level would be, up to a certain point, exogenous and might be measured by the current use of external financing on a fairly well developed capital market (Rajan and Zingales, 1998).

This first hypothesis implies regressing the amount of economic growth, that is to say, comparing the increase in sales to the internal rate of return of every company, over the need for external financing and controls, in keeping with the proposal made by Rayan and Zingales (1998). The test is based on ascertaining whether the companies most dependent on external financing can experience high rates of growth, once certain features of financial development of every unit are under control.

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Consequently, the model follows as:

$$Growth_{i,t} = Constant + \beta_1\ Financial\ dependence_{i,t} + $$
$$+\beta_2\ Financial\ development_{i,t} + \varepsilon_{i,t} \qquad (7)$$

where *Growth* is a dummy variable that takes a value of 1 when the company *i* increases its sales more than expected, due to the internal rate of return (excess of growth) during period *t*, and 0 otherwise; *Financial dependence* is the independent variable measured by the flow of investments carried out by a company that cannot be financed by cash-flow generated (Rajan and Zingales, 1998); *Financial development* represents a group of variables of control on the relative volume that every company generates and on its asset profitability. It brings us closer to the degree of efficiency accomplished by companies on a financial level, in a similar way to Almeida and Wolfenzon's (2005) proposal in regard to financial intermediaries. Lastly, β_i are the regression coefficients and ε the error term.

Our work, in addition, considers size so as to identify the specific effect on SMEs; accordingly, we include a new independent variable, *Size*, which refers to the number of contracted workers and which is represented in the model by a dummy variable. It takes a value of 0 when a company has fewer than 50 workers (small enterprise) and 1 when the number of workers ranges from 50 to 250 (medium-sized enterprise)[1].

Thus the model is as follows:

$$Growth_{i,t} = Constant + \beta_1\ Financial\ dependence_{i,t} + $$
$$+\beta_2\ Financial\ development_{i,t} + \beta_3\ Size\ dummy_{i,t} + $$
$$+\varepsilon_{i,t} \qquad (8)$$

Continuing this methodological trend, regression in our case is binomial logistic and consists of obtaining a linear function of the independent variables, such that the SMEs in the sample can be classified under one of the two possible sub populations or groups, depending on their growth.

The coefficients of the independent variables are obtained by models of conditional probability through a dependent dichotomous variable. The model of logistic regression is based on the quotient of possibilities that represent the probability of success as compared to the probability of failure. The quotient of possibilities is formulated as follows:

$$P(E)\ /\ (1-P(E)) \qquad (9)$$

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[1] *Commission Recommendation 2003/361/EC of 6.05.2003 concerning the definition of micro, small and medium-sized enterprises [Official Journal L 124 of 20.05.2003].*

where $P(E)$ is the probability of success. In addition, the logit model can be formulated as a linear function of different and independent variables, using the formula:

$$Log \{P(E) \mid (1-P(E))\} = \beta_0 + \beta_1\,X\,\beta_1 + ... + \beta_n X_n \qquad (10)$$

where β_0 is the intercep; β_1, β_2, β_3 and so on are the coefficients of the independent variables (the regression coefficients), and x_1, x_2, x_3 respectively are the values of such variables of control.

In the model, the estimated values of the dependent variable can be interpreted as a prediction of the probability of a favourable event, with values between 0 and 1. In this paper, the estimated value of the dependent dichotomous variable is interpreted as a prediction of the probability that a company had grown in the period of study $P(E)$. Thus, calculating the value of $P(E)$ in expression (10), the prediction of the probability of growth is defined as:

$$P(E) = e^y \mid (1 + e^y)$$
where e is the base of natural logarithm and
$$y = \beta_0 + \beta_1\,X\,\beta_1 + ... + \beta_n X_n \qquad (11)$$

The companies in the sample are classified under the so-called groups of "growth" and "without growth" by the logit value (y) of the model described in (11), which establishes that companies with $P(E)$ equal to or lower than 0.5 should pertain to the group of companies "without growth". When the values are higher than 0.5, they are classified as "growth" companies. Using the values obtained from the logistic regression, it is possible to ascertain, on the one hand, the average probability of attaining growth both in the case of an SME that possesses certain structural characteristics and a group of SMEs that has certain types of factors in common, and on the other hand, the logistic calculations will allow us to observe the group of variables that act with greater intensity.

