Implications of the Term Structure of Interest Rates for the Duration of Corporate Investment*

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Abstract

This paper studies the implications of changes to the term structure of interest rates for the composition of corporate real investments. A change in the term structure of interest rates affects differently the present value of projects with different cash-flow duration. Using changes to long-term rates driven by shocks to the maturity of government debt and controlling for aggregate time-series developments, I uncover an *across-firms channel* by which low long-term rates increase the quantity of investment made by firms specialised in long-duration real investments. Furthermore, controlling for observable economic conditions and investment opportunities, I show that firms increase the duration of their real investments under low long-term rates - the *within-firm channel*.

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I Introduction

Fiscal and monetary policies can affect the term structure of interest rates through their impact on the excess supply of long-term bonds (Greenwood & Vayanos, 2014). Empirical evidence suggests that government borrowing choices over maturity have significant effects on the yields and excess returns on long-term bonds (e.g. Greenwood, Hanson, & Stein, 2010; Greenwood & Vayanos, 2014). More recently, bond-buying programmes in the aftermath of the global financial crisis have unprecedentedly expanded balance sheets of central banks in advanced economies[1], resulting in a significant depression of long-term yields (see e.g. Krishnamurthy & Vissing-Jorgensen, 2011; Dell'Ariccia, Rabanal, & Sandri, 2018; and Todorov, 2020). An important body of empirical research has shown that shocks to the term structure of interest rates may affect the capital structure of firms and in particular the maturity of their debt liabilities (e.g. Greenwood et al. (2010), Badoer and James (2016), Baker, Greenwood, and Wurgler (2003)). However, we know little about how the term structure of interest rates, beyond the general level of interest rates, may affect firms' real decisions.

In this paper, I shed light on the consequences of the term structure of interest rates for an important dimension of firms' real decisions: the duration of corporate investment. As the term structure of interest rates is directly linked to the costs of corporate debt over different horizons, a variation in the former should change firm's valuation of its real investments with cash-flow expected at different horizons. In other words, in a frictionless economy, when long-term borrowing rates decrease relative to short-term ones, the valuation of long-duration real investments increases more relative to the valuation of short-duration real investments, as effective discount rates on more distant cash flows experience a relative decrease. In turn, following standard capital budgeting theory, the increase in the relative valuation of long-duration real investments should be followed by an increase in long-duration real investments.

Using financial issuer-level data around corporate issuances of bonds and loans by large public US issuers over the period 1987-2009 to plausibly isolate the timing of important real investment decisions, I test the implications of changes in the term structure of interest rates for the duration of corporate investment along two margins. First, following negative shocks to long-term discount rates, firms relatively more specialised in long-duration real-investments may invest more than the average firm - the *across-firms channel*. Consistent with an *across-firms channel*, I find that, when long-term rates are low, firms specialised in long-duration real investments increase their post-issuance investment significantly more than the average firm controlling for the difference in investment under normal conditions. Second, all firms may adjust upwards the duration of their investments - the *within-firm channel*. Consistent with a *within-firm channel*, I find that firms increase the duration of their real investments post-

[1] For instance, the stock of bonds held by the Eurosystem under its Asset Purchase Program (APP) initiated in March 2015 stood at €3.25 tn at the end of October 2021.

issuance significantly more when long-term rates are low relative to normal conditions. My empirical findings present evidence that changes to the term structure of interest rates have real consequences for the economy as they affect the duration of real investments.

One important challenge lies in the measurement of the duration of firms' real investments. The test of the *across-firms channel* requires a measure of ex-ante specialisation in longer-duration investment. I proxy the duration of the firm's fixed-assets with the inverse of its effective depreciation rate. As this type of measure relies on the assumption of straight-line depreciation, I estimate it at low frequency to limit the noise coming from specific depreciation schedules.[2] I show that the accounting measures of assets duration, when aggregated at the industry-level, are well-aligned with the general intuition about the identity of industries characterised by large and long-term investments. The test of the *within-firm channel* requires to monitor the dynamics of the duration of a firm's real investments. My first measure is the ratio of the firm's durable assets to the firm's current assets where durable assets include fixed assets, intangible assets and equity investment in subsidiaries. My second measure is the expected duration of a firm's cash flows as in Gormsen and Lazarus (2019) - specifically, the average forecast for the long-term growth rate on a firm's cash flows by equity analysts. One feature that makes this measure complementary to the first measure is that, as it reflects expectations, it may capture soft information about the duration of a firm's investment that is not embedded in the accounting measures.

Under the expectations hypothesis, when long-term discount rates fall relative to short-term ones, the benefits for issuers of long-term debt equal in expectation the benefits for issuers rolling short-term debt over the same horizon. Thus, the implication that a decrease of long-term corporate borrowing rates relative to short-term ones should lead to an increased investment into long-duration projects holds both for firms issuing long-term debt and for firms rolling-over short-term debt. In segmented bond markets however, shocks to the supply of long-term bonds break the expectations hypothesis and have a stronger impact on long-term bonds excess returns compared to the term spread - the difference between long-term yields and short-term yields (Greenwood & Vayanos, 2014). Hence, following negative shocks to the supply of long-term bonds, firms that decide to issue long-term debt effectively experience a higher decrease in long-term discount rates than firms issuing short-term debt. For this reason I measure the premium on long-term discount rates with excess returns on long-term Treasury bonds. The advantage of this measure is that, in addition to measuring the current spread between long- and short-rates, it also captures the additional discount rate premium that is specific to issuing long-term debt rather than rolling-over short-term debt over the same horizon.

Testing these two channels using all of the time-series variation in the premium on long-term

[2]Higher-frequency dynamics in such measures could be driven by specific depreciation schedules such as accelerated depreciation motivated by tax incentives, rather than by investment choices.

rates is likely to uncover biased elasticities due to the endogeneity of long-term discount rates with respect to long-duration investment. Everything else equal, better opportunities for long-duration real investment in the economy could increase both such investment and long-term rates on debt used to finance them. This would result in positively biased estimated elasticities of the long-duration investment response to negative long-rate shocks.[3] To circumvent this issue, I exploit variation in government debt maturity, which generate variation in the premium on long-term discount rates (e.g. Greenwood & Vayanos, 2014) and is plausibly more exogenous to investment in long-duration projects than endogenous variation in the excess returns on long-term bonds. For this reason one would expect the coefficients estimated from the instrumented variable (IV) strategy exploiting variation in government debt maturity to be lower than those from a naive ordinary least squares (OLS) strategy.

Instrumenting shocks to the premium on long-term rates with changes in average maturity of US Treasury debt, I find evidence consistent with the *across-firms channel*. In a first stage, I show that a lower average maturity of US Treasury debt - working as negative supply shock to the quantity of interest-rate risk - is indeed associated with more favourable long-term discount rates. In a second stage, I show that such conditions are followed by a significant increase in the investment of issuing firms specialised in long-duration real investment relative to the average firm. Using the firm's industry average asset maturity, I find that following a one standard deviation decrease in the instrumented three-year excess return on the ten-year Treasury bond, issuing firms in industries at the 75th percentile of the distribution in my measure of asset maturity experience a differential increase in their stock of fixed-assets of 8% at a five-year horizon, relative to issuing firms in industries at the 25th percentile of the distribution.

Using the same IV strategy, I find evidence consistent with the *within-firm channel*. For the average issuing firm, lower instrumented excess returns on the long-term bonds are associated with a significant increase in the ratio of its durable assets to its assets used for current production. Furthermore, it is also associated with a significant increase in the average forecast for the duration of the firm's cash flows by equity analysts. I find that, following a one standard deviation decrease in the instrumented three-year excess return on the ten-year Treasury bond, the average issuing firm increases its ratio of durable to current assets, by as much as 28 ppt by the fifth fiscal year-end following the issuance - representing 24 percent of the standard-deviation in the ratio of durable to current assets at issuance in my sample of issuing firms. Following the same negative shock, the average forecast about the long-term growth rate of the average firm's cash flows increases by about 1.3 ppt by the second fiscal year-end following the issuance - representing 17 percent of the standard-deviation in the average forecast about

[3] In particular, this is valid under the assumption of fixed capital supply. Also note that the effects on interest rates could occur because of an increase in the issuance of long-term debt or through the expectations of an increase in short-term debt issuance in subsequent periods.

the long-term growth rate of firms' cash flows at issuance in my sample of issuing firms.

As discussed above, better long-duration investment opportunities should drive long-term rates up, generating a positive endogeneity bias when running the naive OLS tests of the two channels. As expected from the direction of the endogeneity bias, the estimates from the naive OLS regressions are about 5 to 7 times smaller in magnitude than the ones from the instrumental variable regressions in the tests of both channels, despite being still negative and significant. This highlights both the severity of the bias and the improvement in the precision from using government-debt maturity shocks. However government debt may partially be driven by borrowing costs (Greenwood, Hanson, & Stein, 2015) , i.e. by the premium on long-term rates. This point highlights residual endogeneity concerns qualitatively comparable to the case of the naive OLS approach. I address these concerns in two ways. First, one should expect the endogeneity bias to be of lower magnitude under the IV strategy as the other driving factors (refinancing risk, political motives) are plausibly uncorrelated with unobservables that carry explanatory power for investment opportunities in long-duration real investments. In this respect, instrumenting the premium on long-term rates with the average maturity of government debt would provide upper bounds for the true estimates of both channels - predicted to be negative, improving the precision relative to the upper bounds characterised by the naive OLS estimates. Second, I propose an alternative instrument: the projection of the baseline instrument (the maturity of the average Treasury debt instrument) that is orthogonal to the one-month lagged long-term rate premium. I show that using this alternative instrument is consistent with a further reduction in the positive endogeneity bias for the estimates of both channels, thus improving further the precision of the lower bound on the corresponding true estimates.

I address potential omitted variable concerns with alternative model specifications and show that the coefficients are quantitatively robust to virtually all specifications. In particular, the test of the *across-firms channel* allows me to control for unobserved shocks (e.g. investment opportunities) that would affect all firms in the same fashion by including time fixed-effects. I further address the potential concern that the result could have been driven by a greater sensitivity of certain industries to business cycle fluctuations. Using coefficients of procyclicality which are estimated at the industry-level over the universe of issuing firms from Compustat, I find that the main result is not driven by firms that belong to industries which are in extreme quintiles of the distribution of procyclicality coefficients. I also compare the coefficients estimated *across-industries* to alternative coefficients estimated *within-industry across-firms* using the firm-specific measure of firm specialisation in long-duration investment. Importantly such regressions allow me to include industry × time fixed-effects, and exploit the variation within-industries. The results highlighted using within-industry across-firms treatment variation are qualitatively unchanged. Finally, I show that the baseline results are robust to the use of different industry taxonomies (e.g. SIC, GICS or NAICS) at different levels of granularity (number of digits in the classification).

As for the test of the *within-firm channel*, the main identifying assumption is that changes to the maturity of government debt are not correlated with unobservables that carry explanatory power for changes in the investment opportunities of issuing firms across the investment duration dimension. I show that the estimates from my baseline specification are robust to both standard controls used in the literature to measure for investment opportunities and the inclusion of firm-fixed effects to control for the average firm-specific change in the duration of real investment. Finally, I also show that the results of the tests of both channels are not driven by specific time periods.

I also conduct a series of tests to demonstrate the robustness of the results to alternative measurement decisions. Among other tests, I show that the elasticities I present are qualitatively and statistically similar across most regressions using alternative measures of firm's project duration and in particular for the measure of the ratio of durable assets to current assets which is used in the test of the *within-firm* channel. I also show that the estimates from the baseline specification compare to the estimates from specifications that use alternative measures of the instrumented variable: the baseline results are robust to measures of excess returns over different horizons, for bonds of different maturities, for absolute prices change and to such measures built from yield curve data for high quality corporate bond issuers - rather than yield curve data for Treasury debt.

Related literature. This paper contributes to the literature on the composition and the horizon of corporate investment. In particular, a strand identifies the relevance of liquidity risk and credit constraints for the composition of investment. Aghion, Angeletos, Banerjee, and Manova (2010) shows theoretically that under perfect credit markets, the share of long-term investment, which is assumed more productive, is countercyclical because returns on long-term investments are less cyclical than short-term investments. However, because long-term investments are more illiquid, the share of long-term investment may be procyclical when firms face tight credit constraints. The authors provide evidence in support for these implications from a panel of countries using the share of private structural investment in total private investment. In addition, Garicano and Steinwender (2016) estimate from Spanish firm-level data that a credit crunch has a stronger negative effect on investment in long-lived capital. Mendes (2020) shows that Portuguese wine producers respond to tighter financial constraints by adjusting their product mix, effectively shortening the maturity of cash-flows. Another strand stresses that agency problems have an impact on the horizon of investments. In particular the optimal compensation of managers in the presence of agency conflicts, under situations of unobservable effort as in Grossman and Hart (1983) or private benefits from firm size following Jensen (1986), may distort the share of long-term investment away from the frictionless equilibrium (Terry, 2015). As opposed to these strands and others stressing the importance of frictions underlying manager myopia following Stein (1988), my result does not rely on financial frictions at the level of the firm but rather on changes to the marginal value of long-duration investments.

The paper also contributes to the literature focussing on the implications of government borrowing for corporate policies. Following early theoretical work by Friedman (1978), several pieces of empirical evidence suggest that government borrowing have economically significant effects on the borrowing conditions of corporates and that these effects depend on the substitutability of firm securities for liquid and safe government debt (e.g. Greenwood et al., 2010; Krishnamurthy & Vissing-Jorgensen, 2012; Badoer & James, 2016). My paper focuses on changes to the excess supply of government debt *across maturity*, as opposed to changes in government borrowing quantities (see e.g. Graham, Leary, & Roberts, 2014; Demirci, Huang, & Sialm, 2019; Akkoyun, 2018; Pinardon-Touati, 2021). Hence, it relates best to the strand that focuses on the implications for the maturity of corporate debt of government-induced changes to the borrowing conditions of corporates across maturity. While the theoretical considerations and empirical findings of Greenwood et al. (2010) and Badoer and James (2016) focus on the corporate sector's response to the same shocks, the scope of these papers is to understand the consequences for debt issuance policies. My paper extends the analysis to consequences for corporate real investment policies. Changes in the maturity structure of government debt, can also have direct impact on the type of projects financed as they impact the term structure of discount rates. Furthermore, such implications linking the term structure of interest rates and the duration of real investment do not rely on the maturity structure of corporate debt, and more broadly on firm-level financing frictions. Indeed, when long-term discount rates fall relative to short-term ones, the consequent benefits for issuers of long-term debt equal (in expectation) the benefits for issuers rolling short-term debt over the same horizon. Instead, introducing financial frictions that induce firms to match the maturity of their assets with the maturity of their liabilities could in turn generate implications for corporate debt maturity. Indeed, following negative shocks to long-term discount rates, if the predicted increase in long-duration investment occurs through the *within-firm channel*, firms which conduct maturity matching will be more likely to finance such investments with long-term debt, even under the expectation hypothesis or, in other words, in the absence of return predictability.In this context, my paper offers a deeper understanding of the effect of the government debt maturity choice on real investment.

The rest of the paper proceeds as follows. Section II discusses how changes to the term structure of interest rates may affect the duration of real investment. Section III presents the data used for the empirical analysis and explains choices for measuring the duration of real investment, before presenting descriptive statistics. Section IV explains the main identification choices for the analysis. Sections VI and V outlines the paper's empirical strategy and the results from the empirical tests of respctively the *across-firms channel* and the *within-firm channel*. Section VII concludes and elaborates on policy implications of the main findings.

II The term structure of interest rates and the duration of real investment

When long-term borrowing rates decrease relative to short-term ones, the valuation of long-duration real investments should increase relative to short-duration ones as effective discount rates on more distant cash flows experience a relative decrease. In turn, standard capital budgeting theory suggests that the resulting increase in the profitability of long-duration projects relative to short-duration ones should drive investment in the economy towards long-duration projects.

The relative increase in long-duration real investments following negative shocks to the long-term costs borne by debt issuers may occur both *within firm* and *across firms* in the economy. The first channel suggests that firms may increase the duration of their new projects. The second suggests that firms specialised in long-duration projects may experience a relative investment growth compared to firms specialised in short-duration projects. In practise, firms might not have a continuum of opportunities for projects of different duration, therefore highlighting the potential empirical relevance of an *across-firms* channel.

Importantly, these implications do not rely on financial frictions and in particular not on the maturity structure of corporate debt. Under the expectations hypothesis, when long-term discount rates fall relative to short-term ones, the benefits for issuers of long-term debt equal in expectation the benefits for issuers rolling short-term debt over the same horizon. Hence, the implication that a decrease of long-term corporate borrowing rates relative to short-term ones should increase the profitability of (and investment into) long-duration projects holds both for firms issuing long-term debt and for firms rolling-over short-term debt. [4]

In segmented bond markets however, shocks to the demand and supply of bonds can break the expectations hypothesis and have a stronger impact on long-term bonds excess returns compared to the term spread - i.e. the difference between long-term yields and short-term yields (Greenwood & Vayanos, 2014). In this context, decisions over corporate debt maturity have implications for the effective difference between long-term and short-term discount rates.

[4] Introducing financial frictions that induce firms to match the maturity of their assets with the maturity of their liabilities (e.g. Myers, 1977; Hart & Moore, 1994; Goswami, Noe, & Rebello, 1995) could in turn generate implications for corporate debt maturity. If the increase in long-duration investment occurs within firm, firms which conduct maturity matching will be more likely to finance such investments with long-term debt, even under the expectation hypothesis.

III Data and measurement of the duration of real investment

III.A Data

I build a dataset of corporate debt issues by public U.S. corporates over the 1987-2009 period. The observations are extracted from the Thomson Reuters LPC Dealscan and Thomson Reuters SDC Platinum New Issues databases. In line with the literature on the implications of debt markets conditions for corporate debt maturity, I focus on non-financial firms (identified by Standard Industrial Classification (SIC) codes between 6000 and 6999 or Global Industry Classification Standard (GICS) code equal to 40). I clean the debt issuances data following Badoer and James (2016). I extract detailed terms and conditions for individual corporate loans from Dealscan and for individual debt securities including non-convertible debt securities, debt shelf registrations, U.S. Rule 144A non-convertible debt, and medium-term note programs from SDC (Thomson). I exclude asset- and mortgage-backed debt, secured debt, pass-through securities, equipment trust certificates, lease obligations, convertible debt, preferred stock that has been misclassified as debt, equity-linked certificates, and perpetual debt. I only keep US-dollar denominated deals with non-missing positive deal amounts and account for inflation by adjusting dollar amounts to 2009 dollars using the Bureau of Labor price index (all urban consumers). I discard duplicates entry within and across both databases - identified as observations with the same issuer, issuance and maturity dates, deal amount and maturity.

I then merge the issue-level information with fiscal year-end financial information data of public US firms using the CRSP/Compustat Merged - Fundamentals Annual database obtained from WRDS. The merge is completed for the Dealscan dataset using the 2017 version of the link file from Chava and Roberts (2008) which matches individual loan facilities to the corresponding borrowing firm's unique company identifier (variable *gvkey*) on Compustat. For the SDC dataset, I use the DSENAMES database from WRDS to merge unique historical identifiers specific to each issuer in SDC (first 6 digits of variable *cusip*) to unique identifiers in Compustat (variable *gvkey*). Each issuance is associated with the financial information of the five previous fiscal year-end and the five following ones, when available.

I complement the panel of financial information of firms around issuances with market conditions at the month of issuance. To measure the maturity structure of government debt, I use the daily bond database from CRSP US Treasury and Inflation Series, which comprises of end-of-day price observations for nearly $7,000$ US Treasury bills, notes, and bonds from 1961. I replace missing outstanding amounts for issues by the latest available information. I compute the weighted average maturity of the total payments (coupon and principals) underlying all Treasury debt ($TSYMAT$).

