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TAXES AS DETERMINANTS OF BUSINESS INVESTMENT : EMPIRICAL EVIDENCE IN SPANISH COMPANIES THAT ARE NOT LISTED ON THE STOCK MARKET

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Abstract

This article analyzes whether the desire to avoid future tax payments , calculated in terms of net deferred taxes that are recorded in companies' balance sheets, could be established, together with the explanatory factors documented in the previous literature, as a determinant of business investment . Our empirical analysis provides solid results showing that future tax payments are an additional motivation for making decisions investment . However , our findings also show that, to a certain extent, tax motivations could explain situations of overinvestment, although the evidence obtained from these episodes shows moderate statistical significance.

Introduction

The purpose of this work is to empirically analyze whether the desire to avoid future tax payments, captured through the net deferred taxes that are recorded in the companies' balance sheets , could be established , together with the documented explanatory factors. in previous literature, as a determinant of business investment . The empirical evidence available in the literature leaves unequivocal evidence of the decisive influence of taxes on corporate decisions [1] , which according to Slemrod (1992) affect 3 types of issues: the selection of the moment to carry out transactions , the choice of financial alternatives and the adoption of real

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decisions. The way in which taxation affects investment falls into the 3 categories, and our interest is focused on knowing to what extent the information available in the states financial information about the position) .

future tax of companies, represented, as we will explain later, by deferred taxes, contributes to explaining investment activities and makes possible, as Fernández Rodríguez, Martínez Arias and Álvarez García (2003) write , the emergence of arbitration or planning processes fiscal.

Although it is well described in the literature how the marginal tax rate affects financing decisions and it is precisely documented how highly taxed firms tend to exhibit high levels of debt taking advantage of the tax deductibility of interest (Mackie- Mason, 1990; Graham, 2006b; Graham, Lemmon and Schallheim, 1998), we are not aware of previous works, to the best of our knowledge, that address the empirical analysis of the relationship between future tax payments, approximated by the information contained in the financial statements, and business investment. And we do not have any studies on the link between taxes and overinvestment, except for the conjectures of Inger (2014) on this issue.

The study by Laux (2013) provides evidence compatible with the hypothesis that deferred taxes provide information, albeit reduced , on future tax payments , but is limited to documenting this finding without going into analyzing to what extent the desire to avoid greater payments in future years could explain certain business decisions.

Our main contribution consists, precisely, in complementing the evidence documented for the United States by Laux (2013) based on a large sample of unlisted Spanish companies , analyzing whether tax information in the financial statements allows inferring the direction of future tax payments. In the event that such accounting

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information makes it possible to predict an increase in the future tax burden, incentives could be generated to undertake investment projects , which would reduce the tax base of the Corporate Income Tax in subsequent years by increasing the provisions for the amortization of assets, financing them where appropriate with debt and, in addition, generating deductions.additional tions in the quota, thus mitigating the amount of upcoming tax settlements. Furthermore, our work also provides evidence for the Spanish regulatory framework , in which, to the best of our knowledge, no empirical studies of this nature have been carried out.

If this behavior is confirmed, the investment decisions would form part of the companies ' tax planning strategies , understood as the set of actions and measures aimed at reducing or deferring, within the applicable regulatory framework , the tax burden . . Therefore, and in this context, tax motivations would be a determinant of investment , that in this way they would also be affected by the risks that are characteristic of fiscal planning , since the objective of reducing fiscal payments will always be , as Hanlon and Heitzman (2010) and Rego and Wilson (2012) maintain , at the expense to take greater risks.

But it is also possible that if taxation encouraged investment processes, it could happen, as Jensen (1986) suggests , that managers would grow their companies beyond their optimal size , incurring episodes of overinvestment, which would be the main risk inherent to the investment induced not exclusively for business reasons itself, but for additional motivations of a tax nature. For this reason, our work also addresses the study of this possible inefficiency associated with the desire to avoid future tax payments.

We also find it necessary to highlight that our work refers to the context of Spanish unlisted companies , and both circumstances condition the research design and

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our empirical findings . Thus , all the available literature , both theoretical and empirical , refers to listed companies , in which the formidable pressure exerted by the capital market , especially to show results that live up to expectations of investors and analysts , conditions investment decisions in a way that never occurs in unlisted firms , in which the main restriction on investment is their financial capacity . But, in addition, our study is carried out based on a sample of Spanish companies , so the regulatory framework in which it is inserted inevitably stands as a second conditioning factor of the design . ~ or empirical. Indeed , although fiscal incentives for investment are established in all countries, incentives such as, for example, accelerated amortization, which have been present in North American regulations since 1954 , in Spain they are relatively recent until their elimination in March 2012, or the deductions from the investment fee, whose application, conditions and limitations are very different in each regulation . And also certain restrictions, such as the deductibility of financial expenses or the compensation of negative tax bases , which are very different in each jurisdiction and even different from year to year within the same jurisdiction . All of this, as we say, requires an approach to our research that must necessarily adapt to the specific circumstances of the Spanish case and in a context of no stock market listing . _ _

The rest of our work is organized as follows. In the second section we address a brief review of the closest literature ; In the third we describe the design of our research, we propose the hypotheses that will subsequently be tested and we describe the empirical specifications; In the fourth we explain the sample formation process, its main descriptive statistics and the existing correlations between the selected variables; In the fifth we present and discuss the main empirical results obtained; In the sixth we carry out some extensions and complementary tests in

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order to ensure the robustness of our findings, and in the seventh and last we describe the main implications, conclusions and limitations of our study.

Literature Review _ _

As we have described, our work aims to study to what extent the desire to mitigate future tax payments could explain companies' investment decisions . This analysis can be carried out because the financial statements contain information about the direction that tax payments will take in coming years , and for this reason , our contribution is situated in the line of research that studies the link between accounting information, taxation and investment, and which is currently still insufficiently addressed.

Before addressing the design of our research ,it seems relevant to take a brief tour of the literature that links investment decisions and tax incentives , in order to place our work in its appropriate context , which will allow a better understanding of the control factors that we will later introduce into the models that we propose for the empirical contrast of the hypotheses that we will formulate. In our opinion, empirical studies have evolved from the use of aggregate data , aimed at evaluating public policies , to the empirical analysis of companies' fiscal decisions, which has been possible thanks to the most recent utilization of microeconomic data, providing greater richness to the available evidence. In any case, the conceptual roots of the relevant literature on the issue are traced in the seminal works of Jorgenson (1963) , Hall and Jorgenson (1967) and Tobin (1969) , which, in the wake of neoclassical economics , start from the central idea that companies seek to maximize their profitability, and at the service of This objective would be

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investment decisions , encouraged , among other factors, by the rate of depreciation of assets and the fiscal stimuli available .

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In the neoclassical model initially specified by Jorgenson (1963) and later developed by Hall and Jorgenson (1967) , its empirical contrast confirmed the effectiveness of investment incentives . Until then , the impact of fiscal policies had not been addressed , until point of stating that " *the effectiveness of fiscal policies is a matter of faith among economists* " (Hall and Jorgenson , 1967 , p . 391), and their *results* highlighted how fiscal stimuli generate effects *on the* level of investments, determine the moment of undertaking them and influence the specific type of asset to invest. The investment deduction was revealed as the most powerful of the stimuli, followed by the freedom of amortization, accepted for tax purposes in the United States since 1954 .

For Tobin (1969) , investment decisions are based on expected profitability , and therefore the only predictor of the level of investment of firms is the marginal change in the ratio *q* , defined as the quotient between the market value of the assets and their replacement cost , so that the Companies would invest until the marginal benefit derived from the investment equaled its marginal cost . Their theory was confirmed by Summers (1981) and Desai and Goolsbee (2004) with aggregate data and by Fazzari, Hubbard and Petersen (1988) with a panel of companies, although they qualified and relaxed the neoclassical approach to suggest that investment decisions are also sensitive to other variables, particularly the level of cash flow , that is , internally generated resources , especially in the case of companies that suffer from financial restrictions and , therefore , present difficulties or limitations in financing their investments with debt.