In addition to the foregoing, we also propose a statistical exploratory study of the available data on the variables to achieve a first approach to the issue. It is a question then of verifying the expected performance and homoscedasticity of the variables, of observing data averages and anomalies and of detecting and filtering outliers. As customary in exploratory techniques, we have obtained different measures of the central trend (mean, median), of dispersion (variance, standard deviation and range), of skewness and kurtosis (Fisher's coefficients) and position (quantiles and Tukey's box plot). Likewise, expected performance has been verified both in Kolmogorov-Smirnov's test for a sample and Shapiro-Wilk's test.

■ 4. Data

In this section, we will summarise the implications of our model by comparing them to the emirical evidence available and present new contributions regarding the financial behaviour of SMEs. This work is a pioneer study in that it provides evidence on SMEs, in accordance with Rajan and Zingales's (1998) original model; that is to say, by presenting a measure of financial dependence of SMEs arising from the flows of investments that cannot be financed by means of generated cash flows.

In order to determine the main explanatory variables of the economic growth of SMEs, we have used the financial information of a sample of 329 industrial Spanish companies for the period 2001 to 2008, which resulted in a sample including 2,632 observations. The information comes from the comparable financial databases AMADEUS and SABI compiled by Bureau Van Dijk Electronic Publishing, which contain financial information on more than 7 million European companies. The SMEs were selected in accordance with the NCEA Rev.1.1. and NCEA-2009 classifications by means of random stratified sampling, which will allow to infer the population results with a 95% confidence level and a sampling error of below 2%.

The research consists of establishing the relationship between the growth of the different businesses in the sample and their financial dependence, while also obtaining information on the coefficients, the goodness-of-fit and individual and group significance, which will be shown below.

In an initial exploratory analysis (see Table 1), we verify the characteristics of the key variables in the study. For the period 2001 to 2008, the sample offers an average volume of assets (ACT) of € 4.5 million and an average level of employment (EMP) of 24 workers, reflecting the SME nature of the sample, and also the profile of micro or small-sized enterprise that characterises Spanish industry. Furthermore, the ROA indicator records an average of 5.08%.

● Table 1. **Financial Development, Size and Financial Dependence**

No. of businesses: 329
No. of observations: 2,632
Period of time: 2001-2008
SME Criteria: Turnover < € 50 million and Employment < 250 workers; ACT is the amount of total assets on company financial statements; EMP is the level of employment during the period; INV measures the increase in investment during the period of study; CFG is the generated cash-flow; DFE is the variable of external financial dependence of the company, and ROA is the profitability on assets.
INV, CFG and DFE in 10^3 € .

Variables Units		Mean	Median	Stand. D.	Max.	Min.
Descriptive terms:						
ACT	10^3€	4,682.25	675.77	11,082.52	149,011.19	4.27
EMP	No. of workers	24.33	9.00	40.21	248.00	1.00
ROA	Return on assets (%)	5.08	4.85	10.77	116.13	-113.63
Calculation of financial dependence:						
INV	(Asset $_j$ - Asset $_{j-1}$)	420.19	20.92	2,674.11	62,191.79	-29,143.88
CFG	(Net profit + amortisations)	340.10	45.92	1,088.64	16,608.06	-9,477.39
DFE	(INV – CFG)	80.09	-11.17	2,459.37	54,736.79	-34,694.06

Table 1 also shows the results of calculating the financial dependence of the sample, using a comparison between the growth in investment and the cash-flow generated in the period for that purpose. We can therefore verify an average annual investment (INV) of € 420,190 and a total of € 340,100 in generated resources (CFG), which has resulted in average financial dependence being positive at € 80,090 and that external financing needs (DFE) amount to the foregoing figure.

■ 5. Empirical Results

Table 2 shows the results of the logistic regression performed, which refers to the relationship between economic growth and the independent variables selected. The results indicate that financial dependence accounts for the level of growth of SMEs and that other variables of control are also significant, such as financial development and size.

