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FINANCIAL FLEXIBILITY ACROSS THE EURO AREA AND THE UK

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Abstract

We use a large database of more than 685,000 European firms to show that financial flexibility attained through conservative leverage policies is more important for private, small, medium-sized and young firms and for firms in countries with lower access to credit and weaker investor protection. Further, using the recent financial crisis as a natural experiment, we show that financial flexibility status allows companies to reduce the negative impact of liquidity shocks on their investment decisions. Our findings support the hypothesis that financial flexibility relates to companies' ability to undertake future investment, despite market frictions hampering possible profitable growth opportunities.

JEL Classification: G31, G32, D92

Keywords: low leverage, financial flexibility, investment, cross-country analysis

Non-technical summary

In an environment where capital markets are imperfect and the cost of external financing increases, companies may implement a conservative leverage policy to maintain "substantial reserves of untapped borrowing power" as pointed out by Modigliani and Miller (1963). This may allow them to access the capital markets in the event of positive shocks to their investment opportunity set.

The purpose of our study is twofold. First, we investigate how a conservative debt policy aimed at maintaining financial flexibility can enhance corporate investment ability. Second, we study the value of financial flexibility across a very heterogeneous sample of both publicly traded and privately held firms that vary substantially in size, age, and quality of institutional settings.

Our analysis is based on a rich database of more than 685,000 firms from eight euro area countries and the UK. We first identify financially flexible firms (FF) as those that maintain a low leverage profile for a certain period of time. We do this by estimating a leverage equation from which we calculate the predicted level of debt. Since the demand for financial flexibility is indirectly captured by the negative deviations from estimated target leverage, we classify a firm as FF if it shows a conservative leverage policy for a minimum number of consecutive years. We find that about 34% of the firms in our sample show a conservative leverage policy for at least three consecutive years, ranging from 17% in the UK and 23% in Germany and the Netherlands to 37% in Finland and 40% in Italy.

To address our first research question, we check whether this degree of financial flexibility has any impact on firms' investment ability. That is, we check whether FF firms have enough spare borrowing power to be able to raise external funds, and to invest more in the years following the conservative financial policy. To test this hypothesis, we use an investment equation augmented by an FF dummy and its interaction term with cash flow. The FF dummy is expected to have a positive and significant impact on capital expenditure. In addition, to the extent that FF firms can, after a period of low leverage, more easily raise external funds to finance their projects, their investment ability should be less dependent on internal funds. As a consequence, we would expect a lower sensitivity of investment to cash flow. The results over the entire sample do indeed show a large impact of the FF *status* on the firm's investment ability. Our tests reveal that an average company that maintains an LL policy for three years can increase its capital expenditure by around 22.6%.

Second, and more importantly, we investigate how *expected* asymmetric information and contracting problems affect the value of being financially flexible. We argue that for firms with higher *expected* asymmetric information and contracting problems the degree of financial flexibility is more valuable than for those companies less exposed to capital markets frictions. To this end, we classify different sub-samples of firms based on their expected asymmetric information and contracting problems. We first classify firms based on their listing status (privately held vs publicly traded companies) and then based on their size and age. For each sub-sample we run the same investment regression as in the baseline model and compare the overall impact of FF status on the firm's investment. We find that the value of financial flexibility is stronger for these types of firms: for instance, a privately held company that maintains an LL policy for at least three years increases its capital expenditures almost four times more than a publicly traded firm (22.6% versus almost 6.9%). Further, a small company is able to increase its capital expenditure by almost 16.1% after at least three years of LL policy; while a large company can increase its investment by 15.6%. Similar results are found when we discriminate companies on the basis of their age: a young FF company is likely to increase its capital expenditure by about 25.7%, while a mature FF company will increase by about 9%. We find similar evidence when we combine size and age.

We take a further step in our investigation by exploiting the heterogeneity of the quality of institutional settings in our sample. We use two indicators (the *Credit Access Index* and the *Investor Protection Index*) that should capture both the asymmetric information and contracting problems firms face when they try to access external capital markets. We predict the FF *status* to have a stronger (weaker) impact on investment decisions of companies in countries with lower (higher) protection. Results show that, in countries with limited credit accessibility, FF companies are able to increase their investment by almost 22.7%; while in countries with better access, FF firms increase their investment by only 7.9%. We find the same remarkable difference when we use the investor protection index.

As an alternative test we also compare the impact of the FF status within the euro area countries with that in the UK. We expect financial flexibility to be more valuable where financial markets are less developed as it is the case in the euro area. Results are consistent with our expectations and financial flexibility is indeed more important for euro area companies than it is for the UK.

Finally, using the recent financial crisis as a natural experiment, we show that financial flexibility *status* allows companies to reduce the negative impact of liquidity shocks on their investment decisions. From our sample, FF firms seem to be able to reduce their investment

significantly less than others as the change in their capital expenditure is about 6.8 pp while for the others it is about 14.4pp. Further, FF companies also seem to be less exposed to market imperfections even during the severe conditions of the recent crisis.

I. Introduction

Does the value of being financially flexible differ across firms and countries? In other words, which companies benefit the most from being financially flexible? The aim of this paper is to address these questions.

Under perfect capital markets, firms can always invest at their optimum level and costlessly adjust their financial structure to any unexpected change in liquidity and growth opportunities. However, when capital markets are imperfect and the cost of external financing increases, the idea of being financially flexible becomes relevant. It relates to the ability of companies to undertake investment in the future, when asymmetric information and contracting problems might otherwise force companies to forego profitable growth opportunities. Firms may try to pursue financial flexibility through alternative ways, by shaping their current capital structure, cash management or payout policies and creating "an intertemporal dependence" between financial and investment decisions (Almeida, Campello, and Weisbach (2011); Denis (2011)).

This paper focuses in particular on financial flexibility attained through a conservative leverage policy. Survey evidence suggests that it is financial flexibility that primarily drives chief finance officers' leverage choices (Pinegar and Wilbricht (1989); Graham and Harvey (2001); Bancel and Mittoo (2004); Brounen, De Jong, and Koedijk (2004)). Companies may implement a conservative leverage policy to maintain "substantial reserves of untapped borrowing power" (Modigliani and Miller (1963), p. 442), which allows them to access the capital market in the event of positive shocks to their investment opportunity set. The value of being financially flexible is thus directly related to the ability of companies to undertake new investment projects: the more the investment undertaken by financially flexible (FF) firms, the higher the value of financial flexibility for those firms. Further, financial flexibility

should be even more valuable when *expected* asymmetric information and contracting problems are stronger, allowing firms to carry out more investment.

We use a rich database from the entire universe of Bureau van Dijk's *Amadeus* that encompasses a large sample of 685,693 European companies for the 18-year interval 1993–2010. Thanks to the reporting requirements and practices across most of European countries, this database gives us the opportunity to be the first to investigate the value of financial flexibility across a very heterogeneous sample of both publicly traded and privately held firms that vary substantially in size, age, and quality of institutional settings. This sample from eight euro area countries and the UK represents a very large fraction of the aggregate economic activity of Western Europe. For instance, at the end of 2010 the total non-government gross fixed capital formation of all countries in our sample was almost 84% of the equivalent aggregate in Western Europe. Figures for the proportion of overall GDP (83.2%) and total employment (86.2%) are similar.[1]

We first identify FF firms by focusing on low leverage (LL) firms. We estimate a leverage equation from which we calculate the predicted level of debt. Since the *demand* for financial flexibility is indirectly captured by the negative deviations from estimated target leverage, we classify a firm as FF if it shows an LL policy for a minimum number of

[1] Aggregate figures on non-Government gross fixed capital formation are calculated from the 2010 *National Accounts* of each Western European country. Western European countries include: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. Gross fixed capital formation is defined as the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditure on services that adds to the value of non-produced assets (SNA, 2008). This item is equivalent to *capital expenditure* as understood in business accounting. Figures on GDP and total employment are gathered from *Eurostat*. Total employment is the total number of persons employed in each country each year.

consecutive years. We find that about 34% of the firms in our sample show a conservative leverage policy for at least three consecutive years (FF3). Second, we test whether this degree of financial flexibility has any impact on investment ability. In the presence of market frictions, firms that anticipate valuable growth options in the future may respond by pursuing an LL policy for a number of years. In this way, FF firms have enough spare borrowing power to be able to raise external funds, and to invest more in the years following the conservative financial policy. To test this hypothesis, we use an investment equation augmented by an FF dummy and its interaction term with cash flow. The FF dummy is expected to have a positive and significant impact on capital expenditure. In addition, to the extent that FF firms can, after a period of low leverage, more easily raise external funds to finance their projects, their investment ability should be less dependent on internal funds. As a consequence, we would expect a lower sensitivity of investment to cash flow. The results over the entire sample do indeed show a large impact of the FF *status* on the firm's investment ability. Our tests reveal that an average company that maintains an LL policy for three years can increase its capital expenditure by around 22.6%

These results are robust to the method we follow to classify FF firms and to the definition we use of growth opportunities. They are also robust when we consider leverage net of cash and when we take into account potential agency issues or credit rationing that may (partly) drive our findings.

Once we show that the value of financial flexibility relates to the ability of firms to invest, we investigate how expected asymmetric information and contracting problems affect the value of being financially flexible. In other words, we identify those firms that benefit the most from being financially flexible. To this end, we classify different sub-samples of firms based on their expected asymmetric information and contracting problems. For each sub-sample we run the same investment regression as in the baseline model and compare the

overall impact of FF status on the firm's investment. Thanks to the large heterogeneity of firms included in our database, we first classify firms based on their listing status (privately held vs publicly traded companies) and then based on their size and age. Previous studies show that private companies (Brav (2009)), small-sized (Berger and Udell (2003)) and young enterprises (e.g., Rauh (2006); Fee, Hadlock, and Pierce (2009)) face different and often more severe expected constraints than do large firms. They are often seen to be more *opaque* and more at risk of failure than public, large and mature firms. Due to the higher asymmetric information they face, they tend to avoid external public capital markets and, among the external sources, they tend to rely on bank loans. The lending relationships grant lending banks a firm-specific information advantage over non-lending institutions so that firms may end up being informationally captured, with adverse consequences on their contracting power (e.g., Sharpe (1990); Saunders and Steffen (2011)). We therefore expect the value of financial flexibility to be stronger for these types of firms. Indeed this is what we find in our investigation. For instance, a privately held company that maintains an LL policy for at least three years increases its capital expenditures almost four times more than a publicly traded firm (22.6% versus almost 6.9%). Further, a small company is able to increase its capital expenditure by almost 16.1% after at least three years of LL policy; while a large company can increase its investment by 15.6%. Similar results are found when we discriminate companies on the basis of their age: a young FF company is likely to increase its capital expenditure by about 25.7%, while a mature FF company will increase by about 9%. We find similar evidence when we combine size and age.

We take a further step in our investigation by exploiting the heterogeneity of the quality of institutional settings in our sample. Lower legal protection increases firms' expected asymmetric information and contracting problems which, in turn, negatively affects corporate financial and investment decisions (e.g., La Porta, Lopez-de-Silanes, Shleifer, and

Vishny (1997, 1998, 2000, and 2002); Wurgler (2000); Love (2003); Mclean, Zhang and Zhao (2012); Mortal and Reisel (2012)). We expect financial flexibility to be more valuable for firms in these countries.

We use the *Credit Access Index* and the *Investor Protection Index* that should capture both the asymmetric information and contracting problems firms face when they try to access external capital markets. The first index, provided by *World Bank-Doing Business Project*, measures the legal rights of borrowers and lenders with respect to secured transactions and the sharing of credit information. The more the collateral and bankruptcy laws protect the rights of borrowers and lenders and the better the access to credit information, the more the lending. The second index, the anti-self-dealing index calculated by Djankov, La Porta, Lopez-de-Silanesc, and Shleifer (2008), measures the strength of minority shareholder protection against directors' misuse of corporate assets for personal gain: the higher the index, the stronger the protection.

In general, below (above) median values for these two indices indicate countries where companies are expected to face higher (lower) expected asymmetric information and contracting problems when raising external capital. We predict the FF *status* to have a stronger (weaker) impact on investment decisions of companies in these countries. Results show that, in countries with limited credit accessibility, FF companies are able to increase their investment by almost 22.7%; while in countries with better access, FF firms increase their investment by only 7.9%. We find the same remarkable difference when we use the investor protection index.

As an alternative test we also compare the impact of the FF *status* within the euro area countries with that in the UK. Capital markets in the euro area countries are still smaller and less developed than the UK (European Central Bank (2012)). We expect financial flexibility to be more valuable where financial markets are less developed. Results are consistent with

our expectations and financial flexibility is indeed more important for euro area companies than it is for the UK.