To measure the borrowing conditions of corporates across maturity, I compute yield spreads and excess returns on bonds using the interpolated yield curve data for US Treasury bonds from the Federal Reserve website and interpolated yield curve data for high quality US corporate bonds from the US Treasury's High Quality Market (HQM) Corporate Bond Yield Curve from the US Treasury's website.

I also account for credit risk premia with the computed spread between yields on the Moody's Seasoned BBB- and AAA-rated corporate bond indices in percentage point (based on bonds with maturities 20 years and above). I retrieve them at monthly frequency from FRED, Federal Reserve Bank of St. Louis.[5]

Table A.5 in Appendix A presents the sample's descriptive statistics for issuances properties and financial characteristics of issuing firms, as well as macroeconomic conditions at issuance. The average issuance has a maturity of about 7.2 years and amounts to approximately USD 350 million. The corresponding issuer reported a little less than USD 5 billions of total assets, with more than a third representing fixed assets (*PPE*). Finally the issuer of the average issuance has about 25,000 employees.

To be consistent with the subsequent econometric exercises, the statistics are computed on the debt issues sample that excludes credit lines and aggregates issues at the month-level for each issuer. The sample consists of $17,671$ firm$\times$month-level aggregate issuances. Appendix A also describes the construction of all variables.

III.B Measuring the cash-flow duration of real investment

One important measurement challenge related to testing the implications presented in Section II lies in the measurement of duration of the cash flow of firms' new projects. The test of the *across-firms channel* requires a measure of the time-invariant specialisation of firms or industries in long-duration projects. In contrast the test of the *across-firms channel* requires a measure of the firm-level time-varying duration of its real investments.

I start by computing accounting measures of the duration of firms' assets. I distinguish three related measures. The first measure, denoted *Asset Maturity*, inspired from the value-weighted average asset maturity measure defined by Stohs and Mauer (1996): the (book) value-weighted average maturity of current assets and of net property, plant and equipment, hereafter *PPE*. I assume that current assets have a maturity of one year, which can be interpreted as inventory only to be used for the production in a given fiscal year.[6] The maturity of fixed assets is measured as *PPE* divided by depreciation expense (*Dep.*) which can be interpreted as the inverse of the depreciation rate of a firm's stock of fixed-assets. Intuitively, assuming a constant

[5] See https://fred.stlouisfed.org/series/DBAA and https://fred.stlouisfed.org/series/DAAA.

[6] In Stohs and Mauer (1996), the maturity of current assets is measured as current assets (*Current Assets* or *CA*), divided by costs of goods sold, hereafter *COGS*. Stohs and Mauer (1996) argues that "current assets support production, where production is measured by the costs of goods sold". Because the maturity of current assets is very volatile within firm across time, I assume it to be equal to one.

rate of depreciation, a higher depreciation rate for an asset stock can be plausibly associated with a lower economic maturity for this asset stock.

$$Asset\ Maturity := \frac{CA}{CA\ + PPE} \cdot 1 + \frac{PPE}{CA + PPE} \cdot \frac{PPE}{Dep.}$$

The second measure of assets duration is simply the maturity of fixed assets which I denote *Fixed-Asset Maturity* (abbreviated as *FA Maturity*).

$$Fixed\text{-}Asset\ Maturity := \frac{PPE}{Dep.} \approx \frac{1}{Depreciation\ rate}$$

The third measure of assets duration is the ratio of the stock of durable assets to current assets, where the stock of durable assets is the sum of net property, plant, and equipment, equity investment in subsidiaries, and the stock of intangible assets computed following Peters and Taylor (2017). I denote the measure *Durable to Current Assets* (abbreviated as *Dur. Ratio*).[7]

$$Durable\ to\ Current\ Assets := \frac{PPE + Invest.\ in\ Subsidiaries\ (equity) + Intangible\ Assets}{Current\ Assets}$$

Figure 1 reports the time series dynamics of the three duration measures averaged at the industry-level (SIC 2-digits) by 5-year periods from 1987 to 2009. Only the industries with the most extreme average values for the period 2001-2005 are represented. The industries with the seven highest of such values are represented with continuous lines and the industries with the seven lowest are represented with dotted lines. Figure 1 suggests that the three measures are persistent when aggregated at low frequency by industry. The three measures are also well aligned with intuition about the identity of industries characterised by large and long-duration investments: notably industries with very large upfront costs such as transportation or mining, as opposed to industries offering trading or business services.[8]

I use the *Asset Maturity* measure (averaged at the industry-level) as the baseline measure in the test for the across firms channel. I also check that the results are robust to the use of the other two measures.

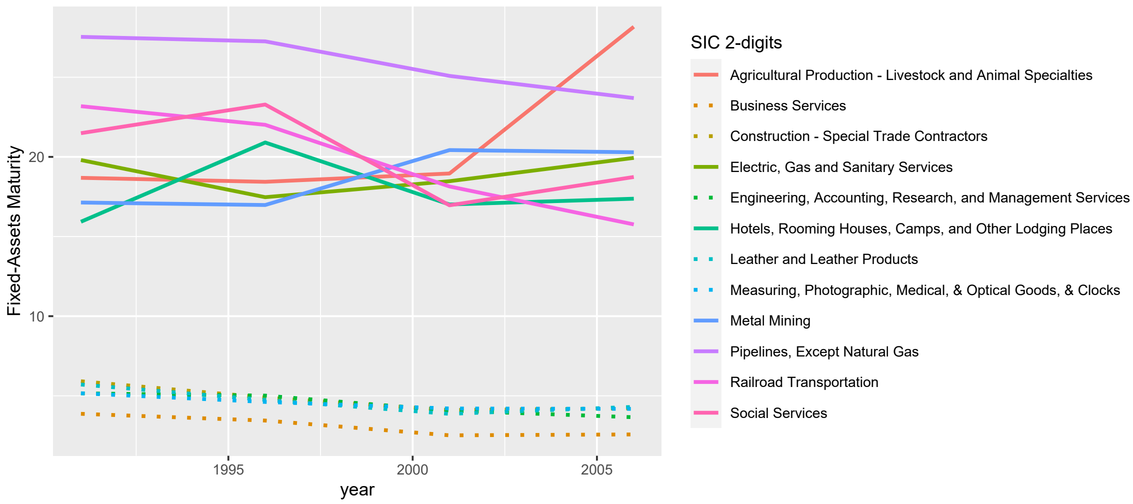
[7] The theoretical considerations in Section II suggest implications for the cash-flow duration of rather than the maturity of a real investment. I argue that in the context of real investment in fixed- and intangible assets, a higher accounting maturity is equivalent to a higher cash-flow duration.

[8] Table A.4 in A.2 details the mean and standard deviation of the duration measures for each industry for the year 2000.

Figure 1: Average duration of firms' assets by industry group

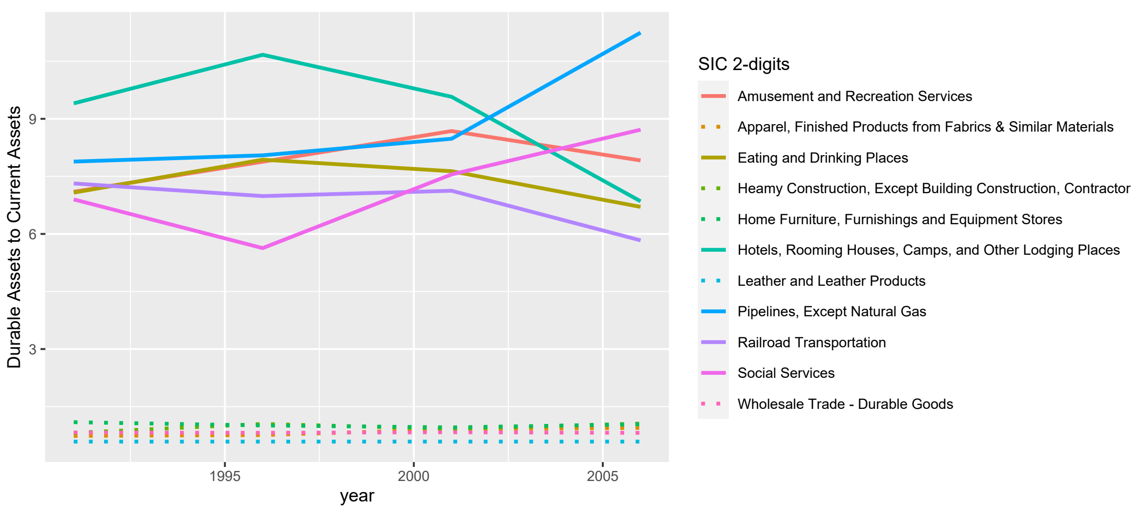
The figure reports the time series dynamics of the respective duration measures defined in Section III.B averaged at the industry-level (SIC 2-digits) by 5-year periods from 1987 to 2009 for the universe of firms present in both Compustat and my sample of debt issuances. Only the industries with the most extreme average values for the period 2001-2005 and with at least 10 underlying firms are represented. The industries with the seven highest of such values are represented with continuous lines and the industries with the seven lowest are represented with dotted lines.

(a) Asset Maturity



(b) Fixed-Asset Maturity

(c) Ratio of Durable Assets to Current Assets



The *Asset Maturity* and *Fixed-Asset Maturity* measures rely on the inverse of the depreciation rate of fixed-assets which plausibly correlates well with economic depreciation when estimated at the industry-level at low frequency. However, accelerated depreciation schedules in earlier years of investment could bias the accounting measures of duration at low frequency and in particular at the time investments are made, making the measures inappropriate for capturing a within-firm channel, i.e. capturing the change in the duration of investment by firms following shocks to long-term discount rates.

Thus, to investigate the within-firm channel, in addition to use the ratio of *Durable to Current Assets*, which is not subject to a bias from depreciation schedules, I use a measure of the expected duration of firm cash flows as in Gormsen and Lazarus (2019): the average long-term forecast for the growth rate in earnings per share (EPS) from the I/B/E/S database. Holding the discount rates constant, the higher the expected growth rate, the larger the weight on more distant cash flows and therefore the greater the expected duration. Note that this measure is not linked to discount rates, unlike measures using market prices for instance, which is important when measuring the changes in real cash-flows following changes to firm discount rates. Another feature that makes this measure complementary to the accounting measure in the context of evaluating the within-firm investment response is that, as it reflects expectations, it may capture soft information about the duration of a firm's investment that is not embedded in accounting measures.

IV Identification: Government debt maturity choices as shocks to the price of interest-rate risk

Testing the implications from Section II using the time-series variation in the premium on long-term borrowing rates is likely to uncover biased elasticities due to the endogeneity of long-term borrowing rates with respect to long-duration investment. For instance, higher investment opportunities for long-duration projects in the economy could increase both the investment in such projects and long-term rates on debt used to financed them under the assumption of capital fixed supply - through either an increase in long-term debt issuance or an expected increase in current and future short-term debt issuance. We would therefore observe contemporaneously more investment in long-duration projects and higher long-term discount rates, biasing towards positive values the above predicted negative relationship between long discount rates and long duration corporate investment.

To circumvent such issue, I exploit large shocks to long-term discount rates (relative to short-term ones), namely choices over government debt maturity. I review the theoretical motivation for such instrument and the evidence in the literature that these shocks to government debt maturity are large enough to generate significant differences for borrowing conditions across maturities for corporates. I then argue that such identification uses shocks that are more plausibly exogenous to the duration of corporate investment than a naive identification using the time series of the term structure of interest rates.

IV.A Economic mechanism

Under the presence of interest-rate risk, the portfolio balance theory (Tobin, 1958) predicts that the compensation required by risk-averse investors is an increasing function of the interest-rate risk in their portfolio, and that long rates are more sensitive to changes in the quantity of aggregate interest-rate risk as they carry more of such risk. In particular, following decreases to the supply of long-term debt, long rates should decrease relative to short rates as the compensation required by risk-averse investors decrease together with the duration risk in their portfolio. Greenwood and Vayanos (2014) presents evidence that is consistent with such prediction using data on the supply of Treasuries across the maturity spectrum: when the weighted-average maturity of Treasury debt increases, long Treasury rates increase more relative to short Treasury rates.

Under the stricter assumption of partially segmented bond markets, where some classes of investors have a natural preference for bonds of certain maturities, shocks to the supply of bonds at specific maturities that are large relative to the supply of arbitrage capital (for instance long-term government bond issuance) have large local effects and can break the expectations hypothesis, generating residual predictability in bond returns (see Vayanos & Vila, 2021).[9] In particular, Greenwood and Vayanos (2014) also present evidence that is consistent with such prediction: when the weighted-average maturity of Treasury debt increases, the holding-period excess returns on long-term Treasury bonds increase.

Lastly, a degree of substitutability between bonds issued by corporates (or a subset of them) and the ones issued by government agencies is required for these shocks to affect the borrowing conditions of all corporates.

IV.B Measuring the relative premium on long-term rates

I measure the relative differences between the long- and short- effective discount rates of issuing firms with the three-year expected excess return on 10-year Treasury bonds. In addition to controlling for the current differences in the discount rates, i.e. the yield spread, it additionally captures the return premium that is specific to issuing long-term debt rather than rolling-over

[9] These implications are consistent with a preferred-habitat framework with arbitrageurs attempting to enforce the expectations hypothesis with trade positions that expose them to interest-rate risk. The natural preference of some investors for bonds with specific characteristics, e.g. pension funds and life insurers with a preference for long-duration assets, can be the result of both underlying aggregate households' life cycle decisions and agency frictions in financial intermediation.

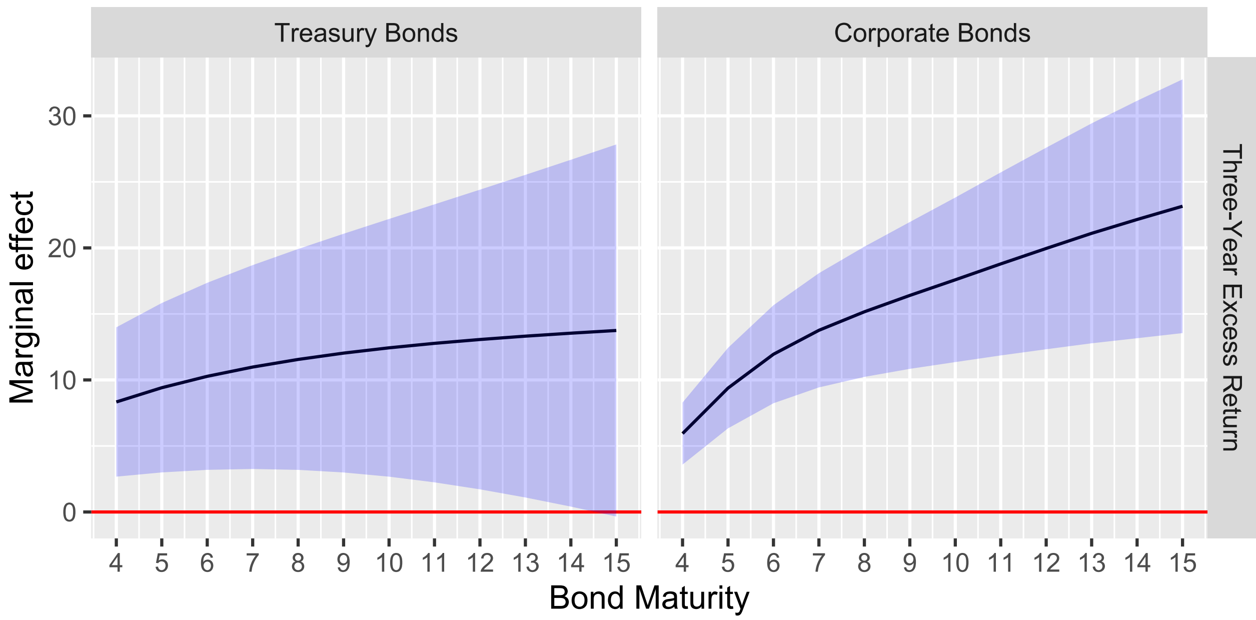
short-term debt in subsequent periods, in other words the return predictability. [10]

Table A.6 in Appendix A presents the sample's descriptive statistics for macroeconomic conditions at issuance, including the maturity of Treasury debt, *TSYMAT*, and different measures of the premium on long-term rates. The sample's average maturity of Treasury debt is 5.6 years *TSYMAT* varies significantly over time: it decreases as low as 4 years, increases as high as 6 years and its standard-deviation is 0.463 years.

Using the interpolated yield curve data for US Treasury bonds and for high quality US corporate bonds[11], I run regressions of the three-year excess returns for zero coupon bonds of different maturities on the average maturity of Treasury debt, controlling for 5-year period fixed effects. Figure 2 plots the estimate of the coefficient on the average maturity of Treasury debt from the regression using bonds of maturity n (horizontal axis). The regression output for such regressions can be found in Table B.3).

Figure 2: Elasticities of relative long-term rate premia to government induced supply shocks

The figures below plot the coefficients from individual regressions of respectively yield spreads, yields, and three-year excess returns for zero-coupon bonds of maturity n on the average maturity of outstanding Treasury debt as found in Tables B.1, B.2, and B.3 of Appendix B. All regressions include five-year period fixed-effects. The yield spreads are computed as the difference between the yield on the bond with n-years residual maturity and the yield on the bond with one-year residual maturity. The excess returns are computed as the three-year holding-period returns on the bond with n-years residual maturity in excess of the yield on the bond with three-year residual maturity. The horizontal axis indicate the maturity, n, of the bond for which the price measure is regressed. The first column presents results using monthly yield curve data on Treasury bonds (1987-2009) and the second column presents results using monthly yield curve data for high quality corporate bonds (1987-2009). Details for data sources are available in Section III.A. The confidence intervals are built at the 95 percent confidence level and are based on Newey-West standard errors with 12 lags.



For the 1987-2009 period, I find evidence consistent with Greenwood et al. (2010) and Greenwood and Vayanos (2014)[12]: a lengthening of the maturity of the stock of Treasury debt

[10]In the Appendix, I also present results when considering alternative measures for different maturities, different return horizons, and safe corporate bonds yield curve.

[11]Respectively from the Federal Reserve database and the US Treasury's High Quality Market (HQM) Corporate Bond Yield Curve database.

[12]Table B.3 in Appendix B presents the regression tables underlying the plots in Figure 2 and the alternative

significantly affects excess returns on long-term bonds, both economically and statistically. The estimated regression for the 10-year Treasury bond carries a coefficient of 9.347. Thus, a one-standard-deviation increase in the average maturity of government debt is associated with an increase of $0.463 \times 9.347 \approx 4.3$ ppt in the expected three-year excess return on the long-term bond, representing about a half of this excess return's standard deviation. Importantly, the implications of Treasury debt maturity shocks predicted by the portfolio balance and the preferred habitat theories apply for both Treasury bonds and their substitutes, bonds issued by high quality corporates.

V Across-firms increase in the duration of investment

As explained in Section II, the relative growth in investment towards long-duration projects following negative shocks to long-term discount rates (relative to short-term ones) may occur *across firms* in the economy: firms specialised in long-duration projects may experience a relative investment growth compared to firms specialised in short-duration projects.

