Debt Without Investment *

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Abstract

This paper studies the role of debt capital markets in driving the increase in market power and industry concentration in the United States since the 1950s. I show that the expansion of non-financial corporate debt is driven by a small group of very large firms issuing capital markets debt. These firms primarily use this financing for acquisitions, rather than for productive investments. To identify the causal effects of debt capital markets on firm behavior, I construct an exogenous measure of debt capital markets supply based on persistent lender-borrower relationships in syndicated loan market. I find a strong positive relationship between the rise of this type of financing and acquisitions expenditure, as well as market power: a one standard deviation increase in the predicted debt leads to a 137% increase in acquisition expenditure, and an increase in market share and profits by 1% and 42%, respectively. Finally, I develop an oligopolistic competition model with firms' internal investment and acquisition choices under a financial constraint to captures access to debt capital markets. The model replicates the key empirical patterns, and reveals a potential trade-off: while acquisitions lead to greater concentration and reduced competition, these can also reallocate capital towards more productive firms. Together, the findings provide new evidence that capital markets play a structural role in shaping industry concentration and competitive dynamics.

Keywords: corporate debt; market power; investment; acquisitions; issuance activity
JEL Codes: D43; E44; F33; G00; G15; G21; G23; G31

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1 Introduction

For several decades, non-financial corporate (NFC) debt has been rising unchecked in the United States, far outpacing the growth of the gross domestic product (GDP). By 2020, the NFC debt-to-GDP ratio had surpassed 160%, a significant increase from 50% in 1950. While both debt and equity financing have grown, the expansion of total corporate financing has been driven by debt markets, which now account for more than 80% of total corporate financing. Despite this sharp rise in corporate debt, private investment has remained remarkably low (Liu et al., 2022; Acharya et al., 2024; OECD, 2025), hovering around 20% of GDP over the same period. Meanwhile, there has been an increase in market power and industry concentration, well documented in the literature (Autor et al., 2020; Gutiérrez and Philippon, 2017; Loecker et al., 2020).

The connection between these macro-financial trends may stem from various financial innovations that occurred in the United States during this period. These new instruments and financial markets appear to have relaxed financial constraints unevenly across different types of firms in the economy, disproportionately favoring large corporations. In particular, debt capital markets—composed of bonds and syndicated loans—are driving the expansion of corporate financing. Research consistently shows the rising importance of corporate bond markets around the world (Cerutti et al., 2015; Garralda and Tsoukas, 2020; Abraham et al., 2020; Cortina et al., 2021). Moreover, syndicated loans, traditionally tied to bank financing, have evolved to function similarly to bonds, most of them being tranched and traded in capital markets (Bord and Santos, 2012; Blickle et al., 2020; Elliott et al., 2024; Aldasoro et al., 2022; Buchak et al., 2023). Non-bank lenders -such as hedge funds and pension funds- provide 40% of the total commitment of an average syndicated loan (Chodorow-Reich and Falato, 2022). The rapid growth of syndicated lending—outpacing traditional loans and bond financing—signals a significant redistribution of financial resources within the banking sector (Altunbas et al., 2010; Doerr and Schaz, 2021).

These developments raise an important question: Has the expansion of capital markets debt contributed to the rise in market power and industry concentration observed in the United States? This paper explores this potential link by analyzing how access to debt capital markets influences firms' strategic behavior and competitive outcomes. As capital markets expanded, large firms with preferential access gained disproportionate advantages, benefiting from greater capital availability and lower borrowing costs. Large firms-due to their scale, established reputations, and greater ability to meet capital market requirements-are

better positioned to access debt capital markets. In contrast, smaller firms remain largely constrained to traditional bank loans (Diamond, 1991; Gomes and Phillips, 2012; Cooper and Maio, 2019). This preferential access is further reinforced by the inelastic demand of investors for securities issued by large firms, which provides them with a cost of capital advantage (Acharya and Plantin, 2019; Kashyap et al., 2021). During this period, there has been a substantial increase in the supply of debt capital markets (PwC, 2024), a transition that could reshape competitive landscapes by reinforcing greater market power (Gutiérrez and Philippon, 2017; Autor et al., 2020).

Beyond access and cost of capital advantages, the strategic use of funds raised through debt capital markets might play a crucial role in reinforcing market power and industry concentration. Unlike traditional bank loans, where lenders maintain close oversight, capital market investors are typically dispersed across a broad, often global base (Diamond, 1991; Acharya et al., 2020). This investor detachment provides large firms with greater strategic flexibility, enabling them to engage in activities like equity repurchases or mergers and acquisitions that enhance market dominance, rather than focusing solely on productive investments (Acharya et al., 2011, 2024). These strategies can entrench the market positions of large firms, further increasing market concentration and limiting competitive opportunities for smaller firms. In contrast, equity financing incentives firms to implement productive investments, as investors benefit directly from successful innovations and projects (Da Rin et al., 2006; Brown and Petersen, 2009; Brown and Floros, 2012; Wu and Au Yeung, 2012; Didier et al., 2021). This is not the case for capital markets debt, where investors' returns are not tied to future performance of the firm. The idea that the strategic use of CMD by large firms could lead to market-enhancing activities rather than purely productive investments offers a nuanced view that could help explain how capital markets debt could potentially entrench the dominance of large firms and contribute to increasing market power and industry concentration.

To explore the relationship between capital market debt and market power, I employ a rigorous methodological approach involving transaction- and firm-level data. First, I document key stylized facts about the expansion of corporate debt in the United States. I find that a remarkably small subset of very large firms issuing capital markets debt is responsible for the expansion of non-financial corporate debt: less than 1% of firms access debt capital markets, yet capital markets now account for more than 50% of total corporate debt outstanding. These firms largely use the proceeds for acquisitions rather than productive investments. At the industry level, sectors with higher capital market usage show higher concentration

levels, suggesting that capital markets may be influencing market power and competition through firms' behavior. I then quantify the relationship between CMD reliance and firm outcomes, finding that firms with greater debt use engage in significantly more acquisition activity and exhibit greater market power: one standard deviation increase in debt capital market issuance activity is associated with a 76% increase in acquisition expenditure, and an increase in market share and profits by 1% and 31%, respectively. These results suggest that debt capital markets serve as a strategic channel through which large firms can consolidate market power and entrench their dominance via acquisitions.

To address potential endogeneity and strengthen a causal link between capital market debt and market power, I use an exogenous measure of capital market debt supply, following Chodorow-Reich (2014). The instrument is constructed based on firm's syndicated loan lenders during a base period (1990–1999), using their lending to other borrowers in subsequent periods (2000–2009 and 2010–2019). The relevance of the instrument depends on the stickiness of the borrower-lender relationship in the syndicated loan market, which I empirically verify. Using this instrument, I find a strong and positive effect of the predicted debt on both acquisition activity and market power: one standard deviation increase in the predicted debt leads to a 137% increase in acquisition expenditure, and an increase in market share and profits by 1% and 42%, respectively. I also explore the relationship at the industry level, where I find that industries with higher predicted debt levels exhibit higher concentration levels.

To support the exogeneity of the instrument, I conduct several robustness checks to mitigate concerns about unobserved borrower characteristics, general economic conditions, and equity-financed deals: first, I implement the within-firm Khwaja and Mian (2008) test for unobserved borrower characteristics, and include firm fixed effects and firm-level controls in all regressions. Second, I construct an alternative version of the instrument that excludes lending to borrowers in the same industry, mitigating concerns about endogeneity driven by industry-specific shocks. Third, I restrict the analysis to the 2008-global financial crisis, period in which broader economic conditions influencing lending were largely unrelated to firms' underlying fundamentals. Fourth, I show that the results are robust to the inclusion of time fixed effects, which control for common macroeconomic shocks and secular trends in acquisitions. Finally, I show that the instrument does not predict equity-financed deals, supporting the interpretation that the instrument captures variation in capital markets debt supply, rather than broader acquisition dynamics or stock-financed deals.

Finally, I develop an oligopolistic competition model building on Atkeson and Burstein

(2008), with firms' internal investment and acquisitions choices. The model incorporates an earning-based financial constraint that governs firms' access to debt capital markets. When calibrated to match key parameters to empirical estimates, the model is able to replicate several of the stylized facts presented in the empirical section: a relaxation of financial constraints disproportionately benefits the largest firms, spurring acquisition activity and reinforcing market power. Importantly, the model also highlights a potential trade-off: while acquisitions lead to greater concentration and reduced competition, these can also reallocate capital towards more productive firms, generating efficiency gains in some scenarios. This framework thus provides a theoretical foundation for understanding how capital market structure can shape both firm dynamics and industry outcomes.

The remainder of the paper is structured as follows: Section 2 describes the related literature and the data. Section 3 presents stylized facts about corporate debt in the United States. Section 4 outlines the empirical methodology and the results. Section 5 describes the theoretical framework. Section 6 concludes.

2 Related Literature and Data

2.1 Related Literature

This paper contributes to the existing literature in several ways. First, it extends the large body of research on the impact of debt capital markets´ development beyond its traditional focus on business cycle implications (Cortina et al., 2021; Becker and Ivashina, 2014; Ivashina and Scharfstein, 2010; Levine et al., 2016). Instead, our study explores the previously unexamined long-term consequences of CMD for market dynamics and firms' market power. While some studies have examined the expansion of bonds independently (Abraham et al., 2021b,a) or in conjunction with equity markets (García-Santanta et al., 2024), they often overlook the role of syndicated loans despite their substantial involvement in capital markets (Fleckenstein et al., 2024; Bord and Santos, 2012; Blickle et al., 2020).

Second, our paper relates to the studies on firm's market concentration and market power. There is a broad consensus in the literature that market concentration among firms has been increasing over time (Autor et al., 2020; Orszag, 2018; Barkai, 2020; Bajgar et al., 2019, 2020). A segment of the literature has linked the rise in concentration to the erosion of market competition, driven by large firms (Barkai, 2020; Gutiérrez and Philippon, 2019, 2017; Decker et al., 2017). The most closely related paper, Liu et al. (2022), develops a theoretical framework that rationalizes the rise in market power and persistently low investment trends

as a strategic response by industry leaders when interest rates fall. In this paper, I offer a complementary explanation for how firms may have consolidated their market power and dominance through their access to debt capital markets.

Third, research suggest that different types of financing are used for different purposes based on the different nature of the investors in each market. Capital markets debt allows firms to pursue strategies aimed at enhancing market dominance rather than prioritizing productive investments, largely due to the dispersed nature of its investors (Acharya et al., 2011). In contrast, other forms of financing, such as equity (Da Rin et al., 2006; Brown and Petersen, 2009; Brown and Floros, 2012; Didier et al., 2021), where investors directly benefit from productive investments, or bank-linked debt (Bolton and Scharfstein, 2002; Hackbarth et al., 2007; Crouzet, 2018), which involves close monitoring and supervision by banks, tend to encourage productive investments. I extend these studies by analyzing how firms consolidate their market dominance through activities financed by capital markets debt.

Our paper also adds to a growing literature exploring the drivers and implications of the recent growth of non-banks and market-based credit intermediation (Buchak et al., 2018b,a; Chen et al., 2018; Fleckenstein et al., 2024; Irani et al., 2020; Aramonte et al., 2022; Aldasoro et al., 2023; Buchak et al., 2023). The rise of international investors has highly influenced capital markets by providing abundant and stable financing, enhancing market liquidity, and reducing the cost of capital for accessing firms (Greenwood and Scharfstein, 2013).

2.2 Data

I use issuance level data for corporate bonds, syndicated loans, and equity from both public and private firms from LSEG´s Security Data Corporations Platinum (SDC). I construct a sample including 156,367 bond and syndicated loan issuances from 27,282 U.S. non-financial corporations between the 1990-2020 period (see Appendix Table 1). This database contains transaction-level information on new issuances of bonds and syndicated loans by public and private firms, including the date of the issuance, the amount raised, and the maturity date. For the syndicated loan issuances, I also observe information on the lenders participating on the syndicated, such as its role (lead or participant). The data also contains information on

the firm, including its country and industry.[1]

I combine the SDC data on equity, bond and syndicated loan issuances with data on income statements and balance sheets for publicly listed companies from the Worldscope database. The universe of U.S. listed firms comprises more than 24,400 firms, from which 6,217 participate in debt capital markets. Listed firms capture over 67% of the total amount raised in debt capital markets. All variables are expressed in constant 2011 U.S. dollars.[2]

Other datasets employed in this paper include the IMF's Global Debt Database, U.S. Bureau of Economic Analysis, World Bank Global Financial Development Database, BIS Debt Securities Statistics, US Census Bureau, IMF's WEO, and the IMMA Institute.

3 Stylized Facts about Debt Expansion

This section documents several important stylized facts regarding the expansion of non-financial corporate debt. Specifically, I illustrate the shift towards debt capital markets, and highlight how access to these markets is limited to a very small subset of exceptionally large firms. Furthermore, I document how this debt is mainly used to finance acquisitions, rather than productive investments, which in turn enhanced firms' market power.

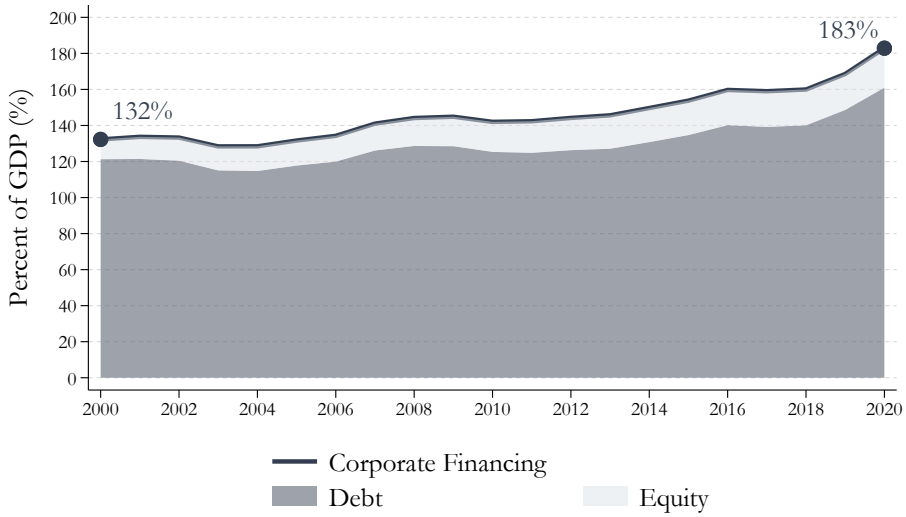
3.1 Composition: Debt Capital Markets

Corporate financing by non-financial firms has expanded rapidly in recent decades in the United States, reaching record-high levels today (Figure 1). Although both of its components — debt and equity — have grown during this period, the vast majority of this financing now comes from debt markets.

[1]I drop observations with missing information on key variables, such as the firm identifier, firm name, or the firm's country of residence. I also dropped the transactions classified as announced, rumored, in registration, in process/syndication, awaiting mandate, signing and underwriting phases, withdrawn, postponed, renegotiated, terminated, or canceled. Moreover, I also dropped the authorization to future bond issuances through medium-term notes, since these could imply subsequent capital raising activity which was taken into account at the time of issuance and the transactions by supranational issuers (e.g., the World Bank). Finally, I drop issuances of special purpose vehicles, and the ones classified as "asset-backed" or "mortgage-backed". I exclude form the sample all the transactions by governments at all levels (including central governments, central banks, local governments, ministries, sovereign wealth funds, and federal credit agencies, among others) or by the financial sector (those with a Standard Industrial Classification (SIC) code between 6000 and 6800).

[2]The matching process between Worldscope and SDC starts by using all common identifiers present in both databases: Refinitiv Permanent Identifier, CUSIP, SEDOL, and ISIN. The matching process follows a sequential order, commencing with the Refinitiv Permanent Identifier. Should the initial matching attempt prove unsuccessful, I proceed to utilize subsequent identifiers. For companies that remain unmatched through common identifiers, I use company name and country.

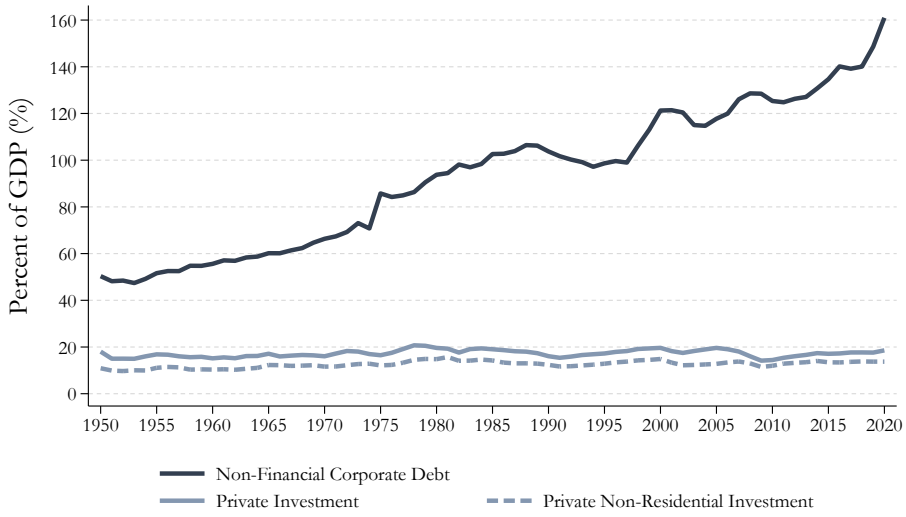
Figure 1. U.S. Corporate Financing



Note: This figure shows the evolution of total corporate financing by non-financial corporate firms, and its components (debt and equity) in the United States during the 2000-2020 period. Non-financial corporate debt data comes from IMF's Global Debt Database. Equity data comes from LSEG's SDC database and own calculations.

Corporate debt by non-financial firms has been growing substantially over several decades (Figure 2). By 2020, the NFC debt-to-GDP ratio had reached over 160%, up dramatically from just 50% in 1950. This surge in corporate debt has occurred as private investment has remained relatively low (Liu et al., 2022), consistently around 20% of GDP. At the same time, the literature has documented rising trends in market power and industry concentration, underscoring significant shifts in the competitive landscape in the United States (Gutiérrez and Philippon, 2017; Autor et al., 2020; Loecker et al., 2020).

Figure 2. U.S. Corporate Debt and Private Investment



Note: This figure shows the evolution of non-financial corporate debt and private investment as a share of gross domestic product in the United States during the 1950-2020 period. The measures of private investment include investment on structure, equipment, and intellectual property products (software, R&D, etc.). Private non-residential investment excludes investment in housing. Non-financial corporate debt data comes from IMF's Global Debt Database. Private investment data comes from U.S. Bureau of Economic Analysis.

To understand the implications of the expansion of non-financial corporate debt, I decompose total debt into the three key debt markets identified by the literature. Those are (1) corporate bonds, (2) syndicated loans, and (3) traditional loans. This decomposition is important because those markets are very segmented, in terms of the characteristics of the credit -such as amount raised-, but in particularly in terms of which firms can access them. The literature has shown that only large firms seem to have access to bonds and syndicated loan markets, while small firms are constrained to traditional loans when they have financial needs. I implement the following decomposition:

$$NFCDebt_t = \underbrace{Bond_t + SynLoan_t}_{Capital\ Markets\ Debt} + TradLoan_t \tag{1}$$

where $NFCDebt_t$ is total U.S. non-financial corporate debt outstanding at time t from the IMF's Global Debt Database; $Bond_t$ and $SynLoans_t$ are amounts outstanding of bonds and syndicated loans, respectively, computed from the issuance-level data provided by LSEG's SDC database using the repayment history of each deal; $TradLoan_t$ are traditional loans outstanding, computed as the residual $TradLoan_t = NFCDebt_t - Bond_t - SyndLoan_t$.[3]

The first two components -corporate bonds and syndicated loans- are classified as capital markets debt. While the role of capital markets in the corporate bond market is straightforward, it is less obvious in the case of syndicated loans. Syndicated loans differ from traditional loans as they consist of multiple tranches, each financed by different financial institutions. This structure diversifies lender's risk exposure and enables firms to borrow large amounts of capital. Capital markets participate in the syndicated loan market through two channels: by allowing a variety of financial institution -not only banks, but also entities such as mutual funds- to act as lender (Altunbas et al., 2010; Blickle et al., 2020; Chodorow-Reich and Falato, 2022); and second, through secondary markets, where syndicated loans trade after origination (Aldasoro et al., 2022; Elliott et al., 2024).

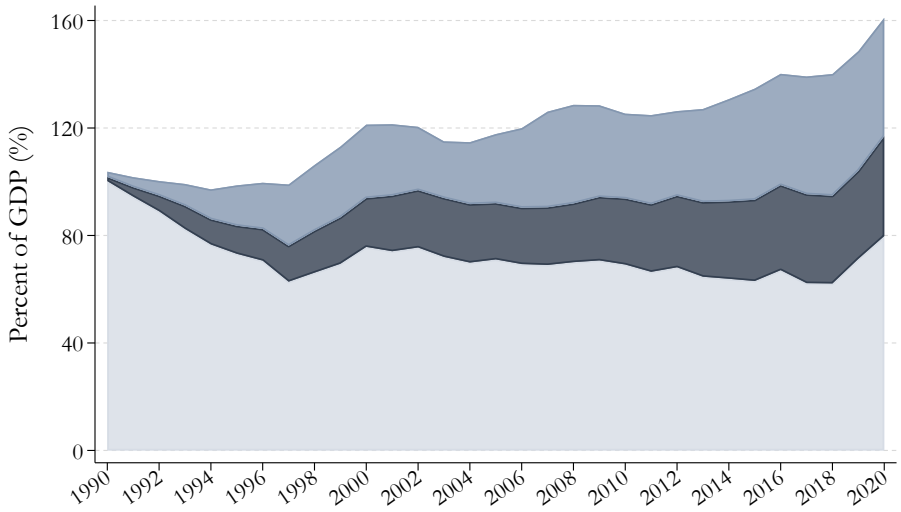
A notable feature of the expansion of corporate debt in the U.S. is the increasing prominence of capital markets debt, including bonds and syndicated loans, which has progressively overshadowed traditional financing methods. The raise in the debt-to-GDP ratio has been driven by capital markets debt, as both bonds adn syndicated laons have expanded, while traditional financing as a share of GDP has been steadily declining (Figure 3, Panel a). As illustrated in the Panel b of Figure 3, debt capital markets now account for over 50% of total

[3]As a robustness, I compare the aggregate amounts outstanding computed using the issuance-level data with publicly available data on aggregate outstanding amount for bonds and syndicated loans in the U.S.The results confirm the reliability of both the decomposition and the issuance-level data (Appendix Figure 1).

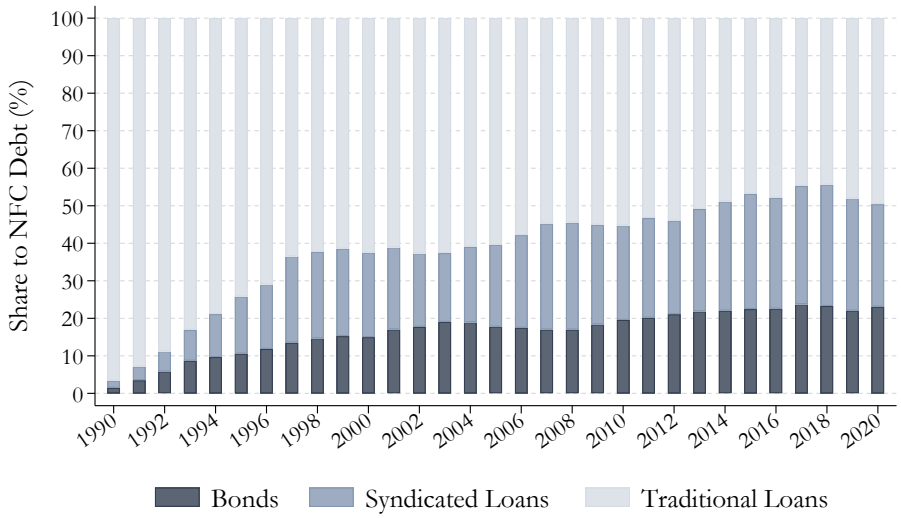
corporate debt.[4,5]

Figure 3. Debt Components

a. Percent of GDP



b. Share of Total Debt



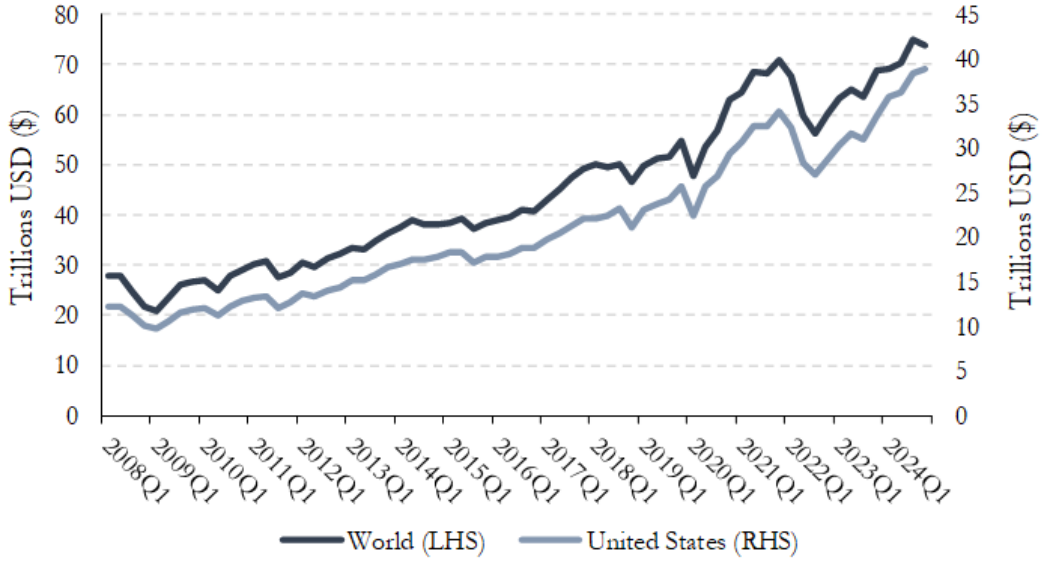
Note: This figure shows the evolution of the components of non-financial corporate debt (bonds, syndicated loans, and traditional loans) in the United States during the 1990-2020 period. Debt components are expressed as percent of GDP (Panel a) and as a share of total non-financial corporate debt (Panel b).