Finally, in the last part of our analysis we investigate whether FF *status* allows companies to reduce the negative impact of liquidity shocks. The recent financial crisis offers a natural experiment to exploit. We argue that spare borrowing capacity should allow FF firms to invest relatively more than others during a period of crisis. We observe that during the recent financial crisis all firms invest on average less than the preceding four years. More importantly, FF firms seem to be able to reduce their investment significantly less than others: during the financial crisis the change in their capital expenditure is about 6.8 pp while for the others it is about 14.4 pp. Further, FF companies seem also to be less exposed to market imperfections even during the severe conditions of the recent crisis.

Our study complements a growing literature on financial flexibility in a number of ways. Marchica and Mura (2010) provide evidence on how financial flexibility achieved by a leverage-conservative policy affects investment ability and long run performance of UK publicly traded companies. Denis and McKeon (2012) identify long-term investment as the primary use of large debt increases for US quoted firms; while Kahl, Shivdasani, and Wang (2008) point out that commercial paper provides financial flexibility to firms with uncertain prospects and funding needs. Other studies highlight the role of cash management in preserving firms' financial flexibility when a recession is anticipated (Ang and Smedema (2011)) or to smooth volatile R&D expenditure (Brown and Petersen (2011)). Our paper provides new evidence on how the value of financial flexibility varies across firms that face different degrees of financial constraints. In addition, we show that FF *status* allows companies to invest more even in presence of an exogenous liquidity shock as severe as the most recent financial crisis.

Also, our results on privately held companies contribute to a recent strand of studies that examine the differences between public and private firms' financial and investment choices. Brav (2009) and Asker, Farre-Mensa, and Ljungqvist (2011) report that private firms have higher leverage ratios than public firms; while Saunders and Steffen (2011) show that they face higher borrowing costs than publicly-traded ones. Further, Mortal and Reisel (2012) find that European private firms invest more than public ones; while Lyandres, Marchica, Michaely and Mura (2013) provide evidence that shareholder's portfolio diversification has a very different impact on private and public firms' investment decisions. By analyzing the relation between financial and investment strategies, we show that privately held firms are likely to invest more after a certain period of conservative leverage policy.

Further, our findings relate to the literature on investor protection and investment decisions (e.g., La Porta et al. (1997, 1998, 2000, and 2002); Wurgler (2000); Love (2003); Mclean et al. (2012); Mortal and Reisel (2012)) by showing that the quality of institutional settings matters for financially flexible firms. Firms in countries with poorer legal protections and less developed capital markets are more likely to benefit from pursuing financial flexibility through a conservative leverage strategy.

Finally, this paper has also important policy making implications. In 2008 the European Commission adopted the Small Business Act for Europe (SBA) that

[..] *reflects the Commission's political will to recognize the central role of SMEs* [small and medium-sized enterprises] *in the EU economy and for the first time puts into place a comprehensive SME policy framework for the EU and its Member States*.[..].

The European Commission report on the SMEs' impact on the EU labor market in 2010 highlights the fact that by providing 67% of the private sector jobs and contributing to more than 58% of the total value-added created by businesses in Europe, SMEs are the true

back-bone of the European economy.[2] Our evidence sheds more light on the mechanisms through which SMEs tackle potential financial frictions that may otherwise hamper their development and the promotion of their growth.

The remainder of the paper is organized as follows. In Section II we describe the data and present the main hypotheses. Section III includes the empirical results and all the robustness tests performed, and in Section IV we draw our conclusions.

II. Data and Hypotheses

A. Data collection and sampling

We use the entire universe of *Amadeus* for accounting data (both balance sheets and income statements). *Amadeus*, one of the products provided by Bureau van Dijk, is a comprehensive, pan-European database containing accounting information for both publicly traded and privately held companies. Bureau van Dijk collects accounting information directly from a variety of sources, such as official registers, regulatory bodies, annual reports, private correspondence, company websites and news reports, and indirectly from Bureau van Dijk associated information providers. It further harmonizes the financial accounts to allow accurate cross-country comparisons.[3] Typically one annual release of Amadeus covers at most the preceding ten accounting years of each firm. Further, *Amadeus* removes a firm after at least five years of no reporting data. Therefore, to eliminate this potential survivorship bias, we compile our database by collecting accounting information from each annual release

[2] http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/index_en.htm

[3] Although *Amadeus* includes companies regardless of their size, limited coverage may still occur because the degree of company accounts filing and publication requirements differ between countries (Coluzzi, Ferrando and Martinez-Carrascal (2012); Faccio, Marchica and Mura (2011)).

retrospectively so that we can have the complete history of data for all firms across the entire sample period.

The original dataset contains end-of-year accounting information for the period 1990–2010. We drop the first two years because of poor coverage and we lose another year of observations to compute some of our variables, such as sales growth. We eliminate observations when there are inputting mistakes (e.g., negative total assets). We keep firms with at least four years of observations, so as to have enough information to build our proxy of FF status (FF dummy). We winsorize all variables at the top and bottom 1% of their distribution within each country. After performing our data filtering, we end up with an unbalanced panel of 685,693 firms and 5,522,225 firm year observations over the 1993–2010 period. The final sample contains eight euro area countries out of 17 (Belgium, Finland, France, Germany, Italy, Netherlands, Portugal, and Spain), and the UK.

Table 1 reports the coverage of our sample. One third of the total sample is made up of Spanish firms and together with French and Italian firms represent 85% of the entire sample. One advantage of *Amadeus* is the wide incidence of privately held firms, which represent on average 99.7% of our sample.

Firm size is defined as the natural logarithm of total assets in real values. SMEs are those firms in the lower and middle tertile of *Size* distribution in each country each year. Large firms are those in the upper tertile. [4] The mean and median values of total assets in our sample are €14.143 million and €0.78 million respectively with the lowest mean value for Spanish firms (€5.63 million) and the highest for Dutch firms (€346.54 million).

[4] In this paper we have not used the Eurostat classification based on the number of employees as many firms in the AMADEUS database (in particular small-sized firms) do not report this variable.

In general, there is also a large heterogeneity across countries in terms of age. The mean and median age of firms in our sample are 16 and 13 years respectively, with Dutch firms being on average 36 years old and Spanish firms around 13 years.

[INSERT HERE TABLE 1]

Table 2 reports descriptive statistics of all variables included in our analysis (for detailed definitions of variables see Appendix 1). On average, financial debt for the European firms in our sample represents almost 14% of their total assets (defined as the sum of short-term loans and long-term debt), and German and UK firms show the highest level of leverage, while French and Finnish firms show the lowest. This figure is slightly higher than the average leverage of quoted companies documented by De Jong, Kabir, and Nguyen (2008) for the same countries. This is probably due to the fact that most of our companies are privately held. For instance, Brav (2009) finds that private firms have higher leverage ratios than public firms in the UK market. Further, German firms are characterized by the highest level of collaterals (*Tangibility*) while their profitability ratio is similar to that of French and Dutch firms. Finnish firms appear to be the most profitable in our sample. Interestingly, the ratio of cash to total assets (*Cash*) in our sample is substantially higher (16.4%) than documented in previous studies for quoted companies (12.4% as reported in Kusnadi and Wei (2011)). Further, figures on capital expenditure and cash flow ($\frac{\Delta\, Gross\ PPE_{j,t}}{K_{i,t}}$ and $\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$) are in line with Becker and Sivadasan (2010) on a similar sample. Overall, Spain and Italy show the highest levels of investment in capital expenditure, with Netherlands and Germany the lowest.

[INSERT HERE TABLE 2]

B. Identification of Low Leverage and Financially Flexible Firms

Recent survey studies of capital structure choices provide strong evidence that the single most important determinant of leverage decisions by firms is the desire to maintain financial flexibility (Graham and Harvey (2001); Bancel and Mittoo (2004)). However, since there is no well-defined measure of flexibility in the literature, this is an unobservable factor that depends largely on managers' assessment of future growth options. Consequently, this factor will end up in the residual of the model, where it will generate systematic deviations between observed and estimated leverage. The deviations from predicted target leverage are thus used to capture indirectly the effect of financial flexibility.

To capture the targeting behavior of firms, in the first step of the analysis we identify leverage-conservative firms using a partial adjustment model, which includes a set of variables widely accepted in the literature as potential determinants of leverage (Flannery and Rangan (2006)).[5] We estimate the following leverage model for each country *c* in our sample:

$$(1) \qquad Leverage_{ict} = \beta_0 Leverage_{ict-1} + \sum_{k=1}^{K} \beta_k X_{kict} + \eta_i + \eta_t + \nu_{ict}$$

where $Leverage_{ict}$ is *Leverage* of company *i* in country *c* at time *t*. Among the control variables we include: *Sales growth, Size, Tangibility, Profitability, Tax,* and *Ndts*. We also include *Cash* to control for other factors that may allow firms to attain a degree of financial flexibility, most importantly financial slack. Finally, we include firms fixed effects (η_i) that account for the potential correlation between firm-specific characteristics and regressors; and time effects (η_t) that account for macro-economic factors (such as market shocks).

[5] Numerous survey studies corroborate the idea that firms have a target capital structure. Graham and Harvey (2001) report that 37% of U.S. firms have a flexible target debt ratio, while a further 35% have a stricter target. Bancel and Mittoo (2004) and Brounen et al. (2004) report similar figures for the UK.

Following the seminal work of Arellano and Bond (1991), we take the first differences of the model and then use suitable lagged levels of the regressors as instruments. We estimate all leverage models using the Generalized Method of Moments (GMM)-System (GMM-SYS) methodology, which allows us to control simultaneously for the endogeneity of the regressors and for firm fixed effects that may be correlated with the explanatory variables (Blundell and Bond (1998); Lemmon, Roberts, and Zender (2008)). Across all models we use the whole set of available lags for the first differenced equations (i.e. from the second lag (t-2) to all available earlier lags). In the GMM SYS, we also use the lagged first differences (dated t-2) for the level equation. Simply for reasons of consistency we have chosen to adopt the same lag structure across all models.[6]

Results on the leverage model are reported in Table 3 where each column shows the results at country level. Results are in line with previous findings in the capital structure literature (e.g., Rajan and Zingales (1995); Flannery and Rangan (2006); Wanzenried (2006)). Firms whose sales are growing faster need more leverage and this result is robust across countries. The results show also a clear size effect as larger firms are less opaque and may raise external finance more easily, and at more favorable rates. *Tangibility* is also important when it comes to enabling firms to obtain external finance, hence the positive sign. The coefficient of *Profitability* is negative for companies in Belgium, Finland, Germany, the Netherlands and the UK and positive for the remaining countries. According to the pecking theory, firms should prefer internal to external finance. Hence the more profitable the firm, the lower the need for external finance. However, given the asymmetric information on the quality of firms, we should expect profitable firms to issue more debt to signal their quality.

[6] We do not report the standard Sargan test of of over-identifying restrictions and the Arellano Bond tests of serial correlation. A number of papers show that in panels with dimensions similar to our sample the Sargan test has a tendency to over-reject the instruments (Ding Guariglia and Knight (2013; Benito (2003); Blundell Bond Windmjier (2000). In fact, for each country we performed a series of tests on random subsamples with panel dimensions (and also instrument lag structure) similar to Bond Klemm Newton-Smith Syed and Vlieghe (2004). All of those subsamples confirm that the Sargan test is never significant and also the m2 test is never significant. We offer a mode detailed treatment of the issue in Appendix 3.

This seems to be the case for French and Italian companies in our sample for which the coefficient is positive. A similar effect on leverage is given by cash holding. The availability of liquid assets may reduce the need of external debt.

[INSERT HERE TABLE 3]

We follow Faulkender, Flannery, Hankins, and Smith (2012) in calculating the fitted values of leverage from each country level regression. Fitted values of leverage are calculated for each company *i* in each country *c* each year *t* as follows:

$$Fitted\ Leverage_{ict} = \frac{\sum_{k=0}^{N} \widehat{\beta_k} \times X_{kict}}{(1-\widehat{\beta_0})} - \left[\frac{\widehat{\beta_0}}{(1-\widehat{\beta_0})}\right] \times X_{0ict-1},$$

Where $\sum_{k=0}^{N}$ includes the estimated coefficients of all the independent variables and the time dummies as well for each company *i* in each country *c*; X_{0ict-1} is equal to the lagged value of leverage for each company *i* in each country *c* ($Leverage_{ict-1}$).[7] We then compare the actual values with the fitted values of leverage, and we define as low leverage (LL) those firms that exhibit a negative deviation between actual and predicted leverage. As discussed above, we expect the systematic component of these deviations to be due to the unobserved effect of financial flexibility in the leverage model. To minimize the influence of small deviations, we require the deviation to be larger than 5%. Also, to classify a firm as financially flexible, we require it to be in a low-leverage state for a minimum number of consecutive periods. This ensures that we are indeed observing a policy, not just a transitory shock to the capital structure of the firm. Further, we separate FF companies from those that show an actual level of leverage always below the predicted level. This is because it does not seem that these firms, unlike FF firms, are following a conservative leverage policy to boost their future investment ability.