The line of research that links accounting information and investment decisions at the corporate level was based on these intellectual roots, and Biddle and Hilary (2006) must be attributed the first recent study located on the intersection of both

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issues, by examining the effect that High-quality accounting information influences the efficiency of the investment and confirms that qualitatively relevant information favors investment, due, in their opinion, to the reduction of the existing information asymmetry between managers and capital providers . Your results, on a sample of listed companies from 34 countries for the period 1993-2004 , remained robust to different measures of accounting quality and alternative econometric specifications . _ _ _

Verdi (2006) studies the relationship between accounting quality and investment efficiency on a large sample of companies for the period 1980-2003. Consistent with the hypothesis that accounting quality favors investment efficiency, he documents how the surrogates of this attribute are negatively associated with both overinvestment and underinvestment . In addition , it obtains evidence of how, in the case of companies with financial constraints , quality is more closely associated with underinvestment , and how companies that exhibit high liquidity on their balance sheets show a greater propensity to overinvestment, which suggests that accounting quality mitigates information asymmetries caused by adverse selection problems and agency conflicts.

McNichols and Stubben (2008) , taking a large sample of North American companies for the period between 1978 and 2002 , analyzed to what extent accounting profit alteration practices affect investment efficiency , documenting how _ _ companies whose financial statements have _ been the subject of investigation by the North American stock market regulator (the *Securities and Exchange Commission* [SEC]) incurred episodes of overinvestment in fixed assets during the period of accounting irregularities, and found the same pattern of behavior in companies with high adjustments for discretionary accruals . The authors consider

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that the most plausible explanation for this phenomenon is due to the fact that accounting manipulation practices affect the internal decisions of the firms, and that, consequently, the decline observed in the stock prices of these companies, which is traditionally attributed to the detection of accounting fraud, could also be attributable to inefficiencies in the investment decisions identified by the participants in the capital market.

The evidence documented by Biddle and Hilary (2006) , previously mentioned, on the relationship between quality of financial information and investment efficiency, encouraged Biddle, Hilary and Verdi (2009) to go one step further and analyze whether said efficiency It arises as a consequence of reducing underinvestment or mitigating overinvestment . His study provided evidence of both phenomena and recorded a negative (positive) conditional association between accounting quality and investment for companies operating in environments more prone to overinvestment (underinvestment). Also , companies with higher accounting quality seem to deviate less from planned investment levels and show less sensitivity to macroeconomic conditions . These results suggested the existence of a link between accounting quality and investment efficiency that would reduce frictions such as moral hazard and adverse selection that hinder efficient investment.

As we have seen , the contributions of Biddle and Hilary (2006) , Verdi (2006) and McNichols and Stubben (2008) are oriented towards the study of the role played by accounting information in the reduction of asymmetric information . . However, that of Edgerton (2012) is a work that , although its objective evaluating the effectiveness of fiscal policies, can be placed, with nuances that we will refer to later, closer to ours . Edgerton built a model in which investment decisions are made

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in a context governed by the objective of maintaining the market value of the company.

The starting point of the model is that participants in the capital market show functional fixation on accounting results , a situation that exerts strong pressure on managers to maintain their level, and argues that the logic of this basic assumption It is found in the copious literature available that has repeatedly and constantly come _ documenting the existence of such fixation, to the point of sacrificing cash flows or altering real economic decisions that improve the level of results . Thus, if managers evaluate investment projects based on accounting results and not cash flow, tax rules on depreciation will not affect investment decisions .

Based on this hypothesis, Edgerton deployed an interesting empirical analysis to document the sensitivity of investments to different types of tax incentives , depending on whether or not such stimuli have an impact on accounting results, and concluded that the accounting policies that , such as accelerated amortization , do not affect the level of results, they are less effective as incentives to investment than those , such as investment deductions , favor an improvement in said results , which would create a propensity to select investment projects that, if they affect results, either to increase them or to maintain them .

The work closest to ours is that of Laux (2013) , who addressed the analysis of the relationship between the fiscal information contained in the financial statements and investment decisions . Based on a sample of 200 large companies listed on the North American capital market, all belonging to the S&P 500 , he analyzed the components of deferred tax assets and liabilities and concluded that these provide information on tax payments for subsequent years , although the magnitude of its informative content is limited . In this way, it confirms the theoretical predictions

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of Sansing (1998) , Guenther and Sansing (2000, 2004) and Amir, Kirschenheiter and Willard (2001) , who predicted that deferred taxes affect future tax settlements. However, this relationship is weak and Laux (2013) , as we have advanced, is just leave record of this fact, without going further and without investigating to what extent companies could adopt strategies to mitigate the tax effort indicated by the positions of deferred tax assets and liabilities .

Finally , Shroff (2014) investigated whether changes in accounting regulations affect investment decisions . Taking a time interval during which 49 changes in accounting standards occurred , she found evidence consistent with the fact that such changes influence investment decisions ; Firstly, to investment in R&D, this effect being more intense in the investments of companies subject to *covenants* , and secondly , to the investment in tangible assets , because the process of complying with regulatory changes alters the information set of managers and , consequently , also alters their investment decisions .

In short, the available evidence shows how investment decisions are sensitive to the quality of accounting information and the level of company results, are affected by information asymmetries and, in the specific case of fiscal content , how it has predictive capacity to predict the level of future fiscal payments, as documented by Laux (2013) .

Research design

Taxation as a determinant of business investment

The central question of our research consists of analyzing to what extent

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investment decisions are integrated into the tax planning strategies of companies, understood as following Scholes et al. (2014) , as the set of actions that contribute to obtaining the greatest cash flow by reducing, to the extent possible, the cash outflow caused by taxes . In an important work on tax planning , Stiglitz (1985) outlined the 3 basic dimensions of the tax advantage inherent in the decision to invest: the reduction of the tax base caused by the provisions for amortization, whether normal or accelerated, its additional reduction if the financing chosen is through financial leasing or with debt, and the lower fee to be settled derived from the application of deductions for investments. The first 2 effects of the *new* investments also imply a contraction of the accounting result , by increasing the expenses for the year, and the third, the tax deductions , a lower expense accrued for taxes, and consequently, a higher accounting result.

Now , business investment understood as a tax planning instrument must be analyzed taking into account the institutional context in which it is carried out. As we can deduce from reading the previous section , all the relevant literature on the relationship between taxes and business investment refers to listed companies and limited to the North American regulatory framework On the contrary , our study aims to analyze this relationship for the specific case of Spanish companies that , in addition , are not listed , both circumstances that condition both the design and the empirical results , rich from our research, as we will reason below .

As we say, investment decisions could be different in the case of unlisted companies. Firstly, due to the fact that companies admitted to trading could incur the so-called *financial reporting costs* , which in the Edgerton (2012) model they try to avoid and which Shackelford and Shevlin (2001) define as the costs associated with the adoption of certain decisions—in this case, fiscal—that lead to a reduction in the

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result, thus generating that for Graham, Hanlon, Shevlin and Shroff (2014) is a conflict between accounting and tax objectives . Cloyd, Pratt and Stock (1996) point out that the reduction in results can lead listed companies to breach the *covenants or debt agreements* agreed upon with creditors, which reduction in the remuneration of the directors when they are based on results objectives and a lower valuation of the company in the market, reasons that explain their empirical results, which show how listed companies are significantly less aggressive in tax matters than those that are not.

On the contrary, this trade - *off* between tax and accounting aspects does not take place when companies are not listed . Thus, Mills and Newberry (2001) document how in the absence of costs linked to reductions in profit, companies have incentives to engage in tax planning practices that reduce both the tax base and the accounting profit, without this constituting a problem . . In this non - listing scenario , Mills and Newberry (2001) and Monterrey and Sánchez (2009) show how the priority of companies is not to live up to market expectations, but to avoid the problems associated with high debt. The empirical results obtained by Penno and Simon (1986) and more recently by Badertscher, Katz and Rego (2013) showed the very different attitude towards taxes of companies depending on whether they are or are not listed companies: while the former tend to select accounting methods to maintain or increase results, and thus the tax base , in the latter incentives are generated to adopt more aggressive tax planning strategies.