V.A Empirical strategy

I first investigate the differential effect on firm's investment of changes to government debt maturity that are associated with changes in long-term discount rates relative to short-term discount rates, for firms ex-ante specialised in investments of different duration. I estimate models of the form:

$$
\begin{aligned}
Investment_{\tau,i,f,t} = & \beta \cdot LongRatesPremium_t \times Invt.\ Duration_{f,t} \times Post_\tau \\
& + \gamma \cdot LongRatesPremium_t \times Invt.\ Duration_{f,t} \\
& + \delta \cdot LongRatesPremium_t + \zeta \cdot LongRatesPremium_t \times Post_\tau \\
& + \eta \cdot Invt.\ Duration_{f,t} + \theta \cdot Invt.\ Duration_{f,t} \times Post_\tau \\
& + \kappa \cdot \mathbf{X}_{i,t} + \lambda \cdot \mathbf{X}_{i,t} \cdot Post_\tau + \epsilon_{\tau,i,f,t}
\end{aligned} \tag{1}
$$

where $Investment_{\tau,i,f,t,}$ is the measure of investment of firm f, reported at the fiscal year-end τ-years from its debt issuance i made at month-year date t. I measure investment with respectively the stock of firm's total assets, fixed assets (*PPE*), and total employment. I normalised the investment stock measures by their value at $\tau = -1$, i.e. at its value in the first fiscal year-end preceding the issuance.

As discussed in Section III.B, my baseline measure for the ex-ante duration ($Invt.\ Duration_{f,t}$) of firm f's assets at date t is the average *Asset Maturity* for the firm's two-digits SIC industry

specifications.

in the universe of issuing firms from Compustat for the 5-year period preceding the one where the issuance was made. Furthermore, I alternatively measure it with the firm's specific average *Asset Maturity* for the 5-year period preceding the one where the issuance was made, so as to exploit within-industry and across-firms variation.

As discussed in Section IV.B, I measure the premium on long-term rates (*LongRatesPremium*) with the three-year excess returns on the 10-year Treasury bond.

Across the specifications $\mathbf{X}_i$ includes different controls at the time of issuance as well as different fixed effects (month-year, firm, 5-year×SIC 2-digits, and month-year×state). $Post_\tau$ is a dummy variable equal to 1 if τ is greater than zero, in other words if the firm-level observation is posterior to the deal. Finally, standard errors are clustered at the levels of the variation of the treatment: the month-year and SIC 2-digits levels.

This regression is a triple difference-in-differences regression that compares the the real investment of firms who issue when the premium on long-term rates is high relative to firms who issue when the premium on short-term rates is low (first difference), for firms specialised in long-duration real investments relative to firms specialised in short-duration real investments (second difference), after the issuance relative to before issuance (third difference).

The coefficient of interest in the test of the across-firms channel is β. Intuitively, it measures the average effect of a unit increase in the relative discount rates for long-term real investments on the post-issuance change in investment for firms with a higher degree of specialisation in long-duration real investments.

The main identifying assumption is that changes to the maturity of government debt are not correlated with unobservables that carry explanatory power for changes in the investment opportunities of issuing firms. However, the inclusion of time (month-year) fixed effects allows to control for the time-series variation in issuance conditions and relaxes the identification assumption to the requirement that the maturity of government debt is not correlated with unobservables that carry explanatory power for the *difference* in the changes in the investment opportunities of issuing firms *along the investment duration dimension*. In other words, it should be that government debt is not correlated with unobservables that explain better (or worse) investment opportunities for firms specialised in long-duration investment relative to firms specialised in short-duration investment.

Table 1 tests whether the issuance by long-duration specialised firms (in other words, higher *Invt. Duration*) when long-term rates are lower (lower $TSYMAT$) is correlated with critical issuance's or issuer's properties that could explain differences in the characteristics of corporates of the same duration specialisation that are issuing under different market conditions. The first column provides correlations conditional on 5-year×SIC 2-digits fixed effects, while the last two provide correlations when conditioning additionally on time (month-year) fixed-effects and firm fixed-effects. When using within-issuance month across-industries variation, long-duration investment specialised corporates issuing debt under more favourable conditions are more likely to be of lower issuer quality, lower size, more leveraged. While the first column indicates that such issuances correlate with better economic conditions, the second column points at such issuances being made by less pro-cyclical firms. While such correlations stress the importance to control for firm characteristics and macroeconomic conditions, they are inconsistent with long-duration specialised firms issuing debt when the market conditions are more favourable because they have effectively better investment opportunities than other firms. Finally the number of issuances, conditional on 5-year fixed effects, does not seem to correlate with more favourable conditions along the duration-specialisation dimension

Table 1: Correlation between TSYMAT and Issuance Characteristics conditional on firm duration

	5-year x SIC-2 FE		5-year x SIC-2 and Month-Year FE	
	Coeff.	S.E.	Coeff.	S.E.
Firm characteristics				
A-AAA Rating	0.008604***	0.001274	0.008866***	0.001281
Dividend Dummy	-0.000639	0.001639	-0.00021	0.001652
EBIT-to-Assets	-0.000475	0.000399	-0.000515	0.000403
log(Assets)	0.007455	0.006859	0.014501*	0.006805
log(Market Value of Equity)	0.01028	0.007399	0.018715*	0.007311
log(Sales)	0.002553	0.002757	0.006082*	0.002644
Market to Book Ratio	0.002836	0.002467	0.004129	0.002463
Market-Debt Ratio	-0.001565	0.000805	-0.00193*	0.000802
Gwth Beta Quintile (SIC 2-digits)	0.004404***	0.000768	0.004278***	0.000776
Sales Gwth	-0.479312*	0.196358	-0.455898*	0.197898
STD EBIT Growth (SIC 2-digits)	-0.000959***	0.000106	-0.000911***	0.000107
Asset Maturity	-0.07739***	0.016143	-0.076996***	0.016369
Issuance characteristics				
Dealscan Flag Dummy	0.000872	0.001652	-0.000133	0.001640
log(Deal Amount)	0.003908	0.005883	0.010165	0.005831
Macroeconomic conditions				
Moody's LT BAA-AAA Spread	-0.006316***	0.001018	NA	NA
Debt-to-GDP	0.019435	0.014845	NA	NA
Total GDP 4Q Growth	0.015768**	0.004821	NA	NA
Distribution of Issuances				
Number of Issuances (per year)	5.8e-05	0.000206	NA	NA
Number of Issuances (per quarter)	2.5e-05	0.000033	NA	NA
Number of Issuances (per month)	1.4e-05	0.000010	NA	NA

Note:
The table presents the coefficient on the interaction between the average maturity of Treasury debt and the industry average asset maturity from individual regressions of an issuance characteristic (among properties of issuing firms, issuance properties, and market conditions) on the average maturity of Treasury debt, the industry average asset maturity and an interaction term. The first column provides the least-squares estimates of coefficients from a regression including 5-year period × industry fixed effects, while the second column provide the estimates from regression also including month-year fixed effects. The standard errors are clustered at the month-year and industry level with the exception of the regressions for the distribution of issuances per year and per quarter where the standard errors are respectively clustered at the year and quarter-year levels rather than month-year level. The thresholds for the significance stars are: * for p<.05, ** for p<.01, and *** for p<.001.

Furthermore the alternative analysis, in which the firm-specific measure is used, allows to control for issuance month-year×SIC 2-digits FE and exploit variation in investment within industry that can be explained by differences in my proxies of the duration of assets.

V.B Results

In this section I present the results of the tests of the across-firms channel corresponding to estimations of model 1.

Baseline result: Across-industries

Figure 3 presents the estimates of the parameter for the triple interaction of interest, β, in model 1 for specifications that include relevant controls as well as 5-year×industry, firm, and time- (month-year) fixed effects. Specifically, it presents interactions with each year-cell τ around the debt issuance with the first fiscal year-end preceding the issuance as a baseline ($\tau = -1$).

The rows of Figure 3 present the specifications for respectively *PPE*, *Employment* and *Total Assets* when using the lagged 5-year average in the Compustat industry-level (SIC 2-digits) measure of ex-ante specialisation in long-duration investment.

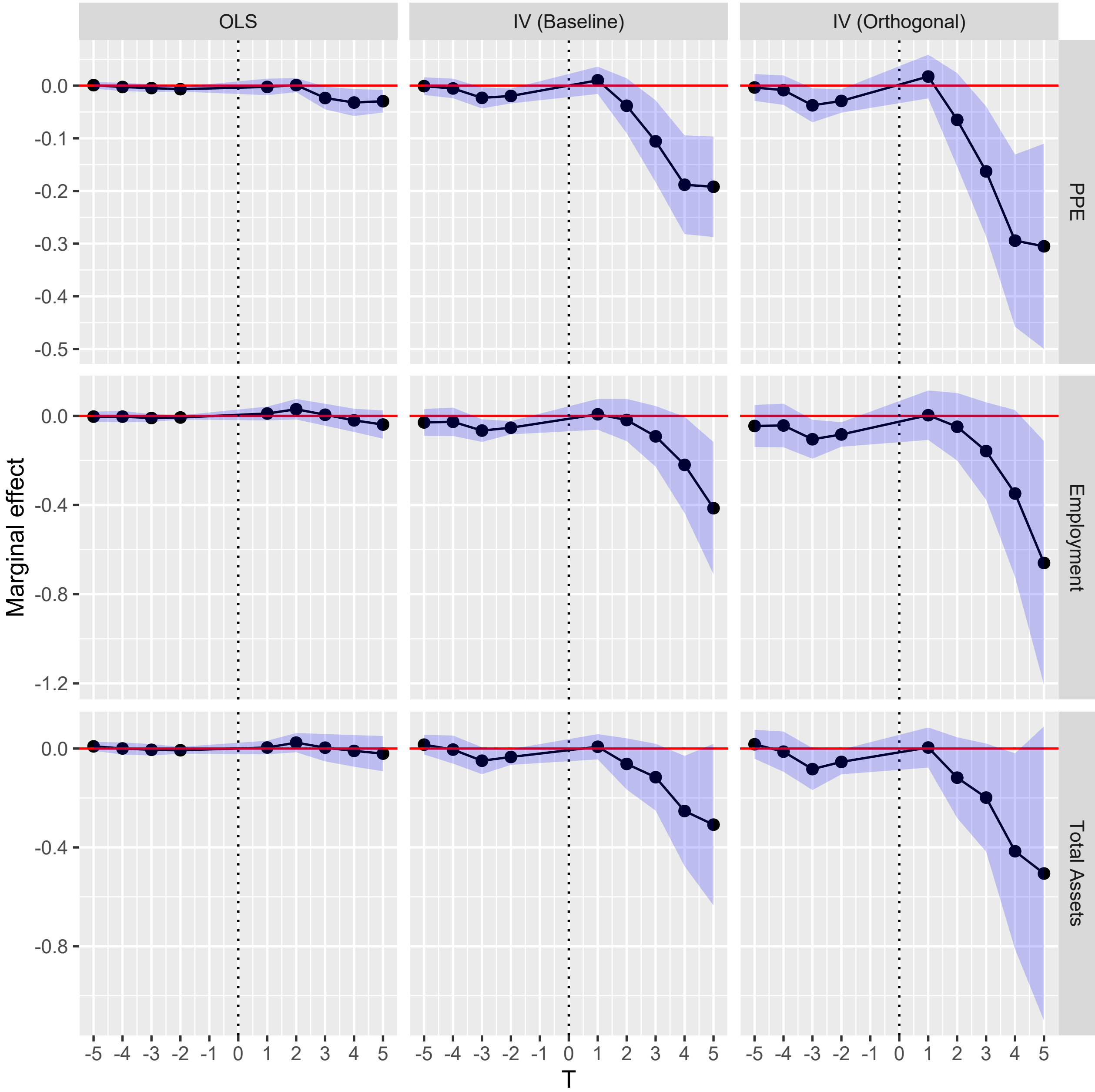
The first column presents the estimates from a naive OLS strategy. The second column presents the second-stage estimates from 2SLS regressions where the premium on long-term rates is instrumented by the average maturity of Treasury debt. The third column presents the second-stage estimates from 2SLS regressions where the premium on long-term rates is instrumented by the residual from a regression of average maturity of Treasury debt on the lagged premium on long-term rates.

The results in the second column highlight that following more favourable long-term discount rates, driven by a lower supply of long-term Treasury debt (lower $TSYMAT$), issuing firms specialised in long-duration projects significantly increase their investment (proxied by *PPE* and *Employment*), relative to firms specialised in short-duration projects.

Panel (a) of Table 2 presents the regression results for the second stage of different 2SLS specifications with *PPE* as the dependent variable and the observation for the first fiscal year-end preceding the issuance as a baseline ($\tau = -1$) and the observation for the fifth fiscal year-end following the issuance as the ex-post observation ($\tau = 5$). The estimated coefficient in the fourth column - which replicates the specification in Figure 3 - highlights that following a one standard deviation decrease in the instrumented three-year excess return on the ten-year Treasury bond, issuing firms in industries at the 75th percentile of the *Asset Maturity* distribution, experience a differential increase in their stock of fixed-assets (*PPE*) of $0.192 \times 10.412 \times (6.836 - 2.855) \approx 8\%$ (of total assets) by the fifth fiscal year-end following the

Figure 3: Premium on long-term rates and specialisation in long-duration real investment: industry-level treatment

This figure presents the estimates of the coefficient on the triple interaction between the premium on long-term rates, measured with the three-year excess returns on the 10-year Treasury bond, the specialisation into long-duration investments, measured by *Asset maturity (5y ave - SIC 2-digits)*,and each of the ten indicator functions for the 10 periods around the issuance ($T = 0$) in the linear models corresponding to Equation 1 where the dependent variable is the variable in the row title. Each row presents the estimates for the three dependent variables of interest: *PPE*, *Employment* and *Total Assets*. The columns present the estimates under different identification strategies: naive OLS regressions, regressions instrumenting the premium on long-term rates with the average maturity of Treasury debt, and regressions instrumenting the premium on long-term rates with the residual from a regression of average maturity of Treasury debt on the lagged premium on long-term rates. As described in Appendix A, *Total Assets* and *PPE* are both normalised by total firm assets in the year preceding the deal, and *Employment* is normalised by total employment in the year preceding the deal. The sample consists of all debt issues (excluding credit lines) for which we observe data in each window time cell. To mitigate the influence of extreme outliers, the variables have been winsorised at the 1st and 99th percentiles. All regressions include month-year × window cell fixed effects, 5-year × industry (SIC 2-digits) × window cell fixed effects, firm× window cell fixed effects and issuance fixed-effects. All regressions include the same controls as in the fourth column of Table 2 interacted with each window cell fixed effects. Confidence intervals are built at the 95% confidence level with standard errors clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).



issuance, relative to issuing firms in industries at the 25th percentile of the distribution.

Panel (b) of Table 2 presents the regression results for the reduced-form estimation of the same specifications. The estimated coefficient in the fourth column highlights that following a one standard deviation decrease in the maturity of the average Treasury debt instrument, issuing firms in industries at the 75th percentile of the *Asset Maturity* distribution experience a differential increase in their stock of fixed-assets of $2.563 \times 0.463 \times (6.836 - 2.855) \approx 5\%$ (of total assets) by the fifth fiscal year-end following the issuance, relative to issuing firms in industries at the 25th percentile of the distribution.

Panel (c) of Table 2 presents the regression results for the OLS estimation of the same specifications, i.e. exploiting all the variation in the three-year excess returns on ten-year Treasury bonds. As expected from the direction of the endogeneity bias, the estimated coefficient is more than five times lower than the one from the instrumental variable regression, losing its significance at the 5 percent level for the baseline specification.

Tables C.1 and C.2 presents the same regression results with respectively *Total Assets* and *Employment* as dependent variables. The estimated coefficients in the second columns highlight that following a one standard deviation decrease in the instrumented three-year excess return on the ten-year Treasury bond, issuing firms in industries at the 75th percentile of the *Maturity* distribution, experience a differential increase in their stock of total-assets of $0.308 \times 10.412 \times (6.836 - 2.855) \approx 13\%$ and in their employment figure of $0.414 \times 10.412 \times (6.836 - 2.855) \approx 17\%$ by the fifth fiscal year-end following the issuance, relative to issuing firms in industries at the 25th percentile of the distribution.

In the first column of Panel (a) in Table 2, I study the relationship between the premium on long-term rates and the differential changes in investment for firms with different specialisation in investment in terms of duration, only controlling for issuance and 5-Year×Post× SIC 2-digits fixed effects. Compared to the baseline specification also including Time (Month-Year)×Post fixed effects, I find a very similar point estimate for the parameters of interest β of model 1.

As explained in Section V.A, the results could be driven by an increase in the investment opportunities for firms specialised in long-duration projects. The concern is addressed in the fourth column by augmenting the specification with the inclusion of the controls suggested in Table 1. The resulting point estimates are slightly more negative but of comparable magnitudes with the baseline ones.

Finally in the fifth column, I augment the specification with the inclusion of Time×State×Post fixed effects, to control for the fact that the decrease in long-term rates may translate into an increase in real estate prices and explain the increase in investment for long-duration specialised firms through a collateral channel (Chaney, Sraer, & Thesmar, 2012). The results are largely unchanged and remained statistically significant at the 5-percent level.

Table 2: Premium on long-term rates, firm specialisation, and investment in fixed-assets

The table presents the estimates of the coefficient on the triple interaction between the proxy for the premium on long-term rates, the specialisation into long-duration investments, measured by *Asset maturity (5y ave - SIC 2-digits)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. In panel (a), the premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a 2SLS procedure with the average maturity of Treasury debt. Panel (b) presents the reduced-form estimates of such 2SLS estimation procedure. Panel (c) presents the estimates from a naive OLS regression using excess returns. The specification (controls and fixed-effects) are the same across all three panels and are only reported in the first panel for the purpose brevity. The sample used for these regressions consists of all debt issues (excluding credit lines) for which we observe data at each time cell between $T = -5$ and $T = 5$. To mitigate the influence of extreme outliers, continuous control variables have been winsorised at the 1st and 99th percentiles. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

(a) Second-stage 2SLS (Baseline IV)

	(1) PPE	(2) PPE	(3) PPE	(4) PPE	(5) PPE
$\widehat{rx^{10Y}_{t\to t+36} \text{ x Asset Mat x Post}}$	-0.147**	-0.162**	-0.135***	-0.192***	-0.120*
	(-3.28)	(-3.27)	(-4.46)	(-3.95)	(-2.45)
Real GDP Growth x Asset Mat x Post				-0.492**	
				(-2.98)	
LT Credit Spread x Asset Mat x Post				-0.691	
				(-1.11)	
Sales Gwth (sic2) x Asset Mat x Post				-0.00272	
				(-1.04)	
Sales Gwth x Asset Mat x Post				0.00894	
				(0.69)	
Issuance FE	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓	✓
Month-Year x Post FE	–	✓	✓	✓	✓
Firm x Post FE	–	–	✓	✓	✓
Month-Year x State x Post FE	–	–	–	–	✓
Observations	22912	22912	20974	19458	14292

(b) reduced-form 2SLS (Baseline IV)

	(1) PPE	(2) PPE	(3) PPE	(4) PPE	(5) PPE
TSYMAT x Asset Mat x Post	-2.569***	-2.654***	-2.143***	-2.563***	-1.844*
	(-4.12)	(-3.76)	(-4.65)	(-4.56)	(-2.51)
Observations	22912	22912	20974	19458	14292
Adjusted R^2	0.497	0.487	0.615	0.622	1.783

(c) OLS

	(1) PPE	(2) PPE	(3) PPE	(4) PPE	(5) PPE
$rx^{10Y}_{t\to t+36}$ x Asset Mat x Post	-0.0311	-0.0286	-0.0169*	-0.0295**	0.00531
	(-1.91)	(-1.61)	(-2.09)	(-2.71)	(0.32)
Observations	22912	22912	20974	19458	14292
Adjusted R^2	0.494	0.485	0.614	0.620	1.785

Endogeneity

As explained in Section IV, the US Treasury might be trading-off the relative costs of debt issuance, i.e. the relative cost premium of issuing long-term debt, with the additional costs of issuing short-term debt in case of increasing debt burden and in turn increasing refinancing risk. This would raise the concern that the point estimates in the baseline instrumental variable approach might be biased towards positive value because the US Treasury would issue long-term debt when the latter is relatively more affordable.

