

# Bank Distress and Firm Performance during the Great Recession - Evidence from Ireland

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**Abstract:** This paper investigates the impact of bank distress on firms' performance using unique data during the Great Recession for Ireland. The results show that bank distress, measured as banks' credit default swap spreads (CDS) has negatively and statistically significantly affected firms' investment expenditures. Interestingly, firms with access to alternative sources of external finance are not impacted by bank distress. The results are robust to accounting for external finance dependence, demand and trade sensitivities, which affect firm performance and the demand for credit.

Keywords: *firm performance, bank distress, crisis*

JEL classification: E44, E50, G20

## 1. Introduction

Does bank distress affect firms' performance? In spite of the crucial importance of this question, the evidence is still unclear. The recent financial crisis has spurred a renewed interest in better understanding the role the banking system plays in the economy, and how financial sector crises spread to the real economy. In this paper we analyze the impact of distress in the banking sector on the real economy, in particular on the investment behavior of firms. We focus on the Irish economy during the crisis years, 2008-2014, and make use of a unique database which provides us information on the universe of Irish firms and their banking relations. Furthermore, an important feature of our analysis is the use of market based indicators to quantify bank distress. Banks' Credit Default Swaps (CDS) capture bank fundamentals as well as risk premia, and thus provide us with a much more comprehensive measure of banks' conditions.

The Irish economy provides an interesting case to study not only due its small size but also its notoriety as one of the "GIIPS"<sup>1</sup> countries that suffered the greatest distress during the European Sovereign debt crisis, and the scale of the economic contraction it experienced from 2008-2013. This experience was in stark contrast to the pre-crisis economic experience. Ireland had a remarkable economic performance, growing at about 6% per year between 1990 and 2005, which justifiably earned it the moniker the "Celtic tiger". However, after the year 2000, the Irish economy accommodated an unusually large credit bubble, with a massive increase in the volume of mortgages. Kelly (2009) highlights that Ireland displayed marked increases in the level of bank lending to households and firms of over 200% of GDP by 2008, the highest in developed Europe, up from a modest base of 60% in 1997. This evolution of lending was complemented by the banking sector's increased reliance on non-deposit funding from 2003 on, with over half of lending being non-deposit financed by 2007, and by the rise in house prices from 5 times earnings to 12 times earnings from 1997 to 2007. The fragility of the business model used by Irish banks was proved by the decline in the demand for mortgages, beginning at the end of 2006, leading to significant decreases in the price of real estate and by the effects of global financial crisis on inter-bank borrowing and bond market in 2008, severely restricting the access to funds for Irish banks. The crisis in the banking sector led to Irish government intervention, nationalization, and recapitalization of several Irish banks. This in turn has translated into a severe crisis that has derailed the "Celtic Tiger" from its remarkable previous growth.

The question we are interested in is to what extent the distress in the banking sector affected the activity of Irish firms. This is an important question especially in the context of the recent financial crisis, because the banking sector, by facilitating the flow of funds from investors to borrowers, is an important contributor to economic growth. Disruptions that interfere with the ability of the financial sector to intermediate financial flows might restrain economic activity. A number of papers identify a "Bank lending channel", where financial institutions could be the source of important macroeconomic dynamics. Financial intermediaries are themselves dependent on debt financing, so that if their condition deteriorates they face higher borrowing costs, which may be passed on to borrowing firms. The bank may also respond to deterioration in

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<sup>1</sup> Greece, Ireland, Italy, Portugal and Spain

its condition by tightening lending standards as lower loan losses might allow it to rebuild its capital.