● Table 2. **SME Growth and Financial Dependence**

Table 2 shows the results of the logistic regression, taking Growth as a dependent variable. The estimated model is:

$$Growth_{i,t} = Constant + \beta_1\ Financial\ dependence_{i,t} + \beta_2\ Financial\ development_{i,t} + \beta_3\ Size\ dummy_{i,t} + \varepsilon_{i,t}$$

Growth is a dummy variable that takes a value of 1 when the sales of company i grow more than expected due to the internal rate of return during period t and 0 otherwise; Financial dependence is the independent variable, measured by the flow of investments that cannot be financed by the generated cash-flow; Financial Development represents a variable of control that estimates the degree of efficiency achieved by financial intermediation through the generated cash-flows and Size controls for volume through the level of employment, taking a value of 0 when the SME has fewer than 50 workers and 1 otherwise; β_i are the regression coefficients and ε the error term.

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Explanatory variables	Coefficients	Odds ratio
Constant	0.8970 ** (30.7490)	2.4530
Financial dependence	0.0005 ** (74.5260)	1.0000
Financial development	0.0003 ** (16.0790)	1.0000
Size dummy	-3.5900 * (4.8020)	0.6800
Chi-square	91.0380 P = 0.000	
Log-likelihood	3127.948	
Correct predictions	66.80%	
Number of observations	2,632.00	

*p<0.05, ** p<0.001
t-statistic in brackets.
Estimations based on maximum likelihood

The value of the Chi-square is used to test the overall significance of the model and confirms the null hypothesis that all the coefficients in the equation, except the constant, are null. The results of this test allow us to reject the null hypothesis and accept the model as valid.

In order to assess the suitability of the model, we compare the number of cases observed to those predicted by the estimated model. In our case, the prediction power of the model, measured by the percentage of success, is 66.80%, taking 0.5 as a cut-off point.

In the model, the estimated coefficient associated with the explanatory variable *Financial Dependence* is significant at 1% and displays a positive sign, by which one can infer a strong relationship between levels of growth and financial dependence. This conclusion is in line with both Rajan and Zingales (1998) and Almeida and Wolfenson (2005). Likewise, the *Financial Development* variable also exerts a considerable influence on SME growth and one can see in Table 2 that the coefficient linked to this variable is significant at 1% with a positive sign, showing that financial development is also directly related to SME growth, in keeping with the results obtained by both Levine and Zervos (1998) and Shleifer and Wolfenzon (2002). Finally, and regarding the *Size* variable, results show that this variable is clearly statistically significant at the 5% level, and with a negative coefficient, confirming the reverse effect of SME size on growth.

Due to verifying the influence that size has, that is to say, that the smallest companies are those which achieve greater growth, we can obtain a more robust model by analysing sensitivity of the results using two further tests:

1) By excluding larger companies (ME) from the sample, taking only those with less than 50 employees on average, thus fulfilling the criterion of Small Enterprises of the Commission Recommendation 2003/361/EC concerning the definition of micro, small and medium-sized enterprises (SE); and

2) By incorporating MEs and excluding SEs. The tests are performed taking equality (2) basically as an analytical reference.

Table 3 presents the results of the foregoing propositions. If we compare predictive power, the new tests seem ideal, especially where MEs are concerned, as 80% of predictions are correct. However, in the case of SEs, only 65% of predictions were correct.

● Table 3. **SME Growth, Financial Dependence and Size**

Model (1) shows the results of the logistic regression applied to the companies in the sample classified as SEs (Micro and Small Enterprises): criterion <50 workers; model (2) shows the results of the regression applied to the companies classified as MEs (Medium-sized Enterprises). Criterion: 50 <workers <250

Relationship between growth and the explanatory variables is estimated using the model:

$$Growth_{i,t} = Constant + \beta_1\ Financial\ Dependence_{i,t} + \beta_2\ Financial\ Development_{i,t} + \varepsilon_{i,t}$$

Growth is a dummy variable that takes a value of 1 when the sales of company i grow more than expected due to the internal rate of return during the period t , and 0 otherwise; Financial dependence is the independent variable, measured by the flow of investments that cannot be financed by the generated cash-flow; Financial Development represents a variable of control that estimates the degree of efficiency achieved by financial intermediation through the generated cash-flows, β_i are the regression coefficients and ε the error term.