The second differentiating characteristic of our study is related to the tax regulatory framework . As Atwood, Drake , Myers and Myers (2012) document, companies ' tax strategies are related to different institutional factors and circumstances , but, above all, they are critically determined by tax regulation . of each country. And in this sense , it is evident that the Spanish regulations , to which

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the companies in our sample adhere , only conditions the way we approach our research . _ _ _ _ _ _ Thus, and among many other examples that we could provide, while in countries like the United States, freedom of amortization has been established since 1954 and is an option available to companies . In Spain , it was introduced in 2009 and was eliminated in March 2012 ; the deduction of the investment fee, which in the North American case continues to be a powerful tax incentive , in our country has gone away gradually blurring until it is relegated, except in the case of the R &D&I deduction , to a marginal role , due to the reduction of the applicable percentages and the limitations for its use, although other deductions have remained . and tax advantages such as those allowed to small companies _ _ or those of holding foreign securities [2] . _ _

However, from our perspective, it does not seem likely that companies adopt investment decisions , of a clearly strategic nature and with long - term implications , with the exclusive purpose of saving taxes, and we are rather inclined to consider that the desire to reduce fiscal costs would be, as Graham (2006a) considers , a complementary or second order of investment . In contrast , companies that expect lower or even no future tax payments

[2] In fact , from the information available on the Tax Agency's website it can be deduced that between the years 2008 to 2013 , which includes our sample, deductions from the investment fee , including those applied to R& D + i, represented, at an aggregate level , a lower collection of Corporate Tax equivalent , on average , to only 1.3 % of positive tax bases . _ Available at the internet address : http://www.agenciatributaria.es/AEAT.internet/datosabiertos/catalogo/hacienda/ Annual accounts in the Corporate Tax.shtml .

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Because they are in cases of fiscal saturation or *tax exhaustion* , they would not have this additional incentive to make investments.

Therefore , the first of our hypotheses, expressed in an alternative way, is stated as follows:

H $_1$. Unlisted companies with higher future tax payments have incentives to make investment decisions .

But the literature also welcomes the possibility that companies deviate from their optimal level of investments and incur situations of overinvestment or underinvestment . Verdi (2006) defines efficient investment as one that selects only projects with positive net present value , under the scenario of a market without frictions such as adverse selection or agency costs. On the contrary, inefficient investment would include not taking advantage of investment opportunities that could have a positive net present value (underinvestment), and also undertaking projects with a negative net present value (overinvestment).

But the reality is that market frictions cause inefficiencies; The first of them, underinvestment, based on the theoretical proposal of Myers (1977) , are those derived from the restrictions to access financial resources, which are generated by the information asymmetry between managers and capital providers. , which could limit the financing possibilities of firms if they perceive that managers can exploit private information, thus generating a problem of underinvestment and making the level of investment very sensitive to the capacity to generate cash . flow of the companies . _ The second friction, overinvestment, argued by Jensen (1986) and empirically confirmed by Blanchard , López de Silanes and Shleifer (1994) , causes agency problems , if the investments are motivated by the personal desire for managers to

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increase the size of the firm and, with it , the perimeter under the control beyond its size optimal and undertaking inefficient investment projects (Baumol, 1959; Williamson, 1974). Other incentives for overinvestment would be _ overconfidence (Bertrand and Mullainathan, 2003; Heaton, 2002) or reputation (Baker, 2000).

As we have mentioned before , we have no studies that analyze lize the possible link between taxation and overinvestment, except for one In which , for company *i* in year *t* , the deferred tax payments , represented by the experimental variable TAX_{it} , would be explaining the investments, INV_{it} , together with other independent variables that will be controlled.

The second of the proposed hypotheses will be tested using model (2), whose formal expression is the following:

$$DEV\ INV_{it} = \text{¸} + \text{˘}_1 * TAX_{it} + Controls + \varepsilon_{it} \quad (2)$$

In which the dependent variable, DEV *INV* it ¸ is the difference between the investment actually undertaken by the company and the expected one, thus capturing the excess (overinvestment) or defect (underinvestment) of investment made.

Regarding the dependent variables, the variable in model (1) , INV_{it} , is the amount of investments made during the year in intangible and material assets , once the divestments made have been deducted 3 . Operating in this way, as Richardson (2006) also proceeds , INV_{it} tries to approximate the investments undertaken for growth purposes , excluding maintenance or replacement, since only the former would be increasing the annual provisions for amortization; Maintenance investments, which only involve a process of asset replacement , do not imply an increase in investments, so they do not have an appreciable effect on

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depreciation and, ultimately, on the tax base.

As for the dependent variable of model (2) , $DEV\ INV_{it}$, it is, as we have advanced, the difference between the investment actually made by the company and the expected one, so it is necessary to estimate the amount of the latter. The most common method consists of approximating the investment through an expectations model that links the dependent variable, the expected investment, to the Tobin 's q ratio , represented by the *market-to- book* ratio [4] . Given that, as we have anticipated, our hypotheses will be tested based on a sample of specific companies. Since ñ waves are not listed and, therefore , it is not possible to know their market values, we have to operate as Biddle et al. (2009) and García Lara, García Osma and P e ñ alva (2016) , estimating an expectations model as a function of growth opportunities, measured by sales growth and using the regression residuals (3) as deviations from the expected investment:

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generic statement by Inger (2014) about overinvestment derived from the possibility of reducing fiscal costs by accessing (*INV*) *it* = ¸ + ˇ ∗ *CRECV it* − 1 + ε *it* (3) the advantages derived from accelerated amortization, and another more specific one from Shackelford, Slemrod and Sallee (2011) , in which they maintain that the fiscal validity of the LIFO method in the US tax system would induce overinvestment in inventories, although in none Of these works, the least empirical evidence is provided to support their claims.

In our opinion, it seems appropriate to explore this conjecture and empirically verify whether investment directed, whether as a primary or complementary objective, to reduce fiscal costs, could also become a possible cause of overinvestment, forcing projects of dubious profitability, unnecessarily increasing its amount, or anticipating its execution at an inopportune moment. Thus, the second of our hypotheses is expressed, also alternatively, as follows:

H 2 . Unlisted companies with higher future tax payments _ _ are prone to overinvestment

Empirical design for the contrast of hypotheses ___ _ _ _

The model that will be used to carry out the empirical contrast of the first of our hypotheses has the following formulationgeneric:

INV it = ¸ + ˇ 1 ∗ *TAX it* + *Controls* + ε *it* (1)

Where *E(INV) it* is the expected level of investment and *CRECV it-1* the annual growth of sales in the year *t-1* , and the most positive (negative) residuals are representative of companies with overinvestment (underinvestment).).

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Specification of the experimental variable

Our experimental variable , TAX_{it} , will capture the amount of expected future tax payments , which, in accordance with the hypothesis we have raised, will create incentives for investment if an increase in their amount is expected in the future . Since 2008, the first year in which the annual accounts were prepared in accordance with the new General Accounting Plan , the balance sheet of companies include in their assets , first of all , the tax effect of deductible temporary differences , which

3 In Spain , although goodwill is not amortizable for accounting purposes , it is amortizable for tax purposes . In the years included in our sample, the tax deductibility was 5 % annually for the years 2008 to 2011 and 1 % for the years 2012 and 2013 .

4 On other occasions, the expected investment is estimated by adding the cash to the *q* ratio .

flow of operations as an additional regressor (Shroff, 2014), motivated by the fact that, as argued by Fazzari et al. (1988) , the financial restrictions of companies will affect the availability of resources and, consequently , the level of investment.

They are those that have involved the early recognition of tax income with respect to its accounting record or the deferred recognition of a tax expense in relation to its accounting record . Secondly, it includes the tax effect derived from the compensation of negative tax bases pending use, and thirdly, the amount of tax deductions pending application due to insufficient quota. The sum of these 3 groups of tax assets are the

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so-called " deferred tax assets " , which may be taken advantage of in future years to the extent that the company generates positive tax bases, in the case of compensable tax losses, and, in the case of tax deductions, if sufficient full quotas are reached to absorb the pending amounts. of application. Consequently, the use, in subsequent years, of deferred tax assets would reduce tax payments.

Likewise, the so-called " deferred tax liabilities " are located on the liabilities side of the balance sheet, made up exclusively of taxable temporary differences that arise as a result of the early tax imputation of an expense with respect to its accounting record or the recognition deferred income in relation to its accounting registration . _ In this way , the incorporation of deferred tax liabilities into the tax base for future years will increase tax payments .

Consequently, the difference between the balance of assets and liabilities for deferred taxes at the end of each year, that is, net *deferred taxes* , as we have advanced, represents the company's net fiscal position for the next years . exercises and will be our experimental variable . Thus , when deferred tax assets are greater than deferred tax liabilities , the company will reduce in the future _ its effective tax rate, and conversely, when deferred tax liabilities are greater than deferred tax assets , the company's tax pressure will increase .