The most recent crisis has revived the interest in the role of the bank lending channel. Popov and Udell (2012) use a survey of small and medium enterprises in 16 emerging European countries to analyze the link between firms' credit supply and banks financial conditions between 2005 and 2008. In the absence of a direct connection between firm and bank, they build an index of locality-specific bank distress corresponding to surveyed firms. Their results show that firms' access to credit was affected by the changes in the financial conditions of their banks and was sensitive to shocks in balance sheet conditions of foreign parent banks. Two recent papers use data obtained from Thomson Reuters LPC's DealScan, which provides extensive coverage of the syndicated loan market and provide firm-bank link. Due to the nature of syndicated loans, the firms used by these papers are large or very large and most of them are publicly traded. The first paper by Acharyaa et al (2014) explores the impact of European Sovereign Debt Crisis on loan supply disruptions for GIIPS banks and the impact on the performance of European borrowers that have a significant business relationship with these banks. The second paper, Carvalho et al (2014), analyses 1,564 large and very large publicly traded firms in 34 countries and finds that, during financial crises, firms with strong relationship with banks are affected by bank distress, and that public debt markets do not mitigate the credit constraint for these firms. Evidence that banks in poorer financial health charge more for loans comes from Hubbard et al (2002), who show that less well capitalized banks tend to charge higher loan rates than well capitalized banks. Dell'Ariccia et al (2008) examine, in a cross-country setting using 41 countries from 1980-2000, whether banking crises exogenously hinder real activity. They found that sectors more dependent on external finance perform relatively worse during banking crises. Important research on how the bank-lending channel operates using a different methodological approach comes from Halvorsen and Jacobsen (2009). They analyse the importance of bank lending shocks on real activity in Norway and the UK, using structural VARs and based on quarterly data over 21 years. They find that a negative bank lending shock causes output to contract. The significance of bank lending shocks seems evident as they explain a substantial share of output gap variability. This suggests that the banking sector is an important source of shocks to the real economy.

Our paper contributes to the literature on the transmission of shocks from the banking sector to the real economy by analysing the effect of bank distress on firms' investments using a large number of Irish firms. While most other studies focus on large and very large firms,<sup>2</sup> our sample covers small and medium firms as well, which are likely to suffer the most, allowing us to provide more precise estimates of the effects of the crises. Previous studies<sup>3</sup> used syndicated loans data to match firms with banks, therefore restricting their analysis to publicly traded, large and very large firms, which often have access to alternative sources of external finance, therefore underestimating the importance of the bank lending channel. Moreover, the measure of bank distress is extremely important for the analysis – we use banks' Credit Default Swap (CDS) spreads, a market based indicator that which allows timely information on the default risk of

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<sup>2</sup> In Carvalho et al (2014) the mean of total assets for non-US firms is 12, 200 million, versus 121 million, the mean of total assets for the Irish firms from our data.

<sup>3</sup> Acharyaa et al (2015), Carvalho et al (2014)

banks which is not subject to the delay in ratings agencies evaluation of risk. Arguably, market based indicators, which combine banks' balance-sheet data with measures of risk faced by the bank's creditors are preferable to the measures previously employed in the literature that are based on banks' balance sheet only. A major and persistent issue of bank lending channel studies is disentangling the bank loan supply effect on firms' investment from the effect of demand. This perennial problem can be resolved in cases where credit data can be matched directly to firms and data on both demand for, and supply of, loans exist. However, in countries such as Ireland such data are not readily available and hence analysis requires substantial innovation. Another contribution of our paper is that we carefully control for both domestic as well as foreign demand, which is especially important for Irish firms, which are very integrated in world markets. In addition we control for firms' dependence of external finance, which influences the degree to which firms respond to disruptions in the supply of bank loans. Finally, we account for possible reverse causation in estimation by using instrumental variables.

We construct a unique dataset with information on borrowing firms and lending banks and the connection between them. We find that bank distress negatively affects borrowing firm's investments. Our results also show that firms in industries that rely more on external finance for investments will be more negatively affected by their bank's distress; similarly, firms in industries more sensitive to business cycles are also more influenced by the distress of their lending bank. Interestingly, distress in the banking sectors affected firms with and without access to alternative sources of finance differently. Those firms that can finance investments elsewhere were able to avoid the negative impact of bank distress. This finding is consistent with the view that public markets for firms in Ireland are substitutes to bank lending, and were able to offset the negative shocks to the banking sector for borrowing firms during the crisis.