The substantial increase in corporate debt over recent decades has largely been driven by the remarkable growth of institutional investors (PwC, 2024). Both the number of institutional investors and their assets under management have expanded dramatically during

[4]Total non-financial corporate financing, including both equity and debt, has also been increasing during the same period, ruling out a potential shift from equity to bond financing (Appendix Figure 3).
[5]As a robustness, I further decompose total non-financial corporate debt to account for commercial papers. This additional decomposition yields consistent results (Appendix Figure 4).

this period, as illustrated in Figure 4. This growth has significantly increased the supply of capital available in debt markets, providing firms — especially large firms — with greater access to external financing.

Figure 4. Assets Under Management



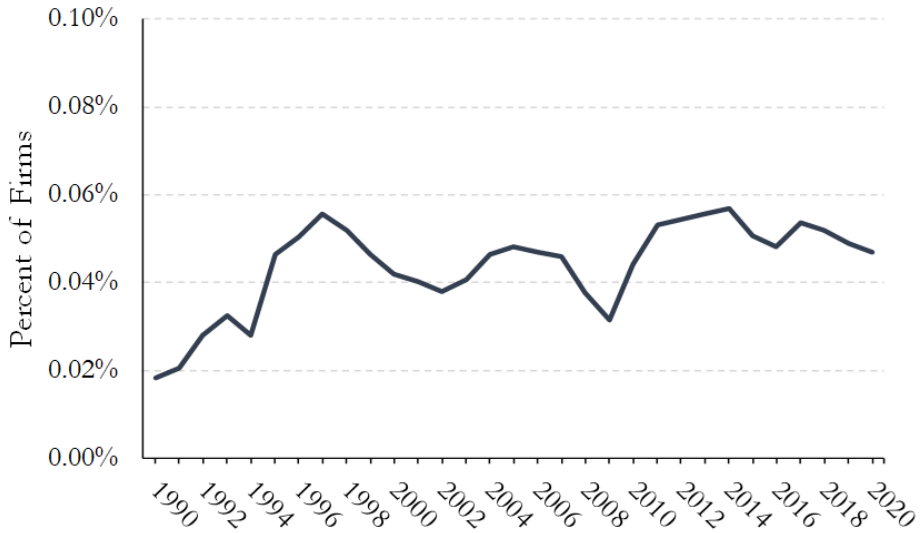
Note: This figure shows total net assets held by worldwide and U.S. regulated open-end funds (excluding funds of funds). *Source*: ICI.

Several factors have contributed to this trend, including aging populations that boost demand for fixed-income securities, financial globalization enabling greater capital mobility, tighter banking regulations that encourage non-bank lending, and a persistently low-interest-rate environment that enhances the attractiveness of debt instruments. Together, these developments have deepened debt capital markets and expanded the pool of capital available for corporate borrowing.

3.2 Access: Small Subset of Large Firms

Despite the significant expansion of capital markets, access to these markets remains highly restricted to an extremely small subset of firms. In particular, only 0.44% of firms have ever utilized these markets, despite accounting for over 50% of total corporate debt financing (Appendix Table 2). Over time, the share of firms accessing debt capital market has remain stable, at approximately 0.05% (Figure 5).

Figure 5. Evolution of Access to Debt Capital Markets



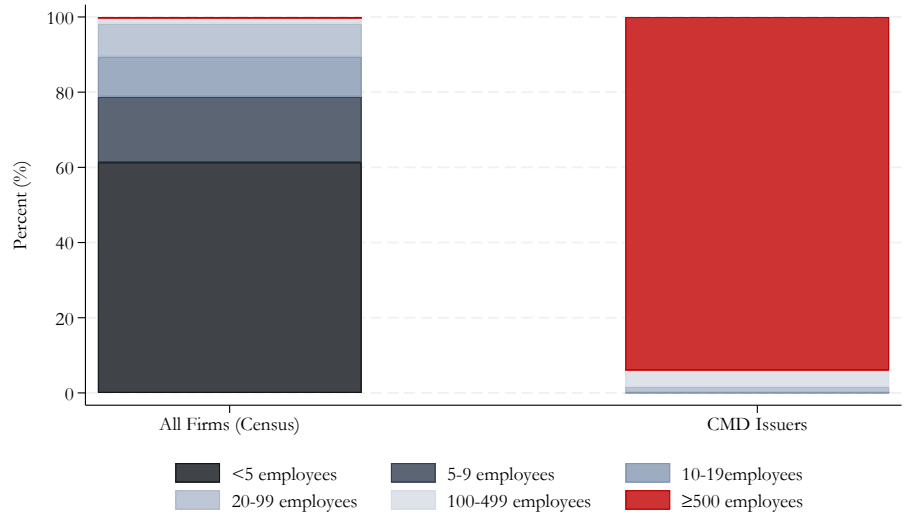
Note: This figure shows the evolution of the share of firms that access debt capital markets in the United States during the 1990-2020 period. The data on the total number of firms comes from the U.S. Census Bureau. The number of firms accessing debt capital markets is computed using LSEG's SDC database, and it includes both private and public non-financial firms issuing either bonds or syndicated loans.

The small subset of firms accessing debt capital markets tend to be exceptionally large, compared to the broader universe of companies. In the United States, 99% of the firms are classified as small and medium enterprises (SMEs). In contrast, those that utilize debt capital markets are predominantly large firms -more than 500 employees- (Figure 6), accounting for approximately 20% of total employment in the economy (Appendix Table 2). This has been stable over time (Appendix Figure 5).[6]

The large size of capital market issuers is evident not only in terms of employee count, but also in other relevant metrics, such as the amount raised -median issuance size is 106 millions of 2011 U.S. dollars, during the 1990-2020 period- or in terms of assets -median issuer has more than $130 millions of assets.

[6]This is computed for the subset of publicly listed issuers for which employees data is available.

Figure 6. Firm Size Distribution



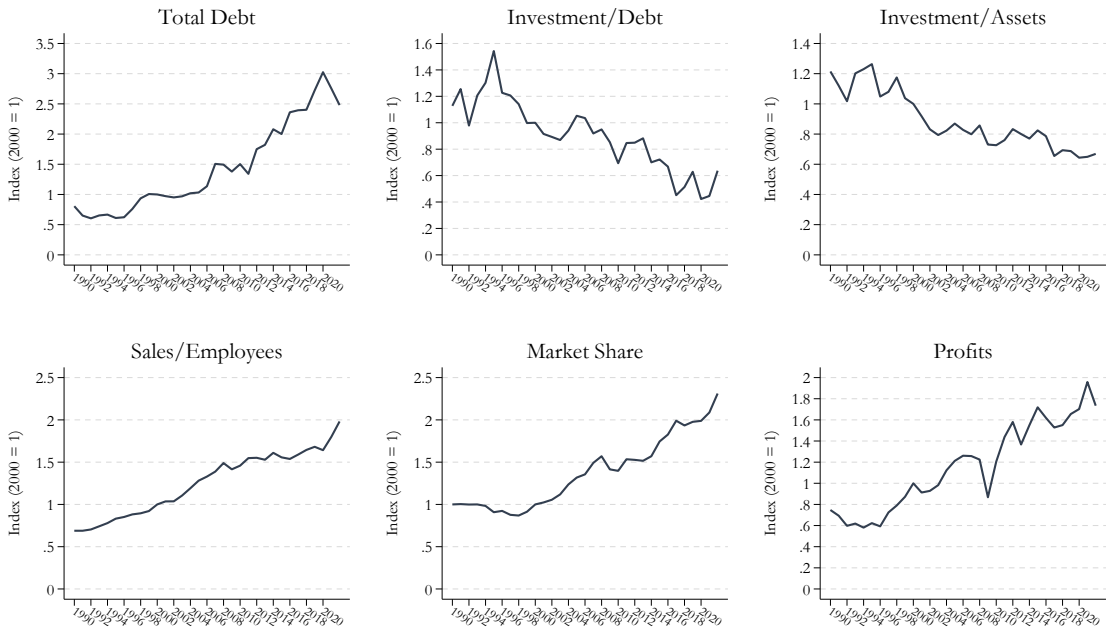
Note: This figure shows the firm size distribution of all firms in the US and for the subset of listed firms that access debt capital markets. The share in each bin size is computed using the median value during the 1990-2020 period. Size is measured by employees. CMD issuers are firms that issued a bond and/or a syndicated loan on a specific year.

The finding that large firms have disproportionately benefited from the expansion in the supply of debt capital markets is consistent with the broader literature on corporate financing. Due to their scale, established reputations, and greater ability to meet the requirements of capital market investors, large firms are better positioned to access these markets (Diamond, 1991; Gomes and Phillips, 2012; Cooper and Maio, 2019). This preferential access is further reinforced by the inelastic demand of investors for securities issued by large firms, which provides them with a cost of capital advantage (Acharya and Plantin, 2019; Kashyap et al., 2021).

The balance sheet trends of firms accessing debt capital markets align with the aggregate trends discussed previously. Total debt in the balance sheet of the median issuer has increased over time. This positive trend suggest that firms are not just switching from other sources of financing, such as traditional loans, to debt capital markets. Moreover, investment as a share of debt and assets has declined for firms with access to debt capital markets. In contrast, proxies for market power -such as market share and profits- exhibit a positive trend among

these firms.[7,8]

Figure 7. Balance Sheet Trends



Note: This figure shows the evolution of key balance sheet variables for firms that issue capital market debt (CMD issuers), and non-capital market debt issuers (non-issuers) during the 2000-2020 period. Capital market debt issuers are firm that issued either a bond or a syndicated loan in that specific year. Non-issuers are firms that neither issued a bond nor a syndicated loan in that specific year. All variables are normalized by their value in 2000. Investment is the sum of capex and R&D. Market share is measured as the ratio of a firm's sales to the total sales within its four-digit SIC industry. The figures show the value of the median type of firm per year for each variable.

3.3 Use: Acquisitions

To examine how firms allocate the proceeds raised through debt capital markets, I use the methodology developed by Kim and Weisbach (2008):

$$ln\left(Y_{i,t+h}\right) = \beta_1\, ln\left[Issuance_t\right] + \beta_2\, ln\left[OthFin_{i,t+h}\right] + \beta_3\, ln\left[Assets_{i,t-1}\right] + \theta_t + \theta_i + \epsilon_{i,t} \quad (2)$$

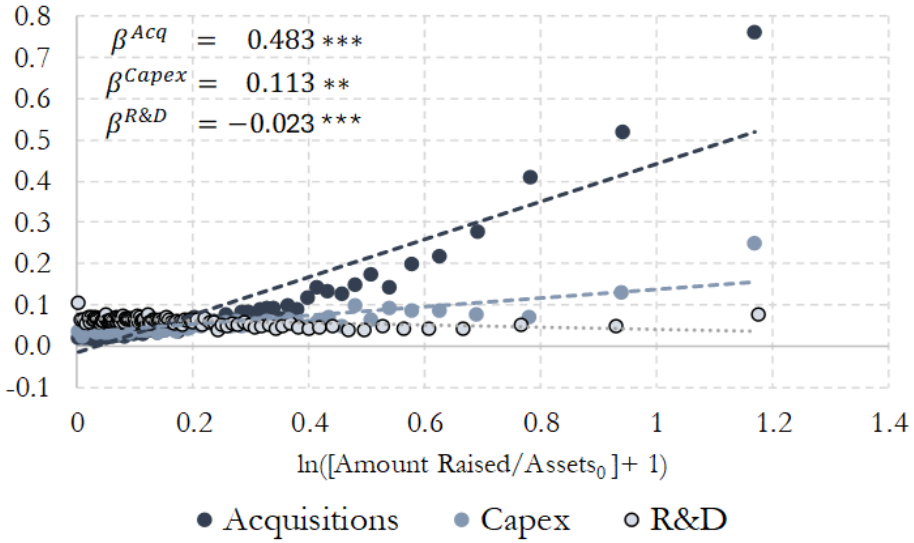
where the dependent variables are nine potential uses: productive investments (capex and R&D), acquisitions, inventory, cash and short-term financial investment holdings, long-term debt reduction, dividends, and staff expenses. $Issuance_t$ is the amount raised through debt capital market issuance (bonds and syndicated loans) at time t. $OthFin_{t+h}$ captures other sources of financing available for the firm, both internal and external, different than the

[7] investment is calculated as the sum of capital expenditure (capex), which represents investment in physical capital such as machinery, and R&D expenditure, which captures intangible capital.

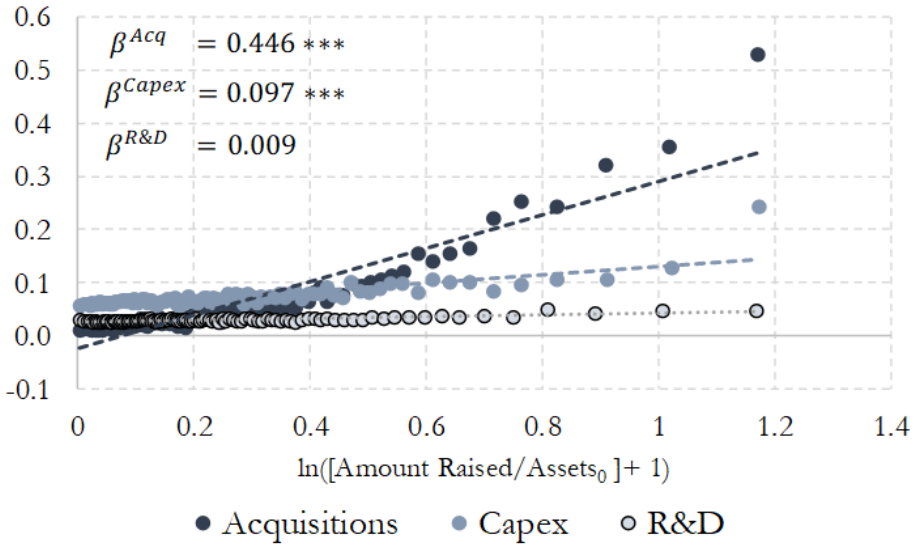
[8] The increasing total debt on the balance sheet of the median issuer suggests that these firms are not merely switching from different types of financing to debt capital markets. This distinction is important because a shift from traditional financing to non-traditional financing could simply indicate that large firms are reallocating their resources between markets. If that were the case, one would expect some positive effects associated with the expansion of debt capital markets, as the supply of credit in the traditional market would increase, thereby easing financial constraints for smaller firms (Balloch, 2023).

Figure 8. Issuances and Subsequent Use of Proceeds

a. Time FE



b. Time and Firm FE



Note: This figure shows a binned scatterplot form the firm-level panel OLS regressions for the use-of-funds analysis for debt capital market issuances from non-financial U.S. firms during the 1990-2020 period. The analysis follows the specification of Kim and Weisbach (2008) specified in Equation 2. The dependent variables (V = {capital expenditures, research and development expenditures, and acquisitions expenditure}- are $Y = \left[\left(\sum_{\tau=1}^{t} V_\tau / Assets_0\right) + 1\right]$. Independent variables are debt capital markets issuance value (including both bonds and syndicated loans) and other sources of funds, both normalized by total assets, in addition to the log of total assets. Total assets are measured at the value of the year just before the issuance. All variables are winsorized at the 1% level. Regressions include time (Panel a) and firm fixed effects (Panel b). Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

amount raised through debt capital market. The regression also controls for firm's size prior to the issuance. All variables are normalized by the firm's assets prior to the issuance $(t-1)$. h denotes the number of years after issuance. The regressions also include time, θ_t, and firm, θ_i, fixed effects. The coefficient β_1 measures the proportion of proceeds raised per issuance

used to increase each of the possible uses of funds. I also report the estimated elasticities and the dollar effects for the median firm.[9]

The results, summarized in Figure 8, show that the main use of debt capital market issuances is to finance acquisitions. A 1% increase in the amount raised through debt capital markets is associated with a 0.5% increase in acquisition expenditure (Figure 8, Panel a). The within firm increase in acquisition expenditure is 0.4% (Figure 8, Panel b). The results are robust to analyzing bond and syndicated loan issuances separately (Appendix Figure 6). When analyzing the other potential uses, acquisitions is still the most important one, although this financing is also used to reduce long-term debt (Appendix Figure 7).[10]

These results suggest that the dispersed nature of debt capital markets investors enables firms to engage in strategic activities aimed at increasing market dominance rather than focusing on productive investments. This tendency should be less pronounced when firms rely on equity financing, as investors directly benefit from successful innovations, as documented by the literature (Da Rin et al., 2006; Brown and Petersen, 2009; Brown and Floros, 2012; Wu and Au Yeung, 2012; Didier et al., 2021). In fact, when analyzing how equity issuances are used, these are mostly used to finance productive investment (both capex and R&D) instead of acquisitions (Figure 9 and Appendix Figure 6), as well as other operational expenditure and savings (Appendix Figure 7).

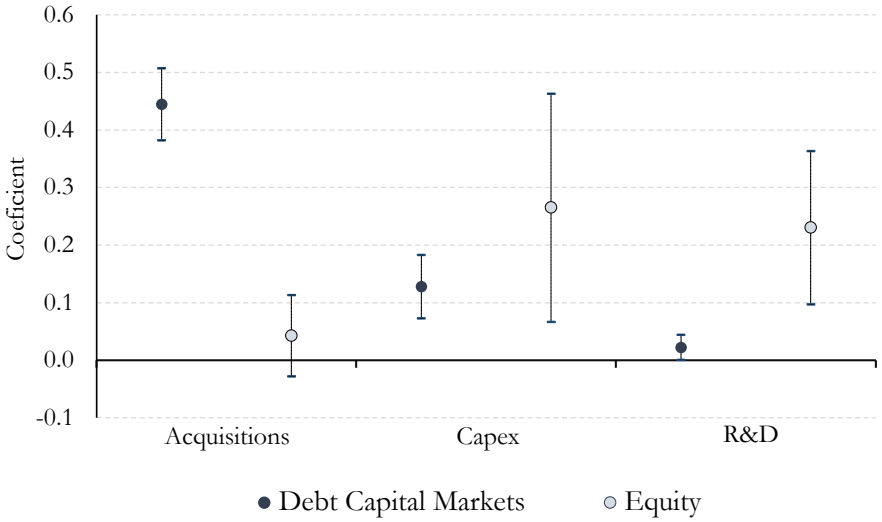
In addition to the nature of its investors, there are other reasons why debt capital markets appear to favor acquisitions over other types of investments. One reason is the large amounts of capital that firms can raise through these markets, which is particularly suitable for acquisitions since they are a very expensive type of investment. Amount raise in these markets are substantially larger than what could be obtained through internal financing or traditional bank loans (Haselmann and Wachtel, 2011; Benmelech et al., 2012).

Furthermore, there are several advantages associated with debt-financed acquisitions - as opposed to stock-financed acquisitions. First, it allows firms to preserve ownership and control, as debt does not dilute equity stakes or involve the transfer of decision-making power to new shareholders (Ghosh and Ruland, 2002). Second, debt financing provides a cost advantage (Martynova and Renneboog, 2009). Large firms with privileged access to debt

[9] $Y = [((V_t - V_0)/Assets_0) + 1]$ corresponds to stock variables, where $V = Inventory$ and $Cash$, $ST\,Investments$, and $Dividends$. $Y = \left[\left(\sum_{\tau=1}^{t} V_\tau/Assets_0\right) + 1\right]$ corresponds to income and cash flow variables, where $V = Capex$, $Acquisitions$, $R\&D$, $Operational\,Expenses$, $Staff\,Expenses$ and $Long\,Term\,Debt\,Reduction$). Other sources of financing $OthFin = \left[\sum_{\tau=1}^{t} \left((TotalSources_\tau - Issuance)/Assets_0\right) + 1\right]$ where $TotalSources$ represent the total funds generated by the firm internally and externally.

[10] The results are robust to analyzing different potential trends over time (Appendix Figure 8 and 9), and do not display pre-trend (Appendix Figure 10).

Figure 9. Use of Proceeds: Debt vs Equity



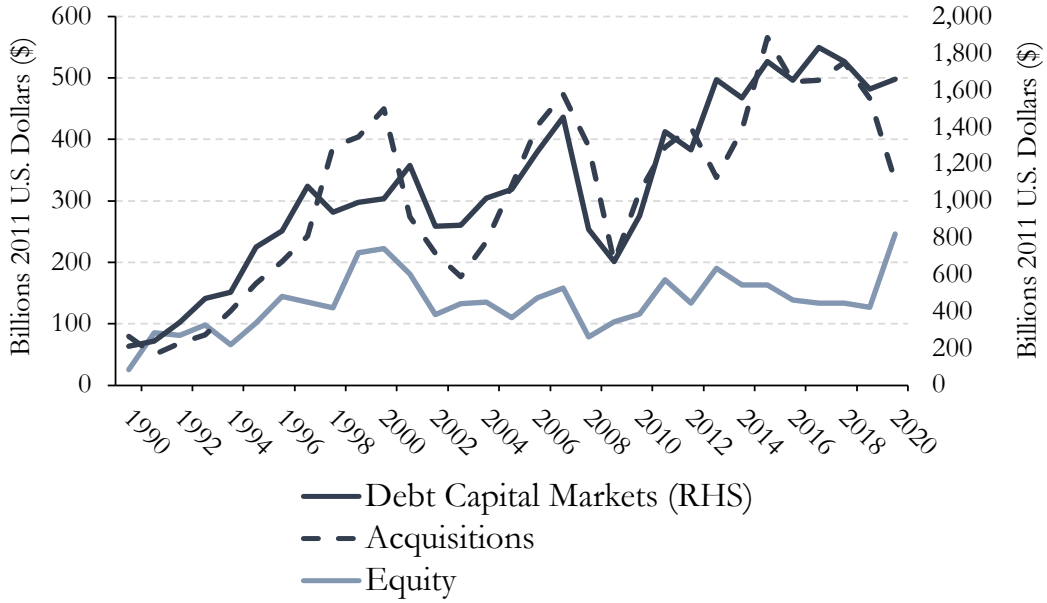
Note: This figure shows the coefficients and its 95% confidence intervals from the use-of-funds analysis for debt capital market and equity issuances from non-financial U.S. firms during the 1990-2020 period. The analysis follows the specification of Kim and Weisbach (2008) specified in Equation 2. Coefficients reported correspond to the year after the issuance. Regressions include firm and time fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

capital markets benefit from lower borrowing costs due to investors' inelastic demand for their securities and favorable market conditions (Acharya and Plantin, 2019; Kashyap et al., 2021). Finally, debt-financed acquisitions can serve as a positive signal to the market (Martynova and Renneboog, 2009; Fischer, 2017). The decision to take on debt to finance acquisitions is often interpreted as a signal of management's confidence in the firm's future profitability and growth prospects. These factors combined make debt financing an attractive tool for firms aiming to pursue acquisitions as a means of expanding their market power and consolidating their competitive positions.

Figure 10 shows the time series of acquisition expenditure alongside equity and debt capital markets aggregate issuance activity. While both financing sources increased over time, acquisitions appear to be much more strongly correlated with debt capital markets activity than with equity issuance. Periods of rising debt issuance—particularly in the late 1990s, mid-2000s, and mid-2010s—coincide closely with peaks in acquisition volumes. In contrast, equity issuance remains relatively stable and does not track the fluctuations in M&A activity as closely. This suggests that debt financing may be playing a more prominent role in funding acquisitions than equity over this period. These patterns suggest that debt capital markets play a key role in enabling firms to pursue acquisitions—one of the most significant strategic tools for increasing market dominance. Since acquisitions often reshape industry structure by consolidating market share among fewer, larger players, their prevalence can have important

implications for competition.

Figure 10. Acquisitions and Financing Over Time

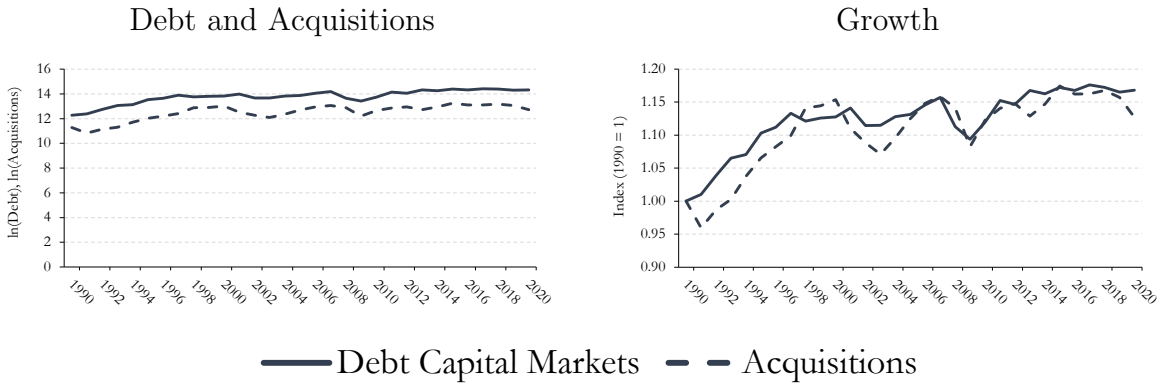


Note: This figure shows the time series correlation between different financing sources and acquisitions expenditure between the 1990-2020 period. Debt capital markets and equity are measures as the aggregate amount raised in billions of 2011 U.S. Dollars (USD). Acquisitions are the aggregate acquisitions expenditure in billions of 2011 USD.