In this way, the experimental variable will be the difference between deferred tax assets and liabilities, that is, the deferred assets.net assets, specified as the difference between deferred tax assets and liabilities located in the balance sheet at the end of the year and deflated by the book value of the asset referred to on the same date. In order to improve the understanding of our empirical results , we have multiplied the original values by –1, so that when TAX_{it} is positive it captures greater liabilities than deferred tax assets , that is, increases in future tax payments

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, and when negative , reductions in future payments.

Control variables _

hefirstthat we will control is the size . Hubbard (1998) maintains that larger firms are more likely to invest, since they usually find it easier to finance their investments. Other authors, such as Richardson (2006) , Verdi (2006) , Shroff (2014) , Biddle and Hilary (2006) and Biddle et al. (2009) also include size control in their work, documenting a direct relationship between business dimension and investment. On the contrary, Blouin, Devereux and Shackelford (2012) do not establish any forecast on the relationship between size and new investment . Our prediction, in accordance with the evidence widely documented in the literature, is that size will exhibit a positive relationship with the investment.

financial expenses of a significant amount, tax deductible, which could place the most indebted companies in a situation close to fiscal saturation due to excess deductible expenses (tax exhaustion) *that* would make greater investments unnecessary for tax reasons. Therefore, our prediction is that the level of debt and investment exhibit a negative relationship. The third variable subject to control is the level of cash flow.

Research has documented this positive relationship (Hubbard, 1998), which could well be the manifestation of an agency problem, due to the possibility that managers waste available treasury on inefficient investments (Jensen, 1986; Stulz, 1990). or a reflection of the imperfections of capital markets , in which the cost of financing generates incentives to generate endogenous resources that allow taking advantage of available investment opportunities (Fazzari et al., 1988; Hubbard, 1998; Richardson, 2006).

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The fourth variable under control is future profitability, since as Cooper and Priestley (2016) demonstrate , the level of results that the company expects to achieve in the future could affect investment decisions, up to the point of point that there will be no investments if future benefits are not expected. Wilson (2009) , Chen, Chen, Cheng , and Shevlin (2010) , Badertscher et al. (2013) and Hope, Ma and Thomas (2013) consider that higher returns generate greater incentives to engage in tax planning practices, among which investment would be found , and Manzon and Plesko (2002) argue that the most profitable firms have greater possibilities of taking advantage of the tax deductions and advantages. And, likewise, the empirical results documented by Frank, Lynch and Rego (2009) , Lisowsky (2010) and Armstrong, Blouin, Jagolinzer and Larcker (2015) show a negative and significant relationship between profitability and tax pressure. From all this, a positive relationship between future profitability and investment can be expected.

The level of dividends could also be related to the level of investment. Indeed, the tendency towards rigidity of the dividend policy (Lintner , 1956; Brav, Graham, Harvey and Michaeli, 2005) can imply a significant restriction to undertake investments, and thus, the works of Biddle and Hilary (2006)) and Biddle et al. (2009) record the negative relationship between investment and dividends, a forecast that we also assume.

In model (1) , we will also control the level of investment from the previous year. If, as we have reasoned, the investment persistently reduces the tax base, it is possible that the investments from previous years will be sufficient to generate the effect of reducing the desired tax burden , making the investment in the current year unnecessary. The provisions for amortization will also be subject to control, since , as they argue Richardson, Lanis and Leung (2014) , the greater the

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depreciation, the less the need to undertake new investments with the purpose of obtaining tax savings 5 .

In addition to the potential drivers of investment decisions, we will monitor other resources available to reduce tax payments, such as reducing earnings by manipulating accrual adjustments and making real management decisions to incorporate bills. As Kothari , Mizik and Roychowdhury (2016) point out, a crucial difference between managing accrual adjustments and making actual decisions is that while the accounting standard provides a framework reference and its compliance is subject _ The second of the variables to control is the level of debt. _____

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dation, whose inverse relationship is clearly documented in numerous works, including those by Blouin et al. (2012) , Richardson (2006) , Biddle and Hilary (2006) , Biddle et al. (2009) and Shroff (2014) are closest to ours. But, in addition to these arguments, in our opinion , high debt entails the accrual of 5 Furthermore , between the years 2009 and 2012 (until March 31), companies had freedom of amortization for tax purposes , which meant being able to make very significant reductions in the tax base . Companies taking advantage of this option record the tax deferral generated in their balance sheet , so that Future reversal of free amortization will increase future tax payments .

Upon review by the auditors, the actual decisions are part of the discretion of the managers, with no more scrutiny than the supervision and control tasks exercised by the administrators. To this we must add the fact that in our sample of companies, their status as unlisted firms prevents the administrators by the capital market .

The most recent studies on altering results, among which we would highlight those by Cohen and Zarowin (2010) , Zang (2012) and Kothari et al. (2016) , integrate in their empirical analysis both the magnitude of discretionary accrual adjustments and the impact of real management decisions , which do not seem to act as complementary , but rather as substitutes for each other. As Graham, Harvey and Rajgopal (2005) write , modifications of the result based on real decisions would be the first resource to use , although we agree with Cohen and Zarowin (2010) that the priority between both options will ultimately depend on the monitoring levels existing in each company . _ _ __ Finally , we will control the sector affiliation of the companies, at a 2-digit depth level , and the year , to capture macroeconomic effects .

Econometric specification and definition of variables

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The econometric specification for the contrast of the first of the proposed hypotheses , that is, verifying the possible existence of a relationship between future tax payments and investment, has the following expression, developed from the generic equation (1) :

$$INV_{it} = \text{¸} + \text{ˇ}_1 * TAX_{it} + \text{ˇ}_2 * TAM_{it} + \text{ˇ}_3 * END_{it} - 1$$

$$+ \text{ˇ}_4 * CFO_{it} + \text{ˇ}_5 * ROI_{it} + 1$$

from investments in intangible and material assets divided by the total assets at the end of the year, as shown in the statement of cash flows, to discard replacement investments and estimate only growth investments. To facilitate the subsequent understanding of our empirical results, if the investment payment is greater than the investment collection, INV_{it} will show a positive sign, and a negative sign otherwise .

The second dependent variable , $DEV\ INV_{it}$, are the residuals from the regression of the previous model (3) , which when its sign is positive captures cases of overinvestment and when negative, of underinvestment. As we will see later, we will operate like Verdi (2006) and divide the sample into 2 subsamples, each of which will group the observations representative of overinvestment and underinvestment, respectively, carrying out separate regressions for each subsample. Regarding the experimental variable, TAX_{it} , it was already defined in the previous section of « Specification of the experimental variable » .

With respect to the control variables , TAM_{it} is defined as the natural logarithm of total assets at the end of the year (Richardson, 2006; Verdi, 2006; Biddle et al., 2009); debt, END_{it-1} , as the ratio between total debt and total assets, both at the end of the previous year, in the same way as Shroff (2014) and unlike Blouin et al. (2012) and Richardson (2006) , since the possible financial restrictions that limit investments for

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the year depend on the pre-existing debt, not on the debt subsequent to the investments; CFO_{it} is the cash flow from operations for the year, taken from the statement of cash flows; ROI_{it+1} is the result before taxes for the following year; DIV_{it} are the dividends distributed in the year, data

$$+ \check{}_6 * DIV\,it + \check{}_7 * INV\,it - 1 + \check{}_8 * AMORT\,it$$

$$+ \check{}_9 * ADA\,it + \check{}_{10} * REAL\,it$$

$$+ \check{}\,k * SECTOR\,k + \check{}_n * AN\tilde{}\,O_t + \varepsilon\,it$$

(4)

also extracted from the statement of cash flows ; $AMORT_{it}$ are the amortization provisions, as shown in the profit and loss account; These last four variables are deflated by the total assets at the end of the year.