The paper is structured as follows: section 2 describes the data, and the econometric strategy. Section 3 discusses the results. Section 4 provides robustness checks. Section 5 concludes.

## **2. Data Description and Econometric Strategy**

### **2.1. Data Description**

The data we use in this paper come from several sources: the Orbis database for detailed firm level information, the Bankscope data for bank specific information, the Amadeus database for the relationship between firms and their banks, and the Compustat data for calculating various controls like external capital dependence, business cycles and trade sectoral dependence. In addition, we used Data Stream and SNL financial databases to obtain Credit Default Swaps (CDS) data, which we use as measures of bank distress.

An important advantage of the Amadeus database is that besides the unconsolidated balance sheet and income statements for firms, it includes information on firms' relationship bank(s), which provides us with crucial information on firms-banks linkages. This information is essential for investigating the effects of bank distress on firm performance. However, the Amadeus data provides only the name of the banks firms have relationships with, and no bank identifier.

Therefore we had to manually search and match the names of each bank listed in Amadeus with the names of the banks in Bankscope in order to also be able to retrieve information of those banks. The vast majority of the firms in our sample report relation with one bank only. For the very few that report more than one bank, we take the average of the CDS scores for the reported banks. These firm-bank relationships tend to be very stable over time, as firms rarely if at all change banks.<sup>4</sup>

The sample of Irish firms which report their bank relationships are spread over all sectors, including manufacturing and services.<sup>5</sup> We focus on firm level as well as bank level data for Ireland for the crisis years, 2008-2014. After cleaning the data and constructing the relevant variables we are left with 1644 firms in manufacturing and services sectors. Summary statistics for the main variables in the regression are presented in Table A.

## 2.2 Econometric Methodology

Our basic specification links firms' changes in capital expenditure to its determinants, including bank distress. We use the following econometric model:

$$\Delta(CapExp/Toas)_{ijt} = \beta_1 Age_{it} + \beta_2 Size_{it} + \beta_3 Cash_{it}/Toas_{it} + \beta_4 Bank\ Distress_{kt-2} + \beta_5 ExternalFinanceDependance_j + \beta_6 BusinessCycleDependence_j + \beta_7 TradeDependence_j + \pi_t + \varepsilon_{ijt}$$

where the dependent variable is the change in the ratio of firms' capital expenditure divided by total assets. We follow Claessens, Tong and Wei (2012) and use change in capital expenditure to total assets in order to account for other firm characteristics, such as differences in profitability before the crisis. We also account for various firm characteristics to capture other determinants of changes in capital expenditure, like firms' corporate policies, loan demand, etc. We thus account for the age and the size of the firm, as well as the cash holdings/total assets.<sup>6</sup> Firms' cash holdings are particularly important and influence their investment level, especially during a crisis, as Duchin et al. (2010) find. We calculate firms' age as the difference between current year and the year the firm was established. As firms' size we use the logarithm of total assets.

The variable of interest which could potentially significantly impact firms' capital expenditures is bank distress. The recent crisis produced pronounced and severe bank distress coupled with a very large decrease in economic activity by firms. Therefore, it is important to investigate to

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<sup>4</sup> Hubbard, Kuttner, and Palia (2002) emphasize the challenges that firms face when trying to obtain loans from other banks. Similarly, see Slovin, Sushka and Polonchek (1993) find that firms that rely on a bank lending relationship find it difficult and expensive to borrow elsewhere.

<sup>5</sup> However, in the regressions we drop real estate, construction and finance because of the specific characteristics of the Irish crisis which started primarily in the real estate sector.

<sup>6</sup> Additionally, accounting for profitability does not change the results.

what extent the major drop in economic activity was driven by banking sector distress. Having a timely and market based measure of bank distress, which can be readily applied across the sample of banks is thus very important as it reflects the direct stress banks were under from creditors.. We use a market-based measure of banks distress captured by using monthly CDS spread data using the 5 year Tenor for Senior debt CDS only. CDS spreads are an important metric of default risk—a higher spread on the CDS implies a greater risk of default by the reference entity. The implicit connection we make is that credit supply is a function of the level of the CDS swap spread. Since investment is a longer-term process and since banks distress may not affect supply to finance firms' investments immediately, we lag the bank distress variable in all regressions. This also corrects for any possible issues of reverse causation.