[7] Since firm fixed effects are controlled with the first differences, they are mechanically included in the construction of the fitted leverage.

In the baseline specification, the FF dummy takes the value of 1 when we observe at least three consecutive periods in which the firm is classified as LL (FF3). There is no theoretical rationale for choosing a specific time length. Therefore, to assess whether the results are sensitive to the choice of time horizon, we use alternative proxies, defined over a period of three to five years of leverage conservatism. Furthermore, we feel that periods of conservativism of just one or two years may be the product of shocks to the capital structure of the firm and not from a policy aimed at achieving this flexibility. Therefore these would only add noise to our definition and do not consider periods of low leverage less than three years to define our financially flexible status dummy.

Table 4 reports some statistics on the percentage of firms that have been identified as financially flexible at least once over the entire sample period. Across the whole sample, 34% of firms (mostly privately held companies) follow a conservative leverage policy for at least three years. We then define sub-samples of firms according to size and age. Small, medium and large firms are identified on the basis of the tertile distribution of the natural logarithm of total assets in each country each year. Young (mature) firms are those in the bottom (top) tertile of the age distribution in each country each year. Age is defined as the number of years from the year of incorporation. The average age of young firms is less than five years; while the age of mature firms is about 17. Almost 18% of firms are classified as small and financially flexible, while almost 25% are young and financially flexible. Further, most FF firms are in countries with limited access to credit, poorer investor protection, and less developed financial markets. In Appendix 2 we also report the breakdown of FF firms within each country and within each different sub-sample. As expected there is a great heterogeneity across countries and between the UK and euro area firms: 17.2% of UK firms are classified as FF3, compared to 34.5% of euro area companies.

[INSERT HERE TABLE 4]

C. The Value of Financial Flexibility

We start from the hypothesis that, in the presence of market frictions, firms that anticipate valuable growth options in the future may respond by pursuing an LL policy for a number of years. As noted in Myers (1984), reserves of borrowing power enable FF firms to raise external funds and to invest more in the years following the conservative financial policy.

We use an investment equation in which capital expenditure is regressed on *Sales Growth* and *Cash Flow* at the beginning-of-year (Cleary (1999); Alti (2003); Brown and Petersen (2009)). We augment the model with the FF status dummy (FF), and an interaction term between this dummy and cash flow to test whether FF firms do have enhanced investment ability and a lower sensitivity of investment to cash flow.

We estimate the following investment model over the entire sample:

$$\frac{\Delta\, Gross\ PPE_{j,t}}{K_{i,t}} = \gamma_1 \frac{\Delta\, Gross\ PPE_{j,t-1}}{K_{i,t-1}} + \gamma_2 \frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}} + \gamma_3 Sales\ Growth_{i,t} + \gamma_4 FF_{i,t} + \gamma_5 FF_{i,t} \times \frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}} + \eta_i + \eta_t + \nu_{i,t} \quad (2)$$

where $\frac{\Delta\, Gross\ PPE_{j,t}}{K_{i,t-1}}$ represents the capital expenditure of firm *i* at time *t* relative to capital stock; $\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$ is the ratio of operating profits before tax, interest, and preference dividends, plus depreciation of fixed assets to capital stock at the beginning-of-year ($K_{i,t-1}$); *Sales Growth* is a proxy for growth opportunities; η_i is the firm fixed effects; η_t is the time-specific effect; and ν_{it} is the disturbance term assumed to be serially uncorrelated, with mean zero. We use the

GMM technique in a dynamic framework, similar to Bond, Elston, Mairesse, and Mulkay (2003), to control for both endogeneity and fixed effects.

We expect the FF dummy to have a positive and significant impact on the capital expenditure of firms and the interaction term to be negative. In fact, given their spare debt capacity, FF companies should be able to raise external funds to finance their projects and thus be less dependent on their internal resources.

III. Empirical Results

A. Investment baseline results

Table 5 shows the results of the investment model. FF dummies here are defined on the basis of LL spanning between three to five years. The relation between capital expenditure and *Sales Growth* is positive and significant, consistent with the prediction that growth opportunities play a relevant role in investment decisions. This is in line with most of the literature in this field (e.g., Cleary, Povel, and Raith (2007)). The coefficient on *Cash Flow* is always positive and significant, suggesting that the presence of capital market imperfections may result in firms relying, at least partially, on internal funds for investment.

[INSERT HERE TABLE 5]

Most importantly, FF dummies are positive and statistically significant across all specifications, suggesting that companies after a period of conservative leverage tend to invest more. Further, we find that theinteraction term with cash flow is always negative and statistically significant. This result indicates that FF companies are less exposed to capital market imperfections, and their ability to invest is thus at a minimum no more jeopardized by asymmetric and agency costs problems than it is for other firms. The impact of the FF status

dummy is also economically sizeable. For instance, after at least three years of conservative leverage policy (FF3), a company with average cash flow (approximately 0.595) is able to increase its average investment by about 22.6%. The economic impact for column (1) in Table 5 for instance, is computed as follows:

$\frac{\partial\left(\frac{\Delta\, Gross\ PPE_{j,t-1}}{K_{i,t-1}}\right)}{\partial FF} = 0.139\widehat{FF} - 0.072\widehat{FF} \times \overline{\left(\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}\right)} = 0.139 \times 1 - 0.072 \times 0.595 =$ 0.096. We then compare this result with the average level of capital expenditure (0.426) and obtain an economic impact of 22.6%.

A1. Robustness tests

Table 6 reports several robustness tests for the baseline investment model.

Financial flexibility status. First, we use a more stringent criterion to define FF status. The first three columns of Table 6 report results where we require the deviation of actual leverage from the target to be larger than 10%. In this case, it is more valuable for firms to be financially flexible as the impact on investment is on average almost three additional percentage points higher than the main findings. For instance, after at least three years of conservative leverage policy (FF3-10%), a company with average cash flow (approximately 0.595) is able to increase its average investment by about 25.4%.

[INSERT HERE TABLE 6]

Predicted Market-to-Book Value. In our analysis we use *Sales Growth* instead of Market-to-Book Value (*MTBV*) as a proxy for growth opportunities, as our sample mostly includes privately held companies. A well-known problem in the investment literature is related to the measurement of the firm's growth opportunities. A firm's growth opportunities should be

measured by the increase in its value given an increment in the capital stock. If *Sales Growth* fails to properly measure the firm's growth opportunities, then the proxy of cash flow in our investment regressions may partly capture the growth opportunities too. Consequently, the interpretation of previous results and the impact of FF status could be biased. As a second robustness test we thus compute the *Predicted MTBV*, largely following Campello and Graham (2007) and Mortal and Reisel (2012). This measure should capture the firm's growth opportunities as explained by the firm's fundamentals that are considered more informative to explain investment decisions than market values (Cummins, Hassett, and Oliner (2006)). We use market values and accounting data from the *Worldscope* database for all public companies of the countries included in our sample. For each public company each year we build a measure of *MTBV* as the ratio of sum of total assets, market value minus common equity minus deferred taxes to total assets. Within each country we then regress *MTBV* on a number of variables considered in the literature as likely sources of information about the marginal product of capital: earnings, sales growth, net income before extraordinary items, and capital investment. We include both contemporaneous and lagged values of all these variables with the exception of capital investment. We further complement firm-level information with variables that proxy industry conditions: contemporaneous and lagged industry sales growth and lagged industry capital investment.[8] We obtain a vector of estimated coefficients for each country in our sample. Finally, we use these coefficients to construct the *Predicted MTBV* for each firm in our sample, both public and private. We replace *Sales Growth* with the new proxy for growth opportunities in the baseline investment

[8] All independent variables are standardized by the beginning-of-year total assets. Variables at industry level are computed by taking the average of the corresponding variable within each country *c*, each 1-digit NACE Rev. 1.1 industry code each year. NACE (a statistical classification of economic activities in the European Community) refers to the industrial classification as defined in Revision 1 and adopted by *Eurostat*.

model (2). Results are reported in column (4) of Table 6. The FF *status* has still a significant economic impact, qualitatively similar to those estimated in Table 5.

Cash holding policy. As a third robustness test, we control for the possibility that firms may achieve financial flexibility through their cash policy (e.g., Denis and Sibilkov (2010)). In the baseline leverage model we already include a proxy for cash holding. Nonetheless, as an alternative test we replace *Leverage* with the *Leverage net of Cash* defined as the ratio of the difference between total debt and cash to total assets, in line with Bates, Kahle, and Stulz (2009). We then estimate again both the leverage (1) and the investment model (2). Table 6 column (5) reports the new results. The FF3 dummy and the interaction term have the expected signs and are statistically significant. More importantly, we still find a significant economic impact of FF status.

Agency costs of equity. Fourth, we control for potential agency costs of equity. Previous studies suggest that managers may prefer sub-optimal levels of leverage, i.e. lower debt ratios, as a consequence of their lack of diversification (Fama (1980)). However, managers may also use high leverage instrumentally, to reduce the risk of takeover (Berger, Ofek, and Yermak (1997)), or to pursue empire-building projects (Zwiebel (1996)). If this is true, then the main determinant of both conservative leverage and higher investment in our results may be managerial entrenchment, rather than financial flexibility. We believe that this potential criticism may hardly apply to our sample, as most of our companies are privately held and therefore are less likely to suffer equity-related agency costs (Ang, Cole, and Lin (2000)). In fact, Faccio et al. (2011) report that the average ownership of the largest ultimate shareholder in a large sample of European private and public companies over the period 1999–2007 is more than 63%, where almost 30% of companies are wholly-owned. Therefore, conflicts of interest between managers and shareholders are less likely to arise among companies in our sample. Nonetheless, to rule out the possibility of an agency costs story, we proceed as

follows. We compute the fitted values of debt from the leverage model (1) augmented by a measure of equity agency costs. The idea is that if equity agency costs were an omitted variable that ended in the residuals of the leverage model, then both previous estimates of deviations from target leverage and the definitions of financial flexibility would have included also a proxy of agency costs. To measure the equity agency costs we use the ratio of annual sales to total assets as in Ang et al. (2000). From the estimates of the new augmented leverage model we calculate the new FF dummies. Column (6) in Table 6 reports the estimates from the investment model (2) with the new FF3 dummy. Results mirror those in the baseline regressions and the overall economic impact of FF *status* has not changed substantially from that shown in Table 5 column (1).