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Where TAM_{it} is the size; END_{it-1} is the debt at the end of the previous year , CFO_{it} it is the cash flow generated by habitual operations, ROI it_{+1} is the profitability of the following year, $_{DIV}$ it $_{is}$ the dividends paid . in the year, INV_{it-1} the investments of the previous year , $AMORT_{it}$ the amortization provisions , ADA_{it} the discretionary accrual adjustments and REAL it our surrogate for the manipulation of real activities . _ In addition , we incorporate the usual controls of the sector affiliation of each company , at a level of 2 - digit depth of the CNAE ,and we added binary variables for years to control the effects that macroeconomic circumstances could induce on our results . _ _ _ We will approach the estimation of the coefficients using panel data methodology, which allows us to control the unobservable heterogeneity of the companies in the sample, and carrying out our estimates by fixed effects, as it is appropriate because the null hypothesis of the Hausman test of equality of coefficients between the fixed and random effects models was rejected.

To test the second hypothesis, we will estimate the parameters of the following equation , raised from the functional expression (2) above:

$$DEV\_INV_{it} = ¸ + ˇ_1 * TAX_{it} + ˇ_2 * TAM_{it} + ˇ_3 * END_{it-1}$$

$$+ ˇ_4 * CFO_{it} + ˇ_5 * ROI_{it+1}$$

The discretionary accrual adjustments, ADA it , $_{will}$ be approximated by the residuals in absolute values of the regression of the Jones model controlled by profitability, as proposed by Kothari, Leone and Wasley (2005) and according to the following expression (6) :

$$ADT_{it} / A_{it-1} = ¸ * (1 / A_{it-1}) + ˇ_1 * (\Delta CNN_{it} / A_{it-1})$$

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$+ \check{}_2 * (INM\ it /A\ it - 1) + ROI\ it + \varepsilon\ it$ (6)

Where ADT_{it} are the total accrual adjustments, as reported in the statement of cash flows ; $\Delta\ CNN_{it}$ is the annual variation in turnover, INM_{it} is the book value of tangible assets, intangible assets and real estate investments , and ROI_{it} is the quotient between profit for the year and book value of the average total asset. The estimation will be carried out in a cross section, as DeFond and Jiambalvo (1994) , *and we will multiply the values of* ADA_{it} by –1 , so that if the coefficient obtained has a negative sign it would indicate that the downward manipulation of accrual adjustments inhibits investment.

To estimate the manipulation of real activities , $REAL_{it}$, we will approximate the change in sales compared to other alternatives such as the estimate of overproduction or the change in discretionary expenses , since, as Di Meo rightly argues (2014) , could be less affected by the

$+ \check{}_6 * DIV\ it + \check{}_7 * INV\ it - 1 + \check{}_8 * ADA\ it$

$+ \check{}_9 * REAL\ it$

$+ \check{}\ k * SECTOR\ k + \check{}_n * AN\tilde{}\ O_t + \varepsilon\ it$

investment decisions and avoids to a greater extent the problem of possible endogeneity between the manipulation of real activities and investment . To do this we will take the residuals from the expectations model (7) proposed by Roychowdhury (2006) and estimated,

or each company *i* in the sample and exercise *t* , the first of our dependent variables, INV_{it} , is defined, in the same way as Richardson (2006) , Verdi (2006) and Biddle et al. (2009) , as

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el importe de los flujos netos de efectivo (pagos menos cobros)

as in Kothari et al. (2016) , in cross section :

$$CFO_{it}/A_{it-1} = \text{¿} + \text{ˇ}_1 * (1/A_{it-1}) + \text{ˇ}_2 * \Delta CNN_{it}/A_{it-1}$$

$$+ \text{ˇ} * \Delta CNN/A + \varepsilon$$

3 It it – It

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Table 1

Descriptive statistics

-

Half		Dev. standard	25%	Median	75%	Minimum	Maximum
INVit	0.026	0.114	0.000	0.013	0.052	–2,270	1,691
INVitDEV	0.000	0.114	–0.026	–0.012	0.026	–1,072	1,164
TAXit	0.008	0.042	–0.003	0.000	0.008	–0.334	0.7966
TAMit	9,718	1,301	8,815	9,475	10,343	5,497	11,7

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EN Dit-1	0.535	0.265	0.336	0.535	0.720	0.015	4 5 5, 1 9 3
CF Oit	0.059	0.167	0.000	0.051	0.111	–2,676	4, 8 3 7
RO Iit+1	0.026	0.113	0.003	0.021	0.054	–2,678	2, 9 5 7
DIV it	0.024	0.114	0.000	0.000	0.005	0.000	0. 8 2 3
INV it- 1	0.033	0.115	0.000	0.016	0.059	–2,234	1, 3 3 8
LO VEI t	0.031	0.032	0.009	0.022	0.042	0.000	0. 1 8

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							0
AD	0.0	0.165	–	–	0.0	–	2,
Ait	00		0.05	0.00	51	1,69	7
			4	8		7	8
							2
RE	0.0	0.137	–	0.00	0.0	–	1,
ALit	00		0.04	4	46	1,12	2
			3			0	6
							1

The sample of companies is made up of 37,390 company - year observations of active, audited Spanish companies that prepare annual accounts in normal format, belonging to all sectors except financial, banking and insurance, between the years 2008 to 2013, both inclusive. For each firm *i* and exercise *t* , INV_{it} It is calculated as a quotient of the net cash flows (payments less collections) from investments in intangible and material assets divided by the total assets at the end of the year; $DEV\ INV_{it}$ are the residuals of the regression $E(INV)_{it} = \alpha + \beta * CRECV_{it-1} + s_{it}$, where $E(INV)_{it}$ is the expected level of investment and $CRECV_{it-1}$ the annual growth of sales in exercise *t-1;* TAX_{it} is the quotient, multiplied by –1, of the difference between deferred tax assets and liabilities and total assets at the end of the year; TAM_{it} is the natural logarithm of the total assets at the end of the year; END_{it} is the ratio between total debt and total assets, both at the end of the previous year; CFO_{it} is the cash flow from operations divided by the total assets at the end of the year; ROI_{it+1} is the profit before taxes of the following year divided by the total assets at the end of the year; DIV_{it} are the distributed dividends deflated by the

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total assets at the end of the year;$AMORT_{it}$ is the amortization provisions divided by the total assets at the end of the year; ADA_{it} are the residuals of the regression of the model, $ADT_{it}/A_{it-1} = \alpha *(1/A_{\iota\tau-1}) + \beta_1 *(\Delta CNN_{it}/A_{it-1}) + \beta_2 *(INM_{it}/A_{it-1}) + ROI_{it} + s_{it}$, where ADT_{it} are the total accrual adjustments, ΔCNN_{it} is the annual variation of the turnover, INM_{it} is the book value of tangible assets, intangible assets and real estate investments and ROI_{it} is the quotient between profit for the year and book value of the average asset total, and $REAL_{it}$ are the residuals of the regression of the $CFO\ model_{it}/A_{it-1} = \alpha + \beta_1 *(1/A_{it-1}) + \beta_2 *(DCNN_{it}/A_{it-1}) + \beta_3 *(DCNN_{it}/A_{it-1}) + s_{it}$.

In which, together with the variables defined for model (6) above, CFO_{it} is the cash flow from operations, obtained from the statement of cash flows. The residuals will be our estimate of sales manipulation, so the more negative they are, the greater their downward alteration will be. Also in this case we will multiply the values of $REAL_{it}$ by –1 , so that if the coefficient resulting from the regression is negative it would indicate that the manipulation to the Low sales discourage investment . _ _ _

Sample, descriptive statistics and correlations between variables

Sample setup _ _

Our sample of companies covers the years 2008 to 2013, both inclusive , and has

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been extracted from the Sabi ® database , requesting a sample of unlisted commercial companies domiciled in Spain , active, audited and belonging to all sectors except financial and banking (CNAE 64), insurance (CNAE 65) and CNAE 84 and 99, for developing activities whose peculiarities They advise exclusion from the sample. The sample begins in 2008 as it was the first year in which Spanish companies prepared their annual accounts . _ _ __ _ _ _ _ _ in accordance with the new General Accounting Plan, which implied an important change in the registration and valuation of income tax by incorporating the accounting reflection of deferred tax assets and liabilities, thus harmonizing with International Accounting Standard No. º 12 (IAS 12), " *Income tax* " .