Various factors, which may influence the relationship between bank distress and firms' investments needed to be carefully controlled for to ensure the effect we are investing could be clearly identified. The first and most obvious of these is external finance dependence. It may be the case that firms industries that are more dependent on external finance rely more on their banks to raise the capital needed for future investments, and would therefore be more affected by negative shocks to their bank than firms in industries that rely less on external financing. In order to account for this possibility we use detailed US firm level data from Compustat for 2000-2006 and calculate industry level external finance sensitivities, using the methodology devised by Rajan and Zingales (1998).<sup>7</sup> The implicit assumption, common in the literature and used in other studies as well,<sup>8</sup> is that that the same sectoral external financing dependence applies to firms in all other countries.

A second major variable that could possibly affect firms performance and which, if not included in the regression could lead to an omitted variable bias, is the demand for credit. Especially during recessions, firms face not only a decrease in their supply of credit but also negative demand shocks. It is crucial therefore to properly disentangle the two shocks. We control for the demand effect first, by accounting for firm specific variables in the regression. Second, we construct and introduce in the regression an industry level business cycle sensitivity variable, following the methodology developed by Tong and Wei (2008))<sup>9</sup>. We expect that firms in industries that are more sensitive to business cycles experience a sharper decrease in their economic activity, and therefore decrease their investments. Furthermore, this decrease in future investments would reduce firms' demand for loans. We account for this channel by including in

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<sup>7</sup> We use US data to construct a sector-level approximation of a firm's dependence on external finance for capital investment following the methodology developed by Rajan and Zingales (1998). Specifically, we define: Dependence on external finance for investment as: (capital expenditures – cashflow)/ capital expenditures for each US firm during 2000-2006. We then take the median across all firms in each 3 digit USSIC industry to define the industry level external finance dependence indicator.

<sup>8</sup> Papers that have used such indexes include Claessens and Laeven, 2003; Raddatz, 2006; and Kroszner, Laeven, and Klingebiel, 2007, Claessens, Tong, Wei, 2015.

<sup>9</sup> We follow Tong and Wei (2008) and develop an industry-level business cycle sensitivity index using the stock price reactions of US firms to the September 11, 2001 terrorist attack. We compute the change in the log stock price for each US firm between September 10 and September 28, 2001. The measure of industry-level sensitivity to the business cycle is then calculated as the median log stock price change over all firms in each three-digit USSIC sector. This index captures the relative sensitivity of firms' stock prices to unexpected business cycle shocks, independent of firm's sensitivity to financial constraints or other shocks.

the regression an industry level business cycle dependence variable constructed again using the US Compustat database. We rely on the sector characteristics of U.S. firms before the crisis, which are exogenous to our sample of firms (see Rajan and Zingales, 1998), to proxy these intrinsic industry characteristics.

We also take great care to account for a third channel which may impact firms' behavior. As the Great Recession started in the US and transmitted across international borders, it may be that firms in industries that are more dependent on international trade are more adversely affected than firms that serve domestic market. As exporting firms experience a decrease in their economic activity they may choose to postpone further investments and decrease the demand for their loans. This international demand channel could be particularly important for an economy as integrated in world markets as Ireland. Not accounting for this possible channel may lead to a spurious correlation bank distress and firm investments.<sup>10</sup>

In addition, introducing these three sensitivities allows us to check to what extent ex ante firms' intrinsic characteristics (external financial dependence, sensitivity to domestic and foreign demand) help explain changes in their ex post performance, i.e. investments during the crisis.

All regressions include year dummies. Regressions where no sectoral sensitivities are included also contain industry dummies to account for any other industry specific shocks that may have affected the credit demand of borrowing firms, their access to credit and firms' investments.