Capital Markets Access. A further criticism relates to the interpretation of the conservative leverage policy. The low leverage level of FF firms could be explained by a debt supply story, rather than a demand story. In other words, those firms that we identify as financially flexible could simply be firms that are rationed by lenders in the external capital markets rather than firms that choose a conservative leverage strategy to accumulate debt spare capacity. If the debt supply story held, then it would be hard to explain how after a certain number of years of low leverage, our FF firms seem systematically to be able to invest significantly more than others. Nonetheless, we undertake a number of steps to control for this potential issue. First, in the leverage regressions we include variables that measure the extent of rationing to which a firm is likely to be exposed when raising its leverage. Previous studies indicate bond market access as a reasonable supply side factor (Faulkender and Petersen (2006)). We therefore exploit the heterogeneity of our sample and use the firm's listing status as a proxy for being able to access the bond market. We augment the leverage model (1) with a dummy *Public* equal to 1 if the company is publicly traded and zero otherwise. The idea is that publicly traded firms have a better access to external capital

markets (bond market in particular) and, therefore, be less likely to be rationed. Once controlled for the supply side factor, estimates of deviations from target leverage should capture only a conservative leverage strategy. From the estimates of the new augmented leverage model we calculate a new FF dummy. Column (7) in Table 6 reports the estimates from the investment model (2) with the new FF3 dummy. Once again, results are in line with those in the baseline regressions. More importantly, the overall economic impact of FF *status* has not changed from that shown in Table 5 column (1). Second, we inspect the behavior of FF firms in terms of investment and financial decisions around the time *t* at which they are assigned a value of 1 after three years of conservative leverage policy. Table 7 shows that FF firms do indeed experience an important increase in their investments. In particular, it shows that between *t-1* and *t* the average investment of FF firms is well above the industry mean. Further, it shows that FF firms are not only able to invest more than their competitors, but also they are able to make (industry adjusted) abnormal investments. These are capital expenditures that are larger in value than the norm in the firm's life (Mayer and Sussman (2004)). We define a proxy for *Normal Investment Activity* by calculating the average value of industry-adjusted investments ($AdjI_{it}$)[9] over five-year periods, but excluding the central year ($NIA_{it} = \frac{AdjI_{it-2}+AdjI_{it-1}+AdjI_{it+1}+AdjI_{it+2}}{4}$). Then, we identify an instance of abnormal investment if the industry-adjusted investment at time *t* is at least twice the *Normal Investment Activity* ($AdjI_{it} > 2NIA_{it}$). Table 7 shows a significant increase in the level of investment of FF firms at time *t* when we take into account both the competitors investment and the normal pattern of investment of FF firms. Further, it reports that the proportion of FF firms that undertake abnormal investments is higher at time *t*, that is, after a certain period of conservative leverage policy. When we turn to the financing decision, we observe that FF firms finance these investments by significantly increasing their total borrowing between *t-2*

[9] This is defined as the difference between the investment of each firm and the industry mean at time t.

and *t* above the average level of leverage of their competitors (*Adjusted Leverage*). More importantly, their (industry adjusted) leverage is at its highest level when companies are identified as financially flexible. Altogether, this evidence further supports the hypothesis that FF firms have used their preserved borrowing power through a conservative leverage policy, and sacrificed some current investment, to be able to exercise better growth options in the future.

[INSERT HERE TABLE 7]

B. Investment sub-samples results

Once we have shown that the value of being financially flexible is indeed directly related to the ability of firms to invest more, we investigate whether for firms with higher *expected* asymmetric information and contracting problems the degree of financial flexibility is more valuable than for those companies that are less exposed to capital markets frictions. We employ two different set of variables to identify these firms.

B1. Firms characteristics

First, we use firm characteristics that have been often referred in the literature as proxies for informational asymmetries and contracting problems which may prevent companies from accessing external capital markets (e.g., Devereux and Schiantarelli (1990); Bond and Meghir (1994); Gilchrist and Himmelberg (1995); Schiantarelli (1996); Cleary (2006)). Thanks to the large heterogeneity of firms included in our database, we create sub-samples based on firms' listing status (privately held vs publicly traded companies) and based on firms' size and age. Private companies (Brav (2009)), small-sized (Berger and Udell (2003)) and young firms (e.g., Rauh (2006); Fee et al. (2009)) face different and often more severe financing problems than do public, large and more mature companies. More recently,

Hadlock and Pierce (2010) focus on the importance of the combination of firm size and age as predictors of potential asymmetric and contracting problems. Therefore, we expect private, small and young firms to value the FF status more than other firms. In other words, private, small and young firms that are financially flexible should invest more than others.

Table 8 reports the results of the investment model for the sub-samples of private and public companies. We note a remarkable difference between private and public firms in terms of both sensitivity of investment to cash flow and growth opportunities. Private firms show a higher investment–cash flow sensitivity than do public firms – the estimated coefficient of *Cash Flow* is almost seven times larger (for FF3; almost five for FF5)– which is consistent with the hypothesis that these firms face more capital markets frictions and, consequently, their capital expenditure depends more on internal funds. Further, private firms seem more responsive to changes in growth opportunities than are public firms – the coefficient of *Sales Growth* is indeed higher. More importantly, the different impact of the FF status across the two sub-samples points further to the different financing strategies pursued by private and public firms. The value of a conservative leverage policy seems higher for private than for public firms. Indeed, for an average private firm a conservative leverage policy for at least three years implies an increase in its capital expenditure of 22.6% (column 1); while for an average public firm the increase is only 6.9% (column 2). Results are similar when we consider a more stringent criterion for the FF status for both sub-samples of firms (columns 3 and 4).

[INSERT HERE TABLE 8]

Table 9 shows the results of the investment regressions when we split the sample according to size, age and a combination of these two firm characteristics. As expected, the

investment–cash flow sensitivity decreases with size, while growth opportunities play a more important role for small-sized and young firms than they do for large firms. More importantly, financial flexibility is more valued by small and medium-sized firms as well as by young firms. The coefficient on the FF dummy decreases with size and age. Indeed, for an average small firm, being financially flexible implies an increase in capital expenditure of 16.1% (column 1); while for an average large company the increase is about 15.6% (column 3). The difference is even more striking when we look at firm age: an average young firm is able to increase its investment by about 25.7% after (at least) three years of conservative leverage policy; while the equivalent figure for a mature company is only about 9%. These findings are confirmed also for the sub-sample of small and young firms that seem able to increase their investment by about 20% if they are financially flexible (column 6); while large and mature flexible firms increase it only by 7% (column 7).

These tests also provide further insight on the impact of a conservative leverage policy within each sub-sample of firms. Overall, firms with similar size (age) that follow a conservative leverage policy are able to increase their capital expenditure more than those that do not follow such a strategy. They are also able to reduce their exposure to capital market imperfections, by reducing their dependence on internal sources of finance. This result is particularly important for small and young firms.

[INSERT HERE TABLE 9]

B2. Institutional setting

To further capture the potential asymmetric information and contracting problems firms are likely to be subject to, we look at the institutional setting of the country where companies operate. An extensive literature points out that legal protection can substantially affect the ability of firms to raise external finance (e.g., La Porta et al. (1997, 1998, 2000, and

2002)). In particular, the protection provided by legal institutions is a predictor of the costs of external financing (Almeida et al. (2011)). This would in turn affect corporate financial and investment decisions too (Wurgler (2000); Love (2003); Mclean et al. (2012); Mortal and Reisel (2012)).

This implies that financial flexibility should be more valuable in countries where legal protection is poorer and firms' asymmetric information and contracting problems are expected to be more intense. Therefore, in these countries FF firms should invest more than they do in other countries. We use two different tests to investigate this hypothesis.

First, we use two indices to proxy credit accessibility and investor protection. These indices should capture both the asymmetric information and contracting problems that firms face in a certain institutional setting when they try to access external capital markets.

The first index, *Credit Access Index*, measures the legal rights of borrowers and lenders with respect to secured transactions and the sharing of credit information as provided by *World Bank-Doing Business Project*. It includes: 1) the strength of legal rights index (which measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending). This index ranges from 0 to 10, with higher scores indicating that collateral and bankruptcy laws are better designed to expand a access to credit); 2) the depth of credit information index (which measures rules and practices affecting the coverage, scope and accessibility of credit information available through either a public credit registry or a private credit bureau). It ranges from 0 to 6, with higher values indicating the availability of more credit information, from either a public credit registry or a private credit bureau, to facilitate lending decisions; 3) the public credit registry index; and 4) the private credit bureau index (which both measure the coverage of public credit registry and private credit bureau respectively in each country. These two indices range from 1 to 5 respectively with higher values indicating higher number of individuals and firms listed in a

public credit registry (or private credit bureau) with information on their borrowing history from the previous 5 years.[10] For each country we add up the four scores to obtain a final composite index of credit accessibility. The resulting index ranges from 0 to 21, with higher values indicating higher credit access. The more the collateral and bankruptcy laws protect the rights of borrowers and lenders and the better the access to credit information, the more the lending is promoted.

The second index, called the *Anti-Self-Dealing Index*, measures the strength of minority shareholder protection against directors' misuse of corporate assets for personal gain. Following Djankov et al. (2008), the strength of investor protection index is the average of: 1) extent of disclosure index; 2) extent of director liability index; and 3) ease of shareholder suits index. This composite index ranges from 0 to 10, with higher values indicating more investor protection.

Both indices are available only from 2006. We use the values of the first available year (2006) for our entire sample period. It is reasonable to assume that the overall composite indices have not changed greatly over time. In fact, these indices do not vary considerably after 2006. Further, Djankov, McLiesh and Shleifer (2007) find only 32 changes in their Creditor Rights variable in the period 1978–2004, across 133 countries, and of these, only one change is relevant to one of our countries: Spain improved its Creditor Rights score by one notch in 2004. This does not affect our classification though.

We divide the countries based on the median value of each composite index. The countries with above-median credit accessibility are: Belgium, Germany, Netherlands and United Kingdom; while those with an above-median investor protection are: Belgium, Portugal and United Kingdom. Finally, we estimate again the investment model (2) on each

[10] http://www.doingbusiness.org/methodology/getting-credit. Both the public credit registry and private credit bureau coverage indicators are provided by World Bank as a percentage of the adult population. To make these two indicators comparable to the strength of legal rights and the depth of credit information ones, we assign a number from one to five to each quintile of the distribution of each of these indicators.

sub-sample of countries and compare the impact of FF status on the firms' investment ability. Results are reported in Table 10.

Columns 1–4 report the results on the sub-samples based on the credit accessibility index; while columns 5–8 report those based on the investor protection index. We find that investment is more sensitive to cash flow in countries with an overall lower legal protection, in line with Mclean et al. (2012). Most importantly, the findings suggest that FF firms are able to invest more than others and this effect is substantially larger in those countries where legal protections are lower. The economic value of being financially flexible is also significant: companies that pursue a conservative leverage policy for at least three years (FF3) are able to increase their average investment by almost 22.7% in countries with more limited credit accessibility; while in countries with better credit accessibility FF firms increase their average investment by only 7.9% (columns 1 and 2 respectively). We find a remarkable difference also when we use the investor protection index.

[INSERT HERE TABLE 10]

To further test this trend, we first run the investment regressions individually for each country in the sample. This allowed us to have different estimated coefficients for the FF3 dummy for each country separately. Figure 1 (Figure 2) shows the plot of the estimated coefficients of the FF3 dummy for each country with respect to each country's Credit Access Index (Investor Protection Index). In this way we test whether the previous Index (Investor Protection Index). In other words, countries with better credit access (investor protection) appear to feature lower estimated FF3 coefficients. This confirms our previous conjecture that the value of being financially flexible is stronger in countries with more limited credit accessibility (investor protection).

As a third strategy, we separate the euro area countries from the UK, re-run the same

investment model (2) as above, and compare the impact of FF status between the two sub-samples. Since the introduction of the euro in 1999, capital markets in the euro area countries have progressively developed and integrated with each other. Nonetheless, their overall size is still smaller than the UK financial sector (ECB, 2012).[11] The results are consistent with our expectations: financial flexibility seems more important for euro area companies than for the UK.[12]

[INSERT HERE TABLE 11]

C. Liquidity shock

Our previous results strongly suggest that spare borrowing capacity helps firms to invest relatively more than others in the presence of asymmetric information and contracting problems. This implies that FF *status* may be more valuable when an exogenous shock in the capital markets makes external financing even less accessible. The recent financial crisis offers a natural experiment to investigate whether FF companies invest more even in presence of a severe exogenous liquidity shock. If our hypothesis is correct, we expect FF firms to display a lower proportional reduction in investment and a lower investment sensitivity to cash flow than other companies during the crisis.

To test this hypothesis we exploit the last eight years of our sample from 2003 to 2010. In particular, we focus on companies in 2006, the year before the start of the financial crisis, and distinguish those that are financially flexible from those that are not. As in our

[11] The size of capital markets is defined as the sum of the stock market capitalization, bank credit to the private sector and debt securities issued by the private sector, divided by GDP. Over the 2005–2010 period, this ratio is equal to 270% for the euro area; while it is 411% for the UK.

[12] As a further robustness test, we divide the euro area countries based on the Credit Access Index and Investor Protection Index. Unreported results are similar to those included in Table 10.

main analysis, to classify a firm as financially flexible, we require it to have an LL policy for at least three consecutive years (FF3). As a robustness test, we also require at least five consecutive years of LL policy (FF5). The final sub-sample counts 219,953 firms. We then employ two different tests.