I address this concern by using alternative instruments using the projections of the baseline instrument ($TSYMAT$, the maturity of the average Treasury debt instrument) that is orthogonal respectively to the one-month lagged premium on long-term rates (the three-year excess return on the 10-year Treasury bond, our instrumented variable), to the contemporaneous debt-to-GDP ratio, and to both the contemporaneous debt-to-GDP ratio and the lagged long-term rate premium. The results can be found in respectively the second, third, and fourth column of Table 3, and are put in perspective with while the point estimate for the baseline approach available in the first column.

As highlighted in the second column and consistent with the direction of the bias from the endogeneity of Treasury debt maturity choices to relative prices, the resulting estimates are more negative. Such method therefore improves the precision of the lower bound on the corresponding true estimates.

To address the concern that the US Treasury issues long-term debt in bad times, when its debt burden is higher and when the average firm might be more constrained in pursuing long-duration projects, I conduct a second alternative approach using the projections of the baseline instrument ($TSYMAT$, the maturity of the average Treasury debt instrument) that is orthogonal to the contemporaneous debt-to-GDP ratio. The third column presents the estimates of the second-stage 2SLS regressions. The point estimates are somewhat smaller, but their magnitude and statistical significance are comparable to the baseline point estimates. This indicates that the concern for the analysis that the US Treasury issues long-term debt in bad times, when its debt burden is higher, does not seem to matter for our results.

Finally, the results of a third alternative approach using the projections of the baseline instrument ($TSYMAT$) that is orthogonal to the contemporaneous debt-to-GDP ratio and the lagged long-term rate premium are presented in the fourth columns. Consistent with a positive bias coming from the endogeneity of government debt issuance with respect to debt prices across maturities, the point estimates are slightly larger than the baseline ones.

Overall, Figure 3 highlights the fact that the use of the baseline instrument ($TSYMAT$) reduces the endogeneity bias inherent to the fully endogenous OLS regressions. It also shows that the use of the second instrument, which aims at further reducing the residual bias, appears to effectively do so: while qualitatively comparable, the magnitude of the effect is larger than under the baseline instrument.

Table 3: Premium on long-term rates, firm specialisation, and investment in fixed-assets: alternative instruments

The table presents the estimates of the coefficient on the triple interaction between the proxy for the premium on long-term rates, the specialisation into long-duration investments, measured by *Asset maturity (5y ave - SIC 2-digits)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. The premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a 2SLS procedure with the average maturity of Treasury debt for specification presented in the first column. For the second column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the one-month lagged premium on long-term rates and on 5-year period fixed-effects for the period 1970-2009. For the third column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the contemporaneous debt-to-GDP and on 5-year period fixed-effects for the period 1970-2009. For the fourth column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the contemporaneous debt-to-GDP, on the one-month lagged premium on long-term rates, and on 5-year period fixed-effects for the period 1970-2009. The specification, sample, and cleaning procedures are the same as for the second column of Table 2. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

	Baseline	Orth. to lagged premium	Orth. to contemp. Debt/GDP	Orth. to lagged premium and contemp. Debt/GDP
$\widehat{rx^{10Y}_{t\rightarrow t+36}}$ x Asset Mat x Post	-0.192***	-0.305**	-0.171***	-0.339*
	(-3.95)	(-3.07)	(-3.49)	(-2.27)
Controls x Post	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓
Month-Year x Post FE	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓
Observations	19458	19458	19458	19458

Pro-cyclicality of long-duration investment specialised firms

A concern about the interpretation of the results is that firms that are specialised in long-duration investments might be responding to unobserved shocks to investment opportunities in a different way than the average firm. I address the possibility that changes to the average maturity of Treasury debt are correlated with better economic conditions and that firms specialised in long-duration investments are more pro-cyclical or counter-cyclical than the average firm.

I compare my baseline result to the results of alternative specifications in Table 4: the second column's specification allows for differential response to economic growth across the duration specialisation dimension, the third column controls for quintile of cyclicality $\times$ time fixed effects to exploit variation within groups of firms with the same degree of cyclicality, and the fourth column looks at the difference in our parameter of interest, β for firms in different quintiles of cyclicality.[13] The point estimates for the second and third columns are unchanged compared to the baseline. The fourth column indicates that the baseline result is driven by long-duration specialised firms that are neither strongly pro-cyclical nor strongly counter-cyclical. Overall, the evidence is consistent with the interpretation that firms investing in long-duration projects

[13] I measure the distribution of cyclicality across SIC 2-digits industries as the distribution of the point estimates specific to each SIC 2-digits industry in the OLS regressions of firm's capital expenditures on the four-quarter real GDP growth in the sample of Compustat observations between 1987 and 2009 controlling for year and industry fixed-effects.

benefit more from low long-term discount rates than firms investing in short-duration projects.

Table 4: Premium on long-term rates: specialised firms and the business cycle

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, measured by *Asset maturity (5y ave - SIC 2-digits)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. The specification, sample, and cleaning procedures in the first column are the same as for the fourth column of Table 2. The specification in the second and third columns considers interactions of indicators for each of the five quintiles of the distribution of cyclicality coefficients across firms with respectively the time fixed-effects and the interactions of interest. The details for the construction of*Growth-Beta Quintile* can be found in Appendix A. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

	(1) PPE	(2) PPE	(3) PPE
TSYMAT x Asset Mat x Post	-2.563***	-2.261*	
	(-4.56)	(-2.63)	
Gwth Q=1 × TSYMAT x Asset Mat x Post			-1.817
			(-1.50)
Gwth Q=2 × TSYMAT x Asset Mat x Post			-2.836*
			(-2.38)
Gwth Q=3 × TSYMAT x Asset Mat x Post			-4.256*
			(-2.37)
Gwth Q=4 × TSYMAT x Asset Mat x Post			-0.676
			(-0.21)
Gwth Q=5 × TSYMAT x Asset Mat x Post			-0.228
			(-0.38)
Controls x Post	✓	✓	✓
Issuance FE	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓
Month-Year x Post FE	✓	–	–
Firm x Post FE	✓	✓	✓
Month-Year x Growth-Beta Quintile x Post FE	–	✓	✓
Observations	19458	19318	19318

Robustness

To ensure the robustness of the results, I conduct a set of robustness tests. Table C.3 shows that the results are robust to restricting to different periods of the sample and Table C.4 shows that the results for the baseline specification are slightly stronger when considering all issuances as opposed to issuances with no missing observations from $\tau = -5$ to $\tau = 5$.

I also compare the baseline specification to specifications with alternative measures of the ex-ante specialisation of industries for investment duration. The first column presents results for the baseline specification with *Asset Maturity* as the measure and the second specification uses the percentiles of the *Asset Maturity* distribution rather than the values to tackle concerns of local effects. The third specification uses *Fixed-Asset Maturity* and the fourth one uses *Dur. Ratio*, the ratio of durable assets to current assets. The latter two specifications allow to capture two dimensions of the baseline measure, on the one hand the maturity of long-term assets and on the other hand the share of long-term assets. Finally the last column uses *EPS LTG rate*, the measure of the expectations by equity analysts of the long-term growth rate of firm's cash flows. The results are qualitatively and statistically similar across all measures with the exception of the expectations measure for which results suggests a positive and non-significant relationship. One possible explanation for this puzzling result is that this measure is more appropriate to capture *within-firm* changes in the duration of cash-flows rather than the specialisation of a firm into long-duration real investments. In particular, using the measure as a left-hand-side variable, as in the test of the *within-firm channel*, and looking at changes around bond issuances allow to isolate the impact on duration of the new real investments. However, this measure might not capture the specialisation into long-duration investments if specialised firms have invested in previous periods recurrently in such investments so that the cash-flow duration of their overall stock of investments is low.

In Table C.6, I show that the baseline results are robust to using other industry taxonomies such as the Global Industry Classification Standard (GICS) or the North American Industry Classification System (NAICS) and to focussing on different levels in these taxonomies.

In Table C.7 I compare the baseline specification to specifications that use alternative measures of the instrumented variable, the premium on long-term discount rates. The baseline results are robust to measures of excess returns over different horizons, for bonds of different maturities, and for absolute prices change. However as hinted from the first stage results in Section IV, the results are not robust to measuring the premium on long-term bonds with the yield spread. One piece of explanation lies in the fact that for the 1987-2009 period, I find no significant and positive effect of positive shocks to long-term debt supply for the yield spreads on Treasury and Corporate, in particular when adding 5-year period fixed effects to control for low frequency factors that can explain the levels in spreads (see Table B.1). Indeed short-term rates (e.g. 1-year yield on Treasury bond) react approximately as much as long-term rates (see Table B.2) to a lengthening of maturity of the Treasury debt stock in the short-term before reverting back in subsequent periods as highlighted in Table B.4. This reinforces the fact that using excess returns as a measure of the premium on long-term rates is an empirically reasonable choice to isolate the effective differences in discount rates. It effectively corrects for the short-term disconnect of short rates from the portfolio balance theory implication and additionally captures the price premium specific to long-term debt - the return predictability. I also show that the results are robust to all the other dimensions using yield curve data for high quality corporate bond issuers as presented in Section IV.B.

Finally, in Table C.8, I show that the results are robust to different starting years in the construction of the five-year fixed-effects.

Within-industry, across-firms variation

Table 5 presents the reduced-form estimates of the parameter for the triple interaction of interest, β, in model 1. It uses a firm-specific measure of firm specialisation in long-duration investment, instead of a industry-specific measure as in Table 2, which allows to refine the test of the across-firm channel by enabling to control for time varying factors that are specific to each industry with Time × SIC 2-digits industry × Post fixed-effects or Time × SIC 3-digits industry × Post fixed-effects.

Despite using another source of variation than the baseline test (across industries), the test *within-industry* and *across-firms* studies the same margin: the degree of specialisation into long-duration real investments. Table 5 (and Tables C.9 and Tables C.10) show that the results are qualitatively similar for the investment response in fixed-assets, total assets and employment.

Table 5: Premium on long-term rates and firm-level specialisation in long-duration real investment

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, measured by *Asset maturity (5y ave - firm)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding issuer.

	(1)	(2)	(3)	(4)	(5)	(6)
	PPE	PPE	PPE	PPE	PPE	PPE
TSYMAT x Asset Mat (firm) x Post	-1.730**	-1.810**	-2.187***	-2.197**	-1.708	0.233
	(-2.93)	(-3.05)	(-3.56)	(-2.73)	(-1.17)	(0.17)
Controls x Post	–	–	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	–	–	–
Month-Year x Post FE	–	✓	✓	–	–	–
Month-Year x SIC2 x Post FE	–	–	–	✓	–	✓
Month-Year x SIC3 x Post FE	–	–	–	–	✓	–
Firm x Post FE	–	–	–	–	–	✓
Observations	21830	21830	20150	13584	6902	10962
Adjusted R^2	0.498	0.487	0.495	-0.049	-0.854	2.702

VI Within-firm increase in the duration of investment

As explained in Section II, the relative growth in investment towards long-duration projects following negative shocks to long-term discount rates (relative to short-term ones) may also occur *within firm* in the economy: firms may increase the duration of their new projects.

VI.A Empirical Strategy

In this test, I investigate the effect on firm's investment duration of changes to government debt maturity that are associated with changes in the premium on long-term discount rates - relative to short-term discount rates. I estimate models of the form:

$$\begin{aligned} Invt.\ Duration_{\tau,i,f,t} = &\beta \cdot LongRatesPremium_t + \gamma \cdot LongRatesPremium_t \times Post_\tau \\ &+ \delta \cdot \mathbf{X}_{i,t} + \xi \cdot \mathbf{X}_{i,t} \cdot Post_\tau + \epsilon_{\tau,i,f,t} \end{aligned} \tag{2}$$

where $Invt.\ Duration_{\tau,i,f,t}$ is the measure of investment maturity of firm f, at the fiscal year-end τ-years from its debt issuance i made at month-year date t. For the baseline specification, I will show consider observations with τ between -5 and $+5$. Following the discussion on the measurement of investment duration in Section III.B, I measure investment duration with respectively the accounting ratio of *Durable Assets to Current Assets* and the average analyst forecast for the long-term growth of the firm's earnings per share, *EPS LTG rate*. The measurement and identification choices for the premium on long-term rates (*LongRatesPremium*) follow from the test of the *across-firms channel*. Across the specifications $\mathbf{X}_i$ includes different controls at the time of issuance as well as different fixed effects (5-year or year, and firm). $Post_\tau$ is a dummy variable equal to 1 if τ is greater than zero, in other words if the firm-level observation is posterior to the deal. Finally, standard errors are clustered at the level of the variation in the treatment: the month-year level.

This regression is a difference-in-differences regression that compares the the real investment duration of firms who issue when the premium on long-term rates is high relative to firms who issue when the premium on short-term rates is low (first difference), after the issuance relative to before issuance (second difference).

The coefficient of interest is γ. Intuitively, it measures the average effect of a unit increase in the relative discount rates for long-term real investments on the post-issuance change in investment duration.

As introduced above, my preferred identification strategy is to instrument *LongRatesPremium* with government debt maturity choices measured with the contemporaneous weighted average maturity of the stock of tradable Treasury debt, denoted $TSYMAT$. In Sections IV.A and IV.B, I have covered the economic motivation for the use of such instrument and provided empirical evidence consistent with such motivation, overall strongly supporting the relevance of the instrument.

The main identifying assumption is that changes to the maturity of government debt are not correlated with unobservables that carry explanatory power for changes in the investment opportunities of issuing firms across the investment duration dimension. Table 6 tests whether the maturity of Treasury debt ($TSYMAT$) is correlated with issuance's or issuer's characteristics that could correlate with different changes to investment maturity. The first column provides unconditional correlations, while the last two provide correlations conditional on 5-year window fixed effects and firm fixed effects.

Table 6: Correlation between TSYMAT and Issuance Characteristics

	Unconditional		5-year FE		5-year FE and Firm FE	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Firm characteristics						
A-AAA Rating	0.0496***	0.0061	0.0458***	0.0089	0.01	0.0055
Dividend Dummy	0.0147	0.0081	0.0392***	0.0117	0.0064	0.0064
EBIT-to-Assets	0.001	0.0019	-0.0047	0.0028	5e-04	0.0022
log(Assets)	-1.0549***	0.0347	0.1859***	0.0485	0.013	0.0144
log(Market Value of Equity)	-1.3789***	0.0374	0.102*	0.0515	-0.0823***	0.0197
log(Sales)	-0.8389***	0.0148	0.0128	0.0192	-0.061***	0.0061
Market to Book Ratio	-0.192***	0.0123	0.0695***	0.0175	0.0498***	0.0126
Market-Debt Ratio	0.0775***	0.0040	0.0376***	0.0057	0.0488***	0.0042
Gwth Beta Quintile (SIC 2-digits)	0.005	0.0044	-0.0146*	0.0063	0	0.0000
Sales Gwth	5.6629***	0.9411	7.99***	1.3604	6.7433***	1.2645
STD EBIT Growth (SIC 2-digits)	-8e-04	0.0006	-0.0013	0.0008	0.0015**	0.0005
Asset Maturity	0.2515*	0.1081	0.4366**	0.1576	0.0448	0.0745
Issuance characteristics						
Dealscan Flag Dummy	-0.009	0.0080	-0.0237*	0.0117	0.0049	0.0109
log(Deal Amount)	-1.2029***	0.0295	-0.0902*	0.0409	-0.0344	0.0306
Macroeconomic conditions						
Moody's LT BAA-AAA Spread	-0.2192***	0.0055	0.0166*	0.0068	-0.0093	0.0081
Debt-to-GDP	4.4276***	0.1193	-6.4355***	0.0715	-6.2379***	0.0837
Total GDP 4Q Growth	0.8912***	0.0271	-0.8184***	0.0311	-0.7789***	0.0368
Distribution of Issuances						
Number of Issuances (per year)	0.0966	0.0790	-6e-04	0.0962	NA	NA
Number of Issuances (per quarter)	0.0247*	0.0107	0.0024	0.0133	NA	NA
Number of Issuances (per month)	0.008**	0.0025	2e-04	0.0034	NA	NA

Note:
The table presents the coefficient from individual regressions of an issuance characteristic (among properties of issuing firms, issuance properties, and market conditions) on the average maturity of Treasury debt. The first column provides the least-squares estimates of coefficients from the baseline regressions, while the last two provide the estimates from regression including 5-year period fixed effects or/and firm fixed effects. The standard errors are clustered at the month-year level with the exception of the regressions for the distribution of issuances per year and per quarter where the standard errors are respectively clustered at the year and quarter-year levels.The thresholds for the significance stars are: * for p<.05, ** for p<.01, and *** for p<.001.

Most significant correlations vanish when focussing on within-firm deals characteristics exploiting variation in maturity of Treasury debt within 5-year windows. In particular conditioning on 5-year windows allows me to control for long-term development in government debt maturity. Exploiting variation only within 5-year periods, more favourable long discount rates (lower $TSYMAT$) follow at least four quarters of economic growth. Corporates issuing debt under these conditions are more likely to be of lower size, tend to have experienced a lower growth in sales, and tend to have lower investment opportunities. While such facts stress the importance to control for firm characteristics and macroeconomic conditions, they are not compatible with firms having consistently better long-duration investment opportunities for other reasons than more favourable market conditions for financing long-duration projects. Another reassuring fact is that there is no correlation between the number of issuances and the supply of long-term Treasuries.

Furthermore, I argue that reverse causality is unlikely. Indeed, government debt maturity choices are unlikely to be directly driven by poorer investment opportunities in long-duration projects relative to short-duration one in the period of interest, 1987-2009, during which policies aiming at lowering long-term rates to spur long-term investments (e.g quantitative easing) were not prominent.[14] I also argue that the positive bias arising from the relationship between firm long-term investment opportunities and long-term rates is arguably less of an issue under an identification strategy that exploits government debt maturity choices. Governments only partially choose the maturity of their debt issuance so as to minimise costs of issuance as they also weight other costs such as refinancing risk (Greenwood et al., 2015). To further address this issue I also run robustness checks where instead of exploiting the historical variation in Treasury debt maturity, I exploit the variation in the latter that is orthogonal to the one-month lagged premium on long rates, i.e. the one-month lag of my instrumented variable.

VI.B Results

In this section I present the results of the tests of the *within-firm channel* corresponding to estimations of model 2.

Baseline results

Figure 4 presents the estimates of the parameter of interest γ of Equation 2 for specifications that include relevant controls as well as 5-year- and firm-fixed effects. Specifically, it presents interactions with each year-cell τ around the debt issuance with the first fiscal year-end preceding the issuance as a baseline ($\tau = -1$). The 5-year period (and 5-year period $\times$ Post) fixed-effects control for low frequency changes in the economic factors that explain changes to the duration of real investment, and restricts the identification strategy to changes in government debt maturity within these 5-year periods. The firm- (and firm- $\times$ Post) fixed effects controls for the average firm-specific change in the duration of real investment, and restricts the identification strategy to firms issuing under different market conditions (at least twice) in the sample.

The rows present the specifications for respectively the *Ratio of Durable to Current Assets* and the *Average EPS LTG forecast*. The first column presents the estimates from a naive OLS strategy. The second column presents the second-stage estimates from 2SLS regressions where the premium on long-term rates is instrumented by the average maturity of Treasury debt. The third column presents the second-stage estimates from 2SLS regressions where the premium

[14] See Swanson (2011) for a discussion of the historical popularity of such policies following the assessment of US Treasury 1961's Operation Twist.

on long-term rates is instrumented by the residual from a regression of average maturity of Treasury debt on the lagged premium on long-term rates.