Although the length of our time series —6 years— is not excessive, a possible survival bias could arise , and in order to mitigate its impact on our empirical results , We rich people have allowed companies to enter and exit

The final sample, once illegible or non-existent data was eliminated, was made up of 37,390 company - year observations [6] , and in the empirical literature on tax planning [7] , we have not excluded companies with negative results nor have we eliminated influential observations. In the first case, an inspection of the observations of our sample is enough to identify a significant number of observations that, presenting a negative accounting result , their tax base is positive due to the of the reversal of deferred taxes , or, on the contrary, companies with positive results that obtain tax refunds or show zero taxable income as a consequence of taking advantage of negative tax bases , or generating taxable temporary differences (for example , applying freedom of tax amortization) or to receive the withholdings and payments on account made [8] . And in the second, maintaining the aforementioned influential observations could deprive us, as Armstrong et al. reason . (2015) , to know

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the impact of very aggressive or very conservative forms of tax planning.

Descriptive statistics and correlations between variables

Table 1 shows the descriptive statistics of the variables in models (4) and (5) . Firstly, we can see how the first of the dependent variables, INV_{it} , reaches an average value of 0.026 (median 0.013), indicating that, on average, growth investment represents 2.6% of total assets (median 1.3%), showing a high dispersion according to the numerical value of its standard deviation. The second dependent variable, $DEV\ INV_{it}$, reflects, as can be deduced from its median (–0.012), a certain tendency towards underinvestment, which could be explained by the situation of economic crisis suffered in the years that include our sample of companies.

As for the remaining variables, the experimental one, TAX_{it} , reaches an average value of 0.008 (median 0.013), that is, 0.8 %

the sample, in order to form a variable sample and replicate in _____

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to some extent the real circumstances of the markets. Therefore , the sample is made up of all the companies present in Sabi ® that *in a given year* have enough data to configure the required variables.

6 With the following distribution: 2008, 5,740 observations; 2009, 6,047; 2010, 6,220; 2011, 5,979; 2012, 6,317, and 2013, 7,087.

7 With the exception of Desai and Dharmapala (2006) .

8 These divergences between the sign of the accounting result and the tax base were already noted by Fernández Rodríguez (2004, p. 108) .

Table 2

Correlations between variables

INV_{it}		DEV	IM_{it}	TAX_{it}	TAM_{it}	END_{it-1}	CFO_{it}	DIV_{it}	INV_{it-1}	$LOVE_{it}$	ADA_{it}	$REAL_{it}$
INV	1,000	0.099	0.050	0.003	−0.030	0.018	−0.021	−0.011	−0.011	−0.010	−0.011	

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it	0	7		0	1	1	7	1	2	2	5
					8		7	1	7	3	
		0	*0.0*	*0*	*0*	*0*	*0*	*0*	*0.*	*0*	*0.*
		.	*00*	*.*	*.*	*.*	*.*	*.*	*0*	*.*	*00*
		0		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
		0		*1*	*0*	*0*	*0*	*0*	*0*	*0*	
		0		*6*	*0*	*0*	*0*	*0*		*0*	
D	0	1	0.0	0	–	0	–	0	0	–	–
E	.	,	46	.	0	.	0	.	.	0	0.
V	9	0		0	.	1	.	1	1	.	1
	6	0		2	0	7	2	0	2	0	4
I	9	0		5	2	5	7	9	5	8	8
N					1		8			5	
V											
it											
	0		*0.0*	*0*	*0*	*0*	*0*	*0*	*0.*	*0*	*0.*
	.		*00*	*.*	*.*	*.*	*.*	*.*	*0*	*.*	*00*
	0			*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	0			*4*	*9*	*0*	*0*	*0*	*0*	*0*	
	0			*0*	*5*	*0*	*0*	*0*		*1*	
T	0	0	1,0	0	–	0	0	–	0	0	–
A	.	.	00	.	0	.	.	0	.	.	0.
X	0	0		0	.	0	0	.	0	0	0
	8	7		0	0	4	0	0	0	1	2

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it	4	0		0	7	3	5	6	5	7	1
					6			1			
	0	*0*		*0*	*0*	*0*	*0*	*0*	*0.*	*0*	*0.*
	.	*.*		*.*	*.*	*.*	*.*	*.*	*7*	*.*	*08*
	0	*0*		*9*	*0*	*0*	*7*	*0*	*0*	*1*	*1*
	0	*0*		*9*	*0*	*0*	*0*	*0*	*5*	*5*	
	0	*0*		*0*	*0*	*1*	*7*	*0*		*7*	
T	0	0	0.0	1	0	0	0	0	0	–	–
A	.	.	26	,	.	.	.	.	.	0	0.
M	1	1		0	0	0	0	0	0	.	0
	3	0		0	6	5	1	5	0	0	5
it	1	8		0	4	4	3	5	2	6	5
										0	
	0	*0*	*0.0*		*0*	*0*	*0*	*0*	*0.*	*0*	*0.*
	.	*.*	*33*		*.*	*.*	*.*	*.*	*8*	*.*	*65*
	0	*0*			*0*	*0*	*0*	*7*	*6*	*0*	*6*
	0	*8*			*5*	*5*	*0*	*8*	*9*	*0*	
	0	*6*			*3*	*9*	*1*	*2*		*0*	
E	–	–	–	0	1	–	–	–	0	0	–
N	0	0	0.0	.	,	0	0	0	.	.	0.
D	.	.	51	0	0	.	.	.	0	0	0
	0	0		3	0	0	0	0	5	9	0
i	4	5		7	0	9	9	2	6	7	7
t	4	7				7	1	6			
-											

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1											
	0	*0*	*0.0*	*0*		*0*	*0*	*0*	*0.*	*0*	*0.*
	.	*.*	*00*	*.*		*.*	*.*	*.*	*0*	*.*	*56*
	0	*0*		*0*		*0*	*0*	*0*	*0*	*0*	*0*
	0	*0*		*0*		*0*	*0*	*3*	*0*	*0*	
	0	*0*		*3*		*0*	*0*	*4*		*0*	
C	0	0	0.0	0	–	1	0	0	0	0	–
F	.	.	82	.	0	,	.	.	.	.	0.
O	3	3		0	.	0	4	0	1	2	4
	4	2		8	0	0	3	5	2	5	2
it	7	1		0	7	0	6	5	1	0	1
					6						
	0	*0*	*0.0*	*0*	*0*		*0*	*0*	*0.*	*0*	*0.*
	.	*.*	*00*	*.*	*.*		*.*	*.*	*0*	*.*	*00*
	0	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*
	0	*0*		*0*	*0*		*0*	*0*	*0*	*0*	
	0	*0*		*0*	*0*		*0*	*0*		*0*	
D	0	0	0.0	0	–	0	1	0	0	0	–
I	.	.	62	.	0	.	,	.	.	.	0.
V	0	0		1	.	2	0	0	0	4	3
	2	0		4	1	8	0	0	4	5	1
it	2	3		3	2	7	0	8	4	1	9
					9						
	0	*0*	*0.0*	*0*	*0*	*0*		*0*	*0.*	*0*	*0.*
	.	*.*	*00*	*.*	*.*	*.*		*.*	*0*	*.*	*00*

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	0	7		0	0	0		4	0	0	0
	6	8		0	0	0		9	0	0	
	9	4		0	0	0		8		0	
I	–	0	–	0	–	0	0	1	0	0	0.
N	0	.	0.0	.	0	.	.	,	.	.	0
V	.	2	96	1	.	1	0	0	1	0	1
	2	1		2	0	3	4	0	4	3	4
i	4	9		9	3	0	6	0	1	4	
t	0				9						
-											
1											
	0	0	0.0	0	0	0	0		0.	0	0.
	.	.	00	.	.	.	.		0	.	91
	0	0		0	0	0	0		0	5	1
	0	0		0	0	0	0		0	4	
	0	0		0	1	0	0			3	
L	–	0	0.0	0	0	0	0	0	1	0	–
O	0	.	77	.	.	.	.	.	,	.	0.
V	.	2		0	0	1	0	2	0	0	1
E	2	5		3	0	9	2	9	0	3	4
	6	3		2	4	0	7	0	0	9	8
it	6										
	0	0	0.0	0	0	0	0	0		0	0.
	.	.	00	.	.	.	.	.		.	00
	0	0		0	7	0	0	0		0	0