First, we compare the average investment levels of FF and non-FF firms before and during the crisis. As above, the investment level of firm *i* is defined as the capital expenditure of firm *i* relative to capital stock ($\frac{\Delta\, Gross\ PPE_{j,t}}{K_{i,t}}$). We then calculate the average of the investment level for firm *i* before (during) the crisis over the 2003–2006 (2007–2010) period. Finally, we compare the levels of investment of (non-) FF firms before and during the crisis, and then we compare these changes between the two sub-samples. We first note that, in line with our hypothesis, during the financial crisis all firms invested on average less than in the four preceding years. In fact, average capital expenditure decreased from 0.384 to 0.254 (Table 12 Panel A). More importantly, FF firms seem to be less affected by the crisis than do others firms. For instance, the change in average investment between the two sub-periods (2003–2006 and 2007–2010) for FF3 firms is equal to 0.068; while for the others it is about 0.144. Further, the difference between the change in investment for the FF3 firms and the change in investment for the other firms (e.g., (0.268 – 0.336) – (0.250 – 0.394) = 0.076) is statistically significant with a p-value of <0.001.

Second, we estimate a simple q-model of investment for the years of the financial crisis (2007–2010) on data from two sub-samples: firms identified as financially flexible in 2006 versus those identified as not financially flexible in the same year. The idea is to see whether firms that have acquired the status *before* the crisis are less exposed to capital market imperfections. As reported in Table 12 Panel B, FF firms do indeed show lower investment sensitivity to cash flow than the other companies (0.305 versus 0.371 for FF3 firms).

Overall these results seem to further corroborate the hypothesis that companies with more spare debt capacity appear better equipped to deal with the shock in the supply of capital. These results complement a recent study by Almeida, Campello, Laranjeira, and Weisbenner (2012) that shows how firms whose debt was largely maturing right after the burst of the crisis in 2007 cut their investment more than otherwise similar firms whose debt was scheduled to mature well after 2008.

[INSERT HERE TABLE 12]

IV. Conclusions

In this paper we investigate the link between financial flexibility, attained through conservative leverage policies, and firms' ability to respond to unexpected changes in their investment opportunities.

First, using an extensive sample from eight euro area countries and the UK between 1993 and 2010 we identify as financially flexible (FF) those firms with low leverage (LL) for a number of years. Since the *demand* for financial flexibility is indirectly captured by the negative deviations of actual leverage from estimated target leverage, we classify a firm as FF if it shows an LL policy for a minimum number of three consecutive years.

Second, we test whether financial flexibility has any impact on investment ability. The rationale is the following: in the presence of market frictions, firms that anticipate valuable growth options in the future may respond by pursuing an LL policy for a number of years. In this way, FF firms have enough spare borrowing power to be able to raise external funds, and to invest more in the years following the conservative financial policy. To test this hypothesis, we specify an investment equation augmented by the FF dummy, and its interaction term with cash flow.

We show that the FF *status* has a large impact on the firm's investment ability. Our tests reveal that an average company that maintains an LL policy for at least three years can increase its capital expenditure by around 22.6%.

Our paper provides new evidence on how the value of financial flexibility varies across firms that face different degrees of financial constraints. We show that private, smaller and younger firms are likely to invest more after a certain period of conservative leverage policy. Further, our findings complement the literature on investor protection and investment decisions by showing that the quality of institutional settings matters for FF firms. Firms in countries with poorer legal protections and less developed capital markets are more likely to benefit from pursuing financial flexibility through a conservative leverage strategy. We also provide evidence that spare borrowing capacity helps firms to reduce their investment less than others in the event of exogenous liquidity shocks in the capital markets, such as during the very recent financial crisis.

Finally, this paper has important policy making implications as it shows a mechanism through which SMEs are able to promote their development growth even in presence of (expected) severe financial constraints in the external markets.

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Table 1. Sample characteristics

This table provides some sample characteristics. The sample includes all non-financial firms (both publicly traded and privately held companies) in eight euro countries and the UK with accounting information for at least four years over the period 1993–2010. Size and age refer to sample averages.

	No. firms	No. obs	% Private	Size (€ mil)	Age
Belgium	10,631	111,449	99.34%	47.301	26.22
Finland	17,623	141,487	99.35%	11.875	16.96
France	190,990	1,641,927	99.75%	8.985	16.89
Germany	6,927	43,393	92.65%	346.214	35.46
Italy	148,016	1,193,518	99.84%	10.644	18.43
Netherlands	2,357	17,909	90.83%	346.504	35.62
Portugal	45,114	222,202	99.64%	7.818	18.18
Spain	244,450	2,048,918	99.91%	5.633	12.83
UK	19,585	101,422	97.33%	92.279	25.09
Total	685,693	5,522,225			
Sample mean	76,188	613,581	99.68%	14.143	16.311
Sample median	19,585	141,487	1	0.782	13

Table 2. Summary statistics

This table reports summary statistics at country level of the variables included both in the leverage (Panel A) and investment (Panel B) models. All variables are winsorized at the 1st and 99th percentiles of their distribution within each country. Please refer to Appendix 1 for definitions of all variables.

Panel A. Leverage Model

		Belgium	Finland	France	Germany	Italy	Netherlands	Portugal	Spain	UK	All sample
Leverage	mean	0.179	0.132	0.093	0.287	0.149	0.139	0.195	0.151	0.215	0.137
	median	0.104	0.000	0.037	0.238	0.039	0.042	0.138	0.070	0.146	0.053
	sd	0.207	0.195	0.135	0.260	0.190	0.177	0.206	0.188	0.223	0.180
Sales Growth	Mean	0.068	0.138	0.429	0.114	0.869	0.282	0.179	0.320	0.135	0.451
	median	0.035	0.045	0.036	0.034	0.037	0.053	0.025	0.059	0.043	0.043
	sd	0.324	0.614	3.458	0.693	5.535	8.203	1.778	2.252	1.309	3.538
Size	mean	8.966	6.105	6.146	9.816	7.591	10.791	6.528	6.555	8.411	6.764
	median	8.806	5.844	5.944	9.985	7.604	10.565	6.445	6.440	8.531	6.662
	sd	1.439	1.912	1.716	2.198	1.625	1.673	1.869	1.508	2.392	1.812
Tangibility	mean	0.211	0.283	0.157	0.372	0.188	0.278	0.245	0.252	0.245	0.210
	median	0.137	0.198	0.095	0.303	0.119	0.234	0.188	0.179	0.152	0.134
	sd	0.221	0.257	0.175	0.296	0.194	0.220	0.214	0.234	0.255	0.215
Profitability	mean	0.111	0.201	0.132	0.129	0.094	0.136	0.099	0.103	0.155	0.114
	median	0.092	0.181	0.113	0.108	0.081	0.122	0.085	0.088	0.101	0.094
	sd	0.110	0.188	0.137	0.142	0.089	0.112	0.104	0.103	0.285	0.122
Ndts	mean	0.045	0.060	0.042	0.052	0.034	0.046	0.050	0.037	0.034	0.039
	median	0.032	0.043	0.030	0.042	0.025	0.039	0.037	0.026	0.023	0.028
	sd	0.044	0.056	0.040	0.043	0.031	0.034	0.047	0.036	0.036	0.038
Tax	mean	0.222	0.197	0.202	0.226	0.622	0.219	0.147	0.201	0.205	0.291
	median	0.158	0.217	0.167	0.150	0.520	0.227	0.118	0.188	0.216	0.217
	sd	0.271	0.173	0.221	0.334	0.996	0.327	0.167	0.219	0.306	0.532
Cash	mean	0.121	0.224	0.240	0.099	0.082	0.091	0.129	0.153	0.188	0.164
	median	0.061	0.155	0.178	0.048	0.031	0.038	0.056	0.091	0.095	0.092
	sd	0.154	0.215	0.217	0.131	0.117	0.128	0.176	0.170	0.227	0.188

Table 2. Summary Statistics (cont'd)

Panel B. Investment Model

		Belgium	**Finland**	**France**	**Germany**	**Italy**	**Netherlands**	**Portugal**	**Spain**	**UK**	**All sample**
$\frac{\Delta\ Gross\ PPE_{j,t}}{K_{i,t}}$	mean	0.301	0.365	0.421	0.264	0.475	0.284	0.334	0.435	0.310	0.426
	median	0.122	0.114	0.115	0.127	0.160	0.160	0.074	0.115	0.108	0.123
	sd	0.693	0.837	1.019	0.580	1.099	0.552	0.847	1.025	0.795	1.015
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	mean	0.635	0.815	0.834	0.438	0.461	0.588	0.423	0.494	1.041	0.595
	median	0.304	0.435	0.490	0.210	0.238	0.290	0.253	0.244	0.518	0.298
	sd	0.944	1.017	0.966	0.729	0.749	0.858	0.674	0.766	1.224	0.853

Table 3. Leverage results

This table reports the GMM-SYS estimations for the leverage model at country level. Please refer to Appendix 1 for definitions of all variables. We use suitable lags of all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients.

	Belgium	**Finland**	**France**	**Germany**	**Italy**	**Netherlands**	**Portugal**	**Spain**	**UK**
(Leverage)$_{t-1}$	0.728***	0.672***	0.472***	0.380***	0.641***	0.563***	0.528***	0.674***	0.580***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Sales Growth	0.022***	0.015***	0.007***	0.011***	0.001***	0.000**	0.005***	0.011***	0.005***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.015]	[0.000]	[0.000]	[0.000]
Size	0.012***	0.0005	0.0001	-0.016***	0.015***	0.008***	0.010***	0.007***	0.006***
	[0.000]	[0.419]	[0.722]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Tangibility	0.136***	0.128***	0.153***	0.146***	0.057***	0.065***	0.085***	0.116***	0.062***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Profitability	-0.075***	-0.011	0.033***	-0.068***	0.035***	-0.042***	0.075***	0.161***	-0.038***
	[0.000]	[0.156]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ndts	-0.187***	-0.229***	-0.184***	0.166***	-0.186***	-0.081***	-0.309***	-0.518***	-0.124**
	[0.000]	[0.000]	[0.000]	[0.003]	[0.000]	[0.000]	[0.000]	[0.000]	[0.043]
Tax	-0.009**	0.019**	-0.004*	-0.013***	0.0004	-0.016***	-0.022***	-0.008**	-0.020***
	[0.038]	[0.040]	[0.070]	[0.002]	[0.700]	[0.000]	[0.003]	[0.022]	[0.001]
Cash	-0.037***	-0.039***	-0.040***	-0.131***	-0.145***	-0.099***	-0.083***	0.00014	-0.086***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.957]	[0.000]
Observations	111,449	141,487	1,641,927	43,393	1,193,518	17,909	222,202	2,048,918	101,422
N of firms	10,631	17,623	190,990	6,927	148,016	2,357	45,114	244,450	19,585
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4. Financially flexible firms

This table reports the percentage of financially flexible (FF) firms across the entire sample, by legal status, size, age, institutional settings and geographical subdivisions. To build the FF status indicator we compare the fitted values from the leverage regressions in Table 3 with the actual values of *Leverage* for each firm each year. We define a firm as *LL* (lower-levered) if the negative deviation between actual and predicted leverage is larger than 5%. *FF3, FF4* and *FF5* are dummies that take the value of 1 when we observe at least three, four or five consecutive periods respectively in which the firm is classified as *LL*. *Small, Medium* and *Large* firms are identified using the tertile distribution of the (logarithm of) total assets in each country each year. *Young* and *Mature* firms are defined on the bottom and top tertile of age distribution. *Low (High) Credit Access Index* is an indicator equal to 1 if the country where the firm operates has a below (above)-median value of the credit access index.

	FF3	FF4	FF5
All sample	34.15%	22.26%	14.57%
Legal Status			
Private	34.07%	22.20%	14.54%
Public	0.08%	0.06%	0.04%
Size			
Small	17.82%	10.91%	6.89%
Medium	10.79%	7.41%	4.92%
Large	5.54%	3.93%	2.75%
Age			
Young	24.84%	16.72%	11.13%
Mature	4.23%	2.34%	1.47%
Institutional setting			
Low credit access index	32.47%	21.10%	13.80%
High credit access index	1.68%	1.16%	0.77%
Low anti-self-dealing index	32.23%	21.08%	13.89%
High anti-self-dealing index	1.92%	1.18%	0.69%
Euro area and UK			
Euro area countries	33.80%	22.03%	14.42%
UK	0.35%	0.23%	0.15%

Table 5. Investment model: baseline regressions

This table presents GMM-DIFF results for the investment equation augmented by the financially flexible status dummies (*FF3, FF4* and *FF5*) and the interaction between these dummies and *Cash Flow*. Please refer to Appendix 1 for definitions of all variables. We use suitable lags of all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients. The economic significance of the FF dummy is reported beneath the coefficient (in bold); this number is the percentage change in the dependent variable (relative to its mean) in response to a change in status of a firm from not FF to FF for a firm with average *Cash Flow*.