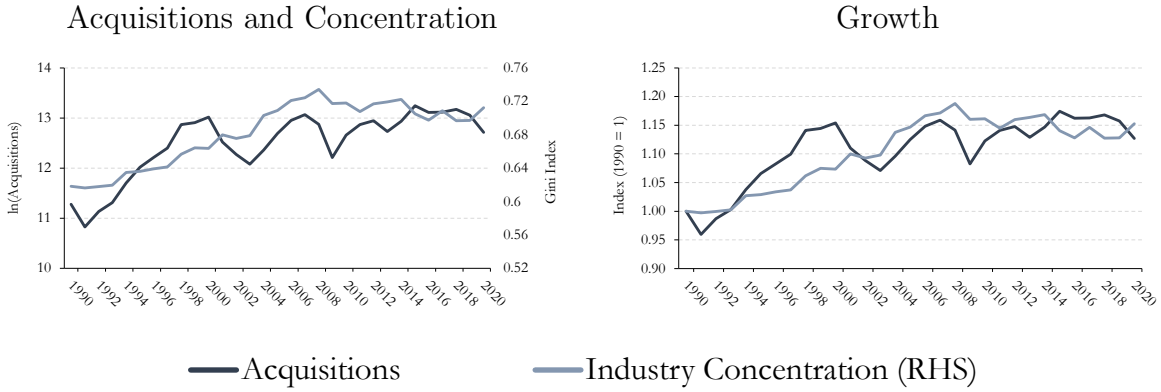
Indeed, there is a positive correlation between industry concentration and acquisitions over time. Figure 11, Panel b, plots the evolution of industry concentration, measured by the Gini index (using firm sales) and acquisitions. Debt capital markets is the aggregate amount raised by U.S. non-financial firms measured in logs. Consistent with previous literature, we find an increase in industry concentration over time in the United States (Grullon et al., 2019). In both cases, a rise in acquisitions expenditure is associated with an increase in industry concentration measures. These patterns are consistent with the hypothesis that greater access to debt financing—especially capital market debt—facilitates firm growth through acquisitions, thereby contributing to increased real and industry concentration over time.

Figure 11. Evolution of Debt, Acquisitions, and Industry Concentration

a. Debt and Acquisitions



b. Acquisitions and Industry Concentration

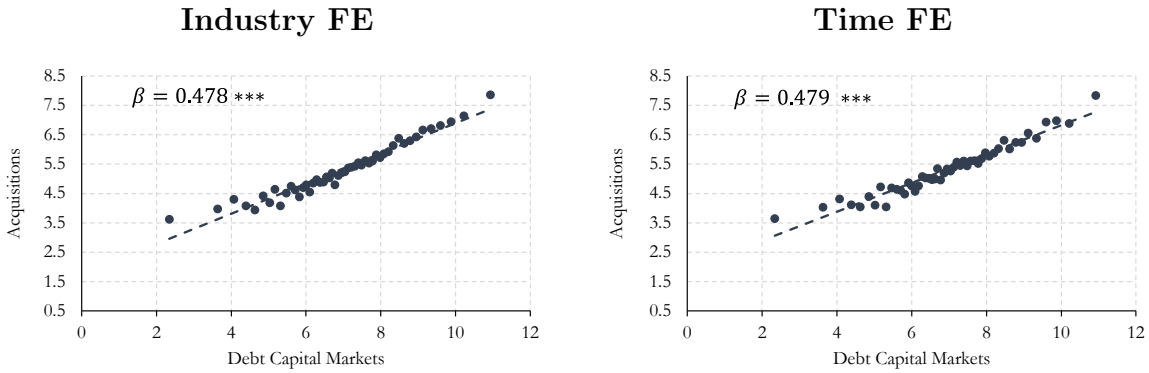


Note: This figure shows the time series correlation between debt capital markets and acquisitions (Panel A) and between acquisitions and industry concentration (Panel b) between the 1990-2020 period. Debt capital markets is measured as the log of the aggregate amount raised. Acquisitions is measures as the log of the aggregate expenditure in acquisitions. Industry concentration is measured as the gini index computed using sales (median industry). Right-hand side graph show the growth by indexing the series to have value equal to one in 1990.

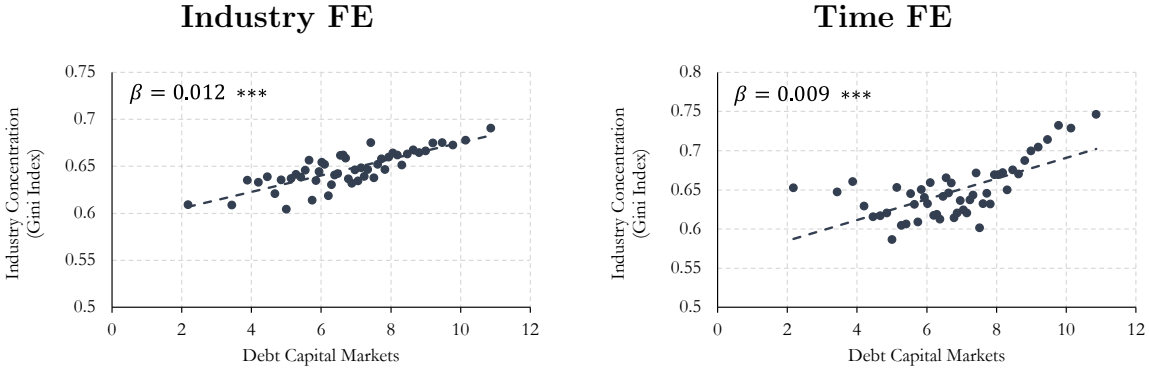
To further investigate the relationship between debt capital markets, acquisitions, and industry concentration, Figure 12 presents binned scatterplots of the correlations between these series. The left panel includes industry fixed effects, while the right panel includes time fixed effects. Panel a shows a strong and positive relationship between debt and acquisitions: industries with greater capital markets debt tend to display greater acquisitions activity. Panel b shows the relationship between debt and industry concentration. In both specifications, there is a strong and positive association: industries with greater reliance on capital markets tend to be more concentrated. Finally, panel c shows the relationship between acquisitions and industry concentration. Again, there is a positive relationship, suggesting that industries with greater acquisition activity tend to be more concentrated.

Figure 12. Debt, Acquisitions, and Industry Concentration Correlations

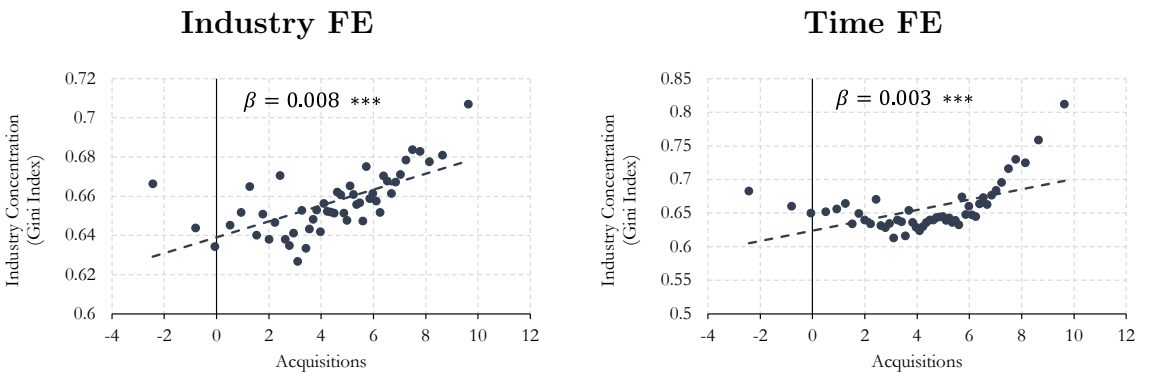
a. Debt and Acquisitions



b. Debt and Industry Concentration



c. Acquisitions and Industry Concentration



Note: This figure shows a binned scatterplot of the relationship between debt capital markets, industry concentration and acquisitions for U.S. non-financial firms between the 1990-2020 period. Panel a shows the correlation between debt capital markets and acquisitions. Panel b shows the correlation between debt capital markets and industry concentration. Panel c shows the correlation between acquisitions and industry concentration. Debt capital markets is the aggregate amount raised at the industry (4-digit SIC) and year level, in millions of 2011 U.S. dollars, expressed in logs. Acquisitions is the aggregate acquisition expenditure at the industry and year level, in millions of 2011 U.S. dollars, expressed in logs. The Gini Index is constructed every year using sales of each firm in a given 4-digit SIC industry. Regressions in panel a and b include other sources of financing as control. Standard errors are clustered at the industry level.

4 Empirical Methodology

The preliminary evidence from the stylized facts section suggests that debt capital markets may influence firms' market power by enabling acquisitions. To investigate this, I aim to empirically assess how firms' use of debt capital markets impacts their market power and contributes to industry concentration. While a straightforward analysis of these relationships could provide support for the hypothesis that the expansion of debt capital markets has contributed to the rising industry concentration and market power, these results would be based on simple correlations that may be affected by endogeneity issues.[11]

To be able to overcome this endogeneity issues and be able to establish the causal effect of firms' debt capital market use on market power, I need to employ an exogenous instrument.

4.1 Specification

To analyze the effect of debt capital markets use on firms' acquisition activity and market power, I run the following specification:

$$Y_{i,j,t} = \beta \times Debt_{i,j,t} + \gamma X_{i,j,t} + \theta_i + \theta_t + \epsilon_{i,j,t} \tag{3}$$

where the regression exploits variation across two periods of time, t = {2000-2009, 2010-2019}. $Debt_{i,j,t}$ is aggregate amount raised in debt capital markets by firm i in sector j at time t. The dependent variables are key firm-time level variables, $Y_{i,j,t}$ = {Acquisitions, Capex, $R\&D$, Market Share, Profits, Sales/Employees}. $X_{i,j,t}$ denotes firm-time level controls (firm size and other sources of financing). All variables are expressed in ln(X+1). θ_i and θ_t are firm and time fixed effects, respectively. Standard errors are clustered at the firm level.

Based on the preliminary facts, one would expect the following hypothesis to be true:

1. There is a positive relationship between debt capital markets use and acquisition activity ($\beta^{Acq} > 0$).

2. The relationship is stronger for acquisitions than for productive investments ($\beta^{Acq} > \beta^{Capex}, \beta^{R\&D}$).

3. There is a positive relationship between debt capital markets use and firms' market power ($\beta^{MktShare}, \beta^{Profits} > 0$).

As previously stated, the results from the OLS regression would be subject to endogeneity issues. To address this, I will employ an instrument for debt capital market use that influences

[11] For instance, reverse causality could bias the results if the development of debt capital markets is not a driver of market concentration but rather a consequence of it —where large firms that have gained market power, for reasons independent of debt capital markets, subsequently exhibit higher demand for this form of financing.

firms' market power solely through the availability of financing in this market.

4.2 Causal Identification

Following Chodorow-Reich (2014), I construct a measure of debt capital market supply using the amount of syndicated loans lending to other borrowers in different post-1990s periods (t = {2000-2009, 2010-2019}) using firm i´s syndicated lenders during the 1990s ($\mathcal{L}_{i,1990s}$). This instrument is plausible due to the sticky relationships between borrower-lender in the syndicated loan market.

The measure of loan supply to each firm i at period t uses a weighted average over all lenders of the last loan syndicate in the 1990s. To measure credit availability to borrower i during period t, I use lending to other firms (excluding i) during period t by firm i's 1990's syndicate lenders. Because lenders retain a larger share of loans in which they have a lead role, I weight each loan by the share retained by the lender.[12]

$$\widetilde{L}_{i,t} = \sum_{l \in \mathcal{L}_{i,1990s}} \alpha_{i,l,1990s} L_{-i,l,t} \tag{4}$$

where $\alpha_{i,l,1990s}$ weight of lender l to i's last 1990s loan syndicate. $L_{-i,l,t}$ measures the quantity of loans made by lender l to all borrowers other than firm i. In particular,

$$L_{-i,l,t} = \frac{\sum_{b \neq i} \alpha_{b,l,t} L_{b,l,t}}{0.5 \sum_{b \neq i} \alpha_{b,l,1990s} L_{b,l,1990s}} \tag{5}$$

where $L_{b,l,t} = 1$ if lender l makes a syndicated loan to borrower b in period t. $\alpha_{b,l,t}$ islender l's share in syndicated loan to b in period t.

For this instrument to be valid, it must be relevant and satisfy the exclusion restriction. In terms of the relevance of the instrument, it needs to satisfy $cov(\widetilde{L}_{i,j,t}, Debt_{i,j,t}) \neq 0$, meaning that the measure of credit supply predicts the actual use of capital market debt by firm i. To confirm this, I will assess the lender relationship in the syndicated loan market, and the first-stage results will provide further verification.

To test for the sticky borrower-lender relationship in the syndicated loan market, I run the following specification based on Chodorow-Reich (2014):

$$Lead_{l,b} = \gamma_1 \left[PreviousLead_{l,b}\right] + \gamma_2 \left[PreviousParticipant_{l,b}\right] + \theta_l + \epsilon_{l,b} \tag{6}$$

where $Lead_{l,b} = 1$ if lender l serves as the lead lender for borrower b. $PreviousLead_{l,b} = 1$ if

[12] In most cases, SDC does not report the actual loan shares, so I instead use as weights the average share retained by lead lenders and participants in deals with the same syndicate structure. For example, in deals with one lead arranger and one participant, on average the lead arranger retains 60% of the loan and the participant the rest, so I use 0.6 and 0.4 as weights. The absence of actual shares also explains the use of the number of loans rather than the dollar value, as the fat right tail in the distribution of loan size means that the dollar value may compound measurement error stemming from the need to impute loan shares.

lender l served as the lead lender for b's previous loan, $PreviousParticipant_{l,b} = 1$ if lender l served as a participant lender for b's previous loan. θ_l are lender fixed effects. The same specification is also run for participant banks rather than lead banks, replacing the dependent variable for $Participant_{l,b}$, which equals one if lender l serves as a participant lender for borrower b.

The results, presented in Table 1, validate that the relationship between lenders and borrowers is indeed sticky. In particular, a lender that served as prior lead lender has a 11 p.p. greater likelihood of serving as new lead lender, while a lender that served as prior participant has a 59 p.p. greater likelihood of serving as new participant lender. The results are robust to the inclusion of borrower fixed effects (Appendix Table 4). Additionally, I also test the long-term stickiness of this relationship (Table 2): a lender that served as lead lender during the 1990s has a 3 p.p. greater likelihood of serving as lead lender in the post-1990s syndicates, while a lender that served as prior participant has a 16 p.p. greater likelihood of serving as a participant lender.

Table 1. Lender Sticky Relationship

	Lender chosen as lead		Lender chosen as participant	
	(1)	(2)	(3)	(4)
Previous lead	0.114***	0.080***	-0.114***	-0.080***
	(0.002)	(0.002)	(0.002)	(0.002)
Previous participant	-0.591***	-0.455***	0.591***	0.455***
	(0.006)	(0.006)	(0.006)	(0.006)
Industry x Lender FE	No	Yes	No	Yes
Lender FE	Yes	Yes	Yes	Yes
Time x Lender FE	No	Yes	No	Yes
Num Obs.	311,803	306,449	311,803	306,449
R-squared	0.487	0.605	0.487	0.605

Note: This table test the sticky relationship between borrowers and lenders in the syndicated loans market during the 1990-2020 period. The dependent variable is an indicator for whether the lender serves in the role indicated in the table header. For each loan in which the borrower has previous accessed the syndicated market, the data set contains one observation for each potential lender, where a potential lender is a lender active in the syndicated loan market in that instrument. The variables Previous lead and Previous participant equal 1 if the lender served as the lead or as a participant on the borrower's previous loan, respectively. Estimation is via OLS. Standard errors in parentheses and clustered by borrower.*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2. Long-Term Lender Sticky Relationship

	Lender chosen as lead			Lender chosen as participant		
Period:	All	2000-2009	2010-2019	All	2000-2009	2010-2019
	(1)	(1)	(3)	(4)	(5)	(6)
1990s Lead	0.030***	0.038***	-0.005	-0.030***	-0.038***	0.005
	(0.004)	(0.005)	(0.006)	(0.004)	(0.005)	(0.006)
1990s participant	-0.163***	-0.210***	-0.027*	0.163***	0.210***	0.027*
	(0.016)	(0.019)	(0.015)	(0.016)	(0.019)	(0.015)
Lender FE	No	Yes	Yes	No	Yes	Yes
Time x Lender FE	Yes	No	No	Yes	No	No
Num Obs.	53,791	22,876	30,915	53,791	22,876	30,915
R-squared	0.145	0.162	0.058	0.145	0.162	0.058

Note: This table test the sticky relationship between borrowers and lenders in the syndicated loans market during the 1990-2019 period. The dependent variable is an indicator for whether the lender serves as the role indicated in the table header during the specified time framework (2000-2009, 2010-2019, or both). For each loan in which the borrower has previous accessed the syndicated market, the data set contains one observation for each potential lender, where a potential lender is a lender active in the syndicated loan market in that instrument. The variables 1990s lead (participant) equal 1 if the lender served as the lead (participant) on the borrower's 1990-1999 syndicated loans. Estimation is via OLS. Standard errors in parentheses and clustered by borrower. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Finally, the instrument must also be exogenous. For the exclusion restriction to be satisfied, we require that $cov(\widetilde{L}_{i,j,t}, \epsilon_{i,s,t}) = 0$, meaning that the amount of syndicated loan lending to other borrowers in different periods should influence acquisition expenditure and market power only through its impact on capital markets debt use (the endogenous variable). Some concerns arise regarding exogeneity: the credit supply measure includes syndicated lending to other borrowers, who might also use these funds for acquisitions. However, this would primarily bias the coefficient downward, making the estimates a conservative lower-bound effect on firm i's acquisition activity and market power.

A key concern is that unobserved borrower characteristics may be correlated with lender fundamentals. If borrowers select lenders based on shared fundamentals (or vice versa), the the overall lending to other borrowers measure would be correlated with firm's characteristics, such as market power. To address this issue, I employ several tests. First, all regressions include firm-level controls to account for borrower characteristics that might correlate with lender's fundamentals. The controls included in all regression are a measure of firm size -computed as the average assets across the post-1990s periods- and a measure of other sources of financing (excluding capital markets debt). Second, I include firm fixed effects in all

the regressions, allowing the results to be interpreted as long-differences within firms.[13] Finally, I use the within-firm test developed by Khwaja and Mian (2008), demonstrating that the estimated effect of lender credit supply on borrowing remains fairly consistent across specifications with and without borrower fixed effects. This suggests that the borrower-lender match is effectively as-good-as random.

Finally, both aggregate lending and firms' market power might be influenced by broader economic conditions. To address this, I construct a refined version of the instrument that excludes lending to other borrowers within the same industry as firm i. The results are robust to using this refined version of the instrument. Additionally, I perform a robustness check by restricting the analysis to the 2008 Global Financial Crisis (GFC) period. During this time, the broader economic conditions influencing overall lending in the U.S. economy were largely unrelated to firms' underlying fundamentals. The findings remain consistent under this exercise. As a final robustness check, I also test whether the instrument is inadvertently capturing equity-financed acquisitions by re-estimating the two-staged least sqaure regressions using equity instead of capital markets debt. In this case, the instrument is weak and statistically insignificant, and the predicted equity financing has no significant effect on acquisitions. This suggests that the results are not driven by firms' general acquisition behavior or access to other forms of external finance.

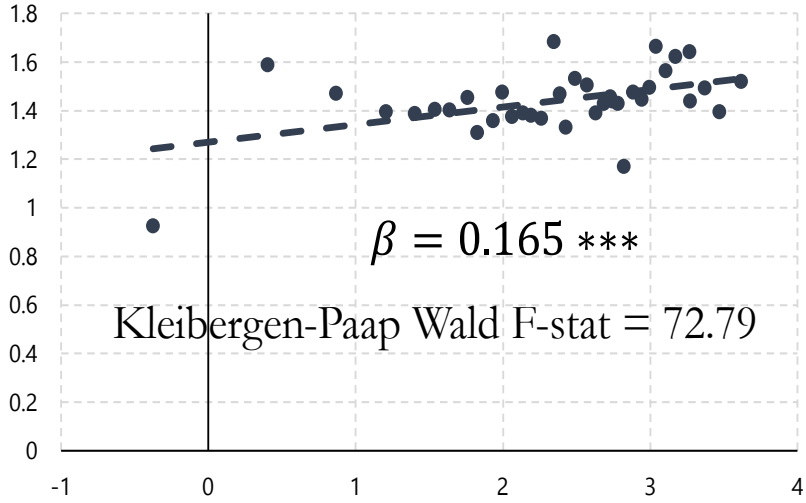
4.3 Results

The results displayed in Figure 13 correspond to the first-stage of the instrument described in the previous section, including firm fixed effects (FE) and firm-time controls (firm size, and other sources of financing different than capital markets debt). We can see that the measure of credit availability predicts firms' use of debt capital markets in the post-1990s, as the credit supply measure has a large and statistically significant effect on the amount raised in debt capital markets. The first stage Kleibergen-Paap Wald F-statistic equals 73.94, way above the Stock and Yogo (2005) criterion for 5% maximal bias, and the J-statistic cannot reject exogeneity of the instrument set.

The results from specification 3 for acquisitions and productive investments are summarized in Figure 14. The results from the OLS regressions (Figure 14, Panel a) show that there is a positive relationship between debt capital markets use and firms acquisition expenditure: in

[13]Firm fixed effects also address the exogeneity concern that arises when the exposure shares of a shift-share instrument do not sum to one, as is the case for the measure of credit supply used here. Borusyak et al. (2022) and Borusyak et al. (2025) recommend including the sum of the shares ("incomplete share" control) to correct for potential bias. In this setting, however, firm fixed effects absorb all firm-specific, time-invariant variation, including the sum of the historical exposure shares, thereby addressing the same concern.

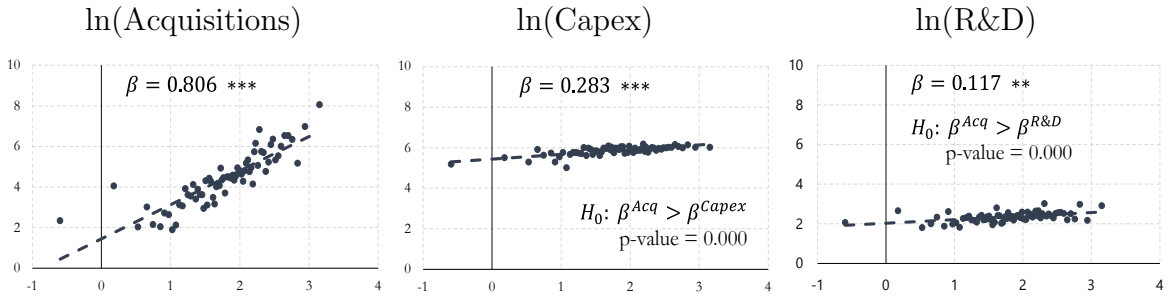
Figure 13. 2SLS Regression (First Stage)



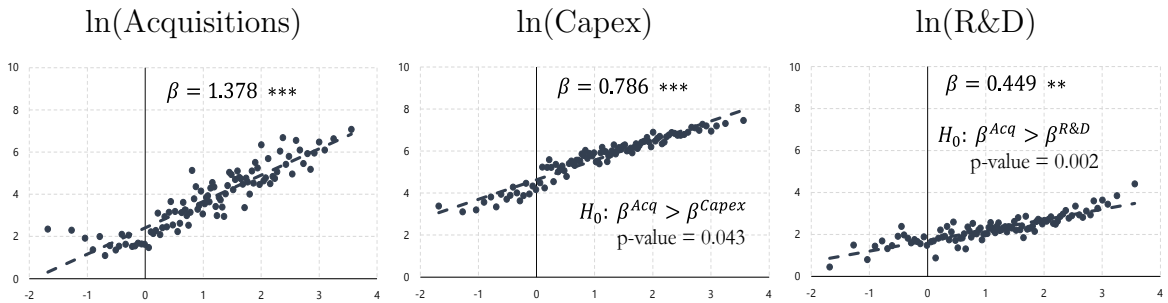
Note: This figure shows the results from the first-stage of the two-stages least square regressions from Equation 3. Regression includes firm fixed effects. All variables are normalized to have unit variance. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Figure 14. Effect of Debt Capital Markets on Acquisitions and Investment

a. OLS Regression



b. 2SLS Regression (Second Stage)



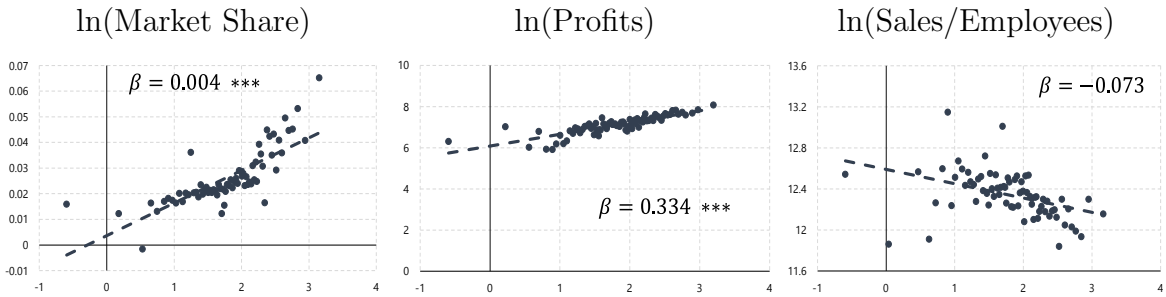
Note: This figure shows the results from the OLS (Panel a) and two-stages least square (Panel b) regressions on the effect of debt capital markets on acquisitions and productive investments specified in Equation 3. All right-hand side variables are normalized to have unit variance. Regressions include firm FE. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

particular, a one standard deviation increase in the amount raised in debt capital markets is associated with a 81% increase in acquisitions expenditure. As predicted, acquisitions

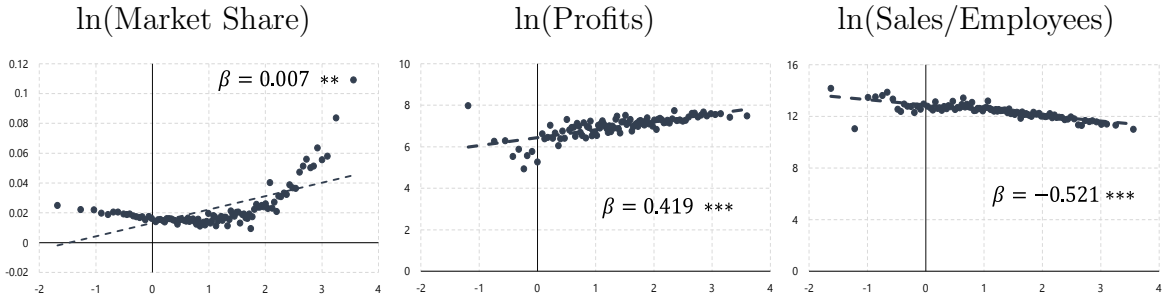
expenditure increases significantly more than both capex and R&D. The second-stage results from the two-stage least squares regressions (Figure 14, Panel b) confirms the OLS results. A one standard deviation increase in the predicted use of debt capital market by the exogenous credit supply measure leads to an increase by 137% in acquisition expenditure. Again, the increase is significantly larger for acquisitions than for productive investments.[14]

Figure 15. Effect of Debt Capital Markets on Market Power

a. OLS Regressions



b. 2SLS Regressions (Second Stage)



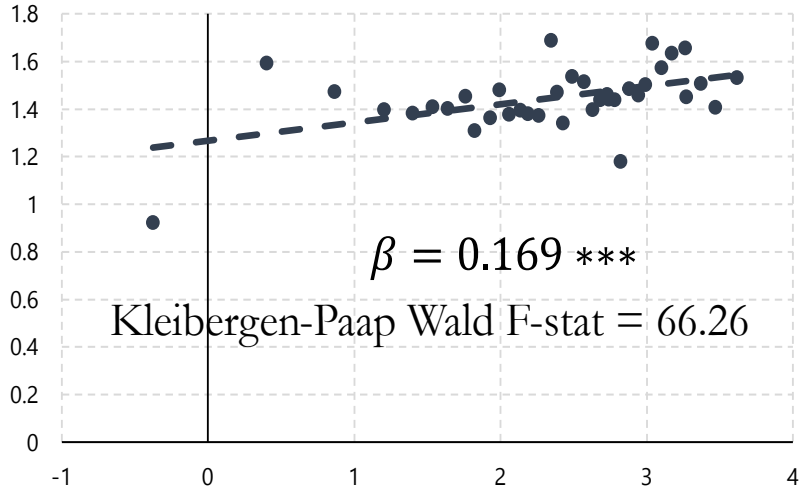
Note: This figure shows the results from the OLS (Panel a) and two-stages least square (Panel b) regressions on the effect of debt capital markets on market power and productivity proxies specified in Equation 3. Market share is measured as the ratio of a firm's sales to the total sales within its four-digit SIC industry. All right-hand side variables are normalized to have unit variance. Regressions include firm FE. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Figure 15 shows the results for the market power and the proxy for productivity. As shown in Panel a, there is a positive relationship between debt capital markets use and market power, proxied by both market share and profits. Specifically, a one standard deviation increase in the amount raised in debt capital markets is associated with a 0.4% and 43% increase in the market share and profits, respectively. The results from the second stage of the two-stage least squares regressions (Figure 15, Panel b) also confirm a positive effect of debt capital markets on firms' profits and market share: one standard deviation increase in the predicted debt leads to an increase in market share and profits by 1% and 42%, respectively. In contrast, both the OLS and the second-stage results deliver a negative relationship between

[14]The results are also summarized in the Appendix Table 5.

debt capital markets and the productivity proxy.