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	0	*0*		*0*	*4*	*0*	*2*	*0*		*0*	
	0	*0*		*9*	*8*	*0*	*7*	*0*		*1*	
A	–	–	0.0	–	0	0	0	–	–	1	–
D	0	0	50	0	.	.	.	0	0	,	0.
A	.	.		.	0	0	1	.	.	0	0
	0	0		0	9	0	0	0	0	0	0
it	1	7		4	3	1	9	2	2	0	7
	5	8		7				5	9		
	0	*0*	*0.0*	*0*	*0*	*0*	*0*	*0*	*0.*		*0.*
	.	*.*	*00*	*.*	*.*	*.*	*.*	*.*	*0*		*56*
	0	*0*		*0*	*0*	*9*	*0*	*4*	*1*		*7*
	0	*0*		*0*	*0*	*8*	*0*	*3*	*7*		
	0	*6*		*0*	*0*	*7*	*0*	*9*			
R	–	–	–	–	–	–	–	–	–	0	1,
E	0	0	0.0	0	0	0	0	0	0	.	0
A	.	.	18	.	.	.	.	.	.	0	0
L	2	2		0	0	4	0	0	2	0	0
	5	5		2	1	2	9	3	0	4	
it	3	6		0	9	3	6	7	9		
	0	*0*	*0.1*	*0*	*0*	*0*	*0*	*0*	*0.*	*0*	
	.	*.*	*45*	*.*	*.*	*.*	*.*	*.*	*0*	*.*	
	0	*0*		*1*	*1*	*0*	*0*	*9*	*0*	*4*	
	0	*0*		*0*	*1*	*0*	*0*	*0*	*0*	*2*	
	0	*0*		*2*	*8*	*0*	*0*	*3*		*0*	

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Pearson correlations are shown at the top of the diagonal and Spearman rank correlations at the bottom . _ _ _ _ _ Statistical significance in *italics* .

The sample of companies is made up of 37,390 company - year observations of active, audited Spanish companies that prepare annual accounts in normal format, belonging to all sectors except financial, banking and insurance, between the years 2008 to 2013, both inclusive. For each firm i and exercise t , INV_{it} It is calculated as a quotient of the net cash flows (payments less collections) from investments in intangible and material assets divided by the total assets at the end of the year; $DEV\ INV_{it}$ are the residuals of the regression $E(INV)_{it} = \alpha + \beta * CRECV_{it-1} + s_{it}$, where $E(INV)_{it}$ is the expected level of investment and $CRECV_{it-1}$ the annual growth of sales in exercise $t-1$; TAX_{it} is the quotient, multiplied by –1, of the difference between deferred tax assets and liabilities and total assets at the end of the year; TAM_{it} is the natural logarithm of the total assets at the end of the year; END_{it} is the ratio between total debt and total assets, both at the end of the previous year; CFO_{it} is the cash flow from operations divided by the total assets at the end of the year; ROI_{it+} 1 is the result before taxes of the following exercise divided by

the total assets at the end of the year; DIV_{it} are the distributed dividends deflated by the total assets at the end of the year; $AMORT_{it}$ is the amortization provisions divided by the total assets at the end of the year; ADA_{it} are the residuals of the regression of the model, $ADT_{it}/A_{it-1} = \alpha *(1/A_{i\tau-1}) + \beta_1 *(\Delta CNN_{it}/A_{it-1}) + \beta_2 *(INM_{it}/A_{it-1}) + ROI_{it} + s_{it}$, where ADT_{it} are the total accrual adjustments, ΔCNN_{it} is the annual variation in turnover, INM_{it} is the book value of tangible assets, intangible assets and real estate investments and

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ROI_{it} is the quotient between fiscal year result and book value of the average total asset, and $REAL_{it}$ are the residuals of the regression of the $CFO\ model_{it}$ $/A_{it-1} = \alpha + \beta_1 *(1/A_{it-1}) + \beta_2 *(DCNN_{it}/A_{it-1}) + \beta_3 *(DCNN_{it}/A_{it-1}) + s_{it}$.

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of total assets , a percentage that visibly contrasts with the substantial amounts that net deferred assets represent in North American companies , for which Poterba , Rao and Seidman (2011) document that 35 % of their sample of companies have a 5 % net tax position of total assets and, at least, 10 % of the companies in their sample maintain a net position greater than 10% of assets . Regarding the control variables , their values are close to those of similar studies , with the strong dispersion exhibited being notable in all cases .

Table 2 shows the univariate Pearson and Spearman correlations between the same previous variables . As most notable, it is worth highlighting the one between INV_{it} and TAX_{it} , positive and statistically significant , and the ones of greatest intensity, which are those of CFO_{it} and INV_{it} and CFO_{it} and DIV_{it} , also positive , as well as the positive correlations of INV_{it} with TAM_{it} and negatives of INV_{it} with END_{it-1} and with INV_{it-1} . The values achieved allow us to rule outany suspicion of multicollinearity problems.

Main results

The relationship between expected tax payments and investment

Prior to the presentation and discussion of the results obtained for the contrast of the proposed hypotheses , we believe it is interesting to show the empirical relationship between our experimental variable, TAX_{it} , and the future tax burden, to record the usefulness of net deferred taxes . For this purpose, we have obtained the parameters of the univariate regression $CASH\ TAX_{it+k} = \alpha + \beta * TAX_{it}$, in which the dependent variable , *CASH* TAX it + $_k$, is *the* amount paid as Tax on

Table 3

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Regression results of the $CASH\ TAX\ it_{+k} = \alpha + \beta * TAX_{it} + s\ it$ model

Dependent variable		*Constant*	*t*	*TAXt*	*t*	*N*
				Coefficient		
		Coefficient				
CASH	*TAXt+1*	0.051	6.72**	0.652	3.38**	3,303

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			*		*	
CASH	TAXt+2	0.050	6.556***	0.6180	2.858***	23,986
CASH	TAXt+3	0.050	6.553***	0.5949	2.552**	18,007
CASH	TAXt+	0.049	6.551***	0.5299	2.513**	21,178

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	4		***		***	7
CASH	TAX t+5	0.048	6.40***	0.0530	1.85***	5,740

The sample of companies is made up of 37,390 company - year observations of active, audited Spanish companies that prepare annual accounts in normal format , belonging to all sectors except financial, banking and insurance, between the years 2008 to 2013, both inclusive. For each firm *i* and year *t* , $CASH\ TAX_{it+k}$ is calculated as the quotient between the payment for Corporate Tax and the total assets at the end of the year; TAX_{it} is the quotient, multiplied by –1, of the difference between deferred tax assets and liabilities and the total assets at the end of the year. ***N*** is the number of company-year observations in each regression. Standard errors corrected for dependence in cross section and time series (Petersen, 2009; Gow, Ormazábal and Taylor, 2010).

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* Level of statistical significance greater than 90% probability .

** Level of statistical significance greater than 95% probability .

*** Statistical significance level greater than 99 % probability .

Companies in the 5 years following year *t* , obtained from the cash flow statement of our sample of companies . In turn , the explanatory variable, TAX_{it} , represents the amount of net deferred taxes for year *t* . As we can see in table 3 , first of all, the TAX_{it} variable exhibits a relationship positive and statistically significant with the payment of Corporate Tax, $CASH\ TAX_{it+k}$, thus confirming the very notable predictive capacity of TAX_{it} . And secondly , the

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Table 4

Model Regression Results _ _ _

$$INV_{it} = \alpha + \beta_1 * TAX_{it} + \beta_2 * TAM_{it} + \beta_3 * END_{it-1} + \beta_4 * CFO_{it} + \beta_5 * ROI_{it+1}$$

$$+ \beta_6 * DIV_{it} + \beta_7 * INV_{it-1} + \beta_8 * AMORT_{it} + \beta_9 * ADA_{it}$$

$$+ \beta_{10} * REAL_{it} + \beta_k * SECTOR_k + \beta_n * AN\tilde{}O_t + s_{it}$$

Variables	Prediction	Coefficients	*INV* *t*
TAX $_{it}$	(+)	0.054	2.86***
TAMit	(+)	0.002	2.83***
ENDit - 1	(–)	–0.018	–3.78

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			***
CF Oit	(+)	0.314	3.61***
RO Iit +1	(+)	0.033	2.07**
DI V it	(–)	– 0.521	– 3.78***
IN Vit - 1	(–)	– 0.066	– 3.11***
LO VE It	(–)	– 0.357	– 4.20***
AD A it	(–)	– 0.147	– 2.64**