The results in the second column for the *Ratio of Durable to Current Assets* highlight that following more favourable long-term discount rates, driven by a lower supply of long-term Treasury debt (lower $TSYMAT$), the average issuing firm significantly increases the ratio of its durable assets to assets used for current production by the fourth fiscal year-end following their issuance, as highlighted by the first panel. Figure D.1 decomposes the results for the *Ratio of Durable to Current Assets* into the results for its sub-components. The delayed increase in the ratio is explained by the the average firm increasing current assets in the year following the issuance, before increasing relatively more durable assets in the subsequent years. This delayed response might be explained by a lag in the allocation of funds raised with debt by the average firm.

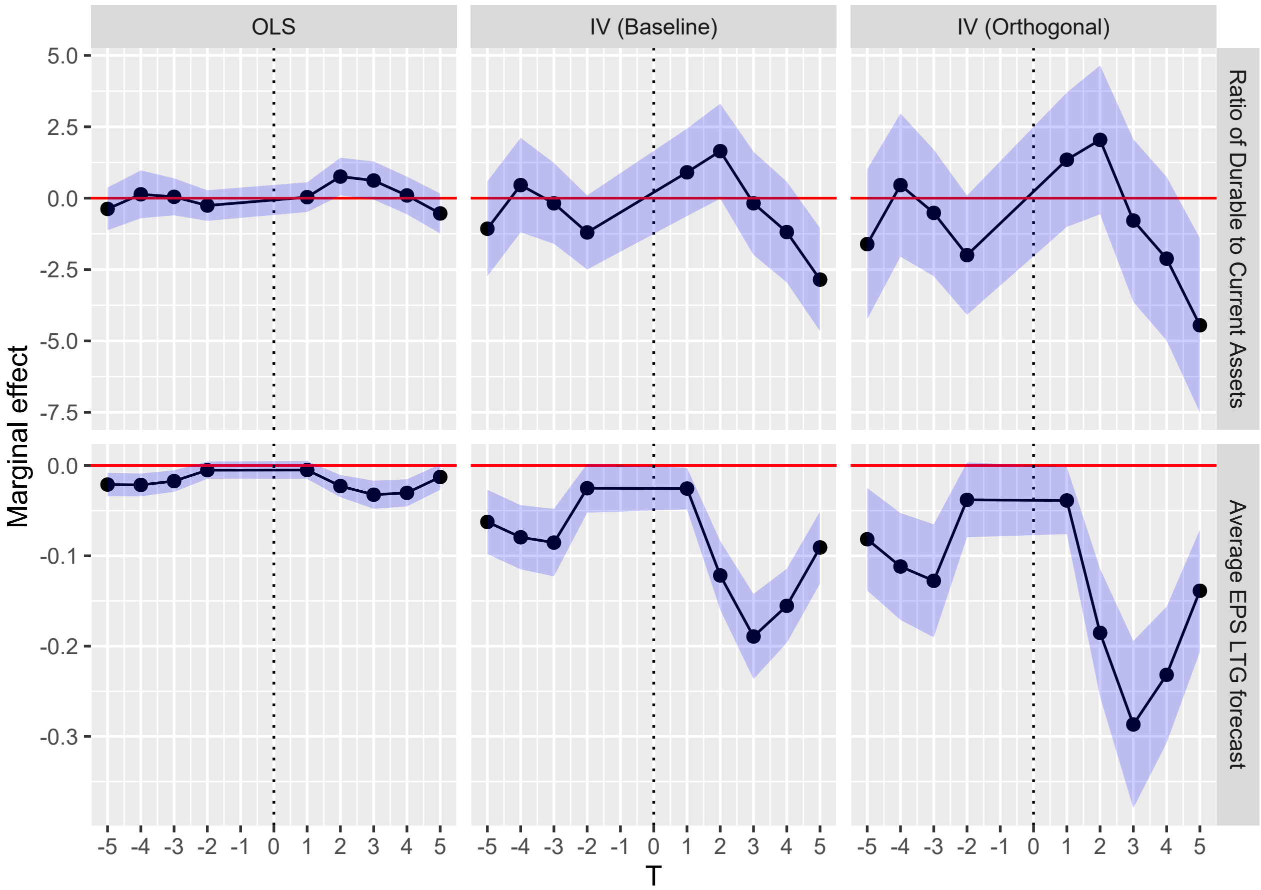
The results in the second column for the *Average EPS LTG forecast* highlight that following more favourable long-term discount rates, driven by a lower supply of long-term Treasury debt (lower $TSYMAT$), the consensus expected long-term growth rate of the earnings per share of the average firm significantly increases by the second fiscal year-end following the firm's issuance.

Panel (a) of Table 7 presents the regression results for the second stage of different 2SLS specifications with the ratio of *Durable Assets to Current Assets* as the dependent variable. The specifications only includes two observation per issuance: the observation for the first fiscal year-end preceding the issuance is used as the baseline ($\tau = -1$) and the observation for the fifth fiscal year-end following the issuance is used as the ex-post observation ($\tau = 5$). The estimated coefficient in the third column - which replicates the specification in Figure 4 - highlights that following a one standard deviation decrease in the instrumented three-year excess return on the ten-year Treasury bond, the average issuing firm increases its ratio of durable to current assets by $2.692 \times 10.412 \approx 28$ ppt more by the fifth fiscal year-end following the issuance relative to average market conditions. This is sizable as it represents $0.28 \times \frac{3.338}{3.891} \approx 24\%$ of the standard-deviation in the ratio of durable to current assets before issuance in my sample of issuing firms.

Panel (a) of Table 8 presents the regression results for the second stage of different 2SLS specifications with the measure of the expected duration of a firm's cash flows as the dependent variable. The specifications only includes two observation per issuance: the observation for the first fiscal year-end preceding the issuance is used as the baseline ($\tau = -1$) and the observation for the second fiscal year-end following the issuance is used as the ex-post observation ($\tau = 2$). The choice for the ex-post observation is motivated by the fact that the proxy is forward-looking. It enables one to isolate the effect of debt issuance on the new real investments pursued by the issuer and avoids capturing systematic confounding factors in the years following

Figure 4: Premium on long-term rates and duration of real investments

This figure presents the estimates of the coefficient on the interaction between the premium on long-term rates, measured with the three-year excess returns on the 10-year Treasury bond, and each of the ten indicator functions for the 10 periods around the issuance ($T = 0$) in the linear models corresponding to Equation 2 where the dependent variable is the variable in the title of each panel. The row presents the estimates for the two dependent variables of interest: *Ratio of Durable to Current Assets* and *Average EPS LTG forecast*. The columns presents the estimates under different identification strategies: naive OLS regressions, regressions instrumenting the premium on long-term rates with the average maturity of Treasury debt, and regressions instrumenting the premium on long-term rates with the residual from a regression of average maturity of Treasury debt on the lagged premium on long-term rates. The sample consists of all debt issues (excluding credit lines) for which we observe data in each window time cell. To mitigate the influence of extreme outliers, continuous control variables have been winsorised at the 1st and 99th percentiles. All regressions include firm × window cell fixed-effects, 5-year × window cell fixed effects, issuance fixed-effects, and the interaction between issuance controls and window cell indicators. The issuance controls, defined in Appendix A, include *LT Credit Spread*, *Real GDP Growth*, *log(Deal Amount)*, *log(Market Value of Equity)*, *Market-Debt Ratio*, *EBIT-to-Assets*, *Market-to-Book Ratio*, *Dividend Dummy*, *STD EBIT Growth (SIC 2-digits)*. Confidence intervals are built at the 95% confidence level with standard errors clustered at the level of the issuance's corresponding month.



different market conditions for long-term rates. The estimated coefficient in the third column - which also replicates the specification in Figure 4 - highlights that following a one standard deviation decrease in the instrumented three-year excess return on the ten-year Treasury bond, the consensus expectation about a firm's cash flow long-term growth rate differentially increases by $0.128 \times 10.412 \approx 1.3$ ppt by the second fiscal year-end following the issuance, representing $\frac{1.3}{7.842} \approx 17\%$ of the standard-deviation in the consensus expectation before issuance in my sample of issuing firms.

Panels (b) of Tables 7 and 8 present the regression results for the reduced-form estimation of the respective specifications in Panels (a). The estimated coefficients in the third columns highlight that following a one standard deviation decrease in the maturity of the average Treasury debt instrument, the average issuing firm differentially increases its ratio of durable to current assets by $32.41 \times 0.463 \approx 15$ ppt ($0.15 \times \frac{3.338}{3.891} \approx 13\%$ of the standard-deviation before issuance). by the fifth fiscal year-end following the issuance, and the consensus expectation about the average firm's cash flow long-term growth rate differentially increases by $1.601 \times 0.463 \approx 0.74$ ppt ($\frac{0.74}{7.842} \approx 9\%$ of the standard-deviation before issuance) by the second fiscal year-end following the issuance.

Panels (c) present the regression results for the OLS estimation of respective specifications in Panels (a). The regressions exploit variation in the three-year excess returns on ten-year Treasury bonds. As expected from the direction of the endogeneity bias, the estimated coefficients are about four times lower than the ones from the instrumental variable regressions, despite being still negatively significant.

In the first column of Panel (a) for both Tables 7 and Tables 8, I study the relationship between the premium on long-term rates and changes in the duration of firm's cash-flows only controlling for issuance and 5-Year×Post fixed effects. Compared to the baseline specification, in the second column, which includes Firm×Post fixed effects, I find very similar point estimates for the parameter of interest γ of model VI for the two proxies of cash-flow duration. As explained in Section VI.A, the results might be driven by an increase in the investment opportunities for long-duration projects. The concern is addressed in the third columns by augmenting the specification with the inclusion of the controls reported in Table 6. The resulting point estimates are slightly more negative but of comparable magnitudes with the baseline ones. Finally in the fourth column, I augment the specification with the inclusion of Year×Post fixed effects, restricting the identification to higher frequency by exploiting exposure of issuers to within-year across-months variation in the maturity of Treasury debt. Despite losing its statistical significance, the results are qualitatively unchanged and in particular the reduced-form estimates are close to being statistically significant at the 10 percent level.

Table 7: Premium on long-term rates and share of durable investment

The table presents the estimates of the coefficient on the interaction between the proxy for the premium on long-term rates and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 2 where the dependent variable is the ratio of *Durable assets to Current Assets* as defined in Appendix A. In panel (a), the premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a two-stage least squares (2SLS) procedure with the average maturity of Treasury debt. Panel (b) presents the reduced-form estimates of such 2SLS estimation procedure. Panel (c) presents the estimates from a naive OLS regression of the dependent variable on excess returns. The specification (controls and fixed-effects) are the same across all three panels and are only reported in the first panel for the purpose brevity. The issuance controls, defined in Appendix A, included in the specification presented in the third column are *LT Credit Spread*, *Real GDP Growth*, *log(Deal Amount)*, *log(Market Value of Equity)*, *Market-Debt Ratio*, *EBIT-to-Assets*, *Market-to-Book Ratio*, *Dividend Dummy*, *STD EBIT Growth (SIC 2-digits)*, *Sales Growth*, and *Sales Growth (SIC 2-digits)*. The sample used for these regressions consists of all debt issues (excluding credit lines) for which we observe data at each time cell between $T = -5$ and $T = 5$. To mitigate the influence of extreme outliers, continuous control variables have been winsorised at the 1st and 99th percentiles. Standard errors are clustered at the level of the issuance's corresponding month.

(a) 2SLS (Second Stage)

	(1) Dur. ratio	(2) Dur. ratio	(3) Dur. ratio	(4) Dur. ratio
$\widehat{rx^{10Y}_{t\rightarrow t+36}}$ x Post	-2.354**	-2.698***	-2.692**	-13.35
	(-3.22)	(-3.85)	(-2.75)	(-0.61)
LT Credit Spread x Post			31.71*	
			(2.24)	
Real GDP Growth x Post			-3.168	
			(-0.75)	
Sales Gwth x Post			0.178*	
			(2.12)	
Sales Gwth (sic2) x Post			-0.956*	
			(-2.39)	
Issuance FE	✓	✓	✓	✓
Firm x Post FE	–	✓	✓	✓
5-year x Post FE	✓	✓	✓	–
Year x Post FE	–	–	–	✓
Other controls x Post	–	–	✓	–
Observations	21170	19288	16380	19288

(b) 2SLS (reduced-form)

	(1) Dur. ratio	(2) Dur. ratio	(3) Dur. ratio	(4) Dur. ratio
TSYMAT x Post	-34.14***	-38.14***	-32.41**	-40.59
	(-3.37)	(-4.02)	(-2.86)	(-1.35)
Observations	21170	19288	16380	19288
Adjusted R^2	0.707	0.742	0.739	0.742

(c) OLS

	(1) Dur. ratio	(2) Dur. ratio	(3) Dur. ratio	(4) Dur. ratio
$rx^{10Y}_{t\rightarrow t+36}$ x Post	-0.494	-0.686*	-0.454	0.858
	(-1.40)	(-2.18)	(-1.13)	(1.65)
Observations	21170	19288	16394	19288
Adjusted R^2	0.707	0.741	0.739	0.742

Table 8: Premium on long-term rates and the expected long-term growth of firms cash flows

The table presents the estimates of the coefficient on the interaction between the proxy for the premium on long-term rates and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 2 where the dependent variable is the average forecast for the long-term growth (LTG) rate of a firm's earnings per share (EPS) as defined in Appendix A. In panel (a), the premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a 2SLS procedure with the average maturity of Treasury debt. Panel (b) presents the reduced-form estimates of such 2SLS estimation procedure. Panel (c) presents the estimates from a naive OLS regression of the dependent variable on excess returns. The specification (controls and fixed-effects) are the same across all three panels and are only reported in the first panel for the purpose brevity. The issuance controls, defined in Appendix A, included in the specification presented in the third column are *LT Credit Spread*, *Real GDP Growth*, *log(Deal Amount)*, *log(Market Value of Equity)*, *Market-Debt Ratio*, *EBIT-to-Assets*, *Market-to-Book Ratio*, *Dividend Dummy*, *STD EBIT Growth (SIC 2-digits)*, *Sales Growth*, and *Sales Growth (SIC 2-digits)*. The sample used for these regressions consists of all debt issues (excluding credit lines) for which we observe data for which we observe data at each time cell between $T=-5$ and $T=5$. To mitigate the influence of extreme outliers, continuous control variables have been winsorised at the 1st and 99th percentiles. Standard errors are clustered at the level of the issuance's corresponding month.

(a) Second-stage 2SLS

	(1) EPS LTG	(2) EPS LTG	(3) EPS LTG	(4) EPS LTG
$\widehat{rx^{10Y}_{t\to t+36}}$ x Post	-0.0860***	-0.0905***	-0.128***	-0.177
	(-7.16)	(-6.88)	(-6.03)	(-0.95)
LT Credit Spread x Post			-0.215	
			(-0.78)	
Real GDP Growth x Post			-0.286**	
			(-3.13)	
Sales Gwth x Post			0.00186	
			(0.72)	
Sales Gwth (sic2) x Post			0.0123	
			(1.77)	
Issuance FE	✓	✓	✓	✓
Firm x Post FE	–	✓	✓	✓
5-year x Post FE	✓	✓	✓	–
Year x Post FE	–	–	–	✓
Other controls x Post	–	–	✓	–
Observations	13144	12408	10554	12408

(b) reduced-form 2SLS

	(1) EPS LTG	(2) EPS LTG	(3) EPS LTG	(4) EPS LTG
TSYMAT x Post	-1.259***	-1.298***	-1.601***	-0.660
	(-7.47)	(-7.69)	(-7.49)	(-1.45)
Observations	13144	12408	10554	12408
Adjusted R^2	0.750	0.748	0.749	0.752

(c) OLS

	(1) EPS LTG	(2) EPS LTG	(3) EPS LTG	(4) EPS LTG
$rx^{10Y}_{t\to t+36}$ x Post	-0.0221***	-0.0240***	-0.0263***	-0.0138
	(-3.41)	(-4.02)	(-3.74)	(-1.69)
Observations	13144	12408	10562	12408
Adjusted R^2	0.748	0.746	0.745	0.752

Endogeneity

By analogy to the test of the *across-firms channel*, I address the concern that the point estimates in our baseline instrumental variable approach are biased towards positive value because the US Treasury would issue long-term debt when the latter is relatively cheap. I conduct an alternative approach using the projections of the baseline instrument ($TSYMAT$, the maturity of the average Treasury debt instrument) that is orthogonal to the one-month lagged premium on long-term rates (the three-year excess return on the 10-year Treasury bond, our instrumented variable). The second columns of Table 9 and Table 10 presents the estimates of the second-stage 2SLS regressions.

As highlighted in the second column and consistent with the direction of the bias from the endogeneity of Treasury debt maturity choices to relative prices, the resulting estimates are more negative. As for the test of the *across-firms channel*, such method therefore improves the precision of the lower bound on the corresponding true estimates.

To address the concern that the US Treasury issues long-term debt in bad times, when its debt burden is higher and when the average firm might be more constrained in pursuing long-duration projects, I conduct a second alternative approach using the projections of the baseline instrument ($TSYMAT$, the maturity of the average Treasury debt instrument) that is orthogonal to the contemporaneous debt-to-GDP ratio. The third columns present the estimates of the second-stage 2SLS regressions. The point estimates are somewhat smaller, but their magnitude and statistical significance are comparable to the baseline point estimates. Finally, the results of a third alternative approach using the projections of the baseline instrument ($TSYMAT$) that is orthogonal to the contemporaneous debt-to-GDP ratio and the lagged long-term rate premium are presented in the fourth columns. Consistent with a positive bias coming from the endogeneity of government debt issuance with respect to debt prices across maturities, the point estimates are slightly larger than the baseline ones.

Table 9: Premium on long-term rates and share of durable investment: alternative instruments

The table presents the estimates of the coefficient on the interaction between the proxy for the premium on long-term rates and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 2 where the dependent variable is the ratio of *Durable assets to Current Assets* as defined in Appendix A. The premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a 2SLS procedure with the average maturity of Treasury debt for specification presented in the first column. For the second column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the one-month lagged premium on long-term rates and on 5-year period fixed-effects for the period 1970-2009. For the third column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the contemporaneous debt-to-GDP and on 5-year period fixed-effects for the period 1970-2009. For the fourth column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the contemporaneous debt-to-GDP, on the one-month lagged premium on long-term rates, and on 5-year period fixed-effects for the period 1970-2009. The specification, sample, and cleaning procedures are the same as for the second column of Table 7. Standard errors are clustered at the level of the issuance's corresponding month.

	Baseline	Orth. to lagged premium	Orth. to contemp. Debt/GDP	Orth. to lagged premium and contemp. Debt/GDP
$\widehat{rx^{10Y}_{t\to t+36}}$ x Post	-2.692**	-4.148**	-1.975*	-3.625
	(-2.75)	(-2.63)	(-2.04)	(-1.87)
Controls x Post	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓
5-year x Post FE	✓	✓	✓	✓
Observations	16380	16380	16380	16380

Table 10: Premium on long-term rates and the expected long-term growth of firms cash flows: alternative instruments

The table presents the estimates of the coefficient on the interaction between the proxy for the premium on long-term rates and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 2 where the dependent variable is the average forecast for the long-term growth (LTG) rate of a firm's earnings per share (EPS) as defined in Appendix A. The premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a 2SLS procedure with the average maturity of Treasury debt for specification presented in the first column. For the second column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the one-month lagged premium on long-term rates and on 5-year period fixed-effects for the period 1970-2009. For the third column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the contemporaneous debt-to-GDP and on 5-year period fixed-effects for the period 1970-2009. For the fourth column, the premium on long-term rates is instrumented with the residual from the regression of the average maturity of Treasury debt on the contemporaneous debt-to-GDP, on the one-month lagged premium on long-term rates, and on 5-year period fixed-effects for the period 1970-2009. The specification, sample, and cleaning procedures are the same as for the second column of Table 8. Standard errors are clustered at the level of the issuance's corresponding month.