	FF3	***FF4***	***FF5***
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	0.020***	0.020***	0.020***
	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	0.470***	0.464***	0.460***
	[0.000]	[0.000]	[0.000]
Sales growth	0.226***	0.224***	0.220***
	[0.000]	[0.000]	[0.000]
	0.139***	0.136***	0.129***
FF dummy	**22.60%**	**22.36**	**23.25**
	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$ *X FF dummy*	-0.072***	-0.068***	-0.050***
	[0.000]	[0.000]	[0.000]
Firm year observations	1,598,899	1,598,899	1,598,899
No. of firms	289,839	289,839	289,839
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes

Table 6. Investment model: robustness tests

This table presents GMM-DIFF results for the investment equation augmented by alternative definitions of the financially flexible (FF) status and the interaction between these dummies and the cash-flow proxy. *FF3 (10%) (FF4,FF5)* in column 1 (2–3) is a dummy equal to 1 if a company shows a negative deviation between its target and the actual leverage larger than at least 10% for three (four, five) consecutive years, and 0 otherwise. Target leverage is calculated from the *Leverage* regressions included in Table 3. In column (4) *FF3* is a dummy equal to 1 if a company shows a negative deviation between its target and the actual leverage larger than at least 5% for three consecutive years, and 0 otherwise, as in Table 5. *Predicted MTBV* is calculated using the projection of market-to-book value of all companies publicly traded in a certain country over the entire sample period on a number of firm- and industry-level characteristics that capture the firm's growth opportunities. *NewFF3* in the *Net Leverage* (column 5) is a dummy equal to 1 if a company shows a negative deviation between its target and the actual leverage larger than at least 5% for three consecutive years, and 0 otherwise. Target leverage is calculated from *Leverage* regressions similar to those in Table 3 where *Leverage* is defined as net of cash. Similarly, *NewFF3* in *Agency Cost* (column 6) is a dummy equal to 1 if a company shows a negative deviation between its target and the actual leverage larger than at least 5% for three consecutive years, and 0 otherwise. Target leverage is calculated from the *Leverage* regressions included in Table 3 and is augmented by a proxy for equity agency costs. This proxy is defined as the ratio of annual sales over total assets in line with Ang et al. (2000). *NewFF3* in *Capital Markets Access* (column 7) is a dummy equal to 1 if a company shows a negative deviation between its target and the actual leverage larger than at least 5% for three consecutive years, and 0 otherwise. Target leverage is calculated from the *Leverage* regressions included in Table 3 and is augmented by a proxy for capital markets access, that is, a dummy *Public* equal

to 1 if the company is publicly traded, and 0 otherwise. Please refer to Appendix 1 for definitions of all other variables. We use suitable lags of all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients. The economic significance of the FF dummy is reported beneath the coefficient (in bold); this number is the percentage change in the dependent variable (relative to its mean) in response to a change in status of a firm from not FF to FF for a firm with average *Cash Flow*.

	FF3 (10%)	***FF4 (10%)***	***FF5 (10%)***	***FF3 Predicted MTBV***	***NewFF3 Net Leverage***	***NewFF3 Agency Costs***	***NewFF3 Capital Markets Access***
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	0.020***	0.020***	0.020***	0.031***	0.020***	0.020***	0.020***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	0.453***	0.435***	0.452***	0.418***	0.462***	0.471***	0.470***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Sales growth	0.216***	0.216***	0.218***		0.219***	0.227***	0.225***
	[0.000]	[0.000]	[0.000]		[0.000]	[0.000]	[0.000]
FF dummy (10%)	0.165***	0.149***	0.122***				
	25.39	**24.24**	**24.06**				
	[0.000]	[0.000]	[0.000]				
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$ *X FF dummy(10%)*	-0.095***	-0.077***	-0.032***				
	[0.000]	[0.000]	[0.000]				

Predicted MTBV				0.048**			
				[0.025]			
FF dummy				0.129***			
				18.72			
				[0.000]			
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$*X FF dummy*				-0.082***			
				[0.000]			
newFF					0.073***	0.139***	0.139***
					11.53	**23.09**	**22.58**
					[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$*X newFF dummy*					-0.039***	-0.069***	-0.072***
					[0.000]	[0.000]	[0.000]
Observations	1,598,899	1,598,899	1,598,899	1,469,014	1,598,899	1,598,899	1,598,899
No. of firms	289,839	289,839	289,839	287,023	289,839	289,839	289,839
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7. Investment, Abnormal Investment, and Leverage changes

This table reports the changes in investment and abnormal investment before and after the firm acquires the financial flexibility (FF) status along with the t-tests on the equality of means. The central observation *t* corresponds to the time when FF firms are assigned a value of 1. FF is a dummy equal to 1 if a company has a negative deviation from its target for three consecutive years, and 0 otherwise. *Adjusted Investment* is calculated as the difference between the ratio of investment to capital stock of each firm *i* each year ($\frac{\Delta \text{ Gross PPE}_{j,t-1}}{K_{i,t-1}}$) and the average investment to capital stock ratio of all firms in the same country *c*, year and 4-digit NACE Rev 1.1 industry code where the company operates. *Adjusted Abnormal Investment* is defined over a pattern of five years of industry-adjusted investment data. We define a proxy for *Normal Investment Activity* by calculating the average value of industry-adjusted investments ($\boldsymbol{AdjI_{it}}$) over five-year periods, but excluding the central year ($\boldsymbol{NIA_{it}} = \frac{AdjIi_{it-2}+AdjI_{it-1}+AdjI_{it+1}+AdjI_{it+2}}{4}$). Then, we identify an instance of abnormal investment if the industry-adjusted investment at time *t* is at least twice the *Normal Investment Activity* ($\boldsymbol{AdjI_{it} > 2NIA_{it}}$). *Adjusted Leverage* is calculated as the difference between the leverage ratio of each firm *i* each year and the average leverage ratio of all firms in the same country *c*, year and 4-digit NACE Rev 1.1 industry code where the company operates.

	t-2	t-1	t	t+1	t+2	Difference in Means t-2 vs. t (p-value)	Difference in Means t vs. t+2 (p-value)
Adjusted Investment	0.023	-0.012	0.154	-0.068	-0.065	0.000	0.000
Adjusted Abnormal Investment	0.015	0.065	0.130	0.030	0.017	0.000	0.000
% of FF firms showing Adjusted Abnormal Investment	2.25%	6.90%	11.07%	4.64%	3.24%	0.000	0.000
Adjusted Leverage	-0.086	-0.081	0.076	0.041	0.031	0.000	0.000

Table 8. Investment models: Private versus Public firms

This table presents GMM-DIFF results for the investment equation augmented by alternative definitions of the financially flexible (FF) status and the interaction between these dummies and the cash-flow proxy. The two sub-samples are identified on the basis of the listing status of each firm in the year when the firm is identified as *Financially Flexible*. Please refer to Appendix 1 for definitions of all variables. We use suitable lags of all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients.

	Private	***Public***	***Private***	***Public***
	FF3		**FF5**	
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	0.020***	0.045***	0.020***	0.050***
	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	0.470***	0.072***	0.460***	0.099***
	[0.000]	[0.000]	[0.000]	[0.000]
Sales growth	0.222***	0.167***	0.216***	0.156***
	[0.000]	[0.000]	[0.000]	[0.000]
	0.139***	0.037***	0.130***	0.074***
FF dummy	**22.587**	**6.86**	**23.316**	**5.861**
	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$ *X FF dummy*	-0.073***	-0.010***	-0.051***	-0.062***
	[0.000]	[0.000]	[0.000]	[0.000]
Observations	1,595,630	3,901	1,595,630	3,901
No. of firms	289,504	565	289,504	565
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Table 9. Investment models: Firms Size and Age

This table presents GMM-DIFF results for the investment equation augmented by the financially flexible (FF) status dummy *FF3* and the interaction between this dummy and the cash-flow proxy. *Small, Medium* and *Large* firms are identified using the tertile distribution of the (logarithm of) total assets in each country each year. *Young* and *Mature* firms are identified in the bottom and top tertile of Age distribution. *Small & Young* (*Large & Mature*) firms are those in the bottom (top) tertile of both Size and Age distributions. Please refer to Appendix 1 for definitions of all variables. We use suitable lags of all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients.

	Small	***Medium***	***Large***	***Young***	***Mature***	***Small & Young***	***Large & Mature***
	FF3			**FF3**		**FF3**	
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	0.008***	0.019***	0.034***	0.020***	0.007***	0.006***	0.013***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	0.463***	0.374***	0.371***	0.437***	0.408***	0.372***	0.344***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Sales growth	0.220***	0.075***	0.079***	0.180***	0.064***	0.347***	0.051***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	0.145***	0.098***	0.090***	0.159***	0.101***	0.154***	0.101***
FF dummy	**16.05**	**15.76**	**15.56**	**25.67**	**8.98**	**19.65**	**6.94**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$ *X FF dummy*	-0.129***	-0.051***	-0.039***	-0.084***	-0.105***	-0.119***	-0.120***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Observations	565,447	397,362	315,461	1,033,110	56,496	441,426	16,684
No. of firms	143,153	107,398	65,614	233,361	14,121	135,159	4,666
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 10. Investment models: Credit Accessibility and Investor Protection

This table presents GMM-DIFF results for the investment equation augmented by the financially flexible (FF) status dummies (*FF3* and *FF5)* and the interaction between these dummies and the cash-flow proxy. *Low (High) Credit Access Index* is an indicator equal to 1 if the country where the firm operates has a below (above)-median value of the Credit Access Index. *Low (High) Anti-Self-Dealing Index* is an indicator equal to 1 if the country where the firm operates has a below (above)-median value of the Anti-Self-Dealing Index. Please refer to Appendix 1 for definitions of all variables. We use suitable lags of all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients.

	Credit Access Index				***Anti-Self-Dealing Index***			
	Low	***High***	***Low***	***High***	***Low***	***High***	***Low***	***High***
	FF3		**FF5**		**FF3**		**FF5**	
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	0.020***	0.040***	0.020***	0.038***	0.021***	0.028***	0.021***	0.030***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	0.475***	0.284***	0.463***	0.282***	0.470***	0.380***	0.459***	0.389***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Sales growth	0.221***	0.042***	0.215***	0.039***	0.201***	0.029**	0.196***	0.025**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.010]	[0.000]	[0.016]
	0.141***	0.042***	0.132***	0.052***	0.138***	0.048***	0.133***	0.037***
FF dummy	**22.70**	**7.91**	**23.43**	**9.23**	**22.41**	**9.44**	**23.67**	**7.54**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$ *X FF dummy*	-0.075***	-0.014***	-0.053***	-0.022***	-0.071***	-0.013***	-0.054***	-0.009***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Observations	1,539,311	59,588	1,539,311	59,588	1,498,931	99,968	1,498,931	99,968
No. of firms	278,122	11,717	278,122	11,717	268,563	21,276	268,563	21,276
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

FIGURE 1 and 2: Investment models: Credit Access Index and Investor Protection Index

These figures show the plot of each country's estimated financially flexible status dummy (*FF3)* with respect to each country's *Credit Access Index* (Figure 1) and *Anti-Self-Dealing Index* (Figure 2) Please refer to Appendix 1 for definitions of all variables.