### **3. Results**

First we present the results from our baseline specification (Table 1), where changes in firms' capital expenditures to total assets are regressed on firms' size, age, and cash holdings. We find that younger and larger firms invest more, the coefficients of both variables are statistically significant at conventional levels. The level of cash holdings relative to total assets is also a significant determinant of firms' investments. Next, we introduce in the regression the main variable of interest, our measure of bank distress, proxied by the value of bank CDS spreads. As expected, bank distress negatively affects firms' investments, confirming that negative shocks to firms' relationship banks negatively affect firms' capital expenditures. The coefficient of the CDS variable has the expected sign, it is negative and statistically significant. We next introduce in the regression, one by one, industry specific sensitivities, to account for other possible factors influencing firms' investments and their demand for loans. We start with the external finance dependence of the industry in which the firm operates. We expect that firms in industries that rely more on external finance for investments will be more negatively affected by their banks' distress. Indeed, the coefficient of the external finance dependence variable is negative and

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<sup>10</sup> The industry level measure of trade sensitivity is calculated by regressing the change in the log global exports at the 3 digit industry level over the period 2000–2006 on the change in log global GDP (in US dollars) during the same period. The coefficient of the global GDP variable is then used as the industry level sensitivity to global trade.

The above approaches assume that sensitivities to external finance, business cycle, respectively trade are intrinsic properties of a sector; thus, sectoral indexes calculated using pre-crisis data can be used for other countries during the crisis (Claessens, Tong, Wei, 2012).

statistically significant. Next, we account for the business cycle dependence, as firms in industries more sensitive to business cycles may experience a sharper decrease in the demand for their goods, a decrease in investments, and also a decrease in the demand for loans. Indeed, the coefficient of the business cycle sensitivity variable is negative and statistically significant. Finally, we also account for trade dependence - expecting firms in sectors more dependent on trade to be affected more by the global recession. Again, the trade sensitivity variable is negative and statistically significant, showing that firms in industries more integrated in world trade decreased their investments more than firms in industries that are relatively less dependent on global trade. Finally, we introduce in the regression all three sectoral sensitivities. The last column of Table 1 shows the results. All sensitivities variables have the expected signs, are negative and statistically significant. The bank distress variable of major interest remains negative and statistically significant in all regressions. This suggests that even after accounting for other possible factors that may have influenced firms' investments, relationship banking is very important and distress at firms' banks was transmitted to their customers and negatively affected their investments.

The size of the effect on Capital expenditure reduction is significant in magnitude as well. The results indicate a 100 basis point increase in the level of the CDS swap spread on 5 Year Senior Debt translated to \$3.3 m fall in expenditure on investment.

#### **4. Robustness checks**

We first account for the fact that some firms might have anticipated the crisis, and hence could have adjusted their balance sheets to insulate themselves as a precautionary measure by changing their level of cash holdings or total assets, (see Claessens, Tong, Wei, 2012). Therefore, in the regressions we use the pre-crisis values (i.e. we use year 2006) of age, size and cash holdings/total assets. This specification will also correct for possible issues of reverse causality between the change in capital expenditure and cash holdings. The results, presented in Table 2 are not substantially changed. The coefficient of bank distress, the variable of interest, remains negative and statistically significant throughout all regressions, confirming our hypothesis that supply-side banking shocks negatively affect firms' investments.

Secondly, to ensure that the negative effects of bank distress on firms' investments are indeed caused by bank loan supply reduction, we analyze separately whether firms without access to public debt markets experience different impacts on their investments than firms with access to alternative sources of finance. We follow Chava and Purnanandam (2011) and use the absence of credit ratings as a proxy for firms without access to public debt markets. We test whether firms without credit ratings are affected more by their bank distress than firms for which credit ratings are available. We thus rerun our regression on two different samples, firms with and without credit ratings. As expected the regressions on firms *without* credit ratings, which rely primarily or solely on their banks for external credit show consistent negative and statistically significant coefficient of the banks distress variable. Interestingly, the results for firms *with* access to public debt markets show that changes in the level of their capital expenditure is not impacted by bank

distress. This is however, not the case for firms *without* credit ratings, i.e, without access to other sources of finance than their bank. In these cases the bank distress variable is negative and highly statistically significant.