	Baseline	Orth. to lagged premium	Orth. to contemp. Debt/GDP	Orth. to lagged premium and contemp. Debt/GDP
$\widehat{rx^{10Y}_{t\to t+36}}$ x Post	-0.128***	-0.191***	-0.131***	-0.237***
	(-6.03)	(-4.97)	(-6.15)	(-4.11)
Controls x Post	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓
5-year x Post FE	✓	✓	✓	✓
Observations	10554	10554	10554	10554

Robustness

Table D.1 presents the estimates of the coefficient on the interaction term, γ, where the dependent variables are *LTG EPS rate* and *Durable Assets to Current Assets*. The specification, sample, and cleaning procedures underlying the first and third columns are the same as for the second columns of Table 7 and 8. In order to examine the robustness of the latter coefficients to examining different periods of the sample, the second and fourth columns feature interactions with indicators of 5-year periods. The results are robust when examining different periods of the sample separately with the exception of issuances made from 2006 to 2009, for which the ex-post observation lies at the peak or the aftermath of the financial crisis. Finally, Table D.2 shows that the results for the baseline specification are slightly stronger when considering all issuances as opposed to issuances with no missing observations from $\tau = -5$ to $\tau = +5$.

Overall, the evidence for the average firm of both the allocation of investment flows into more durable assets and the greater expectations of analysts about long-term growth of cash flows is consistent with the testable implication of a within-firm channel for the increase in the duration of investment in the economy following negative shocks to long-term discount rates - relative to short-term discount rates.

VII Conclusion

In this paper I show that changes to the term structure of interest rates have implications for the horizon of real investments that are financed. Indeed, changes to the term structure of interest rates differently affect the present value of projects with different cash-flow duration. Instrumenting changes to premium on long-term rates with shocks to the maturity of government debt and controlling for aggregate time-series developments, I uncover an *across-firms channel* by which the term structure of interest rates may affect the duration of corporate investment. Importantly, the main cross-sectional results do not depend on the substitutability of safe issues with government debt, and more broadly on the severity of financial constraints, but rather on a long-run equilibrium characteristic of firms: their degree of specialisation into long-duration real investments. Firms specialised into long-duration investments increase their investment when the premium on long-term rates is lower. Additionally, controlling for observable economic conditions and investment opportunities, I provide evidence consistent with the average firm increasing the duration of its real investments following lower premium on long-term rates - the *within-firm channel*. Overall, these results are important because they highlight new real effects of government's actions on corporate investment. In particular, the evidence presented in this paper can be a relevant input to the trade-offs faced by policy makers for decisions over the maturity of government debt issuances (Greenwood et al., 2015). Furthermore, it contributes to the understanding of the implications of central bank purchases of long-term obligations for corporate investment.

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Appendix

Appendix A Variables

A.1 Variables Description

Deal characteristics	**Variable description**
Years to Maturity	Maturity of the issue at issuance date in years.
Deal Amount	Loan principal amount (*facilityamt*) for issues in Dealscan and Total principal amount of the issue (*totdolamt*) in USD mn which may or may not equal proceeds amount, depending on whether or not the bonds were offered at face value (SDC).
Dealscan Flag	Dummy for deal observations that come from the Dealscan dataset (mostly bank loans) as opposed to the SDC datasets (public bonds).

Macroeconomic and asset prices series	**Variable description**
TSYMAT	Dollar-weighted average maturity of Treasury debt at monthly frequency (in years).
Moody's LT BAA-AAA Spread	Spread in percentage points between yields on the Moody's Seasoned BBB- and AAA-rated corporate bond indices (based on bonds with maturities 20 years and above). The data is retrieved at the monthly frequency from FRED, Federal Reserve Bank of St. Louis.
Total GDP 4Q Growth	Real GDP growth over the past four quarters measured quarterly (in percentage points).
Treasury Debt to GDP	Sum of principals of outstanding Treasury debt (from CRSP Treasury) scaled by nominal GDP (from FRED) (in percentage points).
3y Excess Return on 10y TSY	The three-year holding-period return on the 10-year Treasury bond, in excess of the current yield-to-maturity on the three-year maturity Treasury bond, computed with the monthly data on US Treasury constant maturity zero-coupon bond yield curve from the Federal Reserve (in percentage points).
3y Excess Return on 20y TSY	The three-year holding-period return on the 20-year Treasury bond, in excess of the current yield-to-maturity on the three-year maturity Treasury bond, computed with the monthly data on US Treasury constant maturity zero-coupon bond yield curve from the Federal Reserve (in percentage points).
1y Excess Return on 10y TSY	The one-year holding-period return on the 10-year Treasury bond, in excess of the current yield-to-maturity on the one-year maturity Treasury bond, computed with the monthly data on US Treasury constant maturity zero-coupon bond yield curve from the Federal Reserve (in percentage points).
10y TSY Yield	The yield-to-maturity on the 10-year maturity Treasury bond using the US Treasury constant maturity zero-coupon bond yield curve from the Federal Reserve (in percentage points).
20y TSY Yield	The yield-to-maturity on the 20-year maturity Treasury bond using the US Treasury constant maturity zero-coupon bond yield curve from the Federal Reserve (in percentage points).
10y-1y TSY Yield Spread	The spread between the yield-to-maturity on the 10-year maturity Treasury bond and the yield-to-maturity on the 1-year maturity Treasury bond using the US Treasury constant maturity zero-coupon bond yield curve from the Federal Reserve (in percentage points).
3y Excess Return on 10y Corp	The three-year holding-period return on the 10-year Treasury bond, in excess of the current yield-to-maturity on the three-year maturity Treasury bond, computed with the monthly data on US high quality corporates constant maturity zero-coupon bond yield curve from the US Treasury (in percentage points).
3y Excess Return on 20y Corp	The three-year holding-period return on the 20-year Treasury bond, in excess of the current yield-to-maturity on the three-year maturity Treasury bond, computed with the monthly data on US high quality corporates constant maturity zero-coupon bond yield curve from the US Treasury (in percentage points).
1y Excess Return on 10y Corp	The one-year holding-period return on the 20-year Treasury bond, in excess of the current yield-to-maturity on the one-year maturity Treasury bond, computed with the monthly data on US high quality corporates constant maturity zero-coupon bond yield curve from the US Treasury (in percentage points).
10y Corp Yield	The yield-to-maturity on the 10-year maturity Treasury bond using the US high quality corporates constant maturity zero-coupon bond yield curve from the US Treasury (in percentage points).
20y Corp Yield	The yield-to-maturity on the 20-year maturity Treasury bond using the US high quality corporates constant maturity zero-coupon bond yield curve from the US Treasury (in percentage points).
10y-1y Corp Yield Spread	The spread between the yield-to-maturity on the 10-year maturity Treasury bond and the yield-to-maturity on the 1-year maturity Treasury bond using the US high quality corporates constant maturity zero-coupon bond yield curve from the US Treasury (in percentage points).

Financial firm characteristics	**Variable description**
Total Assets	Total assets measured with Compustat variable *at* in 2009 USD million equivalents. For the use as a dependent variable in regression analyses, the variable is normalised by total assets at issuance date and multiplied by 100.
PPE	Fixed-assets measured with Compustat variable *ppent* in 2009 USD million equivalents. For the use as a dependent variable in regression analyses, the variable is normalised by total assets at issuance date and multiplied by 100.
EPS LTG rate	Average forecast across analysts for the long-term growth rate on the firm's earnings per share in percentage points, extracted from the I/B/E/S database.
EPS LTG rate (5y ave - SIC-2D)	Average of yearly firm observations for *EPS LTG rate* aggregated by 5-year periods and two-digits SIC industry for the universe of firms present in both Compustat and my sample of debt issuances.
Employment	Total employment measured with Compustat variable *emp* in thousands of employees. For the use as a dependent variable in regression analyses, the variable is normalised by employment at issuance date and multiplied by 100.
Intangible Assets	The firm's intangible capital measured following Peters & Taylor, 2017 in 2009 USD million equivalents. It is computed as the sum of the firm's externally acquired and internally created intangible capital. The firm's externally acquired intangible capital is measured with Compustat variable *intan*. The firm's internally created knowledge capital is computed as the sum of the internally created knowledge capital and organization capital. The firm's internally created knowledge capital is computed as the accumulation of R&D spending (Compustat variable *xrd*) with the perpetual inventory method using the BEA's industry-specific depreciation rates. I assume missing R&D spending entries to be equal to zero and I set the firm's initial (first Compustat entry) internally created knowledge capital stock to zero. The firm's internally created organisation capital is computed as the accumulation of 30% of the firm's SG&A spending (measured as the difference between Compustat variable *xsga* and Compustat variable *xrd*) with the perpetual inventory method assuming a 20% depreciation rate.
Investment and Advances - Equity	Long-term investments in and advances to unconsolidated subsidiaries and affiliated companies in which the firm has significant control. It is measured with Compustat variable *ivaeq* in 2009 USD million equivalents.
Durable Assets	Sum of *PPE*, *Investment and Advances - Equity* (Compustat variable *ivaeq*), and *Intangible Assets* (in 2009 USD million equivalents).
Current Assets	Total current assets measured with Compustat variable *act*in 2009 USD million equivalents.
Durable Assets to Current Assets	The ratio of *Durable Assets* to *Current Assets.*
Durable Assets to Current Assets (5y ave - SIC-2D)	Average of yearly firm observations for *Durable Assets to Current Assets* aggregated by 5-year periods and two-digits SIC industry for the universe of firms present in both Compustat and my sample of debt issuances.
Market Value of Equity	Market value of equity measured with Compustat variables as $prcc*csho$ in 2009 USD million equivalents.
Market-Debt Ratio	Market-Debt ratio measured with Compustat variables as $\frac{dltt+dlc}{dltt+dlc+prcc*csho}$.
Market to Book Ratio	Market-to-book ratio measured with Compustat variables as $\frac{lt-txditc+prcc*csho+preferred}{at}$. Where *preferred* is measured by *pstkl*.
Dividend Dummy	Dummy variable taking a value of one if the firm declared dividends on common stock (measured with Compustat variable *dvc*).
A+ Rating Dummy	Dummy variable taking a value of one if the firm has a S&P long-term credit rating of A or higher or if it has a S&P short-term credit rating of A-3 or higher. Measured with the S&P ratings database variables *splticrm* and *spsticrm*
EBIT to Assets	Earnings before interest and taxes, scaled by total assets measured with Compustat variables as $\frac{in+xint+txt}{at}$
Asset Maturity	Book-value-weighted average maturity of assets inspired from Stohs and Mauer (1996) with the restriction of one year maturity for current assets and measured with Compustat variables as $\frac{act}{act+ppent} \cdot 1 + \frac{ppent}{act+ppent} \cdot \frac{ppent}{dp}$.
Asset Maturity (5y ave)	Average of yearly firm observations for *Asset Maturity* aggregated by 5-year periods and firm.
Asset Maturity (5y ave - SIC-2D)	Average of yearly firm observations for *Asset Maturity* aggregated by 5-year periods and two-digits SIC industry for the universe of firms present in both Compustat and my sample of debt issuances.
Fixed-Asset Maturity	Average maturity of fixed assets measured with Compustat variables as $\frac{ppent}{dp}$
Fixed-Asset Maturity (5y ave)	Average of yearly firm observations for *Fixed-Asset Maturity* aggregated by 5-year periods and firm.
Fixed-Asset Maturity (5y ave - SIC-2D)	Average of yearly firm observations for *Fixed-Asset Maturity* aggregated by 5-year periods and two-digits SIC industry for the universe of firms present in both Compustat and my sample of debt issuances.
STD EBIT Growth (2digit SIC)	Industry earnings volatility measure defined as the annual standard deviation of growth in *EBIT to Total Assets* by two-digits SIC industry.

Sales	Total net sales measured with Compustat variable *sale* in 2009 USD million equivalents.
Gwth Beta Quintile (2digits SIC)	Quintile for each two-digits SIC industry in the unconditional distribution of the point estimates specific to each SIC-2digits industry in the OLS regressions of firm's capital expenditures on the four-quarter real GDP growth in the sample of observations for issuing firms in Compustat between 1987 and 2009 controlling for year and industry fixed-effects.
Sales Growth	Change of a firm's sales in percentage points of previous year's sales.
Sales Growth (2digits SIC)	Yearly average of yearly firm observations for *Sales Growth* aggregated two-digits SIC industry for the universe of firms present in both Compustat and my sample of debt issuances.

A.2 Maturity of Assets

Table A.4: Average duration of firms' assets by industry group in 2000

SIC 2-digits	Asset Mat. (mean)	Asset Mat. (sd)	FA Mat. (mean)	FA Mat. (sd)	Dur. Ratio (mean)	Dur. Ratio (sd)	Obs.
Legal Services	1.1680086	NA	2.7740430	NA	0.59739070	NA	1
Business Services	1.4211858	0.95150570	2.8044254	3.19222508	1.60239725	2.18179274	663
Leather and Leather Products	1.6697185	0.61883237	4.8887124	2.48459683	0.55108793	0.24255772	18
Construction - Special Trade Contractors	1.6738783	1.09505151	3.3227717	2.64880695	1.81208989	1.11910173	14
Wholesale Trade - Durable Goods	1.7671271	1.12599304	4.4646148	2.88087691	1.06835953	2.96282668	141
Measuring, Photographic, Medical, & Optical Goods, & Clocks	1.9238631	1.40595044	4.1653268	3.07111665	1.30767785	1.55294559	277
Apparel, Finished Products from Fabrics & Similar Materials	1.9766120	1.11067044	4.6866678	2.11564760	0.89637398	0.64313918	54
Miscellaneous Manufacturing Industries	2.0620253	1.25350141	4.7421972	2.84952557	1.05365986	0.82783482	58
Electronic & Other Electrical Equipment & Components	2.1389461	1.84603448	4.6149009	3.54324333	1.22603939	2.42515062	352
Industrial and Commercial Machinery and Computer Equipment	2.1854087	1.95463807	4.6781070	3.30176503	1.17047077	1.04398908	289
Home Furniture, Furnishings and Equipment Stores	2.2341852	1.06053952	5.1580413	2.43426198	0.92223943	0.47274803	30
Miscellaneous Retail	2.2716164	1.67703816	4.6035260	2.84447264	1.33545061	1.25963772	138
Membership Organizations	2.2926043	NA	4.5617094	NA	2.56064258	NA	1
Engineering, Accounting, Research, and Management Services	2.3789964	4.27807630	4.2612869	5.67661084	1.29379470	1.29383617	107
Agricultural Services	2.3939423	0.95642400	4.5999463	0.82863136	4.01398561	5.47635188	3
Printing, Publishing and Allied Industries	2.4518544	1.58699541	4.1845101	3.01392430	3.03172531	3.77187146	67
Nonclassifiable Establishments	2.5079990	3.63848850	4.3995140	5.53140016	2.51637023	3.97394579	65
Transportation Services	2.5399128	3.99646219	4.2805333	4.11793428	2.40674201	3.35864033	15
Educational Services	2.6085357	1.52223832	4.5325036	2.73319211	2.66341027	2.96814719	23
Heamy Construction, Except Building Construction, Contractor	2.8222524	2.99419889	5.4398120	3.79230387	0.89591726	0.64889358	21
Apparel and Accessory Stores	2.8994240	1.79175814	6.4582697	6.11388797	1.24196173	0.98253824	61
Tobacco Products	2.9473093	2.60061129	6.0916754	4.33021515	1.87069527	1.27880286	5
Furniture and Fixtures	2.9750894	1.65219254	6.2205015	2.97844548	1.64546039	1.31366156	30
Miscellaneous Repair Services	3.0130475	NA	5.8621119	NA	0.83823367	NA	1
Chemicals and Allied Products	3.0286636	2.37783356	6.3860886	4.85658554	1.71204962	2.34834173	331
Health Services	3.0481910	2.83584630	4.7620574	4.05753268	2.53689608	3.68897686	110
Transportation Equipment	3.1943557	1.57760846	6.7842848	3.13174763	1.46200091	1.19447150	114
Wholesale Trade - Nondurable Goods	3.3352201	3.89086753	6.3309573	4.94518453	1.56414262	2.23940793	81
Fabricated Metal Products	3.4060367	1.78271329	6.6596433	2.95948030	1.40917995	1.01597851	80
Rubber and Miscellaneous Plastic Products	3.5220528	2.19144043	6.0315925	3.19566498	1.89035828	1.64285608	72
Textile Mill Products	3.6757444	1.79300952	6.4720931	2.56482335	1.28611720	0.63212190	30
Personal Services	3.8188145	2.02213107	5.8316921	2.95357275	3.17370953	2.09834167	20
Automotive Dealers and Gasoline Service Stations	4.0090534	3.13405945	9.1495581	4.48978117	1.29196964	1.27600737	31
Food and Kindred Products	4.6809831	3.07759738	8.0657712	4.51797877	2.53532103	2.09416671	122
General Merchandise Stores	4.6862319	2.93275826	9.3866187	4.34197700	1.11340793	0.41504060	35
Stone, Clay, Glass, and Concrete Products	4.9169058	3.46558518	7.9518561	4.46281692	1.98588399	1.26429872	31
Lumber and Wood Products, Except Furniture	5.2146121	4.20859241	8.7095190	4.90559907	4.05065898	6.72742116	25
Primary Metal Industries	5.3049110	2.46623749	9.3008270	3.32963576	2.01818570	3.92851788	80
Motor Freight Transportation	5.4248080	8.09013180	7.8862367	11.29772819	2.28868247	1.33983092	46
Food Stores	5.4644777	2.87964549	8.0778341	3.41522427	3.75586691	4.72837160	34
Building Materials, Hardware, Garden Supplies & Mobile Homes	5.5670168	3.67958458	10.7382494	4.79042442	1.35895801	0.86645521	11
Construction - General Contractors & Operative Builders	5.6585068	7.90948530	5.2371105	6.38266107	3.23840765	4.25752799	36
Communications	5.6756912	8.32423049	7.9620753	11.59126802	6.15340215	6.74877100	217
Automotive Repair, Services and Parking	5.9812683	3.11392192	7.2266633	3.81527836	5.43816440	3.26619271	17
Paper and Allied Products	6.0191200	2.96797271	9.0628211	3.55255542	2.52331874	1.52287469	52
Agricultural Production - Livestock and Animal Specialties	6.1175152	1.05879221	9.3451416	0.43289929	1.31872018	NA	2
Motion Pictures	6.5934847	7.01406995	9.1199559	13.04241787	8.24732938	8.70544454	34
Coal Mining	7.1760350	4.96903767	8.8277356	5.74599887	3.31654958	1.87048799	12
Local & Suburban Transit & Interurban Highway Transportation	7.5684441	5.48723166	9.5342245	5.96522124	4.37849484	2.21707372	5
Mining and Quarrying of Nonmetallic Minerals, Except Fuels	7.8160604	4.32893864	10.5720117	4.60932953	3.22792925	1.96753980	8
Transportation by Air	8.0768311	8.79093821	11.2695153	10.45203991	2.38433252	1.51041095	39
Eating and Drinking Places	8.1859861	4.34106614	9.6634281	4.55657023	8.58194975	6.76290983	106
Agricultural Production - Crops	8.7980134	7.71985594	13.1346202	7.55984131	3.30131365	3.84139555	12
Forestry	8.9317259	NA	9.2321974	NA	29.24433868	NA	1
Petroleum Refining and Related Industries	9.9627817	7.66079980	14.3194005	8.24020939	3.72708652	5.58093317	33
Oil and Gas Extraction	10.3605149	12.00423696	12.8944608	15.72744750	5.61775974	5.38076888	185
Amusement and Recreation Services	12.5043954	11.29402715	15.2054567	14.43954783	8.11175348	6.19830670	73
Water Transportation	12.5803616	7.39702573	15.5045626	8.33062226	5.44049304	3.23570921	13
Electric, Gas and Sanitary Services	13.4995195	8.34139814	17.0268504	9.72111277	6.00817270	5.64736111	272
Hotels, Rooming Houses, Camps, and Other Lodging Places	16.5777654	12.59208578	19.6382919	15.42164947	10.90853469	8.13389291	25
Metal Mining	18.2491296	21.91530986	25.8385808	31.08624832	5.75218436	8.29432643	21
Railroad Transportation	18.2678932	7.01292458	20.6536648	7.55104882	9.00987559	3.60215431	11
Pipelines, Except Natural Gas	19.1938876	10.87682401	23.5132566	8.66395950	9.68942376	9.18777517	9
Social Services	19.5724423	11.31000347	22.6521187	12.30489712	8.40611207	4.53912537	13

Note:
The table reports the mean and standard-deviation of the respective measures aggregated at the industry-level (SIC 2-digits) for the year 2000.