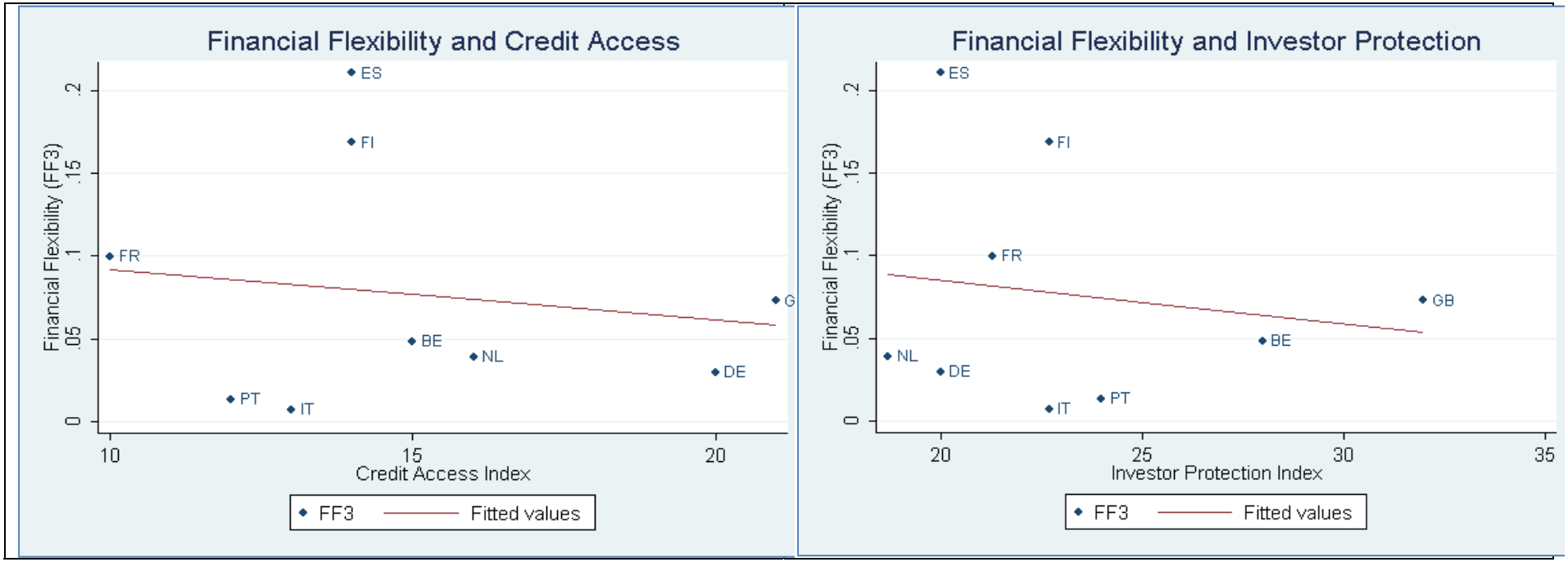


Table 11. Investment models: Euro Area Countries and the UK

This table presents GMM-DIFF results for the investment equation augmented by the financially flexible (FF) status dummies (*FF3* and *FF5)* and the interaction between these dummies and the cash-flow proxy. Sub-samples are defined on the basis of the country where the firm operates. Please refer to Appendix 1 for definitions of all variables. We use suitable lags of all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients.

	Euro Area	***UK***	***Euro Area***	***UK***
	FF3	**FF3**	**FF5**	**FF5**
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	0.021***	0.014***	0.020***	0.017***
	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	0.473***	0.276***	0.462***	0.275***
	[0.000]	[0.000]	[0.000]	[0.000]
Sales growth	0.218***	0.028***	0.213***	0.007
	[0.000]	[0.000]	[0.000]	[0.268]
	0.137***	0.063***	0.129***	0.072***
FF dummy	**23.32**	**13.3**	**2.224**	**13.40**
	[0.000]	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$ *X FF dummy*	-0.071***	-0.010***	-0.050***	-0.025***

	[0.000]	[0.006]	[0.000]	[0.005]
Firm year observations	1,580,392	18,507	1,580,392	18,507
No. of firms	285,518	4,321	285,518	4,321
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Table 12. Liquidity shock and financial flexibility

This table reports results on the investment levels and investment sensitivity to cash flow for a sub-sample of firms during the financial crisis. In particular, we focus on companies in 2006, the year before the burst of the financial crisis, and distinguish those that are financially flexible (FF) from those that are not. To classify a firm as financially flexible FF3 (FF5), we require it to have a low leverage (LL) policy for at least three (five) consecutive years. Panel A shows the means of the average level of capital expenditure of firm *i* relative to capital stock ($\frac{\Delta\ Gross\ PPE_{j,t}}{K_{i,t}}$) over the period 2003–2006 (Pre-crisis) and over the period 20072010 (During crisis) for the two groups of firms. Panel B reports the GMM-DIFF results of a simple q-model of investment estimated for the years affected by the financial crisis (2007–2010) only on the two groups of firms, FF versus Not FF. Please refer to Appendix 1 for definitions of all variables. We use suitable lags of all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients.

Panel A. Mean of investment levels before and during the crisis.

	No. of firms	**Pre- crisis**	**During crisis**	**Δ Mean During-Pre**	**P-val of diff. During-Pre**	**P-val of diff. FF-NotFF**
All sample	219,953	0.384	0.254	-0.130	0.000	
				FF3		
FF firms	39,226	0.336	0.268	-0.068	0.000	0.000
Not FF firms	180,727	0.394	0.250	-0.144	0.000	

				FF5		
FF firms	14,918	0.254	0.242	-0.012	0.008	0.000
Not FF firms	205,035	0.393	0.254	-0.139	0.000	

Table 12. Liquidity shock and financial flexibility (cont'd)

Panel B. Investment regressions

	FF3		***FF5***	
	FF	**Not FF**	**FF**	**Not FF**
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	0.020**	0.008*	0.024*	0.010**
	[0.011]	[0.096]	[0.100]	[0.016]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	0.305***	0.371***	0.177***	0.380***
	[0.000]	[0.000]	[0.000]	[0.000]
Sales growth	0.397***	0.341***	0.428***	0.347***
	[0.000]	[0.000]	[0.000]	[0.000]
Firm year observations	45,328	186,190	18,165	213,353
No. of firms	28,214	125,319	10,836	142,697
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Appendix 1
Table 1A. Variables definitions

Variable	**Definition**
Leverage	Ratio of financial debt to total assets, where financial debt includes non-current liabilities (long-term debt) and current liabilities (loans) and total assets is the sum of fixed and current assets.
Sales Growth	Annual growth rate of sales.
Size	Natural log of total assets (in € mil), expressed in real value.
Tangibility	Ratio of tangible fixed assets to total assets.
Profitability	Ratio of earnings before interest, taxes and depreciation to total assets.
Ndts	Ratio of depreciation to total assets.
Tax	Ratio of total tax charge to total assets.
Cash	Ratio of cash and cash equivalents to total assets.
Age	Number of years since incorporation.
Private (Public)	Dummy equal to 1 if the company is a privately held (publicly traded), zero otherwise.
Interest Debt Burden	Ratio of interest payment to earnings before interest, taxes and depreciation.
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	Ratio of capital expenditure to the beginning-of-year capital stock. Capital expenditure is computed as the annual change in (net) total fixed assets plus depreciation.
$K_{i,t}$	The capital stock is constructed using the perpetual inventory method. Since the values available for the capital stock are at book value (that is, at historical prices), we multiply the value at historical prices for the first year of observation available for each firm by a factor adjusting for historical inflation to get an estimation of the initial value ($K_{i,t}$) of the capital stock at replacement value (that

	is, at time t_1 prices). The perpetual inventory formula is then used to obtain the estimated value of the stock of capital at replacement cost in the subsequent times: $$K_{i,t} = (1-\delta)K_{i,t-1} + \frac{\Delta \text{ Gross PPE}_{i,t}}{GDP\ deflator}$$ where δ is the depreciation rate of the stock of capital (based on aggregate data at country level).
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	Ratio of cash flow to the capital stock where cash flow is net income plus depreciation.
FF dummies (FF3, FF4, and FF5)	Financially flexible status dummy equal to 1 when we observe at least three (four or five) consecutive periods in which the firm is classified as *LL*, where *LL* is an indicator equal to 1 if the firm in each country each year exhibits a negative deviation between its actual and predicted leverage. We require the deviation to be larger than 5%.
Credit Access Index	An index that measures the legal rights of borrowers and lenders with respect to secured transactions and the sharing of credit information as provided by *World Bank-Doing Business Project*. It sums up two indices: 1) the strength of legal rights index; and 2) the depth of credit information index. This composite index ranges from 0 to 16, with higher values indicating higher credit access.
Anti-Self-Dealing Index	An index that measures the strength of minority shareholder protection against directors' misuse of corporate assets for personal gain. It includes three main components: 1) extent of disclosure index; 2) extent of director liability index; and 3) ease of shareholder suits index (Djankov et al. (2008)). This composite index ranges from 0 to 10, with higher values indicating more investor protection.

Appendix 2

This table reports the distribution of financially flexible (FF) firms within the categories country, legal status, size, age and institutional setting. We compare the fitted values from the leverage regressions in Table 3 with the actual values of *Leverage* for each firm each year. We define a firm as *LL* (lower-levered) if the negative deviation between actual and predicted leverage is larger than 5%. *FF3, FF4* and *FF5* are dummies that take the value of 1 when we observe at least three, four or five consecutive periods respectively in which the firm is classified as *LL*.

Table 2A. Financially flexible firms at country level (%)

	FF3	FF4	FF5
Countries			
Belgium	26.29	19.27	14.05
Finland	37.76	27.57	19.31
France	35.66	24.57	16.52
Germany	24.02	14.88	8.47
Italy	40.66	22.74	14.66
Netherlands	23.76	15.89	10.43
Portugal	25.60	14.58	7.45
Spain	32.03	22.07	14.46
UK	17.20	11.24	7.45
Legal status			
Private	34.14	22.24	14.56
Public	40.18	30.70	20.00
Size			
Small	34.06	20.86	13.18
Medium	35.52	24.41	16.21
Large	32.01	22.73	15.90
Age			
Young	35.54	23.92	15.93
Mature	28.43	15.68	9.88
Institutional setting			
Low credit accessibility	34.57	22.47	14.69
High credit accessibility	27.59	19.06	12.74
Low investor protection	35.08	22.95	15.11
High investor protection	23.62	14.46	8.45

Appendix 3. Choice of Instrument Set

Across the entire paper we chose to use a GMM-SYS specification for the leverage equations and a GMM-DIFF specification for the investment equation. This choice is motivated by the difference in persistency between leverage and investment. Further analysis confirms that while leverage is a highly persistent variable, investment is not. Below we report country based OLS estimated autoregressive parameters (as in Bond, 2002) to assess the persistency of the individual series.

Table 3A. Estimated coefficients of the lagged dependent variables

	$(Leverage)_{t-1}$	$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$
Belgium	0.886	0.104
Finland	0.829	0.039
France	0.700	0.031
Germany	0.757	0.105
Great Britain	0.795	0.073
Italy	0.795	0.014
Netherlands	0.813	0.151
Portugal	0.751	0.040
Spain	0.825	0.054

Furthermore, as noted in Blundell Bond and Windmjier (2000) and Bond (2002), the dynamic specification implies that the OLS estimation of the autoregressive parameter is biased upwards while the Fixed Effects (WG) estimation is expected to be biased downwards. The fact that the OLS and WG estimators are biased in opposite directions has been used in a number of studies to infer that a consistent estimator should lie between them (Bond, 2002). Moreover, Bond (2002) emphasizes that the finite sample bias of the GMM-DIFF is likely to be in the direction of the WG estimator when weak instruments are present. Therefore we have used this "rule of thumb" in determining the estimator to use. Reported below is a table that includes the coefficients of the lagged leverage estimated with OLS, WG, GMM-DIFF and GMM-SYS.

Table 4A. Estimated coefficients of the lagged leverage

	OLS	FE	GMMDIFF	GMM-SYS
BELGIUM	0.838***	0.561***	0.709***	0.730***
FINLAND	0.773***	0.463***	0.629***	0.672***
FRANCE	0.664***	0.345***	0.434***	0.473***
GERMANY	0.701***	0.264***	0.372***	0.388***
GREAT BRITAIN	0.797***	0.389***	0.506***	0.581***
ITALY	0.765***	0.463***	0.583***	0.645***
NETHERLANDS	0.801***	0.457***	0.492***	0.557***
PORTUGAL	0.719***	0.349***	0.499***	0.528***
SPAIN	0.785***	0.433***	0.598***	0.678***

Table 4A shows that the GMM-SYS does appear to offer some efficiency gain compared to the GMMDIFF specification. Although in some countries the difference between the two estimated coefficients of the lagged dependent variable is small, the GMM-SYS coefficients are always larger than the GMMDIFF ones.

As for the typical diagnostic checks, as we discussed above we have not reported in the main text the Sargan Test of excluded restrictions and the Arellano Bond Tests of serial correlation. As we state in footnote 6, the Sargan Test is known to have a tendency to over-reject the instrument set in panels of dimensions similar to our sample. In fact, across all our tests the Sargan Test always has a p-value of zero (Table 5A).

Table 5A. Sargan and Serial Correlation Test Values

This table reports the Sargan Tests and Serial Correlation Tests p-values calculated from the leverage regressions at country level using as a lag structure all the available lags starting from *t-2*.