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RE ALit	(–)	– 0.119	– 2.40**
Constant		– 0.008	– 0.32
R^2 (%)		23.61	
F		228.89***	

The sample of companies is made up of 37,390 company-year observations of active, audited Spanish companies that prepare annual accounts in normal format, belonging to all sectors except financial, banking and insurance, between the years 2008 to 2013, both inclusive. For each firm *i* and year t , INV_{it} calculated as the quotient of the net cash flows (payments less collections) from investments in intangible and material assets divided by the total assets at the end of the year; TAX_{it} is the quotient, multiplied by –1 , of the difference between deferred tax assets and liabilities and total assets at the end of the year ; TAM_{it} is the natural logarithm of the total assets at the end of the year; END_{it} is the ratio between total debt and total assets, both at the end of the previous year;

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CFO_{it} is the cash flow from operations divided by the total assets at the end of the year; ROI_{it+1} is the profit before taxes of the following year divided by the total assets at the end of the financial year; DIV_{it} are the distributed dividends deflated by the total assets at the end of the year; $AMORT_{it}$ is the amortization provisions divided by the total assets at the end of the year; ADA_{it} are the residuals of the model regression, $ADT_{it}/A_{it-1} = \alpha *(1/A_{\iota\tau-1}) + \beta_1 *(\Delta CNN_{it}/A_{it-1}) + \beta_2 *(INM_{it}/A_{it-1}) + ROI_{it} + s_{it}$, where ADT_{it} are the total accrual adjustments, ΔCNN_{it} is the annual variation in turnover , INM_{it} is the book value of fixed assets material, intangible and real estate investments and ROI_{it} is the quotient between profit for the year and book value of the average total asset , and $REAL_{it}$ are the residuals from the regression of the CFO model $_{it}/A_{it-1} = \alpha + \beta_1 *(1/A_{it-1}) + \beta_2 *(DCNN_{it}/A_{it-1}) + \beta_3 *(DCNN_{it}/A_{it-1}) + s_{it}$; $SECTOR$ includes the binomial variables representative of the sector affiliation of the sample of companies, and $A\ N\tilde{}\ O$ They are the binary variables that capture the financial year. Statistical significance is expressed in asterisks , at levels greater than 90% (*), 95% (**) and 99% (***) probability . Standard errors corrected for dependence in cross section and time series (Petersen, 2009; Gow et al . , 2010).

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Tosimplifyreading,thecoefficientsassociatedwitheconomicsectorsa ndarenotshown .

The evidence indicates that this is a very persistent effect over time, since , according to our results , this predictive capacity is projected to at least 5 years, although the decreasing value of the *t* statistic reveals that the significance decreases . gradually over time.

Table 4 below shows the results obtained from the regression of model (4) designed to test the first of our hypotheses . Both in this model and in all subsequent ones we will simultaneously control for dependence in cross section and time series at the firm and year level , applying the methodology proposed by Petersen (2009) and also contrasted by Gow et al. (2010) , which does not alter the estimation of the coefficients but does influence the standard errors and , therefore , the *t* - statistics and their significance 9 .

As we can see, the positive sign of the coefficient associated with our experimental variable , TAX_{it} , confirms the proposed hypothesis , indicating how companies , when faced with increases

Table 5

Model Regression Results _ _ _

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$$INV_{it} = \alpha + \beta_1 * TAX_{it} + \beta_2 * TAM_{it} + \beta_3 * END_{it-1} + \beta_4 * CFO_{it} + \beta_5 * ROI_{it+1}$$

$$+ \beta_6 * DIV_{it} + \beta_7 * INV_{it-1} + \beta_8 * AMORT_{it} + \beta_9 * ADA_{it} + \beta_{10} * REAL_{it}$$

$$+ \beta_k * SECTOR_k + \beta_n * AN\tilde{}O_t + s_{it}$$

$TAX_{it} > 0$ Coefficients		t	$TAX_{it} < 0$ Coefficients	t
TAX_{it}	0.053	2.84**	0.090	1.12
TAX_{it}	0.002	1.02	0.005	3.13

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M		3		1
it		1		9
				*
				*
				*
E	–	–	–	–
N	0.0	2	0.0	0
D	14	.	07	.
it		1		8
-		0		7
1		*		
C	0.4	1	0.5	1
F	64	7	30	9
O		.		.
it		6		0
		3		0
		*		*
		*		*
		*		*
R	0.0	3	0.0	0
O	94	.	28	.
Ii		0		9
t		2		0

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+		*		
1		*		
		*		
D	–	–	–	–
I	0.6	3	0.6	2
V	16	5	33	5
it		.		.
		7		0
		9		7
		*		*
		*		*
		*		*
I	–	–	–	–
N	0.0	5	0.0	1
V	73	.	23	.
it		0		1
-		7		8
1		*		
		*		
		*		
L	–	–	–	–
O	0.2	4	0.4	7
V	49	.	64	.

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E		6		3
It		7		6
		*		*
		*		*
		*		*
A	–	–	–	–
D	0.2	1	0.0	2
A	23	4	59	.
it		.		9
		0		9
		9		*
		*		*
		*		*
		*		
R	–	–	–	–
E	0.1	6	0.3	1
A	84	.	45	0
L		6		.
it		6		6
		*		1
		*		*
		*		*
				*

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Cons tant	–0.024	0.82	–0.047	1.07
R^2 (%)	30.54		29.16	
F	167.74***		109.20***	

The sample of companies, divided into 2 subsamples depending on the sign of the TAX_{it} variable , is made up of 37,390 company-year observations of active, audited Spanish companies that prepare annual accounts in normal format, belonging to all sectors except financial, banking and insurance,

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Conclusions

The purpose of our work has been to analyze whether the desire to avoid future tax payments, captured through the net deferred taxes that are recorded in the companies ' balance sheets , could be established, together with the documented explanatory factors in previous literature , as a determinant of business investment . Although the investment decision _ may have the primary objective of obtaining profitability , the reduction of the tax burden as a complementary or secondary objective of the investment must be considered as a corporate decision in the interest of the shareholders .

To this end, we have empirically contrasted to what extent investments could also be explained by tax planning reasons, providing robust empirical results that show that increases in future tax payments constitute an additional incentive to adopt investment decisions that mitigate , via greater provisions for amortization, deductions from the quota or deductions linked to the financing of said investments , the tax pressure supported. No However, our results also show that, to some extent, tax motivations could explain situations of overinvestment, although we consider that the evidence we have obtained from these episodes shows moderate statistical significance .

However, our work presents some limitations that must be highlighted , and thus, first of all, we must accept that neither the *q* ratio , as Summers (1981) already pointed out, nor the growth of sales provide a vision completeness of the firm's investment opportunities, so our

estimates of overinvestment and underinvestment could exhibit some bias that, to some extent, would explain the weak statistical significance obtained.

Secondly , the dependent variable used in the literature and by ourselves as a surrogate for growth investment, INV *it* ¸ could also be measured with a certain error , since, in many cases, it is possible that growth investments replacement also reduce future tax payments if the replaced assets were already amortized . _ the same This happens with *TAX* $_{it}$, since the negative tax bases that have not been recorded as deferred tax assets would not be captured by this variable , although these would be the companies in the sample that raise doubts about their profitability and future viability . and that, consequently, their investment possibilities would be very limited.

Thirdly , the configuration of the sample makes it inevitable that our empirical analysis has been carried out in exercises in which , due to the economic crisis suffered in Spain , _ _ __ The fiscal rule has limited the deductibility of financial expenses, tax compensation of losses and tax deductions, consequently increasing the temporary differences . deductible rias of companies , while the elimination of _ _ The freedom of amortization has stopped the growth of taxable temporary differences , causing a joint effect of

« anticipation » of tax payments . We think that our empirical results would have been more convincing even if these changes regulatory measures, true shock measures, would not have occurred, especially

starting in 2012.

And fourth , the results we have documented must _ be understood as limited to the Spanish case , given the applicable regulatory framework , and interpreted within the strict scope of non - EU companies . quoted, which are what make up our sample. In fact, the works of Cloyd et al. (1996) and Mills and Newberry (2001) characterize very different tax behaviors in listed companies . in relation to those that are not listed, so our findings should not be extrapolated and extended to the context of firms admitted to trading .

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