A.3 Descriptive Statistics

Table A.5: Summary Statistics for Issuances

Variable	N	Mean	Std. Dev.	Min	Q1	Q2	Q3	Max
Years to Maturity	17671	7.243	6.087	0.000	3.917	6.000	9.917	60.083
Deal Amount	17671	342.369	1417.117	0.024	18.838	80.575	240.702	88649.681
Dealscan Flag	17671	0.574	0.495	0.000	0.000	1.000	1.000	1.000
Total Assets	17671	4977.812	13332.484	1.613	135.427	700.538	3503.974	159827.251
PPE	17618	1974.111	5852.485	0.0868	31.101	206.498	1334.169	93524.218
EPS LTG rate (IBES)	13324	15.067	7.842	-1.310	10.000	13.670	18.330	53.330
Employment	17421	25.255	60.685	0.000	0.997	4.135	18.800	486.000
Durable Assets to Current Assets	13920	3.338	3.891	0.142	0.987	1.867	3.951	25.250
MV of Equity	17616	4309.746	15943.721	1.516	61.303	368.094	1947.562	209293.340
Market Debt Ratio	17577	0.390	0.248	0.000	0.185	0.377	0.574	1.000
Dividend Dummy	17671	0.489	0.500	0.000	0.000	0.000	1.000	1.000
Ebit to Assets	17333	0.0729	0.118	-0.591	0.0446	0.0864	0.129	0.349
Asset Mat.	16547	6.226	6.468	0.399	2.061	3.917	7.763	35.664
Asset Mat. (5y ave)	15683	6.556	6.617	0.976	2.308	4.284	7.880	38.825
Asset Mat. (5y ave - SIC 2-digits)	17486	6.104	4.874	1.381	2.855	4.182	6.836	30.654
Fixed-Asset Mat. (5y ave)	16464	9.812	7.424	0.554	5.296	7.928	11.644	46.480
Fixed-Asset Mat. (5y ave - SIC 2-digits)	17486	9.283	4.890	2.459	6.125	7.807	10.310	32.072
EPS LTG rate (5y ave - SIC 2-digits)	17486	17.287	4.793	5.307	14.445	16.996	20.320	31.576
Durable Assets to Current Assets (5y ave - SIC 2-digits)	17486	3.175	2.411	0.456	1.256	1.915	5.608	13.370

Note: This table reports summary statistics for the main variables at the issuance level at the last fiscal year-end preceding the issuance for accounting variables in the sample of monthly-aggregated issuances from 1987 to 2009. Dollar amounts are expressed in December 2009 US dollars using the Bureau of Labor price index (all urban consumers). All variables are defined in Appendix A.

Table A.6: Summary Statistics for Monthly Macroeconomic Conditions

Variable	N	Mean	Std. Dev.	Min	Q1	Q2	Q3	Max
TSYMAT	17671	5.265	0.463	4.056	4.973	5.361	5.636	6.051
Moody's LT BAA-AAA Spread	17671	0.906	0.352	0.53	0.68	0.84	1.01	3.43
Total GDP 4Q Growth	17671	2.964	1.721	-3.924	2.214	3.354	4.305	5.298
Treasury Debt to GDP	17671	41.457	7.626	30.172	32.828	42.812	48.861	52.23
3y Excess Return on 10y TSY	17671	14.678	10.412	-5.413	5.783	13.608	22.17	43.45
3y Excess Return on 20y TSY	17671	19.02	13.433	-8.932	9.662	18.368	25.738	62.379
1y Excess Return on 10y TSY	17671	4.638	8.112	-17.121	-0.562	5.385	10.289	22.584
10y TSY Yield	17671	6.112	1.509	2.879	4.835	5.924	7.193	9.642
20y TSY Yield	17671	6.502	1.371	3.159	5.357	6.196	7.645	9.956
10y-1y TSY Yield Spread	17671	1.389	1.188	-0.585	0.377	1.019	2.421	3.786
3y Excess Return on 10y Corp	17671	21.541	11.06	-10.91	12.2	21.01	28.86	54.63
3y Excess Return on 20y Corp	17671	27.072	18.146	-31.14	12.35	27.29	39.95	76.65
1y Excess Return on 10y Corp	17671	3.777	8.976	-24.62	-2.5	5.07	9.66	34.61
10y Corp Yield	17671	1.618	1.144	-0.59	0.7	1.27	2.52	4.35
20y Corp Yield	17671	7.143	1.421	4.52	6.09	6.96	7.95	10.71
10y-1y Corp Yield Spread	17671	7.683	1.253	5.48	6.75	7.52	8.56	10.77

Note: This table reports summary statistics of monthly averages for the main macroeconomic variables for the month preceding each issuance in the sample of monthly-aggregated issuances from 1987 to 2009. All variables are defined in Appendix A.

Appendix B Identification

Table B.1: Yield spreads

The tables present outputs from regression of yield spreads for zero-coupon bonds on the average maturity of outstanding Treasury debt. The yield spreads are computed as the difference between the yield on the bond with n-years residual maturity and the yield on the bond with one-year residual maturity. The column names indicate the maturity, n, of the bond on which the spread is computed. Panel (a) presents results using monthly yield curve data on Treasury bonds (1987-2009) and Panel (b) presents results using monthly yield curve data for high quality corporate bonds (1987-2009). Details for data sources are available in Section III.A. The first table of each panel presents a simple OLS regression of yield spreads for zero-coupon bonds on the average maturity of outstanding Treasury debt and the regression underlying the second table includes five-year period fixed-effects. t-statistics based on Newey-West standard errors with 12 lags are reported in parentheses. The thresholds for the "significance stars" are: * for p<.05, ** for p<.01, and *** for p<.001.

(a) Treasury bonds

	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y
TSYMAT	0.0386	-0.0176	-0.0818	-0.148	-0.211	-0.269	-0.321	-0.365	-0.403	-0.434	-0.459	-0.478
	(0.15)	(-0.05)	(-0.22)	(-0.35)	(-0.46)	(-0.56)	(-0.64)	(-0.70)	(-0.75)	(-0.79)	(-0.82)	(-0.85)
Observations	276	276	276	276	276	276	276	276	276	276	276	276

	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y
TSYMAT	0.0250	0.0319	0.0291	0.0181	0.000817	-0.0205	-0.0441	-0.0685	-0.0928	-0.116	-0.138	-0.159
	(0.08)	(0.09)	(0.07)	(0.04)	(0.00)	(-0.04)	(-0.08)	(-0.12)	(-0.16)	(-0.20)	(-0.23)	(-0.27)
5-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	276	276	276	276	276	276	276	276	276	276	276	276

(b) Corporate bonds

	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y
TSYMAT	-0.189	-0.222	-0.272	-0.336	-0.401	-0.460	-0.510	-0.547	-0.573	-0.588	-0.594	-0.592
	(-0.71)	(-0.71)	(-0.77)	(-0.88)	(-0.99)	(-1.08)	(-1.16)	(-1.22)	(-1.25)	(-1.27)	(-1.27)	(-1.25)
Observations	276	276	276	276	276	276	276	276	276	276	276	276

	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y
TSYMAT	0.0416	0.0585	0.0568	0.0376	0.0128	-0.0145	-0.0388	-0.0584	-0.0752	-0.0849	-0.0944	-0.0966
	(0.15)	(0.17)	(0.15)	(0.09)	(0.03)	(-0.03)	(-0.08)	(-0.12)	(-0.16)	(-0.18)	(-0.19)	(-0.20)
5-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	276	276	276	276	276	276	276	276	276	276	276	276

Table B.2: Yields

The tables present outputs from regression of yields for zero-coupon bonds on the average maturity of outstanding Treasury debt. The column names indicate the maturity, n, of the bond on which the yield is used. Panel (a) presents results using monthly yield curve data on Treasury bonds (1987-2009) and Panel (b) presents results using monthly yield curve data for high quality corporate bonds (1987-2009). Details for data sources are available in Section III.A. The tables present a simple OLS regression of yields for zero-coupon bonds on the average maturity of outstanding Treasury debt and includes five-year period fixed-effects. t-statistics based on Newey-West standard errors with 12 lags are reported in parentheses. The thresholds for the "significance stars" are: * for p<.05, ** for p<.01, and *** for p<.001.

(a) Treasury bonds

	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y
TSYMAT	0.235	0.300	0.348	0.379	0.398	0.406	0.407	0.402	0.394	0.384	0.373	0.361
	(1.37)	(1.58)	(1.71)	(1.79)	(1.83)	(1.83)	(1.80)	(1.76)	(1.71)	(1.65)	(1.58)	(1.52)
5-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	276	276	276	276	276	276	276	276	276	276	276	276

(b) Corporate bonds

	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y
TSYMAT	0.376	0.472*	0.531*	0.558*	0.568*	0.569*	0.568	0.569	0.570	0.576*	0.580*	0.591*
	(1.73)	(1.98)	(2.07)	(2.07)	(2.03)	(1.99)	(1.95)	(1.94)	(1.95)	(1.98)	(2.02)	(2.08)
5-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	276	276	276	276	276	276	276	276	276	276	276	276

Table B.3: Three-Year Excess Returns

The tables present outputs from regression of excess returns for zero-coupon bonds on the average maturity of outstanding Treasury debt. The excess returns are computed as the three-year holding-period returns on the bond with n-years residual maturity in excess of the yield on the bond with three-year residual maturity. The column names indicate the maturity, n, of the bond on which the excess return is computed. Panel (a) presents results using monthly yield curve data on Treasury bonds (1987-2009) and Panel (b) presents results using monthly yield curve data for high quality corporate bonds (1987-2009). Details for data sources are available in Section III.A. The tables present a simple OLS regression of excess returns for zero-coupon bonds on the average maturity of outstanding Treasury debt and includes five-year period fixed-effects. t-statistics based on Newey-West standard errors with 12 lags are reported in parentheses. The thresholds for the "significance stars" are: * for $p<.05$, ** for $p<.01$, and *** for $p<.001$.

(a) Treasury bonds

	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y
TSYMAT	3.973**	5.710**	6.761**	7.383**	7.717***	7.841**	7.804**	7.636**	7.357**	6.983**	6.528*	6.001*
	(3.08)	(3.25)	(3.28)	(3.31)	(3.33)	(3.32)	(3.26)	(3.13)	(2.94)	(2.70)	(2.43)	(2.14)
5-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	276	276	276	276	276	276	276	276	276	276	276	276

(b) Corporate bonds

	4y	5y	6y	7y	8y	9y	10y	11y	12y	13y	14y	15y
TSYMAT	5.669***	8.868***	11.16***	12.65***	13.70***	14.59***	15.45***	16.35***	17.25***	18.15**	18.98**	19.80**
	(4.24)	(5.01)	(5.02)	(4.69)	(4.31)	(3.97)	(3.72)	(3.53)	(3.39)	(3.29)	(3.21)	(3.16)
5-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	276	276	276	276	276	276	276	276	276	276	276	276

Table B.4: Reaction of short-term yields to government debt maturity shocks

The table present soutputs from regression of the 1-year Treasury bond yield on the one-month lagged average maturity of outstanding Treasury debt, the h-month lagged average maturity of outstanding Treasury debt, the h-month lagged 1-year Treasury bond yield and contemporaneous real GDP growth. The column names indicate the horizon,h, of the lags that is used. The last five columns include five-year period fixed-effects. t-statistics based on Newey-West standard errors with 12 lags are reported in parentheses. The thresholds for the "significance stars" are: * for p<.05, ** for p<.01, and *** for p<.001.

	h=12	h=18	h=24	h=30	h=36	h=12	h=18	h=24	h=30	h=36
$TSYMAT_{t-h}$	-0.727	-1.691	-2.115**	-2.083**	-1.874**	-0.433	-0.944	-0.848	-1.000*	-0.973**
	(-0.97)	(-1.90)	(-2.61)	(-3.07)	(-3.03)	(-0.70)	(-1.10)	(-1.25)	(-2.38)	(-2.88)
$TSYMAT_{t-1}$	0.169	1.451	2.466**	2.731**	2.480**	-0.126	1.075	1.841**	1.799***	1.397***
	(0.22)	(1.74)	(2.76)	(2.87)	(2.71)	(-0.25)	(1.52)	(3.17)	(4.71)	(4.77)
$TSY\text{-}1Y\ Yield_{t-h}$	0.816***	0.547***	0.215	0.00798	-0.0482	0.509***	0.106	-0.344**	-0.519***	-0.542***
	(8.13)	(4.12)	(1.41)	(0.05)	(-0.37)	(5.02)	(0.80)	(-2.71)	(-7.00)	(-7.17)
Real GDP Growth	0.490***	0.501***	0.441***	0.420**	0.457**	0.407***	0.331*	0.124	0.0571	0.149
	(4.86)	(4.17)	(3.36)	(2.73)	(2.76)	(4.23)	(2.25)	(0.79)	(0.47)	(1.50)
Constant	2.245	1.851	0.587	0.158	0.560	5.648*	4.848	3.972	6.528**	8.616***
	(0.95)	(0.63)	(0.18)	(0.04)	(0.13)	(2.11)	(1.42)	(1.42)	(3.27)	(4.25)
5-Year FE	–	–	–	–	–	✓	✓	✓	✓	✓
Observations	276	276	276	276	276	276	276	276	276	276

Appendix C Robustness: across-firms channel

Table C.1: Premium on long-term rates, firm specialisation, and investment

The table presents the estimates of the coefficient on the triple interaction between the proxy for the premium on long-term rates, the specialisation into long-duration investments, measured by *Asset maturity (5y ave - SIC 2-digits)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *Total Assets*. As described in Appendix A, *Total Assets* is normalised by total firm assets in the year preceding the deal. In panel (a), the premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a 2SLS procedure with the average maturity of Treasury debt. Panel (b) presents the reduced-form estimates of such 2SLS estimation procedure. Panel (c) presents the estimates from a naive OLS regression using excess returns. The specification (controls and fixed-effects) are the same across all three panels and are only reported in the first panel for the purpose brevity. The sample used for these regressions consists of all debt issues (excluding credit lines) for which we observe data at each time cell between $T = -5$ and $T = 5$. To mitigate the influence of extreme outliers, continuous control variables have been winsorised at the 1st and 99th percentiles. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

(a) Second-stage 2SLS (Baseline IV)

	(1)	(2)	(3)	(4)	(5)
	Assets	Assets	Assets	Assets	Assets
$\widehat{rx^{10Y}_{t\to t+36}}$ x Asset Mat x Post	-0.201	-0.227*	-0.184	-0.308	-0.215
	(-1.93)	(-2.15)	(-1.51)	(-1.85)	(-1.61)
Real GDP Growth x Asset Mat x Post				-0.996**	
				(-2.87)	
LT Credit Spread x Asset Mat x Post				-2.970*	
				(-2.59)	
Sales Gwth (sic2) x Asset Mat x Post				-0.00775	
				(-1.30)	
Sales Gwth x Asset Mat x Post				0.0182	
				(0.85)	
Issuance FE	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓	✓
Month-Year x Post FE	–	✓	✓	✓	✓
Firm x Post FE	–	–	✓	✓	✓
Month-Year x State x Post FE	–	–	–	–	✓
Observations	23070	23070	21124	19588	14462

(b) reduced-form 2SLS (Baseline IV)

	(1)	(2)	(3)	(4)	(5)
	Assets	Assets	Assets	Assets	Assets
TSYMAT x Asset Mat x Post	-3.587	-3.722*	-2.930	-4.122	-3.312
	(-1.90)	(-2.10)	(-1.46)	(-1.92)	(-1.62)
Observations	23070	23070	21124	19588	14462
Adjusted R^2	0.234	0.219	0.381	0.383	2.207

(c) OLS

	(1)	(2)	(3)	(4)	(5)
	Assets	Assets	Assets	Assets	Assets
$rx^{10Y}_{t\to t+36}$ x Asset Mat x Post	-0.0348	-0.0268	0.00276	-0.0205	0.0227
	(-1.00)	(-0.83)	(0.09)	(-0.56)	(0.45)
Observations	23070	23070	21124	19588	14462
Adjusted R^2	0.232	0.218	0.380	0.381	2.208

Table C.2: Premium on long-term rates, firm specialisation, and employment

The table presents the estimates of the coefficient on the triple interaction between the proxy for the premium on long-term rates, the specialisation into long-duration investments, measured by *Asset maturity (5y ave - SIC 2-digits)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *Employment*. As described in Appendix A, *Employment* is normalised by total employment in the year preceding the deal. In panel (a), the premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a 2SLS procedure with the average maturity of Treasury debt. Panel (b) presents the reduced-form estimates of such 2SLS estimation procedure. Panel (c) presents the estimates from a naive OLS regression using excess returns. The specification (controls and fixed-effects) are the same across all three panels and are only reported in the first panel for the purpose brevity. The sample used for these regressions consists of all debt issues (excluding credit lines) for which we observe data at each time cell between $T = -5$ and $T = 5$. To mitigate the influence of extreme outliers, continuous control variables have been winsorised at the 1st and 99th percentiles. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

(a) Second-stage 2SLS (Baseline IV)

	(1) Emp.	(2) Emp.	(3) Emp.	(4) Emp.	(5) Emp.
$\widehat{rx^{10Y}_{t\to t+36}}$ x Asset Mat x Post	-0.254**	-0.319**	-0.297*	-0.414**	-0.287
	(-2.94)	(-3.04)	(-2.59)	(-2.74)	(-1.84)
Real GDP Growth x Asset Mat x Post				-1.499***	
				(-3.57)	
LT Credit Spread x Asset Mat x Post				-3.288	
				(-1.96)	
Sales Gwth (sic2) x Asset Mat x Post				-0.0265	
				(-1.53)	
Sales Gwth x Asset Mat x Post				-0.00953	
				(-0.36)	
Issuance FE	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓	✓
Month-Year x Post FE	–	✓	✓	✓	✓
Firm x Post FE	–	–	✓	✓	✓
Month-Year x State x Post FE	–	–	–	–	✓
Observations	20996	20996	19228	17832	12644

(b) reduced-form 2SLS (Baseline IV)

	(1) Emp.	(2) Emp.	(3) Emp.	(4) Emp.	(5) Emp.
TSYMAT x Asset Mat x Post	-4.505**	-5.269**	-4.764*	-5.626**	-4.303
	(-2.95)	(-3.05)	(-2.49)	(-2.89)	(-1.86)
Observations	20996	20996	19228	17832	12644
Adjusted R^2	0.112	0.100	0.163	0.170	2.222