Finally, there may still be concerns about possible endogeneity in estimation. It is less probable because our sample includes mostly small and medium size firms, so it is unlikely that their difficulties may have impacted their banks; also, the banking crisis in Ireland was primarily caused by their banks' overexposure to less performing real estate mortgages, thus possibly uncorrelated with their firms customers' performance. However, to insure we obtain consistent estimates we estimate a GMM regression (Blundell and Bond, 1998) and use the lag of bank distress variable as an instrument together with the other variables in the regression. The results, presented in Table 4, confirm our previous findings - banks distress is important and statistically significantly affects firms' capital expenditures.

## 5. Conclusions

In this paper we ask some important and previously unexplored question in the context of Ireland - did bank distress restrict firms' investments by transmitting a shock from the banking sector into the real economy? We use unique data which allows us to connect firms with their relationship banks. We are thus able to directly test whether distress at the firms' banks hurt their customers' investments. The answers have several policy implications from the necessity of banking stability to the maintenance of economic growth, the ability of firms to navigate bank distress by access to public markets and issues of equity for the affected firms whose banks suffered major losses.. We hypothesize that bank distress led to a contraction of loan supplies and negatively impacted the Irish economy by hurting firms' capital expenditures. We find that indeed, bank distress, proxied by their market CDS spreads resulted in lower investments by firms. The results are robust to accounting for various other firms' characteristics and channels through which the great recession spread across borders and impacted firms' capital expenditure and loan demand. We also find that in the context of Ireland bank distress negatively affected firms' investment but only in the case of firms dependent on banks for external finance, i.e. firms with no access to public debt. These findings highlight the importance of the banking system as provider of funds for firms' investments.

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**Table A. Summary statistics**

Variables	Obs	Mean	Std. Dev.
Change in Capital Expenditure/Total Assets	7230	0.01	0.15
Bank distress	7230	0.43	0.40
Age	7230	18.44	15.17
Size (log total assets)	7230	7.99	2.36
Cash holdings/total assets	7230	0.32	0.32
Dependence on external finance	5147	-0.07	0.79
Business Cycle Sensitivity	5147	-0.05	0.08
Trade Sensitivity	7230	0.12	0.44

**Table 1. Regressions**

Dependent variable - change in capital expenditure / total assets

Age	-0.0006*** [-4.834]	-0.0006*** [-4.455]	-0.0009*** [-6.672]	-0.0009*** [-6.602]	-0.0010*** [-7.755]	-0.0009*** [-6.594]
Size	0.001 [1.293]	0.001 [0.719]	0.00354*** [2.584]	0.00341** [2.495]	0.00373*** [3.323]	0.00376*** [2.706]
Cash holdings/total assets	-0.0289*** [-4.347]	-0.0320*** [-4.166]	-0.0199** [-2.275]	-0.0203** [-2.312]	-0.0237*** [-3.614]	-0.0198** [-2.268]
<b>Bank distress_lag</b>		<b>-0.0199*</b> <b>[-1.760]</b>	<b>-0.0320**</b> <b>[-2.337]</b>	<b>-0.0316**</b> <b>[-2.311]</b>	<b>-0.0331***</b> <b>[-3.312]</b>	<b>-0.0328**</b> <b>[-2.393]</b>
Dependence on external finance			<b>-0.0042*</b> <b>[-1.798]</b>			<b>-0.0042*</b> <b>[-1.813]</b>
Business cycle sensitivity				<b>-0.0349**</b> <b>[-2.084]</b>		<b>-0.0311*</b> <b>[-1.887]</b>
Trade Sensitivity					<b>-0.0093***</b> <b>[-3.586]</b>	<b>-0.007***</b> <b>[-2.668]</b>
Constant	-0.001 [-0.0903]	0.025 [1.297]	0.0433** [2.184]	0.0425** [2.144]	0.0439*** [3.067]	0.0420** [2.114]
Observations	9,732	7,230	5,147	5,147	8,258	5,147
R-squared	0.051	0.062	0.017	0.017	0.019	0.018
year dummies	yes	yes	yes	yes	yes	yes
industry dummies	yes	yes	no	no	no	no
*** p<0.01, ** p<0.05, * p<0.1						