Explanatory variables	(1) Coefficient	Odds ratio	(2) Coefficient	Odds ratio
Constant	0.5200 ** (119.6080)	1.6820	0.9330 ** (32.3310)	2.5420
Financial Dependence	0.0086 ** (49.3580)	1.0000	0.0036 (33.5280)	** 1.0000
Financial Development	0.0056 ** (15.7020)	1.0000	0.0017 * (4.5540)	1.0000
Chi-square	81.908 p=0.000		16.320 p=0.038	
Log-likelihood	2776.374		343.446	
Correct predictions	65.00%		80.00%	
Number of observations	2,196.00		344.00	

* p<0.05, ** p<0.001
Statistic in brackets
Estimations based on maximum likelihood

The positive relationship between external financing needs and Levine and Loayza's (2000) measure of economic growth remains after controlling for the financial development of the SMEs. However, this relationship appears more robust in the case of medium-sized enterprises (MEs), which confirms the importance of size, even within the sample of Spanish SMEs, with a large percentage of micro-enterprises that do not respond in the same way to the considered model.

■ 6. Conclusions

In this work, we have used the financial information of a sample of Spanish industrial SMEs referring to the period 2001-2008 to obtain empirical evidence on the impact of external financing needs on economic growth.

We find that external financing needs increase the measure of companies' growth and that this growth is also influenced by company financial development. Both variables of control turned out to be significant and directly relatedto SME growth, although a more in-depth analysis could be required to firmly establish this conclusion. As a case in point, one can observe the importance that size has within the group of Spanish SMEs, with a higher percentage of truly small-sized companies, which do not respond in the same way to the model considered and for which a greater dependence of external financing has a less immediate impact than in the case of medium-sized companies.

Furthermore, we believe that the mechanism described in this paper can help to explain the levels of development of SMEs and the differences in regard to large companies.

The results on the size of the SMEs in the sample were significant, allowing us to obtain a better prediction of the model by means of analysing the reliability of results with two new tests, one focusing exclusively on small-sized enterprises and the other only on medium-sized enterprises.

In fact, the positive effect of external financing needs on a company's growth is revealed to be more robust in medium-sized companies dimensión. This suggests that in countries where SMEs are generally small, as is the case in Spain, external financing can influence capital allocation efficiency through other mechanisms. Therefore, it might be interesting to explore alternative data that allow to control using variables capable of detecting restrictions in the access to financing of small-sized companies.

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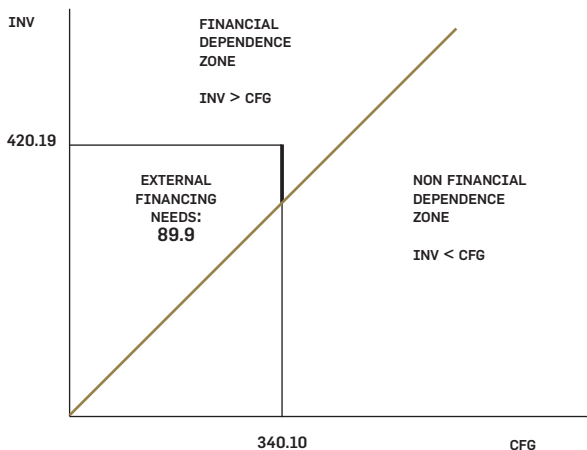
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■ Appendix

● Table 4. **Definition of variables**

	Description
Volume of assets (ACT)	Total assets on company financial statemets (in thousands of €).
Level of Employment (EMP)	Average number of workers.
Investment Growth (INV)	Asset change rate with respect to the previous period.
Cash Flow Generated (CFG)	Cash flow generated by operations during the period of study.
External Financial Dependence (DFE)	Difference between INV and DFE. A DFE positive value indicates the existence of external financing needs. A negative value indicates that a company can finance growth in investments with the cash flow generated and, consequently, there is no need for external financing.
Return On Assets (ROA)	Percentage of profits before financial expenses on total assets.
Growth	Dummy variable that takes a value of 1 when the sales of company i grow more than expected due to the internal rate of return and 0 otherwise.
Financial Development	This variable represents a group of variables of control on the relative volume that every business generates and on the profitability of its assets.
Size (TAM)	Dummy variable that takes a value of 0 when a company has fewer than 50 workers and 1 when the number of workers ranges from 50 to 250.

■ Figure 2. **Average Financial Dependence of Spanish SMEs, 2002-2008**

Figure 2 shows the external financing needs of Spanish industrial SMEs in the eriod 2002-2008, calculated by the difference between the average increase in investment during the period of study (INV) and the average cash-flow generated (CFG). These positive needs of financing cause the existence of an average external financial dependence of €80,090.00 (INV and CFG in 10³).

SOURCE: THE AUTHORS