(c) OLS

	(1) Emp.	(2) Emp.	(3) Emp.	(4) Emp.	(5) Emp.
$rx^{10Y}_{t\to t+36}$ x Asset Mat x Post	-0.0532	-0.0524	-0.0284	-0.0390	0.0369
	(-2.01)	(-1.88)	(-1.02)	(-1.21)	(0.80)
Observations	20996	20996	19228	17832	12644
Adjusted R^2	0.107	0.097	0.159	0.165	2.225

Table C.3: Robustness in the sample

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, measured by *Asset maturity (5y ave - SIC 2-digits)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. The specification, sample, and cleaning procedures in the first column are the same as for the fourth column of Table 2. The second and third column features interactions with indicators of 5-year periods. The third column omits firm fixed-effects. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

	(1)	(2)	(3)
	PPE	PPE	PPE
TSYMAT x Asset Mat x Post	-2.563***		
	(-4.56)		
1986-1990 × TSYMAT x Asset Mat x Post		-0.607	-0.139
		(-0.41)	(-0.08)
1991-1995 × TSYMAT x Asset Mat x Post		-5.764***	-6.611***
		(-4.48)	(-3.81)
1996-2000 × TSYMAT x Asset Mat x Post		-5.991***	-5.029***
		(-4.12)	(-3.64)
2001-2005 × TSYMAT x Asset Mat x Post		-0.358	-2.238**
		(-0.46)	(-3.43)
2006-2010 × TSYMAT x Asset Mat x Post		-3.714	-0.214
		(-1.05)	(-0.06)
Controls x Post	✓	✓	✓
Issuance FE	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓
Month-Year x Post FE	✓	✓	✓
Firm x Post FE	✓	✓	–
Observations	19458	19458	21200

Table C.4: Alternative samples

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, measured by *Asset maturity (5y ave - SIC 2-digits)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. The specification, sample, and cleaning procedures in the first column are the same as for the second column of Table 2. The specification, sample, and cleaning procedures in the second column are the same as for the fourth column of Table 2. The sample underlying the results in the third and fourth column includes all deals which are observed both at $T = -1$ and $T = 5$. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

	Baseline (non-missing)		All deals	
	(1)	(2)	(3)	(4)
	PPE	PPE	PPE	PPE
TSYMAT x Asset Mat x Post	-2.654***	-2.563***	-2.893***	-2.227**
	(-3.76)	(-4.56)	(-4.00)	(-2.71)
Controls x Post	–	✓	–	✓
Issuance FE	✓	✓	✓	✓
Firm x Post FE	–	✓	–	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓
Month-Year x Post FE	✓	✓	✓	✓
Observations	22912	19458	27024	22534

Table C.5: Alternative measures of the specialisation in the duration of investment

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. The specifications, sample, and cleaning procedures in are the same as for the fifth column of Table 2. The first column uses *Asset maturity (5y ave - SIC 2-digits)*, as the measure of the specialisation into long-duration investments. The second column uses the percentile of the firm's *Asset maturity (5y ave - SIC 2-digits)* in the unconditional distribution across industries, as the measure of the specialisation into long-duration investments. The third column uses *Fixed-asset maturity (5y ave - SIC 2-digits)*, as the measure of the specialisation into long-duration investments. The fourth column uses the ratio of *Durable Assets to Current Assets (5y ave - SIC 2-digits)*, as the measure of the specialisation into long-duration investments. The fifth column uses the average forecast for cash-flow long-term growth, named *EPS LTG (5y ave - SIC 2-digits)*, as the measure of the specialisation into long-duration investments. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

	(1) A Mat.	(2) A Mat. (pctile)	(3) F-A Mat.	(4) Durable ratio	(5) EPS LTG
TSYMAT x Asset Mat x Post	-2.563***	-36.63**	-2.322***	-5.718***	0.859
	(-4.56)	(-2.78)	(-4.08)	(-4.24)	(1.11)
Controls x Post	✓	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓	✓
Month-Year x Post FE	✓	✓	✓	✓	✓
Observations	19458	19458	19458	19458	19458
Adjusted R^2	0.622	0.621	0.622	0.623	0.620

Table C.6: Alternative industry classifications to measure specialisation in the duration of investment

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, measured by *Asset maturity (5y ave - Industry)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. The specification, sample, and cleaning procedure are the same as for the fifth column of Table 2. The columns present results using alternative levels for the industry treatment, depending on the granularity (number of digits) or the classification (SIC, NAICS, GICS). The classification and number of digit for each alternative is indicated in the corresponding column name. The last row indicates the number of unique industries for the corresponding treatment level in the sample. The fourth column presents the result using the historical version of the NAICS 3-digits level classification - as opposed to its revised version in the third column. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry according to the classification.

	(1) SIC2	(2) SIC3	(3) NAICS3	(4) NAICS3 Hist.	(5) NAICS2	(6) GICS Ind.
wamxppematxpost	-2.563***	-1.865	-2.217***	-0.827*	-2.770**	-2.346*
	(-4.56)	(-1.61)	(-4.25)	(-2.41)	(-3.02)	(-2.05)
Issuance FE	✓	✓	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓	✓	✓
5-year x Industry x Post FE	✓	✓	✓	✓	✓	✓
Month-Year x Post FE	✓	✓	✓	✓	✓	✓
N	19458	15968	19204	18988	19606	19170
NumberOfIndustries	59	237	84	94	23	67

Table C.7: Alternative measures of the premium on long-term discount rates

The table presents the estimates of the coefficient on the triple interaction between the proxy for the premium on long-term rates, the specialisation into long-duration investments, measured by the *Asset maturity (5y ave - SIC 2-digits)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. The premium on long-term rates is measured in the first column with the three-year excess returns on the 10-year bond and is instrumented in a 2SLS procedure across all columns with the average maturity of Treasury debt. The specifications, sample, and cleaning procedures in are the same as for the fourth column of Table 2. The first panel uses data on US Treasury bonds, while the second panel uses data on high quality corporate bonds. The data sources are detailed in Section III.A. The second columns of each panel use the three-year excess returns on the 20-year bond, as the measure of the premium on long-term rates. The third columns of each panel use the one-year excess returns on the 10-year bond, as the measure of the premium on long-term rates. The fourth columns of each panel use the yield-to-maturity on the 10-year bond, as the measure of the premium on long-term rates. The fifth columns of each panel use the yield-to-maturity on the 20-year bond, as the measure of the premium on long-term rates. The sixth columns of each panel use the yield spread between the 10-year and 1-year bonds, as the measure of the premium on long-term rates. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

(a) Treasury bonds

	(1) TSY $rx^{10Y}_{t\to t+36}$	(2) TSY $rx^{20Y}_{t\to t+36}$	(3) TSY $rx^{10Y}_{t\to t+12}$	(4) TSY y^{10Y}	(5) TSY y^{20Y}	(6) TSY $y^{10Y} - y^{1Y}$
$\widehat{\text{LongRatesPremium x Asset Mat x Post}}$	-0.192***	-0.422**	-0.544**	-4.360***	-6.289***	196.2
	(-3.95)	(-2.74)	(-3.22)	(-3.62)	(-3.51)	(0.07)
Controls x Post	✓	✓	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓	✓	✓
Month-Year x Post FE	✓	✓	✓	✓	✓	✓
Observations	19458	19458	19458	19458	19458	19458
Adjusted R^2	-0.019	-0.285	-0.196	-0.069	-0.105	-268.514

(b) Corporate bonds

	(1) Corp $rx^{10Y}_{t\to t+36}$	(2) Corp $rx^{20Y}_{t\to t+36}$	(3) Corp $rx^{10Y}_{t\to t+12}$	(4) Corp y^{10Y}	(5) Corp y^{20Y}	(6) Corp $y^{10Y} - y^{1Y}$
$\widehat{\text{LongRatesPremium x Asset Mat x Post}}$	-0.165***	-0.110***	-1.213	-2.716***	-2.914***	-609.9
	(-4.08)	(-4.16)	(-1.65)	(-3.69)	(-4.00)	(-0.03)
Controls x Post	✓	✓	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓	✓	✓
Month-Year x Post FE	✓	✓	✓	✓	✓	✓
Observations	19458	19458	19458	19458	19458	19458
Adjusted R^2	-0.011	-0.018	-1.102	-0.028	-0.019	-2763.689

Table C.8: Alternative starting dates for the five-year fixed effects of the specialisation in the duration of investment

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *PPE*. As described in Appendix A, *PPE* is normalised by total firm assets in the year preceding the deal. The specifications, sample, and cleaning procedures in are the same as for the fifth column of Table 2. The name of each column is the starting year for the sequence of 5-year fixed effects. In other words, for the first column the 5-year fixed effects are the the sequence of indicator functions $\mathbf{1}_{year \in [y_0+k; y_0+k+5[}$ where $y_0 = 1980$ and $k = 0, 5, 10, 15, 20....$ Standard errors are clustered at the levels of the issuance's corresponding month and corresponding industry (SIC 2-digits).

	(1) 1980	(2) 1981	(3) 1982	(4) 1983	(5) 1984
TSYMAT x Asset Mat x Post	-2.563***	-1.284***	-1.197**	-0.634	-0.861
	(-4.56)	(-4.17)	(-3.00)	(-1.42)	(-1.86)
Controls x Post	✓	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	✓	✓
Month-Year x Post FE	✓	✓	✓	✓	✓
Observations	19458	19458	19428	19446	19462
Adjusted R^2	0.622	0.622	0.609	0.606	0.613

Table C.9: Premium on long-term rates and firm-level specialisation in long-duration real investment: Total Assets

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, measured by *Asset maturity (5y ave - firm)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *Total Assets*. As described in Appendix A, *Total Assets* is normalised by total firm assets in the year preceding the deal. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding issuer.

	(1) Tot. A.	(2) Tot. A.	(3) Tot. A.	(4) Tot. A.	(5) Tot. A.	(6) Tot. A.
TSYMAT x Asset Mat (firm) x Post	-2.669*	-2.770*	-3.456**	-2.839*	-2.607	-1.706
	(-2.28)	(-2.29)	(-2.84)	(-2.02)	(-1.15)	(-0.64)
Controls x Post	–	–	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	–	–	–
Month-Year x Post FE	–	✓	✓	–	–	–
Month-Year x SIC2 x Post FE	–	–	–	✓	–	✓
Month-Year x SIC3 x Post FE	–	–	–	–	✓	–
Firm x Post FE	–	–	–	–	–	✓
Observations	21882	21882	20192	13620	6920	10998
Adjusted R^2	0.224	0.207	0.205	-0.581	-1.823	3.772

Table C.10: Premium on long-term rates and firm-level specialisation in long-duration real investment: Employment

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates), the specialisation into long-duration investments, measured by *Asset maturity (5y ave - firm)*, and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 1 where the dependent variable is *Employment*. As described in Appendix A, *Employment* is normalised by total firm employment in the year preceding the deal. Standard errors are clustered at the levels of the issuance's corresponding month and corresponding issuer.

	(1) Emp.	(2) Emp.	(3) Emp.	(4) Emp.	(5) Emp.	(6) Emp.
TSYMAT x Asset Mat (firm) x Post	-2.179	-2.491	-2.898*	-0.819	-1.760	-2.738
	(-1.74)	(-1.92)	(-2.11)	(-0.75)	(-1.28)	(-1.08)
Controls x Post	–	–	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓	✓	✓
5-year x SIC2 x Post FE	✓	✓	✓	–	–	–
Month-Year x Post FE	–	✓	✓	–	–	–
Month-Year x SIC2 x Post FE	–	–	–	✓	–	✓
Month-Year x SIC3 x Post FE	–	–	–	–	✓	–
Firm x Post FE	–	–	–	–	–	✓
Observations	19896	19896	18342	12018	5802	9584
Adjusted R^2	0.089	0.069	0.061	-0.953	-3.015	3.686

Appendix D Robustness: within-firm channel

Figure D.1: Premium on long-term rates and duration of real investments: durable and current assets

This figure presents the estimates of the coefficient on the interaction between the premium on long-term rates, measured with the three-year excess returns on the 10-year Treasury bond, and each of the ten indicator functions for the 10 periods around the issuance ($T = 0$) in the linear models corresponding to Equation 2 where the dependent variable is the variable in the title of each panel. The row presents the estimates for the dependent variables of interest: *Ratio of Durable to Current Assets* and its subcomponents. The columns presents the estimates under different identification strategies: naive OLS regressions, regressions instrumenting the premium on long-term rates with the average maturity of Treasury debt, and regressions instrumenting the premium on long-term rates with the residual from a regression of average maturity of Treasury debt on the lagged premium on long-term rates. As described in Appendix A, *Durable Assets* and *Current Assets* are both normalised by total firm assets in the year preceding the deal. The sample consists of all debt issues (excluding credit lines) for which we observe data in each window time cell. To mitigate the influence of extreme outliers, continuous control variables have been winsorised at the 1st and 99th percentiles. All regressions include firm × window cell fixed-effects, 5-year × window cell fixed effects, issuance fixed-effects, and the interaction between issuance controls and window cell indicators. The issuance controls, defined in Appendix A, include *LT Credit Spread*, *Real GDP Growth*, *log(Deal Amount)*, *log(Market Value of Equity)*, *Market-Debt Ratio*, *EBIT-to-Assets*, *Market-to-Book Ratio*, *Dividend Dummy*, *STD EBIT Growth (SIC 2-digits)*. Confidence intervals are built at the 95% confidence level with standard errors clustered at the level of the issuance's corresponding month.

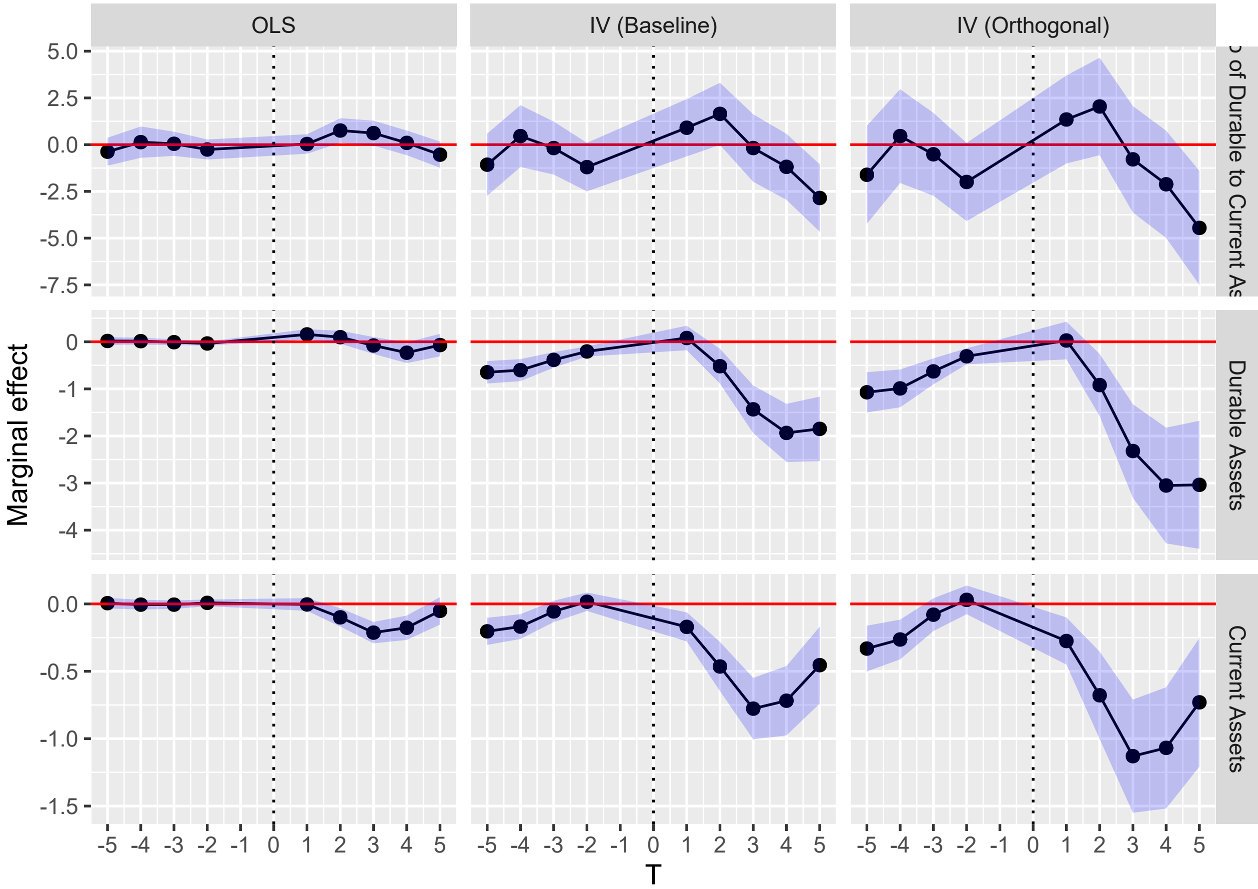

Table D.1: Robustness in the sample

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates) and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 2 where the dependent variables are indicated in the column names and include the the average forecast for the long-term growth (LTG) rate of a firm's earnings per share (EPS) and the ratio of *Durable Assets to Current Assets* as defined in Appendix A. The specification, sample, and cleaning procedures are the same as for the third columns of Table 7 and 8. The second and fourth columns feature interactions with indicators of 5-year periods. Standard errors are clustered at the level of the issuance's corresponding month.

	(1) Dur. ratio	(2) Dur. ratio	(3) EPS LTG	(4) EPS LTG
TSYMAT x Post	-32.41**		-1.601***	
	(-2.86)		(-7.49)	
1986-1990 × TSYMAT x Post		-87.85		1.643
		(-1.21)		(1.43)
1991-1995 × TSYMAT x Post		33.10		-1.580***
		(1.09)		(-3.91)
1996-2000 × TSYMAT x Post		-66.19*		0.398
		(-2.26)		(1.09)
2001-2005 × TSYMAT x Post		-18.80		-2.199***
		(-1.43)		(-7.69)
2006-2010 × TSYMAT x Post		-110.9		-5.342***
		(-1.55)		(-3.61)
Controls x Post	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓
5-year x Post FE	✓	✓	✓	✓
Observations	16380	16380	10554	10554

Table D.2: Alternative samples

The table presents the reduced-form estimates of the coefficient on the triple interaction between the average maturity of Treasury debt (the baseline instrument for the premium on long-term rates) and the *Post* indicator corresponding to *T=5*, with the underlying baseline being *T=-1*, from linear models derived from Equation 2 where the dependent variables are indicated in the column names and include the the average forecast for the long-term growth (LTG) rate of a firm's earnings per share (EPS) and the ratio of *Durable Assets to Current Assets* as defined in Appendix A. The premium on long-term rates is measured with the three-year excess returns on the 10-year Treasury bond and is instrumented in a 2SLS procedure with the average maturity of Treasury debt. The specification, sample, and cleaning procedures of the two first columns are the same as for the third columns of Table 7 and 8. The sample underlying the results in the third column includes all deals which are observed both at $T = -1$ and $T = 5$. The sample underlying the results in the fourth column includes all deals which are observed both at $T = -1$ and $T = 2$. Standard errors are clustered at the level of the issuance's corresponding month.

	Baseline (non-missing)	All deals		
	(1)	(2)	(3)	(4)
	Dur. ratio	Dur. ratio	EPS LTG	EPS LTG
TSYMAT x Post	-32.41**	-38.15***	-1.601***	-1.671***
	(-2.86)	(-3.50)	(-7.49)	(-8.51)
Controls x Post	✓	✓	✓	✓
Issuance FE	✓	✓	✓	✓
Firm x Post FE	✓	✓	✓	✓
5-year x Post FE	✓	✓	✓	✓
Observations	16380	19222	10554	17664