**Table 1b. Regressions with predetermined controls**

Dependent variable - change in capital expenditure / total assets

Age 2006	-0.0003** [-2.303]	-0.0003** [-2.414]	-0.0004*** [-3.515]	-0.0004*** [-3.324]	-0.0004*** [-4.445]	-0.0004*** [-3.474]
Size 2006	-0.000255 [-0.262]	-0.0011 [-0.932]	0.000874 [0.749]	0.000682 [0.588]	0.001 [1.139]	0.000915 [0.780]
Cash holdings/total assets 2006	-0.00443 [-0.660]	-0.00785 [-0.999]	-0.0147* [-1.715]	-0.0159* [-1.872]	-0.00514 [-0.766]	-0.0147* [-1.719]
<b>Bank distress_lag</b>		<b>-0.0219** [-2.400]</b>	<b>-0.0243** [-2.241]</b>	<b>-0.0240** [-2.219]</b>	<b>-0.0390*** [-4.550]</b>	<b>-0.0242** [-2.236]</b>
Dependence on external finance			-0.00440** [-2.017]			-0.00443** [-2.028]
Business cycle sensitivity				-8.54E-05 [-0.0102]		0.0008 [0.0959]
Trade Sensitivity					-0.0030 [-1.216]	-0.0014 [-0.560]
Constant	0.0507** [1.994]	0.0145 [0.832]	0.0104 [0.465]	0.012 [0.534]	0.0389** [2.225]	0.0102 [0.457]
Observations	8,722	6,146	4,324	4,324	7,242	4,324
R-squared	0.035	0.045	0.008	0.008	0.009	0.008
year dummies	yes	yes	yes	yes	yes	yes
industry dummies	yes	yes	no	no	no	no

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3. Results for firms *with* and *without* access to public debt and predetermined controls**

Dependent variable - change in capital expenditure / total assets

	<b>Firms <i>without</i> access to public debt</b>					<b>Firms <i>with</i> access to public debt</b>				
<b>Bank distress_lag</b>	<b>-0.0225**</b>	<b>-0.0269**</b>	<b>-0.0267**</b>	<b>-0.0417***</b>	<b>-0.0268**</b>	-0.0101	-0.00773	-0.00783	-0.0137	-0.00846
	<b>[-2.145]</b>	<b>[-2.103]</b>	<b>[-2.083]</b>	<b>[-4.263]</b>	<b>[-2.096]</b>	[-0.570]	[-0.481]	[-0.484]	[-0.988]	[-0.524]
Age 2006	-0.0004	-0.0006***	-0.0006***	-0.0007***	-0.0006***	-0.0002	-0.0002	-0.0002	-7.06E-05	-0.0001
	[-1.630]	[-3.237]	[-3.032]	[-4.386]	[-3.215]	[-0.903]	[-1.131]	[-1.131]	[-0.619]	[-1.030]
Size 2006	-0.000889	0.00148	0.00126	0.00176*	0.00146	-0.00156	-0.00182	-0.00174	-0.000951	-0.00164
	[-0.648]	[1.063]	[0.911]	[1.681]	[1.042]	[-0.465]	[-0.639]	[-0.617]	[-0.465]	[-0.579]
Cash holdings/total assets 2006	-0.00498	-0.0129	-0.0138	-0.0037	-0.013	-0.00915	-0.0353	-0.0343	-0.0302	-0.0339
	[-0.583]	[-1.413]	[-1.511]	[-0.511]	[-1.420]	[-0.274]	[-1.255]	[-1.257]	[-1.528]	[-1.210]
Dependence on external finance		-0.00617**			-0.00618**		0.00064			0.000438
		[-2.177]			[-2.177]		[0.229]			[0.156]
Business cycle sensitivity			0.00805		0.00973			-0.00232		0.000181
			[0.811]		[0.976]			[-0.176]		[0.0136]
Trade Sensitivity				-0.00308	0.00123				-0.00206	-0.00621*
				[-0.915]	[0.359]				[-0.673]	[-1.852]
Constant	-0.199***	0.0360*	0.0377*	0.0489***	0.0364*	0.0688	0.036	0.0349	0.0385	0.036
	[-3.561]	[1.846]	[1.936]	[3.493]	[1.868]	[1.181]	[1.232]	[1.216]	[1.618]	[1.224]
Observations	4,940	3,302	3,302	5,777	3,302	1,206	1,022	1,022	1,465	1,022
R-squared	0.054	0.01	0.009	0.011	0.01	0.071	0.009	0.009	0.008	0.01
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	no	no	no	no	yes	no	no	no	no

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4. GMM regressions**

Dependent variable: change in capital expenditure / total assets

<b>Bank distress_lag</b>	<b>-0.0317*</b>	<b>-0.056***</b>	<b>-0.055***</b>	<b>-0.047***</b>	<b>-0.057***</b>	<b>-0.0292*</b>	<b>-0.0426**</b>	<b>-0.0423**</b>	<b>-0.048***</b>	<b>-0.0426**</b>
	<b>[-1.714]</b>	<b>[-2.711]</b>	<b>[-2.689]</b>	<b>[-2.946]</b>	<b>[-2.767]</b>	<b>[-1.689]</b>	<b>[-2.246]</b>	<b>[-2.229]</b>	<b>[-3.380]</b>	<b>[-2.243]</b>
Age	-0.005***	-0.008***	-0.008***	-0.009***	-0.008***					
	[-3.485]	[-5.714]	[-5.649]	[-6.532]	[-5.632]					
Size	0.0009	0.0033**	0.0030**	0.0035***	0.0036**					
	[0.644]	[2.360]	[2.280]	[2.981]	[2.487]					
Cash holdings/total assets	-0.028***	-0.0179**	-0.0183**	-0.019***	-0.0179**					
	[-3.443]	[-1.980]	[-2.022]	[-2.719]	[-1.982]					
Dependence on external finance		-0.004			-0.00403		-0.00369			-0.00374
		[-1.605]			[-1.619]		[-1.592]			[-1.614]
Business cycle sensitivity			-0.0312*		-0.0272			0.000829		0.00198
			[-1.829]		[-1.614]			[0.0948]		[0.225]
Trade Sensitivity				-0.008***	-0.007**				-0.00297	-0.00229
				[-2.968]	[-2.529]				[-1.134]	[-0.862]
Age 2006						-0.0029*	-0.004***	-0.004***	-0.004***	-0.004***
						[-1.951]	[-2.898]	[-2.734]	[-3.817]	[-2.850]
Size 2006						-0.000441	0.00121	0.00106	0.00118	0.00128
						[-0.364]	[1.000]	[0.875]	[1.260]	[1.049]
Cash holdings/total assets 2006						0.000194	-0.0105	-0.0115	0.000157	-0.0106
						[0.0235]	[-1.165]	[-1.290]	[0.0222]	[-1.175]
Constant	0.0657	0.051	0.05	0.0393	0.0485	-0.00799	0.00932	0.0106	0.0373**	0.00908
	[1.521]	[1.378]	[1.350]	[1.594]	[1.312]	[-0.324]	[0.410]	[0.468]	[2.104]	[0.400]
Observations	5,974	4,253	4,253	6,796	4,253	5,041	3,546	3,546	5,939	3,546
R-squared	0.064	0.016	0.016	0.017	0.017	0.047	0.007	0.006	0.009	0.007

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