Figure 16. 2SLS Regressions (First Stage, Firm and Time FE)



Note: This figure shows the results from the first-stage of the two-stages least square regressions from Equation 3. Regression includes and time fixed effects. All variables are normalized to have unit variance. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

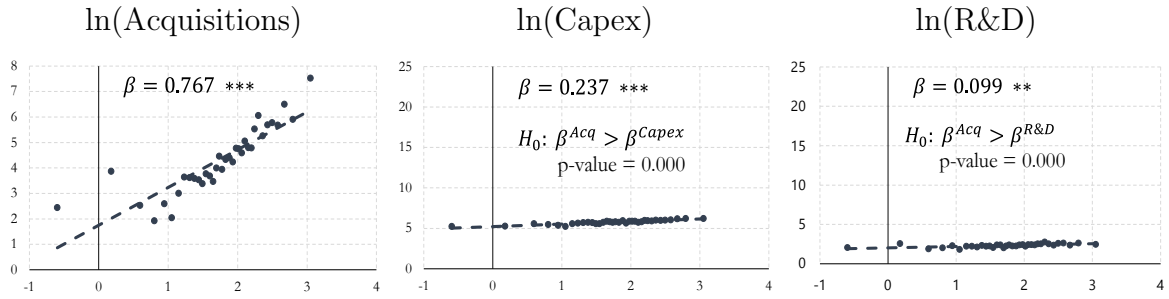
The results remain robust when weighting the regressions by firm size (Appendix Figure 6). They also hold when including time and industry fixed effects (Appendix Figure 11, and Appendix Tables 7 and 8), which control for common shocks across all firms in a given year and industry-specific patterns. In particular, time fixed effects may account for an overall upward trend in acquisition activity over time, helping isolate the effect of debt capital markets supply.

Importantly, the results are very similar when controlling for both firm and time fixed effects. Figure 16 shows the first-stage of the two stage least square specificaiton, including firm and time fixed effects (FE) and firm-time controls (firm size, and other sources of financing different than capital markets debt). The results show that the instrument is statistically significant and strong. Figuer 17 and 18 show the results from the OLS and the second-stage of the two stage least square analysis on acquisitions and market power. The results remain fairly consistent with the previous analysis: one standard deviation increase in the predicted debt leads to an increase in acquisition expenditure by 138%, and in market share and profits by 1% and 42%, respectively. This specification addresses potential concerns related to unobserved heterogeneity at the firm level—such as firm-specific strategies or persistent differences in investment behavior—while also accounting for common shocks across years. [15]

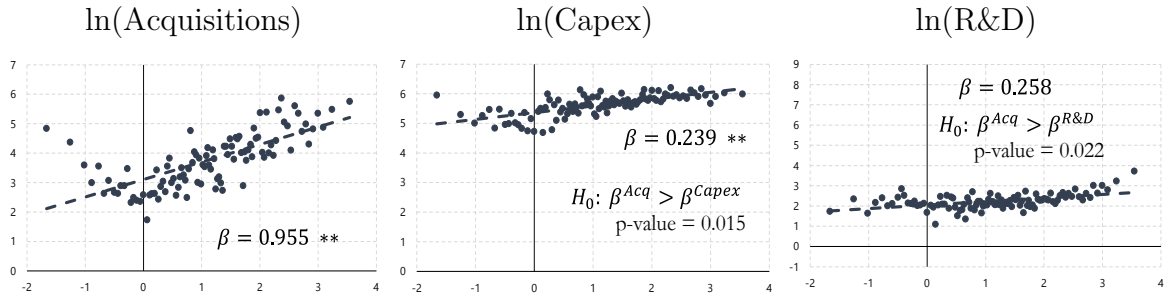
[15](See also Appendix Tables 9 and 10).

Figure 17. Effect on Acquisitions and Investment (Firm and Time FE)

a. OLS Regressions



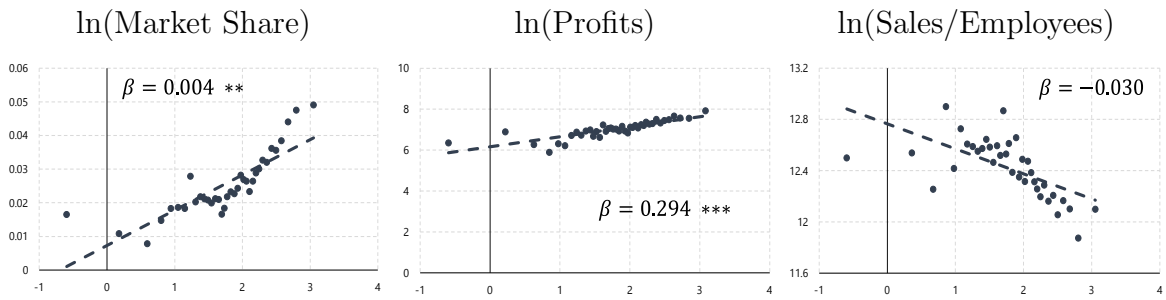
b. 2SLS Regressions (Second Stage)



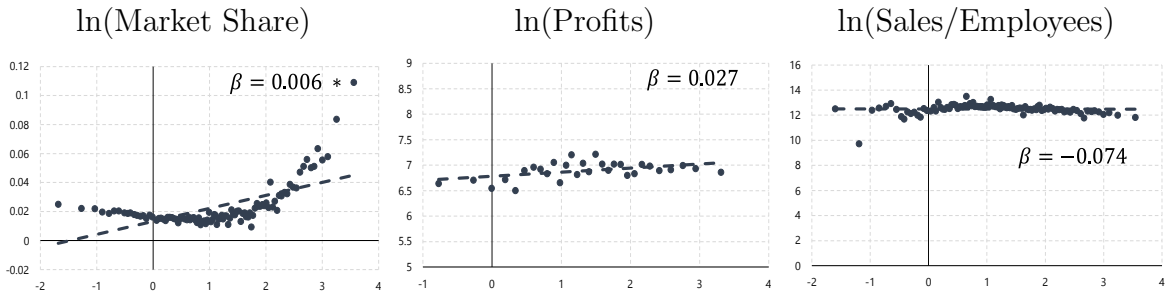
Note: This figure shows the results from the OLS (Panel a) and two-stages least square (Panel b) regressions on the effect of debt capital markets on acquisitions and productive investments specified in Equation 3. All right-hand side variables are normalized to have unit variance. Regressions include firm and time FE. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Figure 18. Effect on Market Power (Firm and Time FE)

a. OLS Regression



b. 2SLS Regression (Second Stage)



Note: This figure shows the results from the OLS (Panel a) and two-stages least square (Panel b) regressions on the effect of debt capital markets on market power and productivity proxies specified in Equation 3. Market share is measured as the ratio of a firm's sales to the total sales within its four-digit SIC industry. All right-hand side variables are normalized to have unit variance. Regressions include firm and time FE. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

4.4 Robustness:

Unobserved Borrower Characteristics:

A key concern regarding the exogeneity of the credit supply measure is the potential non-random matching between borrowers and lenders. If unobserved borrower characteristics correlate with lenders' fundamentals, overall lending to other firms by those lenders could inadvertently reflect key firm characteristics, such as market power.

Following Khwaja and Mian (2008) and Chodorow-Reich (2014), I regress the change in lending in a borrower-lender pair on the loan supply measure and a full set of borrower fixed effects. The fixed effects then absorb any borrower characteristics that might influence loan outcomes.

$$ln(1 + \alpha_{i,l,t}V_{i,t}) - ln(1 + \alpha_{i,l,1990s}V_{i,1990s}) = \delta L_{-i,l} + \theta_i + \epsilon_{i,l}$$

where $\alpha_{i,l,t}$ denotes lender l's imputed share of the loan to borrower i in period t. $V_{i,t}$ denotes the dollar value of the loan. $L_{-i,l}$ denotes the change in lending by bank b to all other borrowers.

Table 3 presents the results. The positive coefficient indicates that a firm that had

both healthy (large supply of credit) and unhealthy lenders in its base period (1990s) borrows more during post-1990 periods from the healthier member.

Table 3. Testing for Unobserved Characteristics of Borrowers

Dependent Variable:	ΔLog(lending in borrower-lender pair)			
	(1)	(2)	(3)	(4)
$L_{-i,l,t}$ (%Δ loans to other borrowers)	0.607***	0.663***	0.607***	0.660***
	(0.15)	(0.17)	(0.15)	(0.16)
Borrower FE	Yes	No	Yes	No
Time FE	No	No	Yes	Yes
Num Obs.	3,858	3,858	3,858	3,858
R-squared	0.394	0.167	0.394	0.170

Note: This table test for unobserved characteristics of borrowers affecting the credit supply measure. The dependent variable is the log change in the dollar amount of lending from that lender to the borrower. The independent variable $L_{-i,l}$ measures the quantity of loans made by lender l to all borrowers other than firm i relative to the 1990s period, and it has been normalized to have unit variance. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

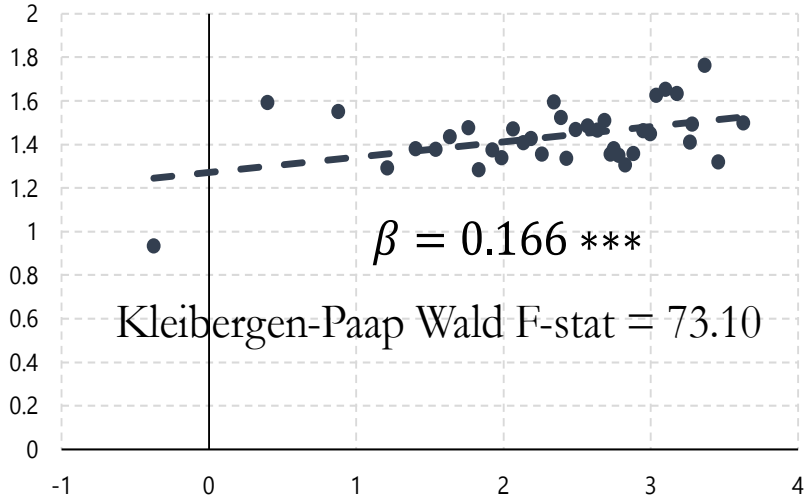
Under certain assumptions, the difference in the point estimates between regressions including and excluding the fixed effects captures the amount of bias induced by not-as-good-as-random matching of borrowers and lenders. To facilitate this comparison, columns (2) and (4) of Table 3 reports the corresponding specification without the borrower fixed effects. Intuitively, the difference between the right-hand-side variables in the specifications reported in columns (1) and (2) captures exactly the unobserved characteristics of the borrowers. If the unobserved characteristics were correlated with the lending measure, then the point estimate would change to reflect the omitted variables. Instead, the point estimate is essentially identical across columns. This provides direct validation of as-good-as-random matching within the set of firms that obtained loans during the post-1990s periods.

General Economic Conditions

The results remain robust when using a more refined version of the instrument that excludes lending to borrowers within the same industry in order to avoid endogeneity from general economic conditions affecting specific industries. In particular, the first-

stage results, including firm fixed effects (FE) and firm-time controls (firm size, and other sources of financing different than capital markets debt), remains large and statistically significant (Figure 19).

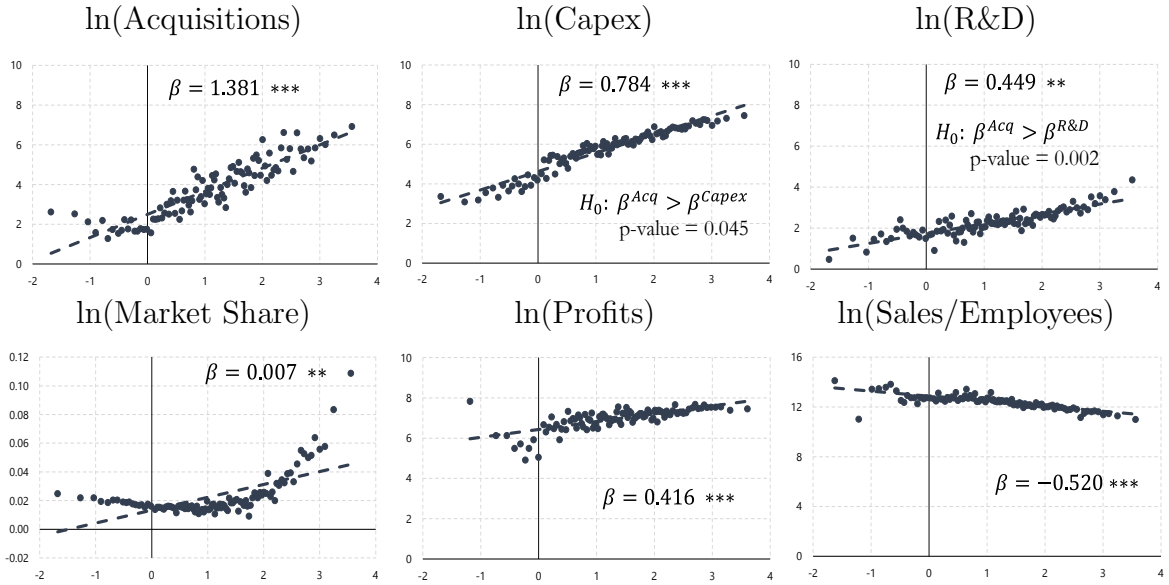
Figure 19. 2SLS Regression with Refined Instrument (First Stage)



Note: This figure shows the results from the first-stage of the two-stages least square regressions from Equation 3. The loan supply measure for firm i excludes loans to other firms belonging to its same industry (2 digit SIC). Regressions include firm fixed effects. All variables are normalized to have unit variance. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The effects of the predicted debt on acquisitions and market power remain strong and statistically significant with the refined instrument. In particular, a one standard deviation increase in the predicted debt leads to a 136% increase in acquisition expenditure, and an increase in market share and profits by 2% and 41%, respectively (Figure 20). The results remain consistent when including time and firm fixed effects (Appendix Figures 12 and 13, 11), and time and industry fixed effects (Appendix Table 12).

Figure 20. 2SLS Regression with Refined Instrument (Second Stage)



Note: This figure shows the results from the two-stages least square regressions on the effect of debt capital markets on acquisitions and productive investments specified in Equation 3. The loan supply measure for firm i excludes loans to other firms belonging to its same industry (2 digit SIC). All right-hand side variables are normalized to have unit variance. Regressions include firm fixed effects. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The results are also robust when the analysis is restricted to the 2008-Global Financial Crisis (GFC) period (Table 4). This robustness check leverages the notion that the broader economic conditions influencing lending in the U.S. economy during the GFC were largely unrelated to firms' underlying fundamentals. The instrument is constructed during the crisis period (2007-2009) considering firm i's lenders during normal times (2004-2006).

Table 4. Effect of Debt Capital Markets during the GFC

(a) OLS Regression

	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)
Debt	0.361***	0.142**	-0.016	0.014**	0.121***	0.007
	(0.051)	(0.047)	(0.105)	(0.004)	(0.019)	(0.052)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	1,164	1,164	1,164	1,164	1,078	1,144
R-squared	0.129	0.762	0.065	0.055	0.817	0.075

(b) 2SLS Regression

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.733***						
	(0.028)						
Debt		0.416***	0.140***	-0.022	0.021***	0.168***	-0.048
		(0.071)	(0.049)	(0.095)	(0.005)	(0.017)	(0.043)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	1,164	1,164	1,164	1,164	1,164	1,078	1,144
R-squared	0.658	0.128	0.762	0.065	0.051	0.817	0.072
Kleib.-Paap Wald F-stat	584.9						

Note: This figure shows the results from the OLS and second-stage and the first-stage of the two-stages least square regressions on the effect of debt capital markets on acquisitions and productive investments during the 2008-global financial crisis (2007-2009). The instrument is constructed during the crisis period (2007-2009) considering firm i's lenders during normal times (2004-2006). All right-hand side variables are normalized to have unit variance. Standard errors are clustered at the industry level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Equity-financed Acquisitions and Other Financing

To address the concern that the instrument may be capturing broader acquisition activity, including those financed by equity rather than capital markets debt, I re-estimate the two-stage regressions using equity financing.

As shown in Table 6, the instrument does not significantly predict equity financing:

the coefficient on the loan supply measure is small and statistically insignificant (Column (2)), and the first-stage F-statistic indicates a weak instrument. In contrast, the instrument remains statistically significant and strong when predicting capital markets debt usage (Column (1)).

In the second stage, the predicted equity financing also does not have a statistically significant effect on acquisition activity (Column (4)). This suggests that the original results are not simply driven by firms' general tendency to acquire, regardless of the financing source.

Table 5. 2SLS Estimates: Capital Markets Debt vs. Equity Financing

	1st Stage		2nd Stage: Acquisitions	
	Debt	Equity	Debt	Equity
	(1)	(2)	(3)	(4)
Loan Supply	0.169***	0.016		
	(0.021)	(0.032)		
Debt			0.956**	
			(0.401)	
Equity				5.152
				(11.368)
Firm-level Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No
Time FE	Yes	Yes	Yes	Yes
Num Obs.	1,934	2,374	1,934	2,374
R-squared	0.907	0.691	0.190	-6.149
Kleibergen-Paap Wald F-stat	65.07	0.235		

Note: This figure shows the results from the two-stages least square regressions on debt capital markets and equity. All right-hand side variables are normalized to have unit variance. Regressions include firm and time fixed effects. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6. 2SLS Estimates: Capital Markets Debt vs. Other Financing

	1st Stage					2nd Stage - Acquisitions				
	Debt			Other Financing		Debt			Other Financing	
	All	Synd. Loans	Bonds	All	Equity	All	Synd. Loans	Bonds	All	Equity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Loan Supply	0.169***	0.221***	0.099***	0.004	0.016					
	(0.021)	(0.025)	(0.030)	(0.013)	(0.032)					
Debt						0.956**				
						(0.401)				
Syndicated Loans							0.735**			
							(0.308)			
Bonds								1.649**		
								(0.801)		
Other Finacning									10.458	
									(34.769)	
Equity										5.152
										(11.368)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	1,934	1,908	1,908	1,908	2,374	1,934	1,908	1,908	1,908	2,374
R-squared	0.907	0.888	0.888	0.926	0.691	0.190	0.195	0.143	-2.153	-6.149
Kleibergen-Paap Wald F-stat	65.07	77.50	10.89	0.104	0.235					

Note: This figure shows the results from the two-stages least square regressions on debt capital markets and equity. All right-hand side variables are normalized to have unit variance. Regressions include firm and time fixed effects. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

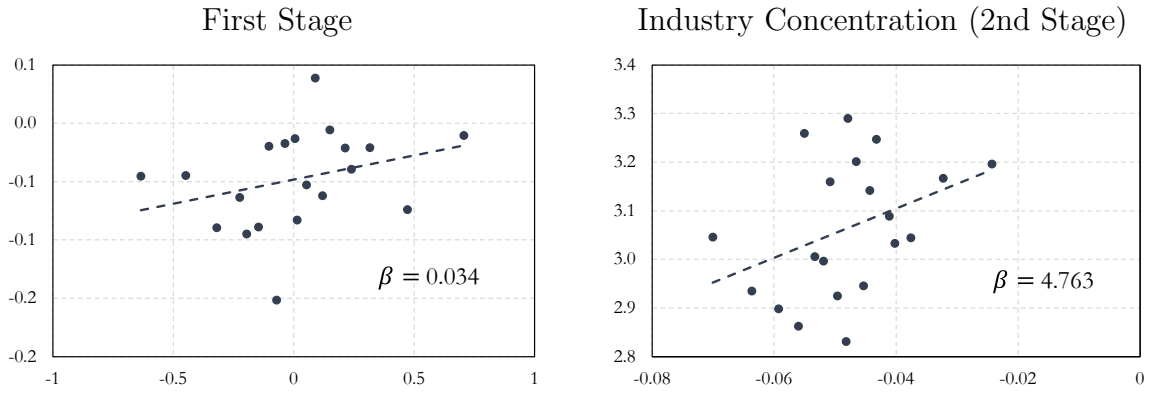
Together, these findings reinforce the interpretation that the instrument captures variation in capital markets debt supply, rather than broader acquisition dynamics or stock-financed deals, supporting the validity of the causal interpretation.

4.5 Industry-level Causal Evidence

To complement the firm-level analysis, I examine whether credit supply shocks also translate into changes in industry concentration.

I re-estimate the debt supply measure from Equation (4), this time aggregating it to the industry level (s) instead of the firm level (i). The exposure shares $\alpha_{s,l,t}$ correspond to the weight of lender l in the last syndicated loan to industry s during the 1990s, while $L_{-s,l,t}$ measures the amount of syndicated loans made by lender l to all other industries in period t.

Figure 21. Industry-level 2SLS Regression



Note: This figure shows the results from the first- and second-stage of the two-stages least square regressions at the industry level. Regressions include industry fixed effects. All right-hand side variables are normalized to have unit variance. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Figure 21 presents the results of the industry-level two-stage-least-square estimation. The left-hand panel displays the first-stage relationship, confirming that the industry-level credit supply instrument is positively associated with capital markets debt activity. While the coefficient is not statistically significant—likely due to the limited number of observations—the magnitude and direction are consistent with the firm-level results. The right-hand panel shows the second-stage relationship between instrumented debt activity and industry concentration, measured by the Herfindahl-Hirschman Index (HHI). The positive coefficient suggests that industries with greater predicted debt also tend to become more concentrated.

Overall, these results reinforce the firm-level evidence by providing complementary support at the industry level. They indicate that capital markets not only affect firm behavior—particularly through acquisitions—but may also shape broader market structure by contributing to rising industry concentration

5 Theoretical Framework

In this section, I develop an oligopolistic competition model, based on Atkeson and Burstein (2008), with firms' investment and acquisitions choice to rationalize the empirical findings. The model incorporates an earning-based financial constraint to capture firms' access to debt capital markets.

The model should be able to replicate several of the stylized facts presented in the empirical section, demonstrating how a relaxation of financial constraints drives acquisitions activity among the largest, not-constrained, firms in the economy, thereby reinforcing their market power. Additionally, the model will show that capital is also reallocated towards more productive firms through acquisitions, underscoring a trade-off between efficiency gains and increased market power.

5.1 Set up

In market j, there are N_j firms producing distinct goods. The production function of firm i is given by $z_{ij}k_{ijt}$, where firms' productivity, z_{ij}, and firm size, k_{ijt}, can differs across firms. Each firm i in market j draws its idiosyncratic productivity z_{ij} and initial size k_{ij0} from a log-normal distribution.

Capital Accumulation: firms face investment opportunities to increase their capital stock, which is subject to the following law of motion $k_t = (1-\delta)k_{t-1} + I_t$. There are two types of investment opportunities: internal investment and external investment (acquisitions).

$$I_{ijt} = \begin{cases} k_{ijt}^{II} & \text{if internal investment} \\ k_{ijt}^{Acq} & \text{if acquisition} \\ 0 & \text{otherwise} \end{cases} \tag{7}$$

where k_{ijt}^{II} represents "internal investment" (buying new capital), and k_{jt}^{Acq} represents the capital acquired through an acquisition (external investment).

Debt Capital Markets: firms have access to debt capital markets and face an earning-base financial constraint that limits their borrowing (Lian and Ma, 2020; Drechsel, 2023):

$$r_t b_{ijt} \leq \phi \Pi_{ijt} \tag{8}$$

where firm i's interest expenses, $r_t b_{ijt}$, are limited by a fraction ϕ of its operating

earnings, Π_{ijt}.[16] Firms need to finance their investment through borrowing-Firm i borrows its internal investment or the price payed to acquire the target firm T:

$$b_{ijt} = P^{I}_{ijt} = \begin{cases} P^{II}_{ijt} & \text{if internal investment} \\ P^{Acq}_{ijt} & \text{if acquisition} \\ 0 & \text{otherwise} \end{cases} \tag{9}$$

Internal investments: At the beginning of each period, all firms face the opportunity to invest in new capital, choosing an investment size $\Delta k_{ijt} = \kappa_{ijt}$. The firm-specific choice κ_{ijt} is selected from a set of discrete sized investment opportunities available to all firms in industry j at time t: $\kappa_{ijt} \in \mathcal{K}_{jt}$. The investment must be financially viable: $r_t b_{ijt} = r_t P^{II}_{ijt} \leq \phi \Pi^{II}_{ijt}$. Firms decide which investment size and whether to pursue it by comparing the net present values of the profits with and without each investment opportunity, among the financially viable options.

$$V^{II}_{Ajt} \geq V_{ijt} \tag{10}$$

where V_{ijt} is firm i's value or the net present value of profits, defined as $V_{ijt} = \mathbb{E}_t \sum_{\tau=0}^{\infty} \beta^{\tau} \pi_{ij,t+\tau}$.

Acquisitions: The largest firm can acquire other firms within their industry in order to obtain their stock of capital and reduce competition directly. This assumption is motivated by empirical patterns: a substantial share of firms never engage in acquisitions over the 1990–2020 period, whereas most firms undertake internal investment at some point (Appendix Figure 14). Firms with access to debt capital markets are significantly more likely to undertake acquisitions and spend more when doing so (Appendix Table 13). Among these, the largest firms are particularly acquisition-intensive, exhibiting both higher probabilities of engaging in deals and larger average expenditures (Appendix Table 14). These patterns justify modeling acquisitions as a strategic option available only to dominant firms, while internal investment remains accessible to all firms.

At the beginning of period t, the largest firm A (acquirer) in market j faces the opportunity to acquire another firm T (target) in the same market j. Firm A and T can decide to proceed with the acquisition if it is profitable for them:

$$\begin{aligned} &Acquirer\, A: \; V^{Acq}_{Ajt} \geq max\{V_{Ajt}, V^{II}_{Ajt}\}; \\ &Target\, T: \quad P^{Acq}_{Ajt} \geq V_{Tjt} \end{aligned} \tag{11}$$

[16] There is recent empirical evidence showing that the relevant financial constraint in debt capital markets is an earning-based constraint (Lian and Ma, 2020).

where P_{Ajt}^{Acq} is the acquisition price payed by acquirer firm A to the target firm T. For the acquisition to proceed, on top of being profitable, it also needs to be financially viable: $r_t b_{ijt} = r_t P_{ijt}^{Acq} \leq \phi \Pi_{ijt}^{Acq}$. If the acquisitions proceeds, the target firm is replaced by a new entrant with initial capital size ν_t. Acquirer A gets target firm T's capital, $\Delta k_{Ajt} = k_{Tjt}$, and pays the acquisition price to the target firm T, $AcqP_{Ajt}^{AT} = \zeta V_{Tjt}$, where $\zeta \geq 1$ represents the merger premium (specified through bargaining). Finally, the resulting technology after the acquisition is $z_{ij}^{Acq} = \gamma z_{Aj}^{\nu} z_{Tj}^{1-\nu}$ (David, 2020).

The size of the new entrant that replaces the target firm, ν_t, is a key determinant of the evolution of the firm size distribution. Hence, it directly influences the effect of acquisitions on competition and market structure by shaping the relative strength of new competitors. To ensure that the model's predictions are consistent with empirical patterns, I calibrate ν to match the observed size distribution of entrants in the data.

Adjustment costs: There is a large literature showing that firms invest infrequently, often in large discrete jumps, rather than making smooth capital adjustments every period (Thomas, 2002; Winberry, 2021). As a consequence, I model investment as a discrete choice or opportunity rather than a continuous optimal decision, by assuming an extreme version of non-convex adjustment costs (Khan and Thomas, 2008):

$$\psi(I_{ijt}) = \begin{cases} 0 & \text{if } \Delta k_{ijt} = \kappa_{ijt} \in \mathcal{K}_{jt} \\ \infty & \text{otherwise} \end{cases} \tag{12}$$

The firm-specific investment choice, κ_{ijt}, is selected from a set of discrete sized investment opportunities available to all firms in industry j at time t, $\mathcal{K}_{jt}$. The discrete size of the investment opportunities available to firms governs the evolution of the firm size distribution by determining the extent to which firms can grow internally, thereby substantially influencing the effects of acquisitions on competition and market structure. I calibrate $\mathcal{K}_{jt}$ to match observed patterns in firm-level investment behavior, ensuring that the model's predictions align with the firm dynamics observed in the data.

Economy Aggregation: A market's output at time t is produced by N_{jt} firms i:

$$Y_{jt} = \left[\sum_{i=1}^{N_{jt}} y_{ijt}^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}} \tag{13}$$

where σ is the elasticity of substitution among varieties within a market. Moreover, as is standard, the market theoretical price index P_j is given by:

$$P_{jt} = \left[\sum_{i=1}^{N_{jt}} p_{ijt}^{1-\sigma} \right]^{\frac{1}{1-\sigma}} \tag{14}$$

The final output is produced by a competitive firm using the output of a continuum of sectors y_{ijt} for $j \in [0,1]$ as inputs subject to a CES production function:

$$Y = \left[\int_0^1 y_j^{\frac{\eta-1}{\eta}} \, dj \right]^{\frac{\eta}{\eta-1}} \tag{15}$$

As is standard, the theoretical price index P for final output is given by:

$$P = \left[\int_0^1 P_j^{\frac{\eta-1}{\eta}} \, dj \right]^{\frac{\eta}{\eta-1}} \tag{16}$$

A key assumption is that goods are more substitutable within markets than across markets ($\sigma > \eta$).

Households' Demand: The economy is populated by representative households. Those identical households consume goods and supply labor. Households can save in a risk-free asset. Households seek to maximize their life-time utility. The households preferences are given by $\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t u(c_t)$, where β is the discount factor, c_t is final consumption of the representative household at time t, and l_t is working hours of the representative household at time t. Firms maximize their utility subject to a budget constraint $c_t + a_{t+1} = d_t + R_t a_t$, where a_t is a risk-free asset in which individuals can borrow, R_t is the rate of return on savings, and d_t are dividends. We normalize the final consumption price P_t to one. From the households minimization of total expenditure given their optimal consumption level, we obtain the inverse demand function for firm i:

$$y_{ijt} = \left(\frac{P_{ijt}}{P_{jt}} \right)^{-\sigma} y_{jt} \tag{17}$$

and the market demand function:

$$y_{jt} = P_{jt}^{-\eta} Y_t \tag{18}$$

5.2 Firms' Optimization: firm's oligopolistic markup

The marginal cost of production for a firm i with productivity z_{ij} and size k_{ijt} is $(R_t b_{ijt} + F) / z_i k_{ijt}$. Firms solve the following profit maximization problem:

$$\max_{p_{ijt}} \Pi_{ijt} = \max_{p_{ijt}} y_{ijt} \times p_{ijt} - MC_{ijt} \times y_{ijt} \tag{19}$$

subject to the good and market inverse demand function derived in Equations (17) and (18).

By solving the first-order condition with respect to prices of this profit maximization problem I obtain the standard oligopoly markup pricing equation:

$$p_{ijt} = MC_{ijt} \underbrace{\left(\frac{\epsilon_{ijt}(s_{ijt})}{\epsilon_{ijt}(s_{ijt}) - 1} \right)}_{Markup_{ijt}} \tag{20}$$

where ϵ_{ijt} is the inverse price-elasticity of demand.

$$\epsilon_{ijt} = \sigma(1 - s_{ijt}) + \eta s_{ijt} \tag{21}$$

and $s_{ijt} = y_{ijt}P_{ijt}/y_{jt}P_{jt}$ is the market share of firm i in its market. From Equations (14), (17) and (18) these market shares can be written in terms of prices:

$$s_{ijt} = \left(\frac{P_{ijt}}{P_{jt}} \right)^{1-\sigma} \tag{22}$$

Therefore, Equation (20) defines N_j non-linear equations in the N_j equilibrium prices p_{ijt}.

5.3 Partial Equilibrium

In the model, I solve for a partial equilibrium in each period, where firms set prices optimally given their realized initial size, k_{ijt}, and productivity, z_{ijt}, the industry state, and the interest rate. This is a static problem solved at each date by finding a fixed point of the firms' optimal pricing condition, as given by Equation (20). I use a function iteration method to compute the fixed point across firms within each industry.

For each period, I compute multiple candidate equilibria corresponding to different investment scenarios: no investments, internal investments only, and a combination of internal investment and acquisition. Within each scenario, I also allow for heterogeneity in firms' investment choices by iteratively adjusting which firms undertake the investment.[17] The model then selects the equilibrium associated with the optimal investment choice - based on the highest firm value - among those that are financially feasible.

Equilibria are computed using the oblivious equilibrium assumption (Weintraub

[17]For each scenario, I begin by computing the equilibrium assuming that all firms adopt the investment. If the value for any firm is lower than in the no-investment baseline, I re-compute the equilibrium allowing that firm to opt out. This process is repeated to identify stable firm-level investment patterns that maximize value subject to financial feasibility.

et al., 2008; Benkard et al., 2008) that firms optimize based on their own state and the current industry environment, without forming expectations about future states. This static and myopic formulation reflects the assumption that firms take the environment as given when making pricing and investment decisions.

5.4 Calibration

In this subsection, I describe the calibration of the main parameters of the model. Table 7 reports the parameter values that are set to the standard values in the literature.

Table 7. Standard Parameters Calibration

	Parameters	Values	Sources
β	Discount factor	0.96	Gourinchas and Parker (2002)
σ	Within-industry elasticity of substitution	10.5	Edmond et al. (2015)
η	Across-industry elasticity of substitution	1.24	Edmond et al. (2015)
ϕ	Earning-based borrowing constraint	0.4	Lian and Ma (2020)

Note: This table reports the calibration values of standard parameters.

Internal investment, and new entrants size:

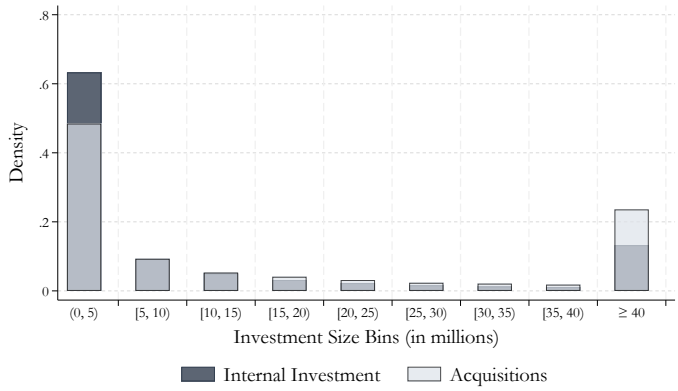
The set of investment opportunities sizes $\mathcal{K}_{jt}$ and the parameter ν_t, govern the firm size distribution resulting from both internal and external investments, and are calibrated using firm-level data.

First, $\mathcal{K}_{jt}$ represents the discrete size of the internal investment opportunities available to all firms within an industry in each period. It is calibrated to ensure that the model produces realistic internal investment values relative to acquisition sizes. As shown in Figure 22, the distribution of internal investment expenditures closely mirrors that of acquisition expenditures in the data. To reflect this empirical similarity, I construct the set of internal investment opportunity sizes $\mathcal{K}_{jt}$ to include all capital levels observed among incumbent firms in industry j at time t that are less than or equal to the capital stock of the acquisition target:

$$\mathcal{K}_{jt} = \{k \in \mathbb{K}_{jt} : k \leq k_{Tjt}\} \tag{23}$$

where $\mathbb{K}_{jt}$ is the set of all existing capital levels in market j at time t, $\mathbb{K}_{jt} = \{k_{1jt}, k_{2jt}, \ldots, k_{N_jjt}\}$; and k_{Tjt} denotes the capital stock of the acquisition target T, in sector j, at time t.

Figure 22. Positive Investments Distribution



Note: This figure shows the size distribution of positive expenditure on internal investments and acquisitions during the 1990-2000 period by U.S. non-financial corporations. Internal investment is constructed as the sum of capex and R&D expenditure. This histogram is constructed by taking the average expenditure by firm during the 1990-2000 period.

Second, the parameter ν_t determines the size of the new entrant firms. It is calibrated based on the observe size of new entrants relative to incumbent firms in the data. I finds that new entrants are on average around 47.9% smaller than the average incumbent firm. This estimate is consistent with the literature, which founds that new entrants are considerably smaller than incumbent firms (Luttmer, 2007; Morris, 2009). Accordingly, I set:

$$\nu_t = (1 - 0.48)\frac{1}{N_j}\sum_{i=1}^{N_j} k_{ijt} \tag{24}$$

where k_{ijt} denotes the capital stock of firm i in sector j at time t, and N_j is the number of firms in sector j.

Number of firms:

In the model, I assume that each sector j contains an exogenously given number N of domestic firms. I set $N = 10$, consistent with the average number of firms per four-digit SIC industry observed in the data.

5.5 Model Predictions

In this subsection, I describe the predictions that the theoretical model delivers.

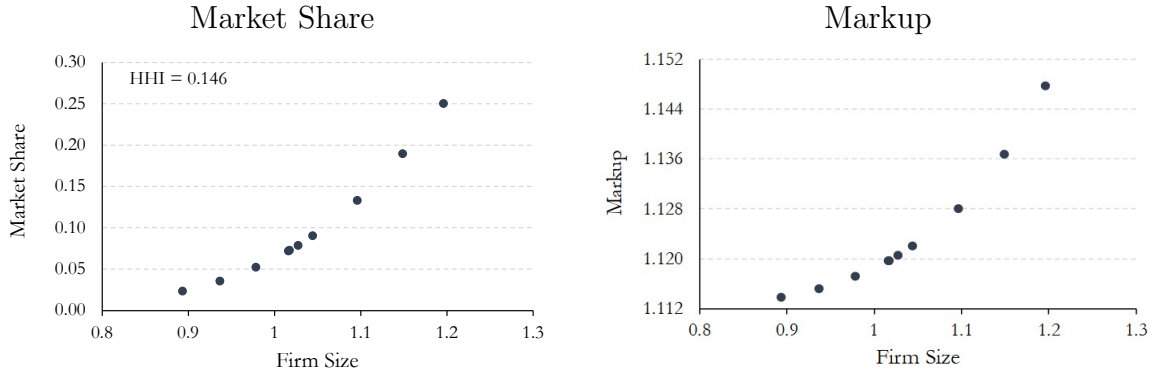
Prediction I. **Acquisitions increase market power and concentration**

The first prediction of the model is that acquisitions increase the market power of the acquiring firm and raise overall industry concentration. This result of the model is consistent with the results presented in the empirical section 4: (debt-financed)

acquisitions are linked to a rise in firms' market share and profits, suggesting a rise in their market power.

In an environment where firms cannot invest internally and growth occurs only through acquisitions, equilibrium market power and concentration are both higher relative to a baseline with no firm growth. This result holds even in the absence of productivity heterogeneity or acquisition synergies. While this baseline scenario is admittedly unrealistic, it serves to isolate the effect of acquisitions in driving market power. Later in this section, I relax this assumption and allow all firms to grow through internal investment, providing a more realistic benchmark for comparison.

Figure 23. Size and Market Power



Note: This figure shows the relationship between firm size and market power. This exercise assumes an initial log-normal distribution of capital with $\sigma_k = 0.05$, homogeneous productivity across firms, and no acquisition synergies.

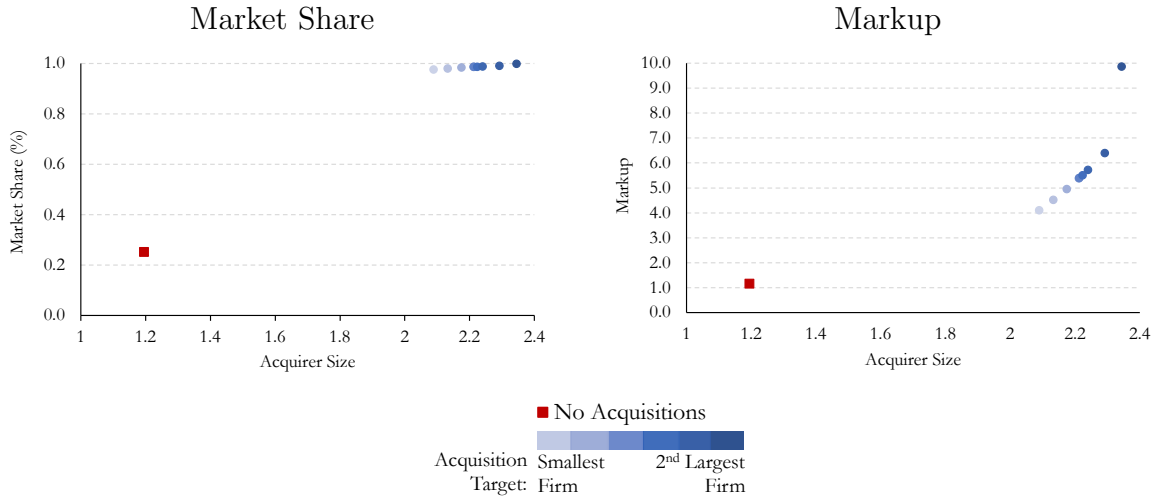
A key prediction of this model is that firms' market power-market shares and markup-is increasing in firms size. For instance, Figure 23 illustrates the relationship between market power and size in an industry with originally low concentration. As firm size increases (capital stock) both the market share and the markup increase. [18]

When allowing the largest firm in the economy to acquire its competitor, the size of the acquirer relative to its competitors increases leading to higher market power. Figure 24 illustrates the impact of acquisitions on the acquirer's market power in this industry. It compares the equilibrium market power in a scenario where acquisitions are not allowed to the outcomes under all possible acquisition options—ranging from acquiring the smallest firm in the economy to the second largest. The acquiring firm's market share and markup increase substantially compared to the no-acquisition benchmark. Notably, the rise in market power is more than proportional to the size or

[18]This industry has an initial log-normal distribution of capital with $\sigma_k = 0.05$. See Appendix Figure 15 to see the initial firm size distribution.

market position of the target firm. This amplification arises because the model features economies of scale: by absorbing another firm, the acquirer expands production and reduces marginal cost disproportionately, which in turn raises its markup relative to competitors.

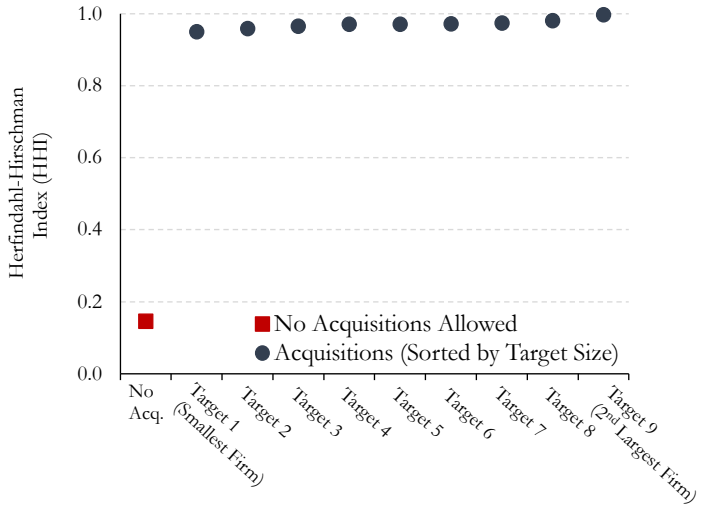
Figure 24. Acquirer Market Power Gains



Note: This figure shows the effect of acquisitions on the acquirer's market power (market share and markup). This exercise assumes an initial log-normal distribution of capital with $\sigma_k = 0.05$, homogeneous productivity across firms, and no acquisition synergies.

As a result of the disproportionate increase in the acquirer's market share, overall industry concentration rises sharply. Figure 25 compares the Herfindahl-Hirschman Index (HHI) in a scenario where acquisitions are not allowed to the levels observed under each possible acquisition, ranked by target size. Even acquisitions of relatively small firms lead to a noticeable increase in concentration, while acquiring larger targets pushes the HHI close to one, indicating near-monopoly levels. This result highlights the nonlinear impact of acquisitions on industry structure, even in the absence of productivity heterogeneity or merger synergies.

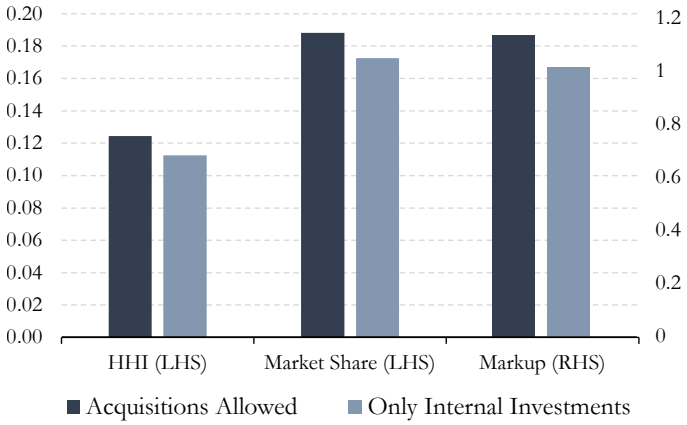
Figure 25. Acquisitions Effect on Industry Concentration



Note: This figure shows the effect of acquisitions on the industry concentration. This exercise assumes an initial log-normal distribution of capital with $\sigma_k = 0.05$, homogeneous productivity across firms, and no acquisition synergies.

When all firms in the economy are allowed to grow through internal investment, acquisitions continue to generate market power and concentration gains, although the effects are more muted. Figure 26 compares the average market share, markup, and industry concentration between two scenarios: one in which only internal investments are allowed, and one where acquisitions are also permitted. Internal investment alone leads to a decline in both market power and industry concentration relative to a scenario without any firm growth. This is because internal investment allows all firms to expand simultaneously, which—given the presence of economies of scale—lowers marginal costs across the board and intensifies competition. By contrast, acquisitions reinforce the dominance of large firms not just by expanding their size, but by eliminating competitors through the absorption of target firms, thereby reducing competitive pressure—even when new entrants are allowed. As a result, allowing acquisitions on top of internal investment restores and amplifies the market power of the largest firm, leading to higher markups and industry concentration relative to the internal-investment-only case.

Figure 26. Average Concentration and Market Power



Note: This figure shows the average industry concentration and the market power on a specific market with and without acquisitions allowed. Industry concentration is measured by the Herfindahl-Hischman index. Market power is measured by the market share and the markup of the largest firm (acquirer). This exercise assumes an initial log-normal distribution of capital with $\sigma_k = 0.05$, homogeneous productivity across firms, and no acquisition synergies.

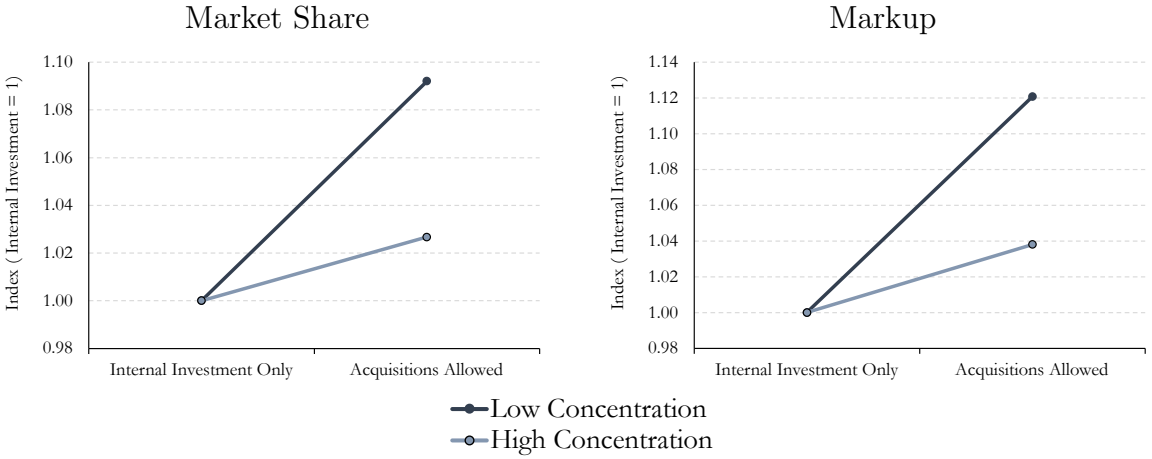
Prediction II. **Acquisitions deliver larger market power gains in less concentrated markets**

Although acquisitions increase acquirer's market power and industry concentration in all scenarios, the gains are larger in originally less concentrated industries.

Figure 27 illustrates this mechanism by comparing the change in the acquirer's market share and markup across two initial industry structures: one with low concentration and one with high concentration. In both cases, the economy allows for internal investment, and the comparison is between equilibria with and without acquisitions. The figure shows that market power gains—measured by both market share and markup—are significantly larger in initially less concentrated industries. In these settings, acquisitions allow the acquirer to increase its relative size and pricing power more substantially, despite the entry of new firms that keeps the number of competitors constant. By contrast, in already concentrated industries, the incremental competitive advantage from acquiring another firm is smaller, resulting in more muted gains in market power.

The relatively larger gains in market power observed in initially less concentrated industries also translate into a disproportionate increase in industry concentration. Figure 28 shows the corresponding change in the Herfindahl-Hirschman Index (HHI) across economies with low and high initial concentration. The rise in HHI closely mirrors the pattern in acquirer market power: when the initial capital distribution is more equal (low σ_k), acquisitions result in greater asymmetries between firms, pushing

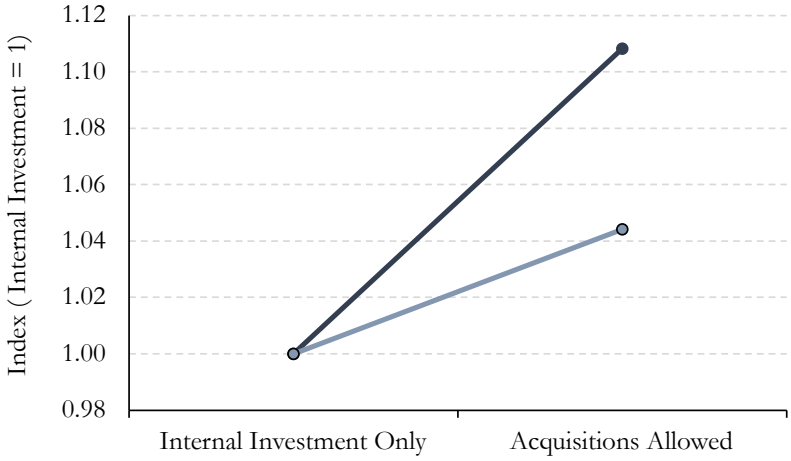
Figure 27. Low vs High Concentrated Industries Market Power Growth



Note: This figure shows the growth in the acquirer's market power (market share and markup) resulting from the average acquisition in an industry with low and high intial concentration. Low and high concentrated industry assumes an initial log-normal distribution of capital with $\sigma_k = 0.05$ and $\sigma_k = 0.385$, respectively. This exercise assumes homogeneous productivity across firms, and no acquisition synergies.

the HHI up more sharply. In contrast, in already concentrated industries, acquisitions generate more modest shifts in firm size and thus lead to smaller changes in overall concentration.

Figure 28. Low vs High Concentrated Industries HHI Growth



Note: This figure shows the growth in industry concentration resulting from the average acquisition relative to the scenario with only internal investment (normalized to one) in an industry with low and high initial concentration. The internal investment scenario assumes that the acquirer undertakes an internal investment of the same size as the acquisition. Both scenarios assume the rest of the firms in the industry are optimally choosing their internal investment. Industry concentration is measured by the Herfindahl-Hischman index. Low and high concentration industries are assumed to have an initial log-normal distribution of capital with $\sigma_k = 0.05$ and $\sigma_k = 0.385$, respectively. This exercise assumes homogeneous productivity across firms, and no acquisition synergies.

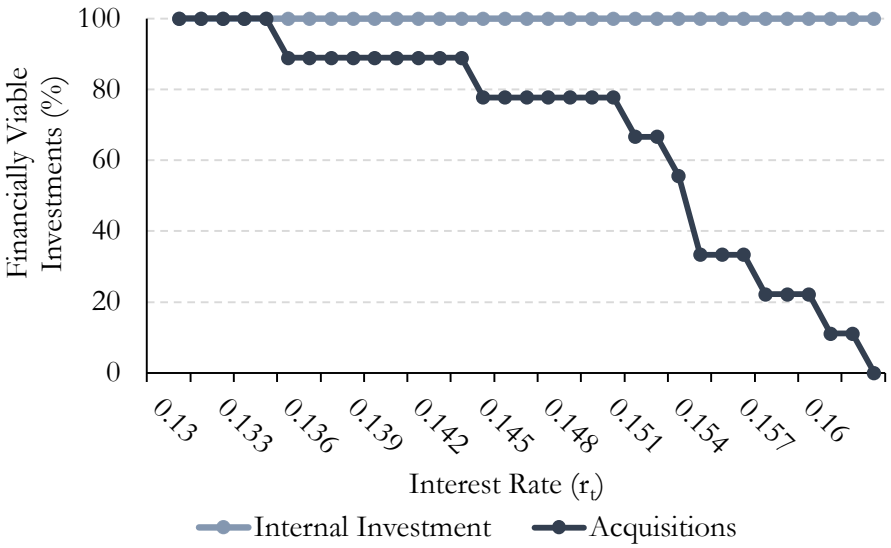
Prediction III. Easing financial constraints leads to more acquisitions

An easing of financial constraints in debt capital markets, reflected by a decrease in the interest rate r_t, leads to a higher percentage of acquisitions being financially viable.

This is also consistent with the results presented in the empirical section 4, which show that an expansion in the supply of debt capital markets leads to higher acquisition expenditure by firms with access to debt capital markets.

Figure 29 illustrates this mechanism by plotting the share of financially viable investments-among profitable ones- across a range of interest rates, separately for acquisitions and internal investments. As the interest rate declines—interpreted here as an easing of financial constraints due to an exogenous expansion in the supply of debt capital markets—the proportion of acquisitions that are financially viable rises sharply. In contrast, the share of viable internal investments remains relatively stable across the same range. This difference arises because acquisitions are substantially more costly than internal investments, making them more sensitive to financing conditions. As a result, expansions in credit supply disproportionately relax constraints for acquisitions, while leaving internal investment decisions largely unaffected.

Figure 29. Financially Viable Investments

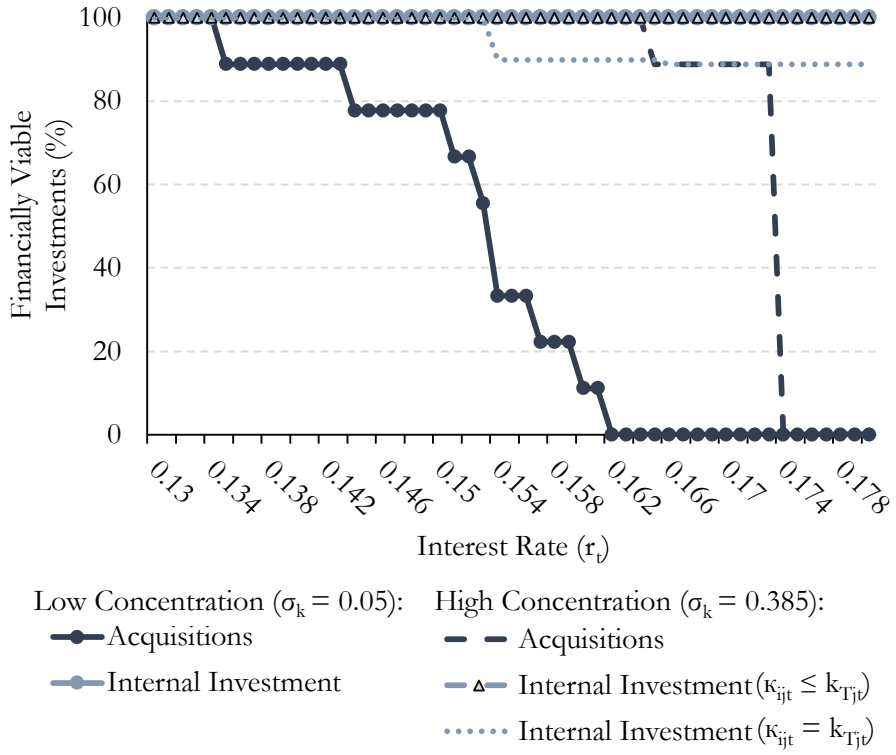


Note: This figure shows the percentage of acquisitions that are financially viable on a specific market with different interest rate levels. An increase in r_t leads to a tightening of financial constraints. This exercise assumes an initial log-normal distribution of capital with $\sigma_k = 0.05$, homogeneous productivity across firms, and no acquisition synergies.

This pattern holds as well in industries with higher initial concentration levels. Figure 30 shows that acquisitions remain highly sensitive to interest rate changes, regardless of the initial market structure, with the share of financially viable acquisitions falling sharply as r_t increases. In more concentrated industries—characterized by a more dispersed capital distribution—internal investments of the same size as the acquisition

target are often too costly for smaller firms, leading to a lower share of financially viable investments when size is held fixed (dotted light blue line). However, because the model allows firms to optimally choose among a set of discrete investment sizes, they can adjust downwards. As a result, the share of financially viable internal investments remains stable across interest rates (dashed light blue line), even in concentrated settings.

Figure 30. Financially Viable Acquisitions in Low vs High Conc. Industries

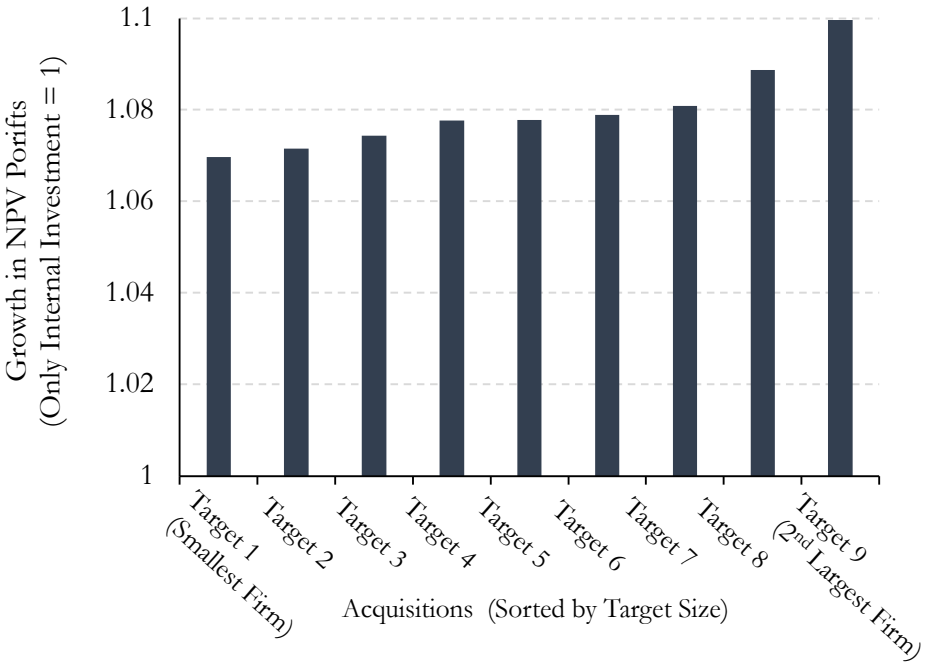


Note: This figure shows the percentage of acquisitions that are financially viable across different interest rate levels on industries with different initial concentration levels. An increase in r_t leads to a tightening of financial constraints. Low and high concentration industries are assumed to have an initial log-normal distribution of capital with $\sigma_k = 0.05$ and $\sigma_k = 0.385$, respectively. This exercise assumes homogeneous productivity across firms, and no acquisition synergies.

Prediction IV. **Market power gains are sufficient incentive for acquisitions**

When acquisition synergies are shut down—that is, when acquisitions do not generate any productivity gains—the model shows that market power alone provides sufficient incentives for firms to pursue them. In other words, even in the absence of cost efficiencies or complementarities, the ability to expand market share and increase markups makes acquisitions a profitable strategy. This mechanism aligns with the empirical evidence presented in Section 4, which suggests that (debt-financed) acquisitions are not typically associated with improvements in productivity.

Figure 31. Acquirer's NPV of Profits



Note: This figure shows the growth of the acquirer's net present value of profits relative to the scenario with only internal investment. The internal investment scenario assumes that the acquirer undertakes an internal investment of the same size as the acquisition. Both scenarios assume the rest of the firms in the industry are optimally choosing their internal investments. Low and high concentration industries are assumed to have an initial log-normal distribution of capital with $\sigma_k = 0.05$ and $\sigma_k = 0.385$, respectively. This exercise assumes homogeneous productivity across firms, and no acquisition synergies.

Figure 31 illustrates that market power gains alone are sufficient to make acquisitions a profitable strategy, even in the absence of synergies. The figure compares the net present value (NPV) of the acquiring firm's profits under each possible acquisition—ranked by target size—to the one it would earn from undertaking an internal investment of the same size. The NPV of profits under the internal investment scenario are normalized to one. Across all target sizes, acquisitions generate strictly higher revenues for the acquirer relative to an equal-sized internal investment. Crucially, in both scenarios, all other firms in the economy are allowed to undertake their own optimal internal investments. The higher revenues generated under acquisitions more than offset the premium paid to acquire another firm relative to the cost of internal growth. Thus, even in the absence of productivity gains or complementarities, the strategic market power benefits of acquisitions are strong enough to make them a more attractive growth option.

6 Conclusions

In this paper, I show a link between corporate financing and the raise in market power and industry concentration observed in the United States. The development of debt capital markets has disproportionately benefited large firms, enabling them to leverage this financing to enhance their market dominance through acquisitions.

I find that the expansion of corporate debt in the Unites States is driven by a significantly small subset of large firms issuing capital markets debt, in the form of corporate bonds and syndicated loans. Those firms mostly use this funds to do acquisitions, rather than productive investments. To identify the causal effects of debt capital markets on firm behavior, I construct an exogenous measure of debt capital markets supply based on persistent lender-borrower relationships in syndicated loan market. I find a strong positive relationship between the rise of this type of financing and acquisitions expenditure, as well as market power: a one standard deviation increase in the predicted debt leads to a 136% increase in acquisition expenditure, and an increase in market share and profits by 2% and 41%, respectively.

Finally, I develop an oligopolistic competition model building on Atkeson and Burstein (2008), with firms' internal investment and acquisitions choices. The model incorporates an earning-based financial constraint that governs firms' access to debt capital markets. When calibrated to match key parameters to empirical estimates, the model is able to replicate several of the stylized facts presented in the empirical section: a relaxation of financial constraints disproportionately benefits the largest firms, spurring acquisition activity and reinforcing market power. Importantly, the model also highlights a potential trade-off: while acquisitions lead to greater concentration and reduced competition, these can also reallocate capital towards more productive firms, generating efficiency gains in some scenarios.

This paper leaves several important questions for future research. A key limitation of the theoretical framework is that the computed equilibrium is a partial equilibrium rather than a general equilibrium. Extending the analysis to a general equilibrium setting could shed light on the interactions between households and firms. For instance, allowing a fraction of households to become firm owners would imply that some households benefit from firms' increased market power, potentially raising their savings. This, in turn, could increase the supply of funds to the debt capital markets, facilitating

even greater borrowing by firms and amplifying the dynamics studied in the model. Lastly, a deeper understanding of the nature and outcomes of acquisitions financed through debt capital markets is necessary in order to understand their overall economic impacts.

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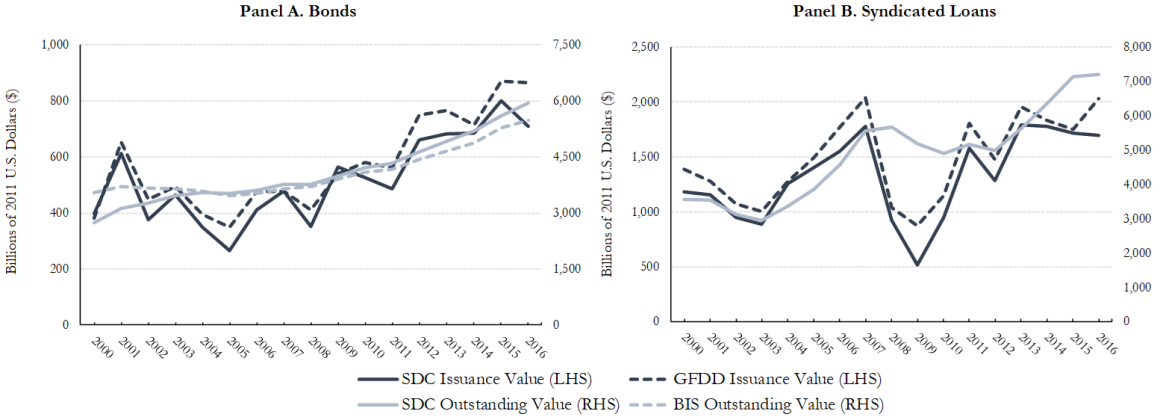
A Appendix

Appendix Table 1. Summary Statistics

	Number of Firms		Number of Issuances		Amount Raised (Millions 2011 U.S. Dollars)					
					Total Amount Raised		Mean per Issuance		Median per Issuance	
	Bonds	Syndicated Loans	Bonds	Syndicated Loans	Bonds	Syndicated Loans	Bonds	Syndicated Loans	Bonds	Syndicated Loans
1990	777	355	1,472	468	207,007	186,526	143	399	83	165
1991	882	719	1,723	963	275,526	286,266	163	297	118	152
1992	1,065	838	2,114	1,108	335,108	435,512	160	393	116	156
1993	720	908	1,165	1,312	153,013	629,558	134	480	76	190
1994	779	2,040	1,340	3,266	189,870	907,672	144	278	89	89
1995	853	2,273	1,518	3,530	237,759	977,836	163	277	108	93
1996	1,115	2,456	2,185	4,132	314,620	1,231,691	148	298	84	112
1997	1,190	2,160	2,308	3,931	432,869	996,994	191	254	138	106
1998	873	2,063	1,577	3,823	397,369	1,075,939	254	281	135	115
1999	583	2,039	1,163	3,750	340,155	1,174,971	300	313	163	131
2000	712	1,939	1,457	3,388	525,412	1,171,948	363	346	222	140
2001	594	1,877	1,206	3,206	341,255	949,738	283	296	187	125
2002	760	2,005	1,274	3,437	392,899	891,270	309	259	243	116
2003	667	2,410	1,065	4,327	310,602	1,254,019	292	290	208	119
2004	539	2,605	829	4,765	239,518	1,399,254	289	294	205	110
2005	516	2,576	859	4,680	369,075	1,548,808	431	331	278	112
2006	518	2,492	929	4,721	418,282	1,796,046	452	380	324	108
2007	410	1,984	746	3,347	328,694	928,192	441	277	312	89
2008	635	1,367	1,012	2,082	527,169	514,864	521	247	365	75
2009	734	2,092	1,131	3,514	490,711	955,928	434	272	309	98
2010	618	2,751	1,025	4,620	462,527	1,580,019	452	342	349	115
2011	780	2,679	1,352	4,789	637,774	1,292,020	472	270	343	98
2012	752	2,817	1,349	5,352	641,585	1,795,187	476	335	338	106
2013	675	2,936	1,299	5,730	646,643	1,745,169	498	305	380	95
2014	648	2,604	1,375	4,997	768,919	1,727,501	559	346	427	95
2015	599	2,531	1,250	4,867	683,429	1,721,200	547	354	464	94
2016	705	2,820	1,473	5,592	773,832	2,034,261	525	364	451	106
2017	529	2,864	1,131	5,594	552,442	2,111,479	488	377	358	103
2018	594	2,646	1,233	4,997	668,927	1,715,296	543	343	440	88
2019	893	2,304	1,953	4,345	1,148,803	1,286,773	588	296	435	87
2020	800	3,417	1,498	6,693	769,999	2,204,306	514	329	415	100
Total	8,405	24,101	42,011	121,326	14,581,790	38,526,242				

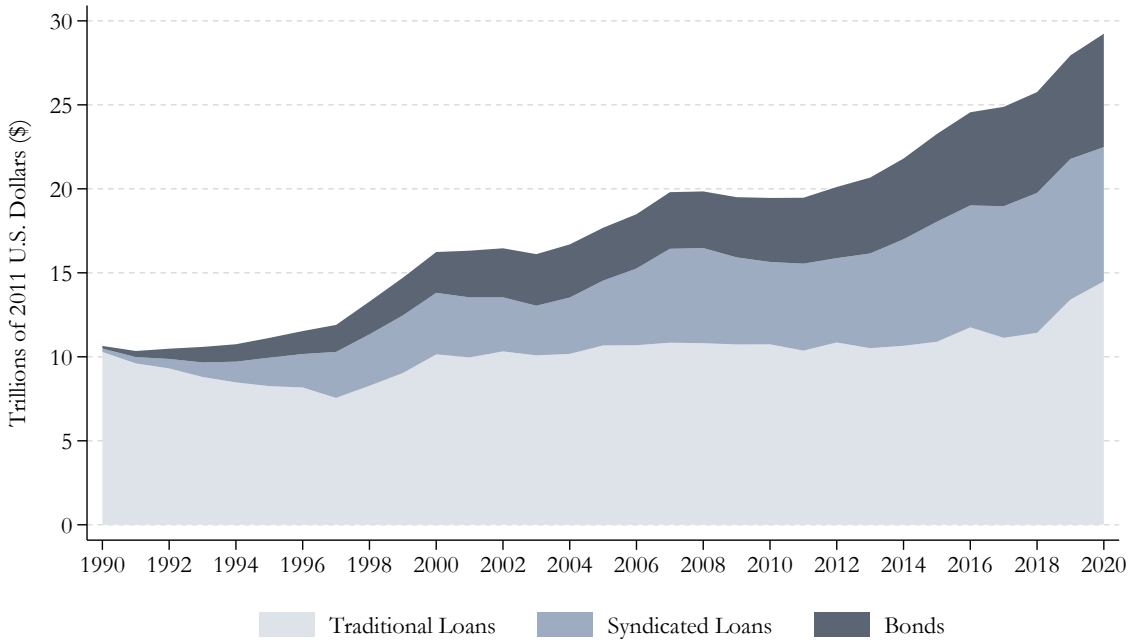
Note: This table reports summary statics on corporate bonds and syndicated loans' issuance activity of United States non-financial firms during the 1990-2020 period.

Appendix Figure 1. Issuance and Outstanding Amounts Check



Note: This figure shows the issuance volume and outstanding amounts of bonds and syndicated loans for the U.S. non-financial corporations, computed using the LSEG's Security Data Corporation Platinum database (SDC Platinum), the World Bank Global Financial Development Databases and the BIS Debt Securities Statistics. Panel A shows the corporate bond issuance and stock volume. Panel B shows the syndicated loans issuance and stock volume. The issuance volume and outstanding amounts are measured in billions of 2011 U.S. dollars, and take into account domestic and cross-border issuances.

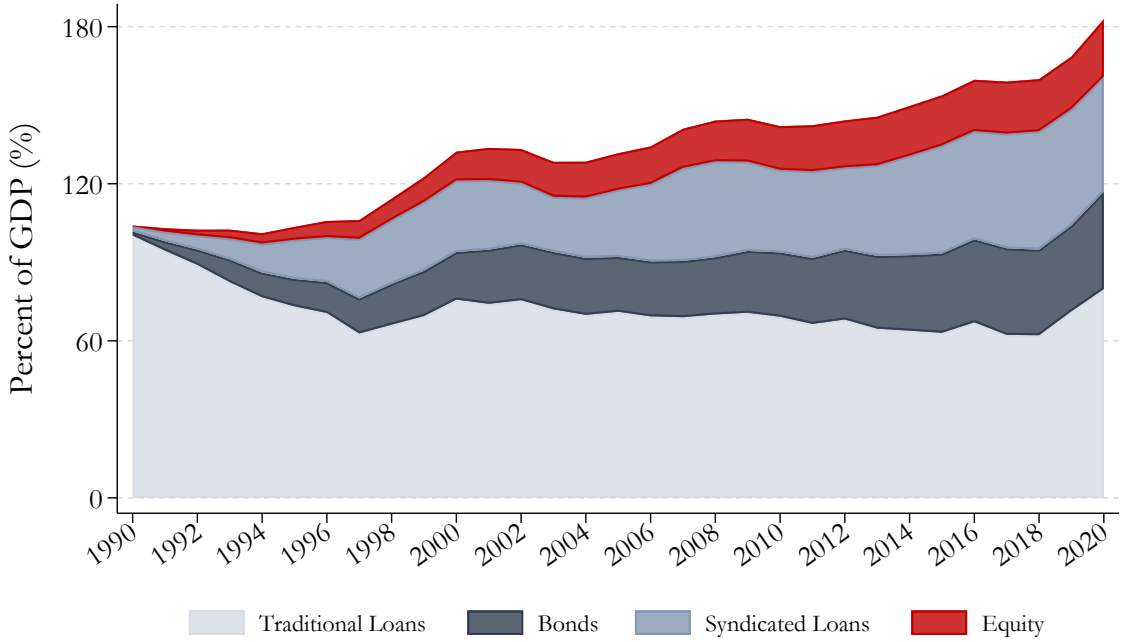
Appendix Figure 2. Debt Components, Outstanding Values



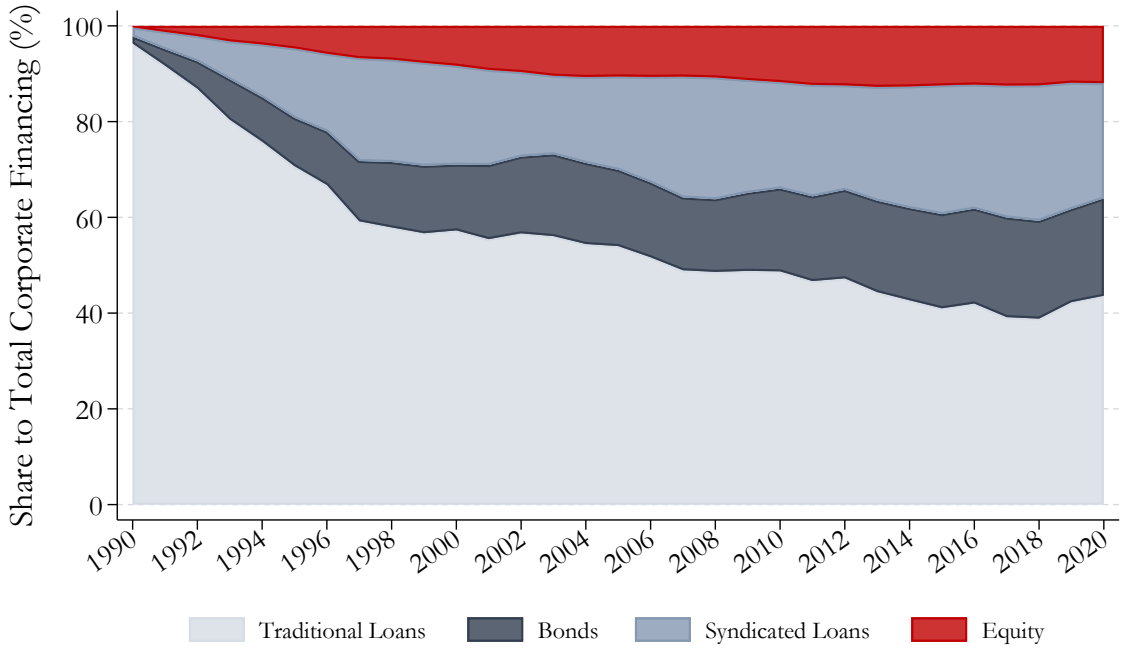
Note: This figure shows the evolution of the components of non-financial corporate debt (bonds, syndicated loans, and traditional loans) during the 1990-2020 period. The amount outstanding of the debt components are expressed in trillions of 2011 U.S. dollars.

Appendix Figure 3. Total Corporate Financing

a. Percent of GDP

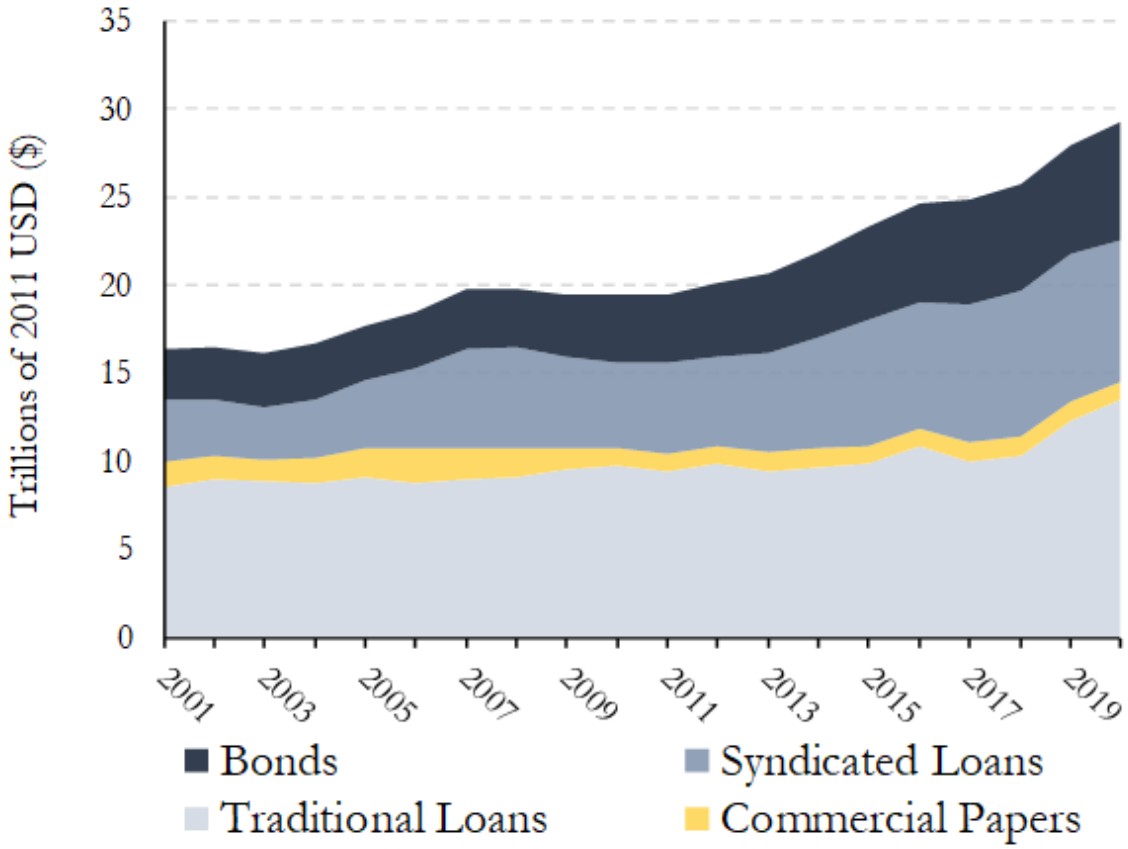


b. Share of Total Financing



Note: This figure shows the evolution of the components of total non-financial corporate financing in the United States between the 1990-2020 period. Total financing includes both equity and debt financing to non-financial corporations. The components are expressed in percent of GDP (Panel a) and as a share of total corporate financing (Panel b).

Appendix Figure 4. Corporate Debt Components, Further Desegregation



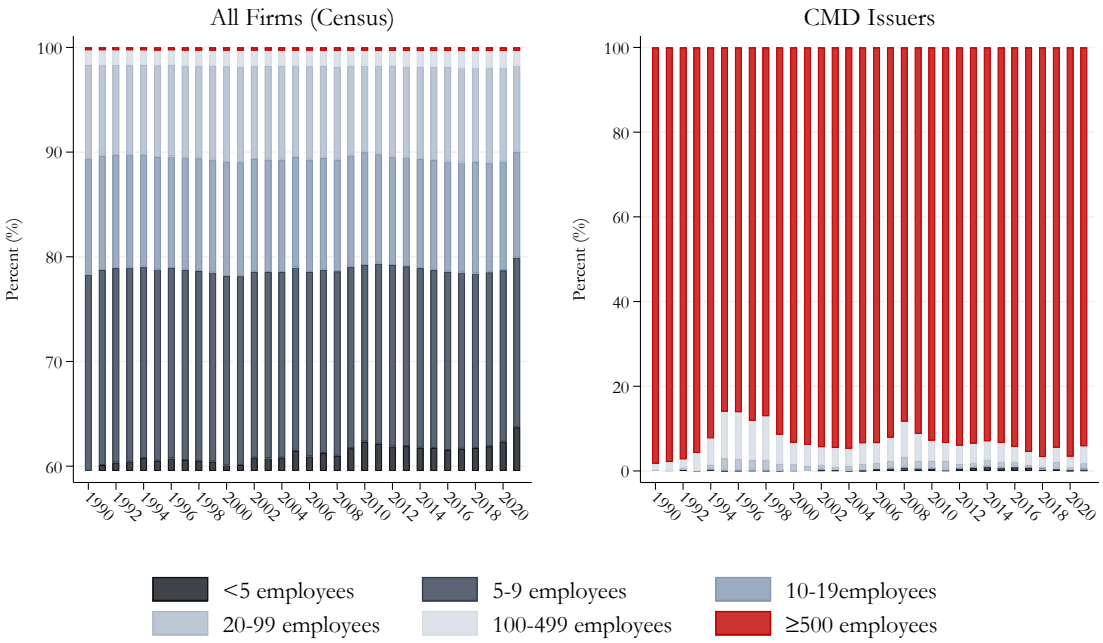
Note: This figure shows the evolution of the components of non-financial corporate debt (bonds, syndicated loans, commercial papers and traditional loans) during the 2001-2020 period. The amount outstanding of the debt components are expressed in trillions of 2011 U.S. dollars. Commercial papers data comes from the Board of Governors of the Federal Reserve System.

Appendix Table 2. Access to Debt Capital Markets

	All Firms (Census)		CMD Issuers			
	Number of Firms	Employment	Number of Firms	Percent	Employment	Percent
1990	5,073,795	93,469,275	926	0.02%	10,277,185	11.00%
1991	5,051,025	92,307,559	1,033	0.02%	11,053,314	11.97%
1992	5,095,356	92,825,797	1,422	0.03%	12,391,008	13.35%
1993	5,193,642	94,773,913	1,690	0.03%	11,595,283	12.23%
1994	5,276,964	96,721,594	1,481	0.03%	11,596,140	11.99%
1995	5,369,068	100,300,000	2,493	0.05%	15,993,659	15.95%
1996	5,478,047	102,200,000	2,755	0.05%	16,843,738	16.48%
1997	5,541,918	105,300,000	3,083	0.06%	19,474,044	18.49%
1998	5,579,177	108,100,000	2,902	0.05%	17,936,175	16.59%
1999	5,607,743	110,700,000	2,598	0.05%	18,626,147	16.83%
2000	5,652,544	114,100,000	2,376	0.04%	19,077,558	16.72%
2001	5,657,774	115,100,000	2,275	0.04%	21,295,186	18.50%
2002	5,697,759	112,400,000	2,157	0.04%	19,061,276	16.96%
2003	5,767,127	113,400,000	2,348	0.04%	20,243,472	17.85%
2004	5,885,784	115,100,000	2,730	0.05%	20,644,261	17.94%
2005	5,983,546	116,300,000	2,880	0.05%	20,067,031	17.25%
2006	6,022,127	119,900,000	2,830	0.05%	19,886,310	16.59%
2007	6,049,655	120,600,000	2,782	0.05%	20,276,318	16.81%
2008	5,930,132	120,900,000	2,242	0.04%	16,259,368	13.45%
2009	5,767,306	114,500,000	1,820	0.03%	16,760,038	14.64%
2010	5,734,538	112,000,000	2,536	0.04%	18,001,158	16.07%
2011	5,684,424	113,400,000	3,020	0.05%	22,082,425	19.47%
2012	5,726,160	115,900,000	3,121	0.05%	21,345,614	18.42%
2013	5,775,055	118,300,000	3,213	0.06%	20,769,543	17.56%
2014	5,825,458	121,100,000	3,312	0.06%	20,364,008	16.82%
2015	5,900,731	124,100,000	2,986	0.05%	21,418,153	17.26%
2016	5,954,684	126,800,000	2,869	0.05%	20,783,053	16.39%
2017	5,996,900	128,600,000	3,211	0.05%	21,121,438	16.42%
2018	6,075,937	130,900,000	3,156	0.05%	21,616,270	16.51%
2019	6,102,412	133,000,000	2,978	0.05%	20,473,622	15.39%
2020	6,140,612	134,200,000	2,878	0.05%	24,745,008	18.44%
Total	6,140,612		27,282	0.44%		

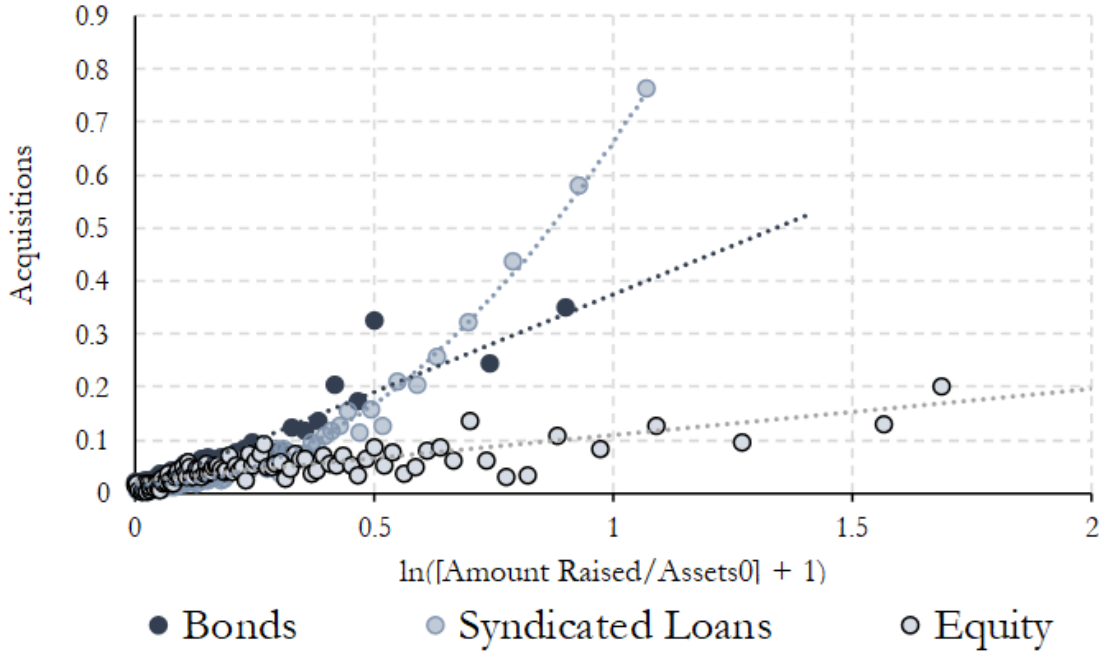
Note: This table reports the number of firms that access debt capital markets and how much employment those capture between the 1990-2020 period.

Appendix Figure 5. Evolution Firm Size Distribution (1990-2021)



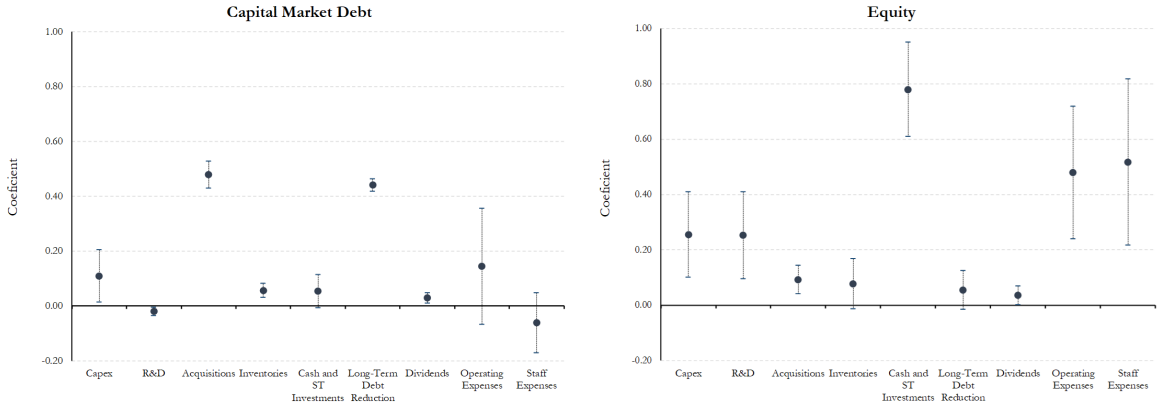
Note: This figure shows the firm size distribution of all firms in the US and for the subset of listed firms that access debt capital markets between 1990-2021. The share in each bin size is computed using the median value during the 1990-2020 period. Size is measured by employees. CMD issuers are firms that issued a bond and/or a syndicated loan on a specific year.

Appendix Figure 6. Propensity to Spend on Acquisitions



Note: This figure shows a binned scatterplot form the firm-level panel OLS regressions for the use-of-funds analysis for bonds, syndicated loans, and equity issuances from non-financial U.S. firms during the 1990-2020 period. The analysis follows the specification of Kim and Weisbach (2008) specified in Equation 2. The dependent variable is $Y = \left[\left(\sum_{\tau=1}^{t} Acquisitions_{\tau}/Assets_0\right) + 1\right]$. Independent variables are issuance value and other sources of funds, both normalized by total assets, in addition to the log of total assets. Total assets are measured at the value of the year just before the issuance. All variables are winsorized at the 1% level. All regressions include time fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure 7. Debt Capital Markets and Equity Issuances Uses



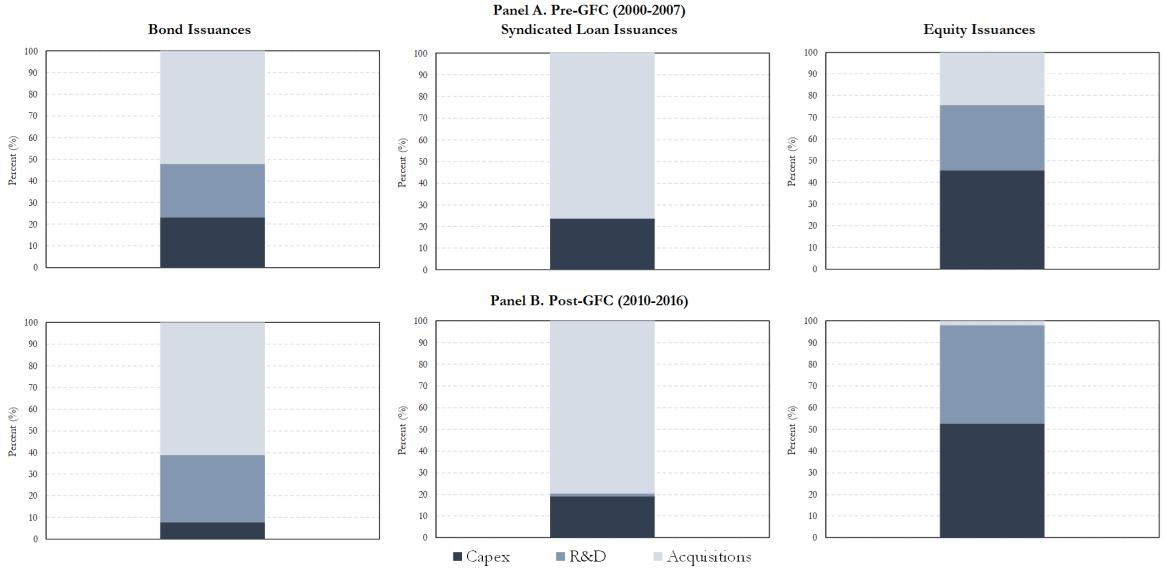
Note: This figure shows the results form the firm-level panel OLS regressions for the use-of-funds analysis for debt capital market issuances from non-financial U.S. firms during the 1990-2020 period. The analysis follows the specification of Kim and Weisbach (2008) specified in Equation 2. The figure shows the coefficient β_1 and the 95% confidence interval. The dependent variable for balance-sheet variables (inventory, cash and short-term investment and dividends) is $Y = [((V_t - V_0)/Assets_0) + 1]$. The dependent variable for cash-flow statement and income statement variables (capital expenditures, acquisitions, research and development expenditures, or reduction of long-term debt) is $Y = \left[\left(\sum_{\tau=1}^{t} V_\tau / Assets_0\right) + 1\right]$. Independent variables are debt capital markets issuance value (including both bonds and syndicated loans) and other sources of funds, both normalized by total assets, in addition to the log of total assets. Total assets are measured at the value of the year just before the issuance. All variables are winsorized at the 1% level. All regressions include time fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 3. Issuances and Subsequent Use of Funds

Dependent Variable	Years After Issuance (Issuance at t=1)	ln(Issuance/Assets + 1)							
		Capital Markets Debt				Equity Issuances			
		Coefficient		$ Change	N	Coefficient		$ Change	N
CAPEX	1	0.1125	**	0.107	15,870	0.2666	***	0.255	9,990
	2	0.1606	***	0.156	20,706	0.3123	***	0.302	12,883
	3	0.1687	***	0.172	21,319	0.3102	***	0.318	13,225
	4	0.164	***	0.174	20,088	0.331	***	0.342	12,248
RD	1	-0.0229	***	-0.021	8,181	0.2423	***	0.219	5,914
	2	-0.0369	**	-0.034	10,471	0.3406	***	0.326	7,905
	3	-0.0522	**	-0.048	10,502	0.4361	***	0.415	8,114
	4	-0.0699	**	-0.067	9,650	0.4946	***	0.516	7,392
Acquisitions	1	0.4827	***	0.435	15,559	0.0957	***	0.082	9,742
	2	0.5029	***	0.461	20,038	0.0701	***	0.060	12,379
	3	0.5012	***	0.466	20,370	0.0748	***	0.064	12,569
	4	0.4916	***	0.452	18,959	0.0588	**	0.049	11,470
Inventory	1	0.0535	***	0.047	15,627	0.0804	*	0.068	9,752
	2	0.0693	***	0.061	20,398	0.0908	***	0.076	12,634
	3	0.0631	***	0.056	21,009	0.1139	***	0.093	13,025
	4	0.0518	***	0.045	19,813	0.1348	***	0.108	12,092
Cash ST Inv.	1	0.0525		0.047	15,837	0.7629	***	0.639	9,969
	2	0.0433		0.039	20,679	0.7304	***	0.608	12,933
	3	0.0289		0.026	21,292	0.6242	***	0.511	13,322
	4	0.014		0.012	20,079	0.5818	***	0.494	12,370
LT Debt Reduction	1	0.4364	***	0.419	15,771	0.0649	*	0.061	9,854
	2	0.451	***	0.449	20,495	-0.024		-0.022	12,654
	3	0.4948	***	0.541	21,004	-0.0245		-0.024	12,891
	4	0.5318	***	0.614	19,728	-0.0218		-0.022	11,870
Dividends	1	0.0292	***	0.026	15,851	0.0359	**	0.031	9,967
	2	0.0322	***	0.028	20,669	0.0204	*	0.017	12,889
	3	0.0374	***	0.033	21,266	0.0209		0.016	13,257
	4	0.0441	***	0.039	20,032	0.0189		0.015	12,291
Operational Expenses	1	0.1324		0.194	2,089	0.4877	***	0.722	1,579
	2	0.2268	*	0.529	2,705	0.6222	***	1.154	2,128
	3	0.2884	*	0.926	2,761	0.6733	***	1.705	2,172
	4	0.3091	**	1.110	2,575	0.6526	***	2.445	2,058
Staff Expenses	1	-0.072		-0.064	1,086	0.5233	***	0.487	689
	2	-0.0007		-0.001	1,182	0.2935	***	0.304	774
	3	0.0845		0.078	1,099	0.3889	***	0.435	715
	4	0.118		0.145	951	0.646	***	0.855	570

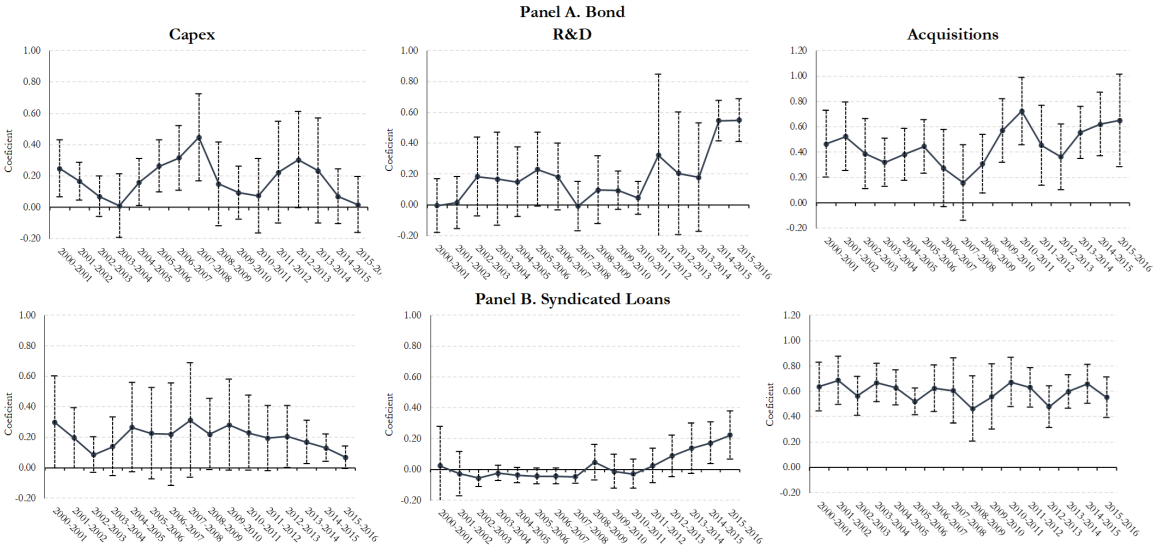
Note: This table reports firm-level panel OLS regressions for the use-of-funds analysis for debt capital market issuances from non-financial U.S. firms during the 1990-2020 period. The analysis follows the specification of Kim and Weisbach (2008) specified in Equation 2. The figure shows the coefficient β_1 and the 95% confidence interval. The dependent variable for balance-sheet variables (inventory, cash and short-term investment and dividends) is $Y = [((V_t - V_0)/Assets_0) + 1]$. The dependent variable for cash-flow statement and income statement variables (capital expenditures, acquisitions, research and development expenditures, or reduction of long-term debt) is $Y = \left[\left(\sum_{\tau=1}^{t} V_\tau / Assets_0\right) + 1\right]$. Independent variables are debt capital markets issuance value (including both bonds and syndicated loans) and other sources of funds, both normalized by total assets, in addition to the log of total assets. Total assets are measured at the value of the year just before the issuance. All variables are winsorized at the 1% level. All regressions include time fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure 8. Pre- vs. Post-GFC Use of Proceeds



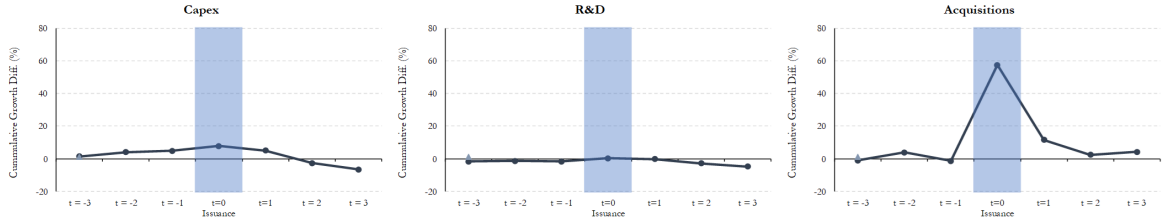
Note: This table reports firm-level panel OLS regressions for the use-of-funds analysis for debt capital market issuances from non-financial U.S. firms during the pre-global financial crisis (GFC) (1990-2007) and post-GFC (2010-2020) periods. The analysis follows the specification of Kim and Weisbach (2008) specified in Equation 2. The figure shows the coefficient β_1 and the 95% confidence interval. The dependent variable for balance-sheet variables (inventory, cash and short-term investment and dividends) is $Y = [((V_t - V_0)/Assets_0) + 1]$. The dependent variable for cash-flow statement and income statement variables (capital expenditures, acquisitions, research and development expenditures, or reduction of long-term debt) is $Y = \left[\left(\sum_{\tau=1}^{t} V_\tau / Assets_0\right) + 1\right]$. Independent variables are debt capital markets issuance value (including both bonds and syndicated loans) and other sources of funds, both normalized by total assets, in addition to the log of total assets. Total assets are measured at the value of the year just before the issuance. All variables are winsorized at the 1% level. All regressions include time fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure 9. Use of Proceeds - 2 Years Rolling Windows



Note: This table reports firm-level panel OLS regressions for the use-of-funds analysis for debt capital market issuances from non-financial U.S. firms using 2 year rolling windows between 1990-2020. The analysis follows the specification of Kim and Weisbach (2008) specified in Equation 2. The figure shows the coefficient β_1 and the 95% confidence interval. The dependent variable for balance-sheet variables (inventory, cash and short-term investment and dividends) is $Y = [((V_t - V_0)/Assets_0) + 1]$. The dependent variable for cash-flow statement and income statement variables (capital expenditures, acquisitions, research and development expenditures, or reduction of long-term debt) is $Y = \left[\left(\sum_{\tau=1}^{t} V_\tau / Assets_0\right) + 1\right]$. Independent variables are debt capital markets issuance value (including both bonds and syndicated loans) and other sources of funds, both normalized by total assets, in addition to the log of total assets. Total assets are measured at the value of the year just before the issuance. All variables are winsorized at the 1% level. All regressions include time fixed effects. Standard errors are clustered at the industry (two-digit SIC) level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure 10. Cumulative Growth Differentials



Note: This figure shows the cumulative growth differential of acquisitions, capex and *R&D* around issuance. The results come from an issuance event study regression: the dependent variable is the year-to-year growth rate of balance sheet variables (capex, R&d, and acquisitions) of firm i, in industry s, and time t+h. h=0 indicated the year of the issuance, $h = \{-3, -2, -1, -, 1, 2, 3\}$. The independent variable is a dummy that equals one in the year of the issuance (zero otherwise). The regressions include time and firm fixed effects.

Appendix Table 4. Lender Sticky Relationship

	Lender chosen as lead		Lender chosen as participant	
	(1)	(2)	(3)	(4)
Previous lead	0.103***	0.073***	-0.103***	-0.073***
	(0.002)	(0.002)	(0.002)	(0.002)
Previous participant	-0.464***	-0.361***	0.464***	0.361***
	(0.006)	(0.006)	(0.006)	(0.006)
Borrower FE	Yes	Yes	Yes	Yes
Industry x Lender FE	No	Yes	No	Yes
Lender FE	Yes	Yes	Yes	Yes
Time x Lender FE	No	Yes	No	Yes
Num Obs.	311,615	306,145	311,615	306,145
R-squared	0.576	0.668	0.576	0.668

Note: This table test the sticky relationship between borrowers and lenders in the syndicated loans market during the 1990-2020 period. The dependent variable is an indicator for whether the lender serves in the role indicated in the table header. For each loan in which the borrower has previous accessed the syndicated market, the data set contains one observation for each potential lender, where a potential lender is a lender active in the syndicated loan market in that instrument. The variables Previous lead and Previous participant equal 1 if the lender served as the lead or as a participant on the borrower's previous loan, respectively. Estimation is via OLS. Standard errors in parentheses and clustered by borrower.*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 5. Effect of Debt Capital Markets (Firm FE)

(a) OLS Regression

	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)
CMD	0.757***	0.275***	0.120***	0.007***	0.311***	-0.067
	(0.105)	(0.039)	(0.045)	(0.003)	(0.054)	(0.047)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No
Time FE	No	No	No	No	No	No
Num Obs.	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.854	0.976	0.974	0.961	0.959	0.797

(b) 2SLS Regression

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.168***						
	(0.020)						
CMD		1.357***	0.783***	0.430**	0.024***	0.412***	-0.507***
		(0.402)	(0.135)	(0.169)	(0.008)	(0.142)	(0.115)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No
Time FE	No	No	No	No	No	No	No
Num Obs.	1,934	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.907	0.160	0.439	0.066	0.043	0.405	-0.026
Kleib.-Paap Wald F-stat	73.94						

Note: This table reports the results from the OLS (Panel a) and two-stages least square (Panel b) on the effect of debt capital markets specified in Equation 3. All right-hand side variables are normalized to have unit variance. Regressions include firm fixed effects. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 6. Effect of Debt Capital Markets (Weighted by Firm Size, Firm FE)

(a) OLS Regression

	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)
CMD	0.759***	0.262***	0.141***	0.007**	0.306***	-0.066
	(0.111)	(0.038)	(0.046)	(0.003)	(0.055)	(0.044)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No
Time FE	No	No	No	No	No	No
Num Obs.	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.835	0.974	0.978	0.964	0.958	0.834

(b) 2SLS Regression

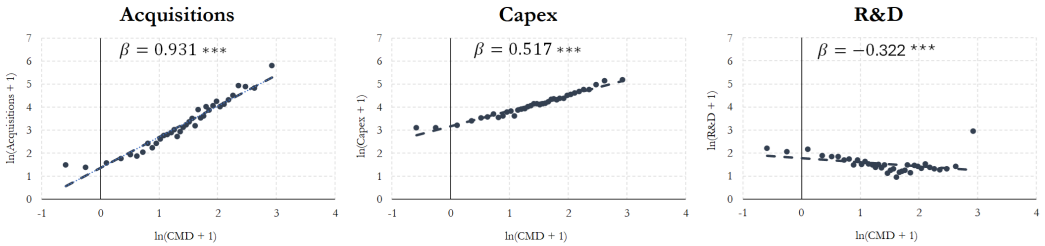
	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.159***						
	(0.020)						
CMD		1.436***	0.779***	0.512***	0.026***	0.369**	-0.571***
		(0.466)	(0.139)	(0.184)	(0.008)	(0.147)	(0.133)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No
Time FE	No	No	No	No	No	No	No
Num Obs.	1,934	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.892	0.131	0.408	0.032	0.053	0.410	-0.104
Kleib.-Paap Wald F-stat	193.3						

Note: This table reports the results from the OLS (Panel a) and two-stages least square (Panel b) regressions on the effect of debt capital markets specified in Equation 3, weighted by firm size. Firm size is measured by the average firm's assets. All right-hand side variables are normalized to have unit variance. Regressions include firm fixed effects. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

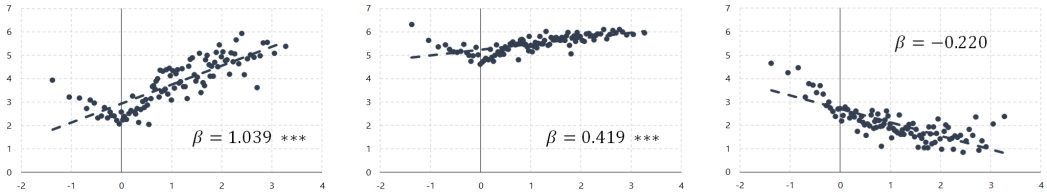
Appendix Figure 11. Effect of Debt Capital Markets (Time & Industry FE)

Panel A. Effect on Acquisitions and Investment

a. OLS Regression

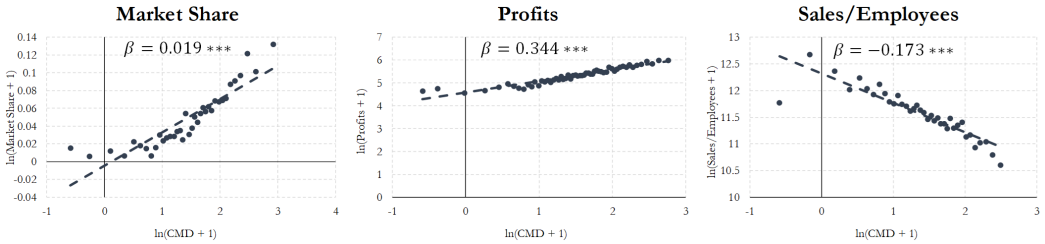


b. 2SLS Regression (Second Stage)

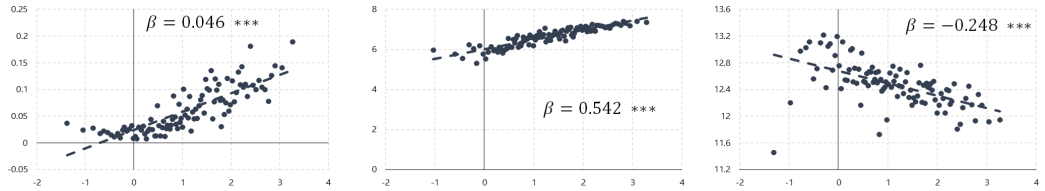


Panel B. Effect on Market Power and Productivity

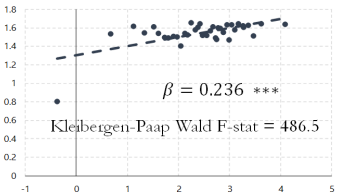
c. OLS Regression



d. 2SLS Regression (Second Stage)



Panel C. 2SLS Regression (First Stage)



Note: This figure shows the results from the OLS and second-stage and the first-stage of the two-stages least square regressions on the effect of debt capital markets on acquisitions and productive investments specified in Equation 3. All right-hand side variables are normalized to have unit variance. Regressions include time and industry fixed effects. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 7. Effect of Debt Capital Markets (Time & Industry FE)

(a) OLS Regression

	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)
CMD	0.886***	0.383***	-0.165***	0.021***	0.468***	-0.084**
	(0.057)	(0.029)	(0.060)	(0.003)	(0.032)	(0.040)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	3,058	3,058	3,058	3,058	2,516	3,007
R-squared	0.526	0.889	0.442	0.184	0.868	0.194

(b) 2SLS Regression

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	RD	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.236						
	(0.011)						
CMD		1.039***	0.419***	-0.220	0.046***	0.542***	-0.248***
		(0.159)	(0.059)	(0.168)	(0.009)	(0.067)	(0.073)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No	No
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	3,058	3,058	3,058	3,058	3,058	2,516	3,007
R-squared	0.689	0.509	0.871	0.192	0.123	0.854	0.067
Kleibergen-Paap Wald F-stat	486.5						

Note: This table reports the results from the OLS (Panel a) and two-stages least square (Panel b) on the effect of debt capital markets specified in Equation 3. All right-hand side variables are normalized to have unit variance. Regressions include time and industry fixed effects. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 8. Effect of Debt Capital Markets (Weighted by Firm Size, Time & Industry FE)

(a) OLS Regression

	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)
CMD	0.867***	0.346***	-0.220***	0.020***	0.464***	-0.057
	(0.066)	(0.029)	(0.068)	(0.003)	(0.033)	(0.039)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	3,058	3,058	3,058	3,058	2,516	3,007
R-squared	0.469	0.877	0.484	0.178	0.864	0.212

(b) 2SLS Regression

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.220***						
	(0.011)						
CMD		0.992***	0.358***	-0.407**	0.046***	0.537***	-0.222***
		(0.186)	(0.063)	(0.191)	(0.011)	(0.070)	(0.074)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No	No
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	3,058	3,058	3,058	3,058	3,058	2,516	3,007
R-squared	0.660	0.448	0.858	0.197	0.115	0.851	0.053
Kleib.-Paap Wald F-stat	508.6						

Note: This table reports the results from the OLS (Panel a) and two-stages least square (Panel b) regressions on the effect of debt capital markets specified in Equation 3, weighted by firm size. Firm size is measured by the average firm's assets. All right-hand side variables are normalized to have unit variance. Regressions include firm fixed effects. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 9. Effect of Debt Capital Markets (Firm & Time FE)

(a) OLS Regression

	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)
CMD	0.717***	0.226***	0.099**	0.006**	0.271***	-0.023
	(0.105)	(0.034)	(0.046)	(0.003)	(0.055)	(0.048)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	No	No	No	No	No
Num Obs.	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.856	0.980	0.975	0.962	0.960	0.808

(b) 2SLS Regression

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.169***						
	(0.021)						
CMD		0.956**	0.244**	0.227	0.015**	0.014	-0.063
		(0.401)	(0.111)	(0.163)	(0.008)	(0.165)	(0.134)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	1,934	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.907	0.190	0.606	0.112	0.094	0.404	0.059
Kleib.-Paap Wald F-stat	65.07						

Note: This table reports the results from the OLS (Panel a) and two-stages least square (Panel b) regressions on the effect of debt capital markets specified in Equation 3. All right-hand side variables are normalized to have unit variance. Regression includes Firm and Time FE. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 10. Effect of Debt Capital Markets (Weighted by Firm Size, Firm & Time FE)

(a) OLS Regression

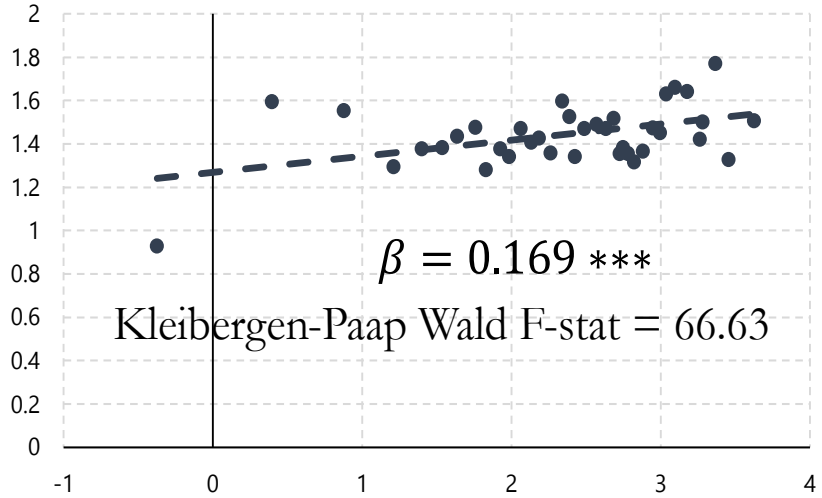
	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)
CMD	0.710***	0.212***	0.119**	0.005**	0.276***	-0.019
	(0.111)	(0.034)	(0.046)	(0.003)	(0.055)	(0.043)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.837	0.978	0.978	0.965	0.960	0.849

(b) 2SLS Regression

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.160***						
	(0.021)						
CMD		1.436***	0.204*	0.303*	0.011	0.003	-0.084
		(0.464)	(0.111)	(0.173)	(0.008)	(0.165)	(0.131)
Firm-level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	1,934	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.892	0.172	0.604	0.094	0.144	0.395	0.054
Kleib.-Paap Wald F-stat	160						

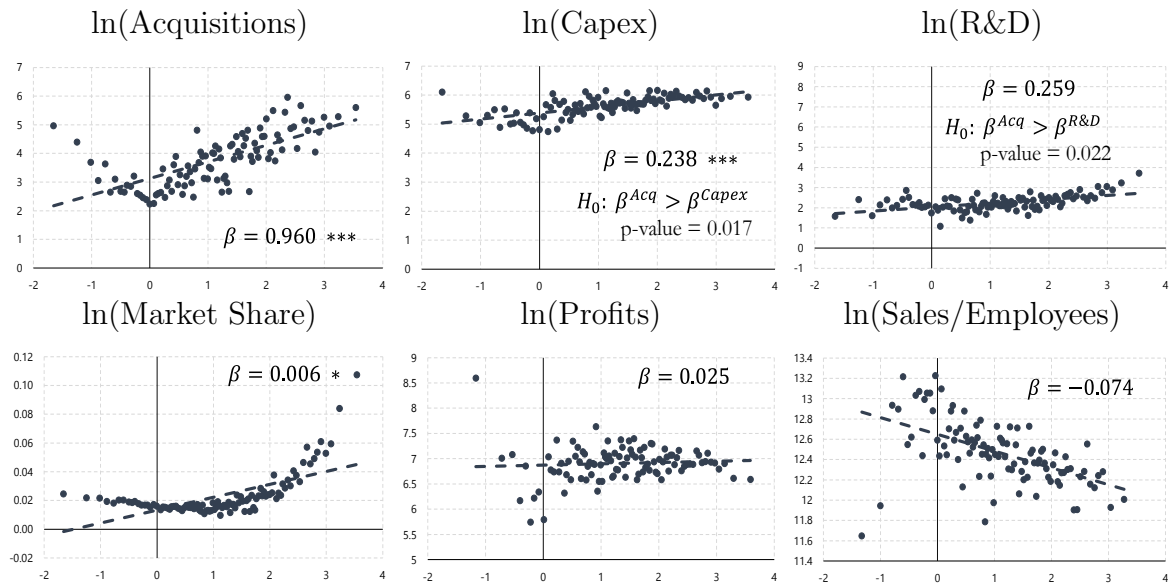
Note: This table reports the results from the OLS (Panel a) and two-stages least square (Panel b) regressions on the effect of debt capital markets specified in Equation 3, weighted by firm size. Firm size is measured by the average firm's assets. All right-hand side variables are normalized to have unit variance. Regressions include firm and time fixed effects. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure 12. Refined Instrument First Stage (Firm and Time FE)



Note: This figure shows the results from the first-stage of the two-stages least square regressions from Equation 3. The loan supply measure for firm i excludes loans to other firms belonging to its same industry (2 digit SIC). Regressions include firm and time fixed effects. All variables are normalized to have unit variance. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure 13. Refined Instrument Second Stage (Firm and Time FE)



Note: This figure shows the results from the two-stages least square regressions on the effect of debt capital markets on acquisitions and productive investments specified in Equation 3. The loan supply measure for firm i excludes loans to other firms belonging to its same industry (2 digit SIC). All right-hand side variables are normalized to have unit variance. Regressions include firm and time fixed effects. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 11. Refined Instrument

(a) Firm FE

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.168***						
	(0.020)						
CMD		1.360***	0.781***	0.430**	0.024***	0.409***	-0.505***
		(0.401)	(0.135)	(0.168)	(0.008)	(0.142)	(0.115)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No
Time FE	No	No	No	No	No	No	No
Num Obs.	1,934	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.907	0.159	0.440	0.066	0.044	0.405	-0.025
Kleibergen-Paap Wald F-stat	74.25						

(b) Firm and Time FE

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	R&D	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supply	0.169***						
	(0.021)						
CMD		0.961**	0.243**	0.228	0.015*	0.012	-0.062
		(0.400)	(0.111)	(0.163)	(0.008)	(0.165)	(0.133)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No	No
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	1,934	1,934	1,934	1,934	1,934	1,578	1,880
R-squared	0.907	0.190	0.606	0.112	0.094	0.403	0.059
Kleib.-Paap Wald F-stat	65.44						

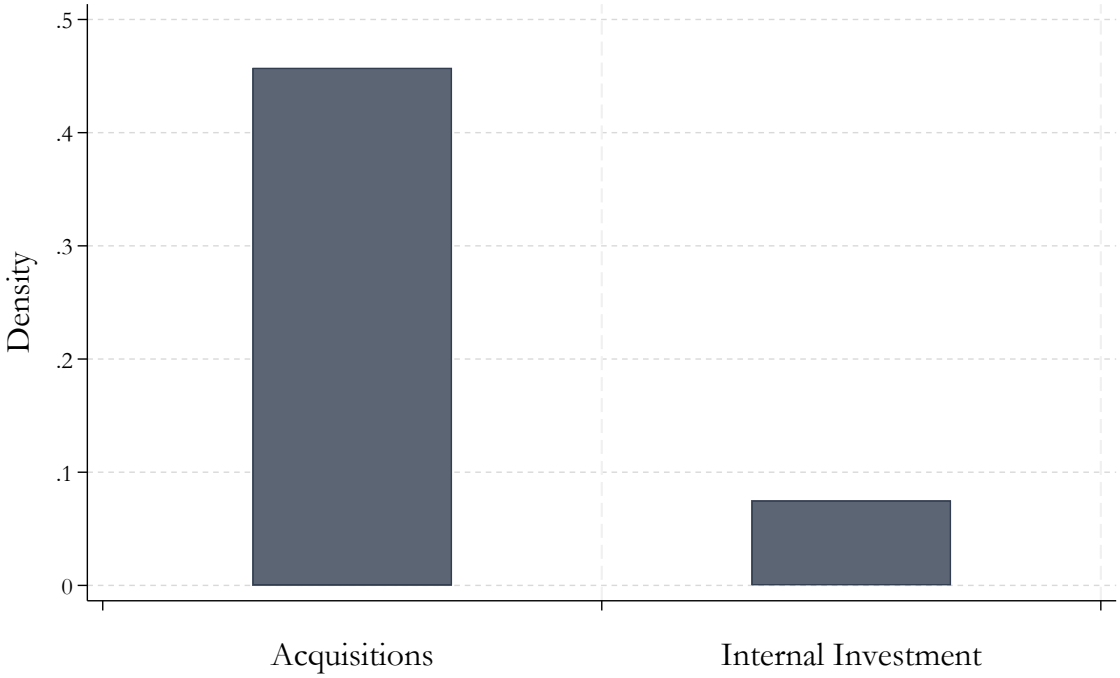
Note: This table reports the results from the two-stages least square regressions on the effect of debt capital markets specified in Equation 3. The loan supply measure for firm i excludes loans to other firms belonging to its same industry (2 digit SIC). All right-hand side variables are normalized to have unit variance. Regression includes firm fixed effects (Panel a), and firm and time fixed effects (Panel b). Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 12. Refined Instrument (Time & Industry FE)

	1st Stage	2nd Stage					
	CMD	Acquisitions	Capex	RD	Market Share	Profits	Sales/ Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Loan Supplyit	0.235***						
	(0.011)						
CMD		1.040***	0.419***	-0.234	0.046***	0.543***	-0.249***
		(0.159)	(0.058)	(0.168)	(0.009)	(0.067)	(0.073)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No	No
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num Obs.	3,058	3,058	3,058	3,058	3,058	2,516	3,007
R-squared	0.688	0.509	0.871	0.192	0.123	0.854	0.067
Kleib.-Paap Wald F-stat	483.5						

Note: This table reports the results from the two-stages least square regressions on the effect of debt capital markets specified in Equation 3. The loan supply measure for firm i excludes loans to other firms belonging to its same industry (2 digit SIC). All right-hand side variables are normalized to have unit variance. Regression includes time and industry fixed effects. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure 14. Proportion of Firms not Investing



Note: This figure shows proportion of public non-financial firms that did not engage in acquisitions or internal investment during the 1990-2020 period. Internal investment includes capex and R&D.

Appendix Table 13. Acquisitions Behavior by Type of Firms

Sample:	All Listed Firms								
Dependent Variable:	Acquisitions			Ln(Acquisitions)			Dummy Acquisitions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Issuer	10.063***	10.239***	10.164***	2.235***	2.154***	2.128***	0.221***	0.229***	0.229***
	(0.738)	(0.829)	(0.800)	(0.098)	(0.090)	(0.090)	(0.018)	(0.019)	(0.019)
Constant	1.565***	1.481***	1.517***	1.146***	1.208***	1.228***	0.119***	0.115***	0.115***
	(0.209)	(0.393)	(0.379)	(0.091)	(0.068)	(0.068)	(0.016)	(0.009)	(0.009)
Industry FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Time FE	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Num. Obs.	93,074	93,074	93,074	25,705	25,705	25,705	93,074	93,074	93,074
R^2	0.058	0.069	0.072	0.164	0.171	0.190	0.071	0.111	0.112

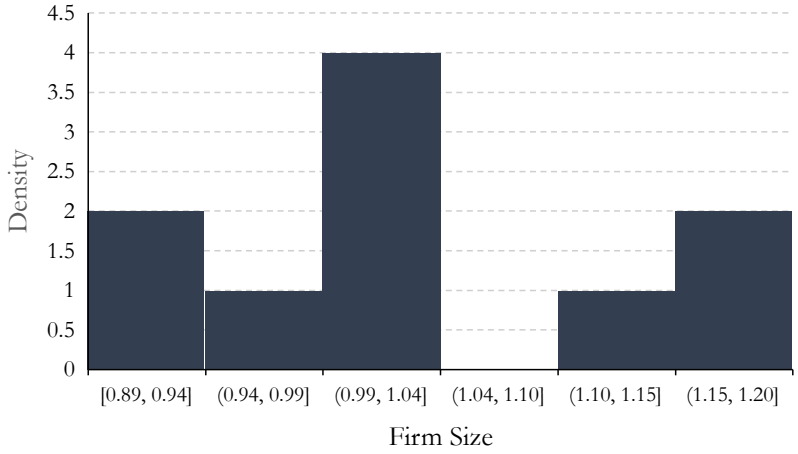
Note: This table reports the results from the least square regressions on the acquisitions behaviour by different type of firms. Regression includes time and industry fixed effects. A firm is classified as issuer if it issued a bond and/or a syndicated loan at least ones during the 1990-2020 sample period. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 14. Acquisitions Behavior by Large vs. Small Issuers

Sample:	Debt Capital Market Issuers								
Dependent Variable:	Acquisitions			Ln(Acquisitions)			Dummy Acquisitions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Large Issuer	13.298***	13.842***	13.874***	2.131***	2.169***	2.162***	0.186***	0.202***	0.203***
	(1.729)	(1.618)	(1.628)	(0.085)	(0.081)	(0.081)	(0.034)	(0.030)	(0.030)
Constant	4.817***	4.537***	4.520***	1.850***	1.823***	1.828***	0.244***	0.235***	0.235***
	(0.584)	(0.832)	(0.838)	(0.125)	(0.059)	(0.059)	(0.023)	(0.016)	(0.016)
Industry FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Time FE	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Num. Obs.	44,104	44,104	44,104	19,571	19,569	19,569	44,104	44,104	44,104
R^2	0.058	0.083	0.088	0.191	0.211	0.230	0.040	0.121	0.122

Note: This table reports the results from the least square regressions on the acquisitions behaviour by large vs. small capital market debt issuers. The sample is restricted to issuers(firms that issued a bond and/or a syndicated loan at least ones during the 1990-2020 sample period). A firm is classified as large issuer if its assets are above the median value within year and 4-digit SIC sector. Regression includes time and industry fixed effects. Standard errors clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix Figure 15. Intial Firm Size Distribution (Low Concentration)



Note: This figure shows the initial firm size distribution in an industry j with $N_j = 10$ firms assuming a log-normal capital distribution with $\sigma_k = 0.05$.