	Sargan Test	p-val Sargan	m1	p-val m1	m2	p-val m2	m3	p-val m3	Obs	Firms
BE	1546.557	0.00	-38.037	0.000	3.818	0.00	0.486	0.627	111,449	10,631
FI	1667.417	0.00	-45.087	0.000	3.86	0.00	3.147	0.002	141,487	17,623
FR	10866.28	0.00	-142.945	0.000	23.477	0.00	-0.749	0.454	1,641,927	190,990
DE	1593.338	0.00	-29.213	0.000	4.524	0.00	-1.228	0.219	43,393	6,927
UK	1681.639	0.00	-38.135	0.000	6.445	0.00	-0.721	0.471	101,422	19,585
IT	21652.22	0.00	-157.385	0.000	33.859	0.00	-23.759	0	1,193,518	148,016
NL	1392.772	0.00	-15.776	0.000	1.723	0.085	-0.323	0.747	17,909	2,357
PT	2612.864	0.00	-67.466	0.000	7.137	0.00	1.687	0.102	222,202	45,114
ES	11624.14	0.00	-186.714	0.000	21.558	0.00	0.492	0.623	2,048,918	244,450

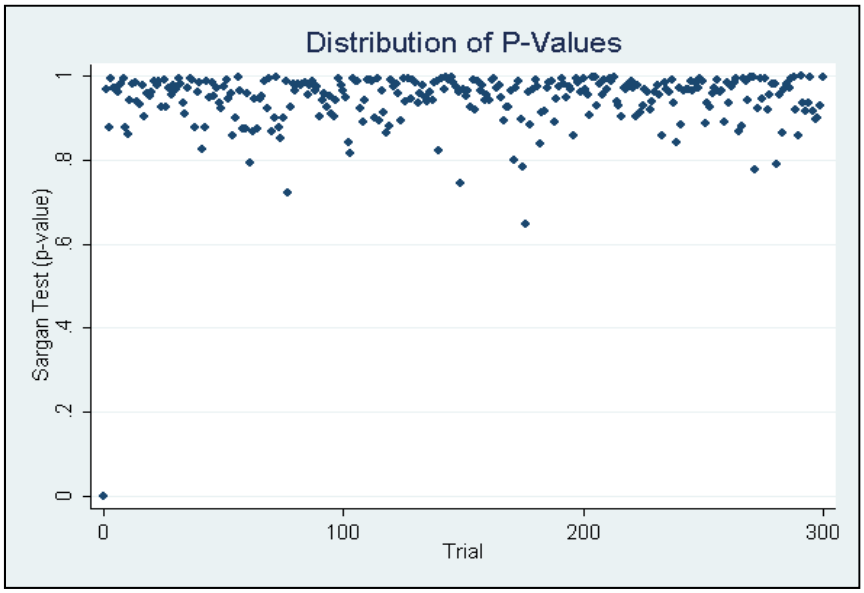
To further confirm this evidence, we replicate the panel structure of the paper kindly referenced by the referee from Bond Klemm Newton-Smith Syed and Vlieghe (BKN-S S V, 2004). So, first we only keep UK companies (we also repeat the following test with all the other countries in the paper and they all deliver similar results to the following).

Finally, we repeat the estimations of the investment model for 300 times (the number of repetitions depends on the maximum capacity of Stata to store the estimated coefficients and Sargan tests at once). In each repetition we randomly select a subsample of about the same number of firms as BKN-S S V(2004) (average sample size is 709 firms with and 2654 observations while BKN-S S V(2004) report 703 firms and 4,263 observations). We also run the same regression on the whole panel (which is still a subsample of the test included in the paper since we only kept 1993-2004).

Figure 1A shows the plot of the Sargan Test p-values for each trial, including the trial where we have the whole sample (trial 0). In this exercise we use the same lag structure we use in the paper (all the available lags starting from t-2 for all independent variables).

Figure 1A. Distribution of the Sargan Test p-values (all available lags starting from t-2)

This figure plots the Sargan Test p-values calculated from the leverage regressions estimated for the whole sample (trial 0) and for each random sub-sample (300 trials). In these regressions we use all available lags starting from t-2 as instruments.

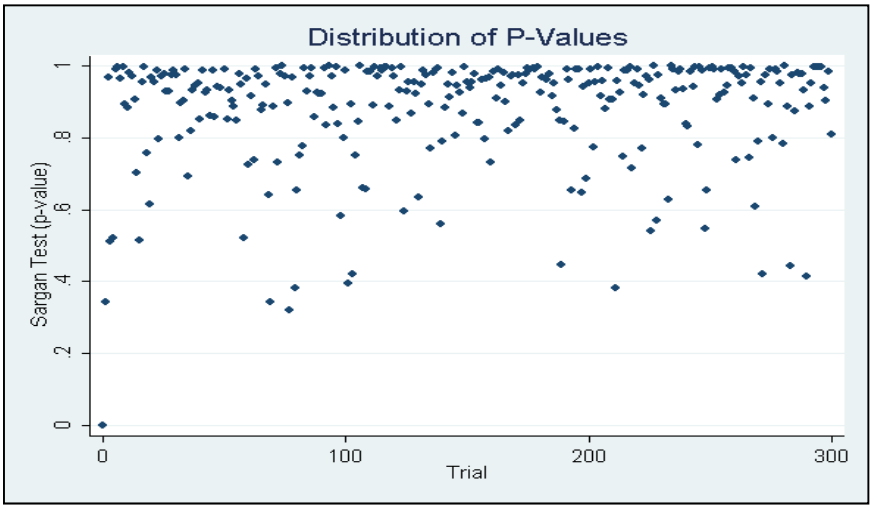


The only observation corresponding to a Sargan p-value equal to zero is the one from the whole sample at the bottom left of the graph. Each and every single trial on a subsample with similar sample structure as BKN-S S V (2004) returns a p-value of the Sargan statistic above 0.6.

Interestingly, this result is not driven by the specific lag structure we use. In fact, a number of papers discuss the possible issue of "overfitting bias" (for instance see Bowsher, 2003). When we use the same conservative lag structure as BKN-S S V(2004), i.e. t-2 and t-3, we obtain very similar results as reported below in the next Figure. The only observation corresponding to a p-value of zero is the one from the whole sample (trial 0). Each and every single trial on a subsample with similar sample structure and same lag structure as in BKN-S S V(2004) returns a p-value of the Sargan statistic above a significance level of 0.3. There are just five trials where p-value is between 0.3 and 0.4 0 and the remaining 295 all have p-values above 0.4. Average Sargan is 0.88 Median p-value is 0.94 (Figure 2A).

Figure 2A. Distribution of the Sargan Test p-values (t-2 and t-3 lags)

This figure plots the Sargan Test p-values calculated from the leverage regressions estimated for the whole sample (trial 0) and for each random sub-sample (300 trials). In these regressions we use t-2 and t-3 lags as instruments.



Another possible reason for concern is that the second order test of serial correlation (*m2*) fails in all countries (Table 5A). The *t-2* lag would not then be a valid instrument, but the *t-3* (and earlier) lags would (except with Finland and Italy). However, the serial correlation test itself appears to be affected by the dimensions of our sample. Figure 3A (4A) reports the distribution of the *m2* p-values with the lag structure we use in the paper (with the t-2 and t-3 lag structure). While the p-value on the *m2* test for the whole sample is zero, the tests on the 300 trials described above indicate that only 10% (15%) of the trials do feature a statistically significant *m2* test (p-value less than 0.1); while the median p-value is 0.4 (0.34).

Figure 3A. Distribution of the *m2* test p-values (all available lags starting from t-2)

This figure plots the *m2* test p-values calculated from the leverage regressions estimated for the whole sample (trial 0) and for each random sub-sample (300 trials). In these regressions we use all available lags starting from t-2 as instruments.

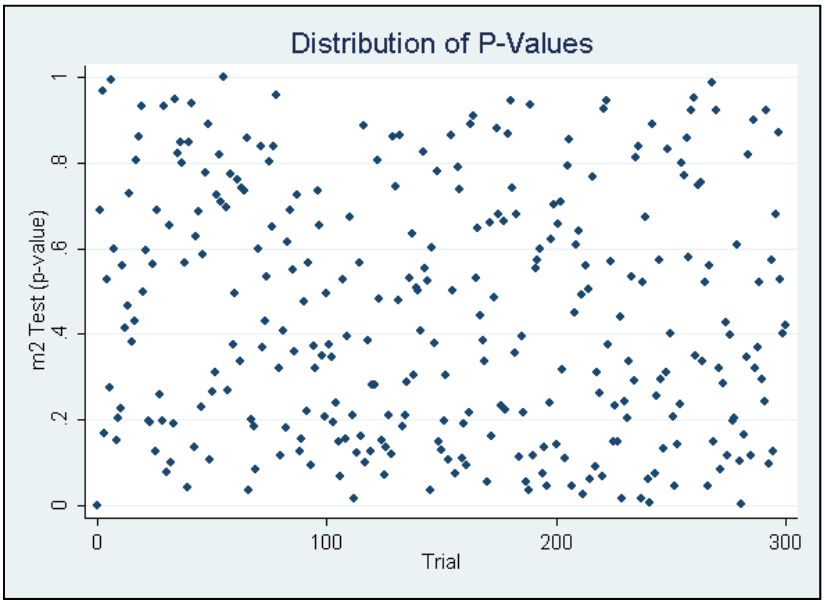
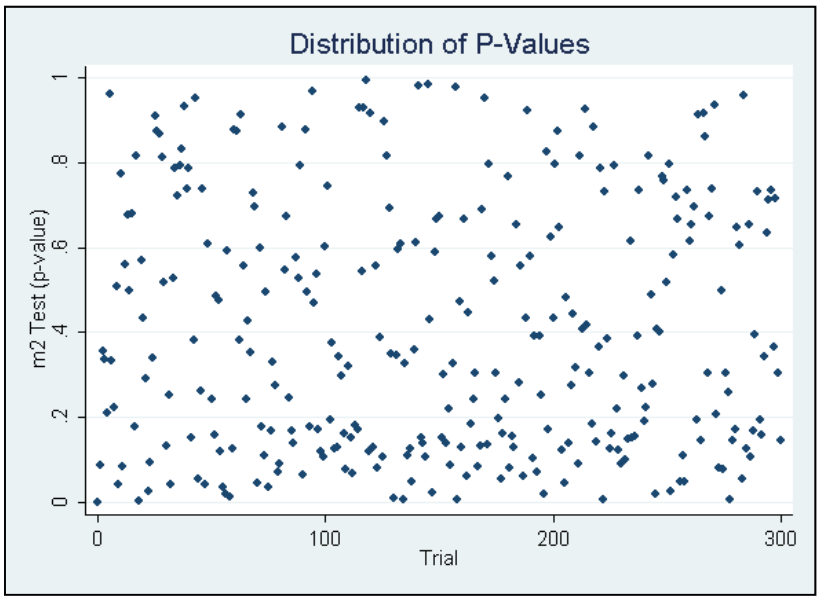


Figure 4A. Distribution of the *m2* test p-values (t-2 and t-3 lags)

This figure plots the *m2* test p-values calculated from the leverage regressions estimated for the whole sample (trial 0) and for each random sub-sample (300 trials). In these regressions we use t-2 and t-3 lags as instruments.



Finally, our results are not affected either by the choice of the lag structure. We replicate all the results in the paper using as instruments all the available lags starting from *t-3* for all independent variables. For brevity Table 6A reports only the results of the baseline regressions in Table 5. Figures are almost identical to those reported in the paper.

Table 6A. Investment model: baseline regressions with different lags structure

This table presents GMM-DIFF results for the investment equation augmented by the financially flexible status dummies (*FF3, FF4* and *FF5*) and the interaction between these dummies and *Cash Flow*. Please refer to Appendix 1 for definitions of all variables. We use all the available lags starting from t-3 for all independent variables as well as year dummies as instruments. All regressions include firm and year fixed effects. P-values, adjusted for heteroskedasticity, are reported in brackets below the coefficients. The FF dummies come from leverage models estimated using from the third to the earliest lag for the difference equation and the third lagged first difference for the level equation.

	FF3	***FF4***	***FF5***
$\frac{\Delta\ Gross\ PPE_{j,t-1}}{K_{i,t-1}}$	0.020***	0.020***	0.020***
	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$	0.468***	0.463***	0.461***
	[0.000]	[0.000]	[0.000]
Sales growth	0.224***	0.224***	0.218***
	[0.000]	[0.000]	[0.000]
	0.138***	0.127***	0.113***
FF dummy	**22.47**	**21.43**	**22.75**
	[0.000]	[0.000]	[0.000]
$\frac{Cash\ Flow_{i,t-1}}{K_{i,t-1}}$ *X FF dummy*	-0.071***	-0.060***	-0.027**
	[0.000]	[0.000]	[0.022]
Firm year observations	1,598,899	1,598,899	1,598,899
No. of firms	289,839	289,839	289,839
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes