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Major Customers and the Speed of Leverage Adjustments

Abstract

Purpose: This study investigates how major customers influence the speed of adjustment (SOA) in a firm's capital structure, specifically examining the effects of governmental versus non-governmental major customers.

Study design/methodology/approach: The study employs Blundell and Bond's (1998) GMM model to estimate SOA. Robustness methods include fixed effects, two-stage least squares (2SLS), propensity score matching (PSM), and the augmented doubly censored Tobit (DPF estimator).

Sample and data: The sample consists of 186,240 firm-year observations from Compustat North America annual files and Compustat historical segment files, spanning 1978 to 2013. Firms in the utility and financial sectors are excluded.

Results: Findings indicate that major customers significantly influence SOA by reducing market uncertainty through certifications. Firms with major customers have a higher SOA, with governmental customers exhibiting an even higher SOA than non-governmental ones. Results are consistent across various models and settings.

Originality/value: This study uniquely identifies major customers as critical determinants of SOA, highlighting the heterogeneities in firms' SOA. It stresses the importance of considering customer type in financial strategies, differentiating between governmental and non-governmental impacts. These findings offer valuable insights for scholars, policymakers, and practitioners.

Research limitations/implications: Focusing on publicly listed U.S. firms limits generalization. Future research should extend the analysis to other regions and recent periods. The findings provide insights for supplier firms in strategizing financial decisions and managing relationships with major customers. We emphasize the significant role of major customers in financial strategies, advocating for more detailed disclosure policies in the U.S. and globally to enhance transparency and market efficiency.

Keywords: Speed of Adjustment, Dynamic Capital Structure, Major Customers, Governmental Customers, Partial Adjustment, Corporate Finance.

JEL classification: G30, G39

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الملخص

كبار العملاء وسرعة التكيف في هياكل رأس مال الشركات الموردة

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هدف الدراسة: تستقصى الدراسة كيفية تأثير كبار العملاء على سرعة التكيف في هياكل رأس مال الشركات الموردة نحو المستويات المثلى.

تصميم/ منهجية/ طريقة الدراسة: التحليل الكمي باستخدام نموذج GMM من خطوتين (1998) Blundell and Bond's لتقدير سرعة التكيف، وللتأكد من متانة النتائج: استخدم: نموذج التحليل ذي التأثيرات الثابتة، ونموذج المربعات الصغرى في مرحلتين (2SLS)، وطريقة مطابقة النقاط المرجعية (PSM)، ونموذج تويت المزوج المراقب (DPF).

عينة الدراسة وبياناتها: تستخدم الدراسة 186,240 سجلاً سنوياً للشركات من ملفات كومبستات لأمريكا الشمالية وقطاعات كومبستات التاريخية، من 1978 إلى 2013، باستثناء قطاعي المالية والمرافق.

نتائج الدراسة: تُظهر النتائج أن وجود عملاء كبار يسرع من عملية التكيف في هيكل رأس مال الشركة الموردة؛ إذ يقدم العملاء شهادة للأسواق تقلل عدم اليقين، لكن التأثير يتفاوت بحسب نوع العميل؛ إذ يؤدي التعامل مع العملاء الحكوميين إلى تسريع أكبر مقارنة بالكيانات غير الحكومية.

أصالة الدراسة: تعزز النتائج نظرية تأثير أصحاب المصلحة غير الماليين في قرارات الشركات، من خلال إثبات دور العملاء الكبار عوامل حاسمة في تحديد سرعة التكيف هيكل رأس المال، مسيطرة الضوء على التباين في سرعة التكيف بين الشركات، وتميز هذه الدراسة نفسها من خلال التفريق بين أنواع العملاء الرئيسيين، وتؤكد على أهمية مراعاة نوع العميل في الإستراتيجيات المالية.

حدود الدراسة وتطبيقاتها: الدراسة تقتصر على الأسواق الأمريكية؛ مما يحد من إمكانية تعميم نتائجها؛ ومن ثم، يجب أن تمتد الأبحاث المستقبلية إلى مناطق أخرى وفترات حديثة، توفر النتائج رؤى للشركات الموردة في إستراتيجيات القرارات المالية وإدارة العلاقات مع العملاء الكبار، التي لها آثار على تحالفات الشركات وسياسات إدارة أصحاب المصلحة، داعين إلى سياسات إفصاح أكثر تفصيلاً لتعزيز الشفافية وكفاءة السوق.

الكلمات المفتاحية: سرعة التكيف هيكل رأس المال، هيكل رأس المال الديناميكي، العملاء الكبار، العملاء الحكوميون، التعديل الجزئي، مالية الشركات.

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Introduction

Roughly one out of every two firms has a major customer (Ellis et al., 2012) who acts as a non-financial stakeholder and influences corporate decisions (Fee et al., 2006). Major customers, defined as those accounting for at least 10% of a firm's total sales, play a crucial role in shaping corporate decisions. These customers can reduce risk and provide certification to financial markets, improving firm performance (Cai & Zhu, 2020; Cui et al., 2022; Johnson et al., 2010).

Previous studies have highlighted the substantial impact of major customers on firms' financial strategies (Alqassar et al., 2024; Al-Thaqeb & Harper, 2017; Dhaliwal et al., 2016; Ellis et al., 2012; Fee et al., 2006; Itzkowitz, 2013, 2015; Johnson et al., 2010; Kale & Meneghett, 2014; Patatoukas, 2012; Wang, 2012), and significantly affect capital structure decisions (Al-Thaqeb, 2022; Banerjee et al., 2008; Chu & Wang, 2017; Kale & Shahrur, 2007). However, there are trade-offs between the risks and benefits of working with major customers. While some literature shows that major customers improve a firm's operational performance through certification power and reducing market uncertainty (Cen et al., 2015; Johnson et al., 2010), other studies argued that major customers increase a firm's volatility and riskiness (Dhaliwal et al., 2016; Campello & Gao, 2017; Hertz et al., 2008; Huang et al., 2016).

According to the dynamic capital structure theory, firms continually strive to align their capital structures with an optimal benchmark, adjusting to changing market conditions, investment opportunities, and internal financial constraints. However, focusing solely on target capital structures without considering the speed of adjustment (SOA) towards optimal capital structures can lead to incomplete conclusions (Chang & Dasgupta, 2009). The SOA is crucial as it indicates how quickly firms can realign their capital structures to target levels, impacting financial flexibility and risk management capabilities. Market imperfections, adjustment costs, and agency conflicts often complicate the adjustment process (Byoun, 2008; Faulkender et al., 2012). Despite extensive research on the influence of major customers, the specific effects on the SOA remain underexplored. Therefore, the study aims to test the relationship between having a major customer and SOA.

Firms with major customers often exhibit characteristics of financially constrained firms, such as smaller size, younger age, lower dividend payouts, and higher growth opportunities (Wang, 2012). On the other hand, these ex-ante

characteristics can predict both the cost of adjustment and its effect on the SOA (Faulkender et al., 2012). The cost of moving toward the target capital structure is higher than the benefit for financially constrained firms, making access to financial markets key in capital structure decisions. Moreover, how far a firm deviates from its target capital structure significantly influences its SOA (Faulkender et al., 2012). Firms under or over the target leverage ratio exhibit different SOAs. Al-Thaqeb (2022) shows that firms for which the government is a major customer are over-leveraged, while firms with major non-governmental customers are under-leveraged, demanding a deeper exploration of the differential impacts of the type of customers, governmental versus non-governmental, on firms' SOA.

Our study aims to address the gap in the literature by investigating how major customers influence the SOA of a firm's capital structure and exploring the differential effects of governmental versus non-governmental major customers on the adjustment process. The research objectives are twofold: first, to examine the overall impact of major customers on the SOA, and second, to analyze how the type of major customer affects firms' leverage strategies and SOA. Finally, the study tests whether the effect of customer concentration on the SOA is more substantial for over-leveraged firms.

The findings indicate that major customers significantly impact the SOA of a firm's capital structure. Firms with major customers adjust their capital structures faster. Moreover, the customer type also plays a key role; firms with major governmental customers exhibit a higher SOA than those with major non-governmental customers. The results suggest that governmental customers provide lower risk and higher market certification power, facilitating faster adjustment. The findings stress the importance of considering the major customer type when analyzing firms' financial strategies and SOA.

The study contributes to the literature of corporate finance in four ways. First, it is the first study to examine the impact of major customers on corporate SOA and document a significant effect. Second, it contributes to the literature on cross-sectional capital structure by establishing the heterogeneities in firms' SOA and showing that major customers can be determinants of the SOA. Third, the study documents the heterogeneity in the effects of different types of major customers on a firm's SOA and finds initial evidence of different impacts for different customer types. Fourth, the results suggest that firms with governmental customers exhibit a higher SOA than firms with non-governmental customers. The effect

of SOA on major customers may differ based on customer type. Hence, some major customers, such as governmental customers, may have greater certification power than others, potentially resulting in greater flexibility.

The paper is organized as follows: section 2 reviews relevant literature and develops the study's hypotheses. Section 3 outlines the research design, data collection, and analytical methods used to estimate leverage and the SOA. Section 4 describes the data sources, sample selection, and empirical framework. Section 5 presents the empirical findings and discusses their limitations, as well as theoretical and practical implications. Finally, section 6 summarizes the study's findings and suggests directions for future research.

Literature Review and Hypotheses Development

Major customers significantly influence corporate decisions, including governance, cash management, capital structure, and financial reporting. Recent research has highlighted the role of customer concentration in various financial decisions such as corporate governance (Fee et al., 2006), cash management (Al-Thaqeb & Harper, 2017; Itzkowitz, 2013, 2015), capital structure (Al-Thaqeb, 2022; Banerjee et al., 2008; Chu & Wang, 2017; Kale & Shahrur, 2007), initial public offerings (Johnson et al., 2010), mergers and acquisitions (Dong et al., 2021), and financial reporting (Ellis et al., 2012; Patatoukas, 2012).

Al-Thaqeb and Harper (2017) and Itzkowitz (2013, 2015) found that firms with major customers hold higher cash reserves for several reasons: to mitigate the risk of losing major customers, to manage unstable revenue streams that increase financial distress risk, and to ensure better liquidity management. Wang et al. (2023b) showed that geographic distance and financial constraints moderate the impact of customer concentration on cash holdings in Chinese firms, with distant major customers leading to elevated cash reserves. Thus, firms with concentrated customers tend to have a lower market value of excess cash (Kim et al., 2023). Investors view such reserves less favorably, as a concentrated customer base can lead to higher agency costs. Chen et al. (2022a) showed that managers in companies with a few large customers are more likely to take more risks, influenced by the demands and expectations of these major customers. Kim (2017) found that customer concentration and interconnection negatively impact supplier profitability. Additionally, Chen et al. (2022b) and Cen et al. (2018) indicated that managers are more likely to withhold adverse news disclosure when they have a high concentration of custom-

ers, possibly to maintain good relationships with these important clients. Dong et al. (2021) demonstrated that acquirer firms targeting companies with concentrated customer bases often experience suboptimal long-term performance post-merger, highlighting the need to evaluate the customer base in M & A transactions.

On the other hand, Fee et al. (2006) demonstrated that major customers enhance corporate governance by reducing firm-specific uncertainty and improving performance. Ellis et al. (2012) and Patatoukas (2012) reported that major customers improve financial transparency and reporting standards as firms adopt more rigorous practices to meet stakeholder expectations. Major customers can have certification power, reducing market risk (Cen et al., 2015; Johnson et al., 2010). They can provide signals regarding quality certification to the financial market, thus reducing firm-specific uncertainty (Fee et al., 2006; Itzkowitz, 2015). For this reason, banks view firms with major customers as less risky and provide them with more loans with fewer covenants and lower spreads (Cen et al., 2015; Johnson et al., 2010).

However, major customers can also introduce risks, such as pricing pressures and the need to hold excess inventory (Patatoukas, 2012). Therefore, the dependencies on major customers can also introduce idiosyncratic risks. Customer bargaining power, payment terms, and industry can significantly alter the risk landscape (Cen et al., 2018; Chu, 2012). Having a major customer can make cash flow more volatile (Alqassar et al., 2024; Campello & Gao, 2017; Dhaliwal et al., 2016; Hertz et al., 2008; Huang et al., 2016). Dhaliwal et al. (2016) argued that the customer-supplier relationship significantly impacts a firm's cost of equity and debt, with firms having high customer concentrations incurring higher costs. As a result, firms with major customers may try to reduce risk by holding lower leverage ratios (Banerjee et al., 2008).

Firms with high customer concentration often exhibit lower debt levels due to the risks of losing substantial revenue streams (Banerjee et al., 2008; Kale & Shahrur, 2007). These firms face higher borrowing costs and stricter loan covenants (Campello & Gao, 2017). Within U.S. manufacturing firms, customer-supplier relationships significantly influence capital structures, particularly in the durable goods sector. Kale and Shahrur (2007) also highlighted a correlation between lower leverage and research and development (R&D) intensity, indicating product uniqueness. Then, Banerjee et al. (2008) found that firms with high customer concentration tend to adopt lower leverage levels to mitigate risks associated with potential revenue loss from major customers.

While Banerjee et al. (2008) found an insignificant relationship between governmental major customers and capital structure, Al-Thaqeb (2022) showed that the major customer type significantly impacts capital structure. He shows that firms with major governmental customers tend to have higher leverage ratios, whereas those with non-governmental customers adopt more conservative strategies. The presence of a major customer can constrain or enhance financial flexibility.

In a static capital structure, firms maintain a target or optimal leverage (Frank & Goyal, 2009; Rajan & Zingales, 1995). However, firms often deviate from this target due to various shocks and financial frictions. The speed of adjustment (SOA) refers to the rate at which firms move towards their optimal capital structure. Studies supporting the trade-off theory and the existence of an optimal leverage structure have modeled the SOA to target leverage (Byoun, 2008; Fama & French, 2002; Flannery & Rangan, 2006; Huang & Ritter, 2009; Lemmon et al., 2008; Oztekin & Flannery, 2012). These studies show that firms adjust their capital structures at different speeds based on their unique financial conditions, market dynamics, and internal constraints. Previous work has touched upon the determinants and barriers to adjusting capital structures (Faulkender et al., 2012; Fischer et al., 1989), but the role of major customers in shaping SOA remains underexplored.

Given the extensive literature on the impact of major customers on corporate governance and capital structure (Al-Thaqeb, 2022; Fee et al., 2006), it is likely that such a relationship extends to capital structure adjustments. Ni et al. (2023) highlighted that high customer concentration often leads to fewer financing constraints, facilitating more options and making it easier for firms to access external financing. Major customers can reduce uncertainty and lower risk by providing certification and a quality signal to the market (Huang et al., 2016; Johnson et al., 2010). Consequently, the study's first hypothesis is:

H1: Firms with major customers adjust their capital structure faster towards the optimal level than those without major customers.

The impact of major customers on firm capital structures varies between governmental and non-governmental entities. About 7% of firms have major governmental customers (Al-Thaqeb, 2022; Dhaliwal et al., 2016). Governmental customers are often more creditworthy and provide stable demand, reducing financial volatility (Dhaliwal et al., 2016). Firms with governmental customers have lower systematic risk and cost of equity, providing a signal of quality certification to the

market (Al-Thaqeb, 2022; Dhaliwal et al., 2016; Huang et al., 2016). However, dealing with government customers can involve bureaucracy and stringent regulations (Alqassar et al., 2024; Purchase et al., 2009).

Existing research suggests that the type of major customer—governmental versus non-governmental—can lead to vastly different corporate behaviors and outcomes. For instance, Lee et al. (2020) demonstrated that corporate customer concentration positively correlates with stock price risk. In contrast, firms with major governmental customers exhibit a significantly lower level of risk. Nevertheless, Chen et al. (2021) highlighted that governmental customer concentration brings unique challenges, including additional financial reporting and audit requirements, complicating accounting systems, and increasing costs. They found that companies with governmental customers tend to pay higher audit fees because auditors need to spend more time and effort to ensure these companies comply with complex regulations, which increases audit risk.

Wang et al. (2023a) found that companies with high customer concentration are more vulnerable to adverse stock sentiment risks. Nonetheless, Boscaljon et al. (2021) found a negative association between government customer concentration and stock liquidity risk. Additionally, Wang and Mao (2021) explored the relationship between customer concentration and tax behavior, finding that suppliers with major customers are more likely to engage in tax avoidance strategies, consistent with the findings of Cen et al. (2017). However, Huang et al. (2016) observed lower levels of tax avoidance among firms with governmental customers.

Al-Thaqeb (2022) analyzed leverage ratios between firms with governmental and non-governmental major customers, finding that firms with governmental customers tend to increase leverage, while non-governmental customers lead to more conservative strategies. This highlights the complex relationship between customer types and capital structure. Governmental customers often have unique characteristics and typically engage in long-term contracts and provide consistent demand, which may mitigate risks associated with customer concentration (Dhaliwal et al., 2016). These characteristics suggest that firms with governmental customers may adjust their capital structures more swiftly. As a result, the second hypothesis is:

H2: *Governmental major customers lead to a higher SOA due to their lower risk and greater certification power than non-governmental major customers.*

The literature establishes that firms strive to adjust towards their target capital structure. The ex-ante characteristics can predict the SOA, as financially con-

strained firms often face higher costs than benefits when moving towards the target capital structure. Access to financial markets becomes crucial, and the degree of deviation from the target capital structure significantly influences the SOA (Faulkender et al., 2012). Over-leveraged firms tend to move towards their target capital structure more quickly due to higher adjustment pressures. For these reasons, the major customer type could influence the SOA differently for over-leveraged firms. Accordingly, the third hypothesis is:

H3: *The effect of customer concentration on the SOA is stronger for over-leveraged firms.*

Methodology: Methods to Estimate Leverage and SOA

To test the hypotheses, our study follows previous literature on dynamic capital structure to design a model for estimating the SOA of capital structure and partial adjustment on leverage (Flannery & Rangan, 2006; Graham & Leary, 2011; Lemmon et al., 2008). The SOA model is as follows:

$$Leverage_{(i,t)} = \alpha + (\lambda\beta) * X_{(i,t-1)} + (1-\lambda) * Leverage_{(i,t-1)} + \varepsilon_{(i,t)} \quad (1)$$

Where λ is the SOA to the target leverage level, and X is a vector of determinants of the firm's target capital structure. Control variables include size, dividends, market-to-book ratio, profitability, proportion of tangible assets to total assets, and industry leverage (Frank & Goyal, 2009; Rajan & Zingales, 1995).

While Fama and French (2002) used the Fama–Macbeth method to estimate SOA, Flannery and Rangan (2006) argued that firm fixed effects control for any omitted or unobservable variables determining capital structure. They present a model with fixed effects and instrumental variables to estimate SOA. However, studies show that the ordinary least squares (OLS) model underestimates the actual SOA, and the fixed effects model overestimates it (Lemmon et al., 2008).

Lemmon et al. (2008) proved that initial leverage affects long-term leverage for over 20 years. They argued that there is no significant difference in whether the target leverage is a function of firm characteristics that change over time or remains a fixed target for each firm. Using either estimation method has little effect on the SOA. They employed a general method of moments (GMM) system using differences and lagged values of dependent variables to avoid bias.

Flannery and Hankins (2013) compared the results of different models using simulation modeling of datasets. They provided evidence that the two-step system

in the GMM model by Blundell and Bond (1998) results in efficient estimators of the SOA in dynamic panels. Thus, we employ the GMM model as the primary estimation method and use others for robustness checks.

Data and Sample Construction

This study uses data from Compustat North America annual files and Compustat historical segment files, covering the period from 1978 to 2013 for publicly listed companies in the United States. We follow the literature by excluding firms in the utility and financial sectors. The dataset includes all firms with positive assets, net assets, sales, market value of assets, and equity.

The sample period starts in 1978 because it is the initial reporting year for Compustat Segments. All main variables are winsorized at the 1st and 99th percentiles and deflated to 2007-dollar values using the CPI deflator. SFAS 14 and SFAS 131 mandate the disclosure of any major customers that account for 10% or more of total sales. Unfortunately, our access to comprehensive data is limited to the period ending in 2013. This limitation prevents us from extending the data analysis beyond this period.

Compustat's segment files provide the data for these metrics, reliably tracking firms with at least one major customer accounting for 10% or more of total sales. To comprehensively assess the influence of major customers, this study uses the percentage of total sales to major customers as the primary measure. This measure aligns with methodologies from previous studies (Al-Thaqeb, 2022). For robustness checks, three additional measures are employed: a binary indicator to reflect whether a firm has at least one major customer contributing more than 10% to total sales, the number of major customers a firm has, and the modified Herfindahl-Hirschman Index for customer concentration (HHCC). The HHCC measures customer concentration by summing the squares of the market shares of each major customer within a firm's portfolio, with higher values indicating higher customer concentration. These multiple measures allow for a robust analysis of the influence of major customers under different definitions, enhancing the study's robustness.

The final sample consists of 186,240 firm-year observations. Table 1 provides descriptive statistics of the main variables of U.S. firms in the study sample. Firms with major customers tend to maintain these relationships over time, with a low turnover rate. Consistent with previous research, around 40% of firms have a major customer, and 6% have a major governmental customer (Dhaliwal et al., 2016).

Most firms with major customers are smaller, younger, and have more growth opportunities (Itzkowitz, 2013; Wang, 2012). To ensure that factors such as firm size, industry, and growth opportunities do not drive the heterogeneity in the SOA, the study follows established methodologies in the literature and controls for these variables (e.g., Al-Thaqeb, 2022; Banerjee et al., 2008; Dhaliwal et al., 2016).

Table 1
Summary Statistics of the Main Variables

Panel A	Full Sample of all Firms ($N = 186,240$)				
	Mean	Std Dev	1 st Quartile	Median	3 rd Quartile
Age	14.791	12.122	6.000	11.000	20.000
Size	4.381	2.492	2.634	4.280	6.058
MB	2.424	4.243	1.030	1.404	2.247
Leverage	0.249	0.255	0.023	0.169	0.403
R&D /Sales	0.278	1.820	0.000	0.000	0.048
Dividends/Assets	0.009	0.022	0.000	0.000	0.008
ROA	0.018	0.555	0.000	0.101	0.166
Tangibility	0.304	0.245	0.102	0.238	0.451

Notes: This table presents the descriptive statistics of the main variables in the study sample of US-based, publicly traded firms from the Compustat North America annual and Compustat historical segment files, excluding the utility and financial sectors from 1978 to 2013. The sample and variable selection followed the literature and included all firms with positive sales, net assets, and equity. The actual variables were deflated to 2007 dollars using the CPI. All the main variables of the study models were deflated to 2007-dollar values using the CPI deflator and winsorized at the 1st and 99th percentiles. Age is the number of years that the firm was listed on Compustat. Assets are the book values of the total assets at the end of the fiscal year. Size is defined as the natural logarithm of net assets.

The market-to-book ratio is measured as the sum of the market value of equity and total liabilities divided by assets. Total leverage is the total debt, which is the sum of long-term debt and debt in current liabilities over the sum of total debt and market value of equity. Return on assets is operating income before depreciation over net assets. Tangibility is the property, plant, and equipment divided by assets. There were 48 Fama–French industries. N is the number of non-missing observations in the sample for each variable. The variables were winsorized at the 1st and 99th percentiles, except for the R&D measures, which were winsorized in the upper tail.

Cont. Table 1
Summary Statistics of the Main Variables

Panel B	Firms with a Major Customer (N = 76,069)					Firms without a Major Customer (N = 110,171)				
	Mean	Std Dev	1 st Quartile	Median	3 rd Quartile	Mean	Std Dev	1 st Quartile	Median	3 rd Quartile
Age	15.117	12.310	6.000	11.000	20.000	14.570	11.893	6.000	10.000	20.000
Size	4.342	2.490	2.528	4.170	6.022	4.369	2.486	2.668	4.299	6.037
MB	2.373	3.742	1.050	1.456	2.340	2.422	4.496	1.008	1.354	2.147
Leverage	0.228	0.248	0.013	0.141	0.368	0.266	0.259	0.035	0.193	0.431
R&D/Sales	0.202	1.157	0.000	0.009	0.090	0.322	2.130	0.000	0.000	0.020
Dividends/Assets	0.007	0.021	0.000	0.000	0.001	0.010	0.022	0.000	0.000	0.011
ROA	0.019	0.485	0.012	0.096	0.163	0.029	0.592	0.009	0.106	0.170
Tangibility	0.269	0.233	0.085	0.196	0.387	0.329	0.250	0.122	0.271	0.493

Panel C	Non-governmental Major Customer (N = 70,860)					Governmental Major Customer (N = 5,209)				
	Mean	Std Dev	1 st Quartile	Median	3 rd Quartile	Mean	Std Dev	1 st Quartile	Median	3 rd Quartile
Age	14.847	12.257	6.000	11.000	19.000	18.786	12.441	9.000	16.000	27.000
Size	4.348	2.502	2.528	1.472	2.371	4.259	2.307	2.534	4.083	5.788
MB	2.419	3.824	1.057	0.067	0.210	1.734	2.270	0.995	1.257	1.755
Leverage	0.225	0.248	0.011	0.054	0.104	0.272	0.245	0.060	0.210	0.427
R&D/Sales	0.208	1.181	0.000	0.000	0.000	0.110	0.761	0.000	0.016	0.055
Dividends/Assets	0.007	0.021	0.000	0.095	0.163	0.007	0.015	0.000	0.000	0.012
ROA	0.025	0.494	0.019	0.195	0.395	0.066	0.320	0.054	0.116	0.166
Tangibility	0.271	0.237	0.083	0.181	0.361	0.236	0.165	0.110	0.204	0.317

Empirical Results

Main Results

Before beginning hypothesis testing, the study confirmed earlier empirical results. The study validated the sample using Frank and Goyal's (2009) model to demonstrate the differences between major customer types in corporate capital structure. Table 2 displays a dataset of 152,196 firm-year observations across 18,768 firms.

The first two columns test the impact of having a major customer on capital structure. Firms with major customers have lower leverage, and increased sales concentration to these customers correlates with reduced debt levels. The results align with prior research that firms with major customers tend to adopt more conservative capital structures (Al-Thaqeb, 2022; Banerjee et al., 2008; Chu & Wang, 2017; Kale & Shahrur, 2007). The last two columns compare firms with major governmental versus non-governmental customers. Firms with major governmental customers hold more debt and have higher leverage ratios. The table results support previous literature indicating that the major customer type influences capital structure (Al-Thaqeb, 2022). Table 2 confirms that the presence and type of major customers significantly impact a firm's capital structure, consistent with existing literature.

Table 2
Capital Structure

	Market Leverage	Book Leverage	Market Leverage	Book Leverage
Major Customer	-0.0073*** (0.0010)	-0.0198*** (0.0017)		
Government Major Customer			0.0098*** (0.0029)	0.0187*** (0.0077)
Non-government Major Customer			-0.0103*** (0.0009)	-0.0111*** (0.0017)
Industry Leverage	0.5931*** (0.0067)	0.5987*** (0.0069)	0.5978*** (0.0066)	0.5974*** (0.0065)
Dividend	-0.9876*** (0.0301)	-0.9867*** (0.0303)	-0.9881*** (0.0301)	-0.9877*** (0.0302)

Cont. Table 2
Capital Structure

	Market Leverage	Book Leverage	Market Leverage	Book Leverage
Profitability	-0.0765*** (0.0024)	-0.0777*** (0.0026)	-0.0761*** (0.0027)	-0.0771*** (0.0029)
Size	0.0106*** (0.0002)	0.0109*** (0.0003)	0.0112*** (0.0002)	0.0108*** (0.0003)
Tangibility	0.2020*** (0.0029)	0.2019*** (0.0028)	0.2034*** (0.0030)	0.2034*** (0.0031)
MB	-0.0112*** (0.0004)	-0.0112*** (0.0004)	-0.0114*** (0.0004)	-0.0114*** (0.0004)
Constant	0.0735*** (0.0021)	0.0713*** (0.0022)	0.0635*** (0.0023)	0.0754*** (0.0025)
Obs.	152,196	152,196	152,196	152,196
Adjusted R^2	0.197	0.205	0.209	0.215

Notes: This table presents the results of a panel regression, where the dependent variable is the leverage ratio. The leverage ratio is calculated as market leverage (measured as the sum of long-term debt and debt in current liabilities over the sum of total debt and market value of equity) and book leverage (measured as the sum of long-term debt and debt in current liabilities over the book value of assets). This model's variables predicting target capital structure levels are lagged one fiscal year. All other variables are defined in Table 1. This model was estimated using firm and industry fixed effects with a yearly dummy. Standard errors are in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Next, the study employs Blundell and Bond's (1998) GMM model to assess the SOA for firms with major customers as outlined in Equation (1). Table 3 presents the findings. Column 1 shows that the SOA for the entire sample is 0.176. The signs and significance of the SOA and all control variables align with results from previous literature on capital structure determinants, including studies by (Fama & French, 2002; Frank & Goyal, 2009; Lemmon et al., 2008; Rajan & Zingales, 1995).

Table 3
Speed of Adjustment of Capital Structure

	Full Sam- ple	Firms with a Major Customer	Firms without a Major Customer	Govern- mental Customer	Non-gov- ernmental Customer
SOA	0.1760	0.2050	0.1570	0.3770	0.2090
Lag Leverage	0.8240*** (0.0085)	0.7950*** (0.0128)	0.8430*** (0.0114)	0.6230*** (0.0352)	0.7910*** (0.0131)
Size	-0.0077*** (0.0014)	-0.0015 (0.0020)	-0.0135*** (0.0020)	0.0081 (0.0077)	-0.0008 (0.0020)
Industry Leverage	-0.3470*** (0.0128)	-0.4150*** (0.0216)	-0.3550*** (0.0160)	-0.0233 (0.0636)	-0.4190*** (0.0224)
Dividend	0.33900*** (0.0400)	0.1770*** (0.0473)	0.4180*** (0.0586)	0.5050** (0.2440)	0.1670*** (0.0477)
MB	0.0063*** (0.0004)	0.0067*** (0.0006)	0.0059*** (0.0005)	0.0076*** (0.0019)	0.0065*** (0.0006)
Tangibility	-0.0806*** (0.0114)	-0.0812*** (0.0179)	-0.0645*** (0.0142)	-0.0479 (0.0657)	-0.0700*** (0.0183)
ROA	0.0464*** (0.0036)	0.0439*** (0.0056)	0.0465*** (0.0047)	0.0155 (0.0195)	0.0429*** (0.0057)
Constant	0.1620*** (0.0083)	0.1360*** (0.0114)	0.1910*** (0.0118)	0.0614 (0.0431)	0.1310*** (0.0116)
Observations	152,196	62,593	89,603	3,979	58,614
Number of ID	16,787	9,783	13,336	927	9,299

Notes: This table presents the results of a panel regression of Equation (1), where the dependent variable is market leverage, measured as the sum of long-term debt and debt in current liabilities over the sum of total debt and the market value of equity.

$$Leverage_{(i,t)} = \alpha + (\lambda\beta)X_{(i,t-1)} + (1-\lambda)Leverage_{(i,t-1)} + \varepsilon_{(i,t)} \quad (1)$$

where λ is the SOA to the target leverage level and X is a vector of the determinants of the firm's target capital structure. The determinants are the market-to-book ratio, size, return on assets, industry median leverage, dividends, and tangibility. This model was estimated using a two-step Generalized Method of Moments (GMM) estimator, as presented by Blundell and Bond (1998). Standard errors are shown in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The first hypothesis suggests that firms with major customers exhibit a higher SOA of capital structure. The results in columns 2 and 3 provide clear evidence supporting this hypothesis. The SOA is 0.21 when the model includes only firms with major customers (Column 2) and 0.16 for firms without major customers (Column 3). These results are significantly different at the 5% level.

The second hypothesis suggests that firms with major governmental customers have a higher SOA of capital structure. Columns 4 and 5 compare the impact of governmental versus non-governmental major customers. The SOA for firms with governmental customers is 0.38, while it is 0.21 for firms with non-governmental customers, supporting the hypothesis. These results significantly differ at 5%, reinforcing that SOA depends on the major customer type.

Overall, the findings indicate that having a major customer influences a firm's SOA, with firms having major customers showing a higher SOA. Furthermore, within these firms, those with governmental major customers exhibit a significantly higher SOA than firms with non-governmental major customers. The results suggest that major customers increase the SOA, and the effect may depend on the customer type. Our analysis indicates that having major customers enhances a firm's financial flexibility, thus facilitating a quicker adjustment of its debt levels toward the target leverage.

Robustness Checks

To validate the findings and confirm the results, the study employed different methods to further test the hypotheses. Rather than splitting the sample, we performed a cross-sectional test. We introduced a new variable: the interaction between lagged leverage and the major customer measure in the fixed effects partial adjustment model, as described in Equation (1).

Table 4 presents the results. Overall, the SOA is higher, consistent with previous literature showing that fixed effects models tend to overestimate SOA (Lemmon et al., 2008). Additionally, the results support the same conclusion: having major customers affects firms' SOA of capital structures. In Column 2, the interaction term is significantly negative, indicating that having a major customer increases the SOA by 1.75%. This supports the hypothesis that firms with a major customer have a higher SOA. The rest of the table is consistent with previous findings indicating that firms with governmental (non-governmental) major customers have a higher (lower) speed of adjustment to their optimal capital structure. Thus, having major customers has a significantly positive impact and increases a firm's SOA.

Table 4
Robustness Checks: Fixed Effects Model of SOA with
an Interaction of Major Customers

	Full Sample	Full Sample	Firms with a Major Customer	Firms without a Major Customer	Govern- mental Customer	Non-gov- ernmental Customer
SOA	0.384	0.377 (3595)	0.421	0.367	0.446	0.415
Lag Leverage	0.616*** (0.0034)	0.623*** (0.00371)	0.579*** (0.00595)	0.633*** (0.00466)	0.554*** (0.0235)	0.585*** (0.0063)
MC*Lag Leverage		-0.0175*** (0.0037)				
Size	0.0133*** (0.0004)	0.0135*** (0.0004)	0.0154*** (0.0007)	0.0144*** (0.0006)	0.0206*** (0.0037)	0.0161*** (0.0007)
Industry Leverage	0.0354*** (0.0064)	0.0344*** (0.0064)	0.0371*** (0.0116)	0.0375*** (0.0082)	0.107** (0.0443)	0.0308** (0.0123)
Dividend	-0.0720*** (0.0188)	-0.0705*** (0.0188)	-0.0471* (0.0270)	-0.0761*** (0.0277)	0.174 (0.1230)	-0.0537* (0.0277)
MB	-0.00035*** (0.0002)	-0.000354*** (0.0002)	-0.00019 (0.0003)	-0.00045* (0.0002)	0.0008 (0.0013)	-0.0002 (0.0003)
Tangibility	0.0585*** (0.0042)	0.0586*** (0.0042)	0.0772*** (0.0078)	0.0556*** (0.0056)	0.0751** (0.0367)	0.0744*** (0.0081)
ROA	-0.0144*** (0.0020)	-0.0146*** (0.0017)	-0.0200*** (0.0030)	-0.0122*** (0.0022)	-0.0335* (0.0177)	-0.0212*** (0.0030)
Constant	0.0232*** (0.0029)	0.0225*** (0.0029)	0.0107** (0.00486)	0.0266*** (0.00406)	-0.0124 (0.0249)	0.0104** (0.0051)
Observations	152,196	152,196	62,593	89,603	3,979	58,614
Adjusted R^2	0.738	0.770	0.716	0.721	0.802	0.712
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table presents the panel regression results for Equation (1). This model was estimated using a fixed-effects model of SOA with the interaction of the measures of major customers. MC is an indicator variable that takes the value of one in years when a firm has at least one major customer and zero in all other years. All other variables are defined in Table 1. Standard errors are shown in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Next, the study employed additional tests using the augmented doubly censored Tobit (DPF estimator) proposed by Elsas and Florysiak (2015). The simulation worked by Dang et al. (2015) supports the accuracy and efficiency of the DPF estimator for modeling SOA. The results in Table 5 show significant and robust findings and indicate that firms with a major customer have a higher SOA. Additionally, firms with governmental major customers exhibit a higher SOA than those with non-governmental major customers, further supporting the relationship between having a major customer and a firm's SOA. The robustness checks confirm that dealing with a major customer significantly impacts a firm's SOA, providing more financial flexibility.

Table 5
Robustness Checks: Augmented Doubly Censored
Tobit Estimator (DPF Estimator)

	Full Sample	Firms with a Major Customer	Firms with- out a Major Customer	Governmental Customer	Non-govern- mental Customer
SOA	0.245	0.284	0.230	0.303	0.280
Lag Leverage	0.755*** (0.0028)	0.716*** (0.0029)	0.770*** (0.0032)	0.697*** (0.0033)	0.720*** (0.0053)
Size	0.0114*** (0.00046)	0.0102*** (0.00086)	0.0148*** (0.00069)	0.0122*** (0.00061)	0.0125*** (0.000935)
Industry Leverage	-0.0523*** (0.0071)	-0.189*** (0.0080)	-0.162*** (0.0079)	-0.117*** (0.00785)	-0.0884*** (0.0143)
Dividend	-0.0463* (0.0280)	-0.0864 (0.0299)	-0.0343 (0.0299)	-0.0305 (0.0313)	-0.0754 (0.0519)
MB	0.0009*** (0.000185)	0.0029*** (0.000276)	0.0026*** (0.000275)	0.0015*** (0.000289)	0.0019*** (0.000369)
Tangibility	0.0650*** (0.00411)	-0.0905*** (0.00697)	-0.0451*** (0.00618)	-0.0219*** (0.00601)	0.0829*** (0.00865)
ROA	-0.00550*** (0.0015)	0.0170*** (0.0027)	0.00652** (0.00255)	0.00447* (0.00267)	-0.00824*** (0.0029)
Constant	0.1620***	0.1910***	0.0614***	0.1310***	0.1310***

Cont. Table 5
Robustness Checks: Augmented Doubly Censored
Tobit Estimator (DPF Estimator)

	Full Sample	Firms with a Major Customer	Firms with- out a Major Customer	Governmental Customer	Non-govern- mental Customer
	(0.0083)	(0.0118)	(0.0431)	(0.0116)	(0.0116)
Observations	152,196	62,593	89,603	3,979	58,614

Notes: This table presents the panel regression results for Equation (1). This model was estimated using the DPF estimator of SOA presented by Elsas and Florysiak (2015). All other variables are defined in Table 1. Standard errors are shown in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Previous literature shows that most firms with major customers are smaller in size, younger, and have more growth opportunities (Itzkowitz, 2013; Wang, 2012). To ensure that other factors did not drive SOA heterogeneity, we control for firm size, industry, and growth opportunities in the model. However, given concerns that the difference in sample size between groups (those with a major customer and those without) could have driven the main results, all tests were repeated with matched samples using Propensity Score Matching (PSM) based on age, industry, and growth as a robustness check.

The results in Table 6 support the study hypotheses. Firms with a major customer still show a higher SOA of their capital structure. Columns 1 and 2 compare the impact of having major customers. The difference in results became more substantial and was significantly different at the 1% level. Columns 3 and 4 compare the effect of having major governmental and non-governmental customers. The results significantly differ at the 5% level, supporting that SOA depends on the major customer type. The findings show that having major customers, particularly governmental ones, increases the SOA and that the effect may depend on the kind of customer.

Table 6
Robustness Checks - Propensity Score Matching (PSM)

	Firms with a Major Customer	Firms without a Major Customer	Governmental Customer	Non-governmental Customer
SOA	0.231	0.1570	0.3770	0.2090
Lag Leverage	0.769*** (0.0066)	0.802*** (0.0041)	0.651*** (0.0271)	0.761*** (0.0069)
Size	0.0154*** (0.00085)	0.0154*** (0.00085)	0.0207*** (0.0045)	0.0161*** (0.0009)
Industry Leverage	0.0372*** (0.0128)	0.0372*** (0.0128)	0.109** (0.0482)	0.0310** (0.0136)
Dividend	-0.0479* (0.0280)	-0.0479* (0.0280)	0.172 (0.120)	-0.0546* (0.0288)
MB	-0.00019 (0.00028)	-0.00019 (0.00029)	0.00077 (0.00139)	-0.00021 (0.00029)
Tangibility	0.0771*** (0.00919)	0.0771*** (0.00919)	0.0765** (0.0382)	0.0743*** (0.00965)
ROA	-0.0200*** (0.0031)	-0.0200*** (0.0031)	-0.0339* (0.0205)	-0.0212*** (0.0032)
Constant	0.0184*** (0.0057)	0.0184*** (0.0056)	0.00348 (0.028)	0.0178*** (0.0059)
Observations	15,378	15,378	1,423	1,423
Adjusted R ²	0.331	0.331	0.322	0.321

Notes: This table presents the results of a panel regression of Equation (1). This model was estimated using a two-step generalized method of moments (GMM) estimator, as presented by Blundell and Bond (1998). Matched samples using propensity score matching (PSM) based on age, industry, and growth. All other variables are defined in Table 1. Standard errors are shown in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Following An et al. (2021), we employ OLS regression and a two-step partial adjustment model as robustness checks for our analysis. Table 7 presents OLS regression results, where the dependent variable is the actual leverage adjustment, calculated as the difference between the lead and current leverage. To calculate the over-levered measure, we regress observed financial leverage on its determi-

nants to obtain the target leverage. We then compare a firm's leverage to this target: if its leverage exceeds the target, the over-leveraged dummy (OL) equals one; otherwise, it equals zero. The over-leveraged dummy (OL) variable consistently shows negative and significant coefficients, indicating that over-leveraged firms are more aggressive in reducing their leverage. The findings show that a major customer (MC) significantly increases the SOA, as indicated by the negative coefficients in Columns 1 and 2. This suggests that firms with major customers adjust their leverage more rapidly due to the stability and certification they provide.

Table 7
Robustness Checks - Ordinary Least Squares (OLS) Regression

	(1)	(2)	(3)	(4)
MC	-0.00322*** (0.000833)	-0.00371*** (0.000900)		
MC*OL		0.00131 (0.00176)		
Gov			-0.00914*** (0.00231)	-0.0118*** (0.00239)
NonGov			-0.00276*** (0.000853)	-0.00318*** (0.000919)
Gov*OL				0.00593 (0.00451)
Nongov*OL				0.00111 (0.00181)
OL	-0.0777*** (0.000956)	-0.0782*** (0.00122)	-0.0776*** (0.000956)	-0.0782*** (0.00122)
Size	-0.000993*** (0.000197)	-0.000993*** (0.000197)	-0.00101*** (0.000198)	-0.00101*** (0.000197)
Industry Leverage	-0.0619*** (0.00392)	-0.0618*** (0.00392)	-0.0615*** (0.00392)	-0.0614*** (0.00392)
Dividend	0.279*** (0.0161)	0.278*** (0.0161)	0.279*** (0.0161)	0.278*** (0.0161)
Tangibility	-0.00494** (0.00221)	-0.00501** (0.00221)	-0.00503** (0.00221)	-0.00509** (0.00221)

Cont. Table 7
Robustness Checks - Ordinary Least Squares (OLS) Regression

	(1)	(2)	(3)	(4)
MB	0.00134*** (0.000136)	0.00134*** (0.000136)	0.00133*** (0.000136)	0.00133*** (0.000136)
ROA	0.00306** (0.00139)	0.00306** (0.00139)	0.00309** (0.00139)	0.00310** (0.00139)
Constant	0.0596*** (0.00141)	0.0598*** (0.00143)	0.0596*** (0.00141)	0.0598*** (0.00143)
Observations	172,578	172,578	172,578	172,578
Number of gvkey	18,276	18,276	18,276	18,276
Adjusted R^2	0.0873	0.0873	0.0873	0.0873
Year Dummy	YES	YES	YES	YES
Industry Effect	YES	YES	YES	YES

Notes: This table reports the OLS regression results for the impact of major customers (MC) on the speed of leverage adjustment (SOA) by estimating the partial adjustment model. The dependent variable is the actual leverage adjustment (leverage_lead - leverage). All independent variables are multiplied by the leverage deviation from the target (DLEV). The variable MC represents the presence of a major customer. OL is a dummy variable that equals one if a firm is over-leveraged and zero otherwise. The regression also includes interactions with government (gov) and non-government (non-gov) major customers. Firm-level variables are controlled in each regression. All other variables are defined in Table 1. Standard errors are shown in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Columns 3 and 4 explore the specific types of major customers, including government (Gov) and non-government (NonGov) customers. Both types significantly increase the SOA, with government customers having a more pronounced effect. However, the interaction between major customers and over-leveraged firms is insignificant, indicating that the impact of major customers on SOA does not vary significantly between over-leveraged and under-leveraged firms. In general, Table 7 supports the hypothesis that major customers enhance firms' leverage adjustment speed. Government customers, in particular, provide greater flexibility, allowing firms to adjust their capital structures more rapidly.

Yet, our results may face endogeneity issues. Unobserved factors might influence both the presence of a major customer and the SOA of the capital struc-

ture, leading to omitted variable concerns. Additionally, firms with characteristics associated with faster leverage adjustment may be more likely to secure major customers, raising reverse causality concerns. To address these issues, we follow An et al. (2021) and employ a 2SLS regression, using the Herfindahl-Hirschman Index (HHI) as an instrumental variable for having major customers (Aggarwal et al., 2011; Luong et al., 2017).

Table 8
Robustness Checks - 2SLS Regressions

	1 st Stage Major Customer	2 nd Stage	(3) 2 nd Stage
Est MC		1.001*** (0.0123)	0.715*** (0.180)
Est_MC*OL			1.722*** (0.0692)
OL			-0.0777*** (0.00095)
Size	-0.00104*** (0.000197)	7.60e-06 (0.000198)	0.000675** (0.000274)
Industry Leverage	-0.0602*** (0.00390)	-7.77e-05 (0.00408)	0.0325*** (0.0116)
Dividend	0.281*** (0.0161)	0.000309 (0.0161)	-0.280*** (0.0542)
Tangibility	-0.00443** (0.00220)	2.81e-06 (0.00220)	0.00177 (0.00232)
MB	0.00135*** (0.000136)	9.88e-07 (0.000137)	-0.00137*** (0.000284)
ROA	0.00305** (0.00139)	1.11e-05 (0.00139)	-0.00398*** (0.00149)
Constant	0.0580*** (0.00134)	-2.02e-05 (0.00148)	0.0101 (0.0104)

Cont. Table 8
Robustness Checks - 2SLS Regressions

	1 st Stage Major Customer	2 nd Stage	(3) 2 nd Stage
Observations	172,578	172,578	172,578
Number of gvkey	18,276	18,276	18,276
Adjusted R^2	0.5437	0.2874	0.2901
Year	YES	YES	YES
Industry Effect	YES	YES	YES

Notes: This table reports the two-stage least squares (2SLS) regression results for the impact of major customers (MC) on the speed of leverage adjustment (SOA) by estimating the partial adjustment model. In the first-stage regression (Column 1), we regress MC on the Herfindahl-Hirschman Index (HHI) and the same set of control variables as used in the baseline regression. In the second-stage regression, we extract the fitted value of MC (Est MC) and examine its impact on the SOA (Columns 2 and 3). In Columns 2 and 3, the dependent variable is the actual leverage adjustment (leverage_lead - leverage), and all independent variables are multiplied by the leverage deviation from the target (DLEV). The instrumental variable, HHI, measures market concentration within an industry. OL is a dummy variable that equals one if a firm is over-leveraged and zero otherwise. All other variables are defined in Table 1. Standard errors are shown in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The HHI, which measures market concentration, serves as an instrumental variable. High HHI values indicate less competition and a higher likelihood of having major customers. HHI is based solely on market shares within an industry, so it likely does not directly impact leverage adjustment decisions, making it a valid instrument.

In the first-stage regression in Table 8, we assess HHI's validity as an instrumental variable by regressing MC on HHI and the baseline control variables. The significant coefficient for HHI confirms its strength as an instrument. The near-zero F -test p -value indicates a robust relationship between HHI and MC, ensuring reliable second-stage estimates. In the second-stage regression, we examine the impact of the fitted MC (Est MC) from the first stage on SOA. The coefficient for Est MC is significant at the 1% level, suggesting that a higher concentration of major customers is associated with a faster SOA. However, the interaction term Est_MC×OL is significant at the 1% level, indicating that major customers significantly enhance the SOA for over-leveraged firms.

Consequently, the results for the third hypothesis are inconclusive. Table 8 shows that major customers significantly enhance the SOA for over-leveraged firms, while Table 7 indicates no significant difference between over-leveraged and non-over-leveraged firms. Still, both tables confirm our first and second hypotheses. The results from Table 8 address endogeneity concerns and reinforce the robustness of our findings. The results support our study's findings, demonstrating that having a major customer enhances SOA due to its certification power and stability.

Formerly, our study employs four distinct measures to evaluate the influence of major customers on the SOA. The primary measure is the percentage of sales to customers accounting for at least 10% of a firm's total sales, a method commonly used in previous research. We also incorporate three additional measures to ensure robustness: the modified Herfindahl-Hirschman Index for customer concentration (HHCC), a binary indicator, and the total number of major customers.

Tables A and B in the appendix confirm the robustness of our findings across different measures of customer concentration. The tables are divided into two panels. In Panel A, the three measures—the HHCC, MC dummy, and number of customers—demonstrate that the presence of major customers significantly increases the SOA. Panel B presents results separately using three alternative measures for major governmental and non-governmental customers. Regardless of how we measure major customers, the results remain consistent. The presence of a major governmental customer increases the SOA, while the presence of a major non-governmental customer also increases the SOA, but to a lesser extent. Overall, the results confirm that our findings are robust and consistent across various definitions and measures of customer concentration.

Prior literature suggests that firms with major customers often exhibit traits of financially constrained firms. Hence, we assess the firm's financial condition to determine if it supports previous results. Faulkender and Petersen (2006) showed that firms with bond ratings indicating access to financial markets tend to hold more debt. Larger and older firms with bond ratings or those paying dividends are generally less financially constrained. Many scholars use market-to-book (MB) as a measure of growth opportunity. Using criteria from prior research, we divide the sample into financially constrained and unconstrained firms based on five measures—firm size, age, bond rating, dividend payments, and MB (Al-Thaqeb, 2022; Byoun, 2008; Faulkender et al., 2012).

Table C in the appendix presents the results. Financially constrained firms (high MB, young, small, no rating, dividend non-payer) generally have lower SOA values than less constrained firms. The results indicate that financial constraints significantly influence SOA. Financially constrained firms tend to change their leverage less rapidly than less constrained firms, highlighting the complex interplay between financial constraints and leverage adjustment behavior in firms.

The final robustness checks confirm our results using different measures of leverage (book and market leverage). We followed previous literature and redefined leverage in four ways: the total debt-to-book value of assets, long-term debt-to-book value, total debt-to-market value, and long-term debt-to-market value (Al-Thaqeb, 2022; Frank & Goyal, 2009). Regardless of the leverage measure, major customers consistently increased a firm's SOA. The results, not reported for brevity, consistently show that a major customer's presence increases a firm's SOA. The magnitude of this effect varies by customer type, with governmental customers having a more significant impact than non-governmental ones. The results remain significant, further reinforcing the validity and robustness of our conclusions.

Discussion: Study's Limitations and Implications

The theoretical framework of dynamic corporate structure and prior literature indicates that major customers function as non-financial stakeholders. Access to financial markets and market friction significantly impacts capital structure decisions, influencing the SOA. Major customers, especially governmental ones, possess certification power that reduces market uncertainty and fear (Johnson et al., 2010). This power provides firms with more options and enhances SOA. The greater certification power of governmental customers explains the variation in SOA based on customer type.

One notable limitation of our current analysis is the exclusion of the recapitalization cost. These costs can significantly influence a firm's financial strategy and SOA. Due to constraints in our dataset, we could not access the necessary data to include and analyze these costs directly. We acknowledge this as a significant gap in our study and highlight it as an exciting research question for future studies.

Plus, our study focuses on publicly listed U.S. companies in non-financial and non-utility sectors, which may limit its generalizability across different geographic regions and industries. Regulatory environments, economic conditions, and industry-specific factors can vary significantly across regions and affect how firms interact with their major customers and manage their capital structures.

Another limitation is that the analysis does not extend to the period of near-zero interest rates that characterized the past decade, which may impact the SOA in capital structures. This recent economic condition could alter the dynamics between SOA and financial performance metrics, which are typically adjusted based on the cost of debt. Our data access is limited to the period ending in 2013, preventing us from examining the effects of these long low-interest rate conditions that emerged post-2008 financial crisis. We recognize this as a significant limitation and suggest it as a compelling area for future research.

Nonetheless, the findings of our study have significant implications for supplier firms, particularly in strategic financial planning. By demonstrating that major customers, especially governmental ones, provide stability, the research suggests that supplier firms can leverage these relationships. Firms should consider utilizing the stability offered by major customers to optimize their leverage ratios, thus improving their financial flexibility and overall resilience. This strategic approach can help firms in navigating economic fluctuations more effectively and maintaining a robust financial position.

In addition to financial planning, the study underscores the importance of risk management for firms dealing with non-governmental customers. These customers often bring higher revenue volatility and payment uncertainties, requiring more conservative financial strategies. Supplier firms should diversify their customer base to reduce dependency on any single customer and maintain adequate liquidity reserves to buffer against potential payment delays and revenue shortfalls. Furthermore, we highlight the value of forming solid corporate alliances and effective stakeholder management. By implementing these risk management practices, firms can mitigate the financial risks of non-governmental customers and ensure more stable operations.

Furthermore, the findings have important policy implications in the U.S. and globally. In the U.S., while firms must disclose their major customers, there is a need for more detailed information to enhance transparency and market efficiency. Policymakers should consider requiring firms to disclose the major customer type, such as government, corporate, nonprofit, or individual. Specifically, firms should provide more information on the specific industry in which these customers operate and the nature of the business relationship.

Globally, and particularly in emerging markets, implementing similar detailed

disclosure policies could help bridge the information gap and improve corporate governance. By requiring firms to provide comprehensive details about their major customers—including the type of customer, the percentage of sales from these customers, and the industry context—these markets can attract more foreign investment and enhance transparency.

Enhanced transparency would foster investor confidence, contribute to more efficient and resilient financial markets, and support the development of robust corporate strategies. By promoting detailed and consistent disclosure practices, policymakers can ensure that all stakeholders can access critical information to assess firms' financial health and strategic positioning across various sectors. This approach benefits individual firms and strengthens the overall financial ecosystem.

Conclusion

The dynamic nature of corporate finance demands a comprehensive understanding of how capital structures evolve, particularly in response to having major customers. Therefore, we explore the impact of major customers on a firm's SOA in capital structure and examine whether the type of customer plays a role in this effect.

The findings indicate that firms with major customers exhibit a higher SOA, underscoring the significant influence of these customers on corporate financial decision-making. The theory of the certification power of major customers helps explain these results, as such customers can enhance a firm's financial flexibility and signal quality to the market (Cen et al., 2015; Graham & Harvey, 2001; Johnson et al., 2010), facilitating faster capital structure adjustments.

An essential contribution of this study is the differentiation between types of major customers. Firms with governmental major customers display a higher SOA compared to those with non-governmental major customers. Governmental customers often engage in stable, long-term contracts, providing firms with a buffer against macroeconomic fluctuations and enhancing financial stability. In contrast, private-sector major customers may introduce idiosyncratic risks.

Another significant contribution is emphasizing the critical role of major customers as non-financial stakeholders that affect firm financial policies. Emphasizing the role of major customers as determinants of SOA adds significant value to the academic discourse on dynamic capital structures. Additionally, highlighting the importance of considering customer type, when analyzing firms' financial

strategies and SOA, offers valuable implications and insights.

The findings pave the way for further exploration into the relationship between major customers and corporate financial strategies. Future studies should investigate the cost of recapitalization and its impact on decisions to restructure a firm's capital structure. Understanding how these costs influence the SOA can provide deeper insights into corporate financial strategies, especially considering the long period of low interest rates. Research should also explore how such a low interest rate environment affects capital structure adjustments and other financial strategies, providing a comprehensive analysis of corporate behavior in varying economic climates.

Moreover, comparing the impact of major customers on SOA across different countries and economic systems could offer valuable insights into how institutional factors and economic maturity influence corporate financial strategies. Finally, given the evolving nature of global markets, studies could shed light on how relationships with major customers and their impact on SOA change over time, mainly through economic cycles. By undertaking these suggested studies, researchers can build on our findings and explore how different environments and industry contexts impact the strategic financial decisions of firms with major customers.

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Appendix

Table A
Robustness Checks - Different Measures of the Major Customer

Panel A	(1)	(2)	(3)
HHCC	-0.00599*** (0.00158)		
MC		-0.0165*** (0.00320)	
Cusnumber			-0.00427*** (0.000606)
Observations	167,116	167,116	167,116
Number of gvkey	18,004	18,004	18,004
Panel B	(1)	(2)	(3)
Gov	-0.0230*** (0.0013)		
NonGov	-0.0169*** (0.00259)		
HHGov		-0.0086*** (0.0025)	
HHNonGov		-0.0069*** (0.0016)	
CusGov			-0.0284*** (0.0069)
CusNongov			-0.0170*** (0.0032)
Observations	167,116		167,116
Number of gvkey	18,004		18,004

Notes: This table presents the results of a panel regression of Equation (1) using GMM, as shown in Table 3. The determinants are not reported for brevity. The three alternative measures for major customers used in Panel A are: HHCC, the Modified Herfindahl-Hirschman Index for Customer Concentration, which measures customer concentration by summing the squares of the market shares of each major customer within a firm's portfolio; MC, a binary indicator that shows whether a firm has at least one major customer contributing more

than 10% to total sales; and Cusnumber, which counts the total number of major customers a firm has. In Panel B, the three alternative measures for governmental and non-governmental major customers are Gov (Nongov), a measure indicating whether a firm has at least one governmental (non-governmental) major customer; HHgov (HHnongov), the Modified Herfindahl-Hirschman Index for governmental (non-governmental) Customer Concentration; and Cusgov (Cusnongov), which counts the total number of governmental (non-governmental) major customers a firm has. Standard errors are shown in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B
Robustness Checks- Different Measures of Major Customer (OLS)

Panel A	(1)	(2)	(3)
HHCC	-0.00491*** (0.00112)		
MC		-0.00597*** (0.00026)	
Cusnumber			-0.00163*** (0.000383)
Observations	172,578	69,921	172,578
Adjusted R ²	0.0424	0.0562	0.0424
Panel B	(1)	(2)	(3)
HHNonGov	-0.0134*** (0.00214)		
HHGov	-0.00452*** (0.00166)		
NonGov		-0.0109*** (0.00329)	
Gov		-0.00445*** (0.00114)	
CusNonGov			-0.00759*** (0.00233)
CusHov			-0.00155*** (0.000384)
Observations	172,578	172,578	172,578
Adjusted R ²	0.0424	0.0425	0.0425

Notes: This table presents the results of a panel regression based on Equation (1), following the methodology explained in Table 3. The determinants are the market-to-book ratio, size, return on assets, industry median leverage, dividends, and tangibility, although they are not reported for brevity. The three alternative measures for major customers used in Panel A are: HHCC, the Modified Herfindahl-Hirschman Index for Customer Concentration, which measures customer concentration by summing the squares of the market shares of each major customer within a firm's portfolio; MC, a binary indicator that shows

whether a firm has at least one major customer contributing more than 10% to total sales; and Cusnumber, which counts the total number of major customers a firm has. In Panel B, the three alternative measures for governmental and non-governmental major customers are: Gov (Nongov), a measure indicating whether a firm has at least one governmental (non-governmental) major customer; HHgov (HHnongov), the Modified Herfindahl-Hirschman Index for governmental (non-governmental) Customer Concentration; and Cusgov (Cusnongov), which counts the total number of governmental (non-governmental) major customers a firm has. Standard errors are in parentheses. Significance levels are *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table C
Impact of Financial Constraints on Speed of Leverage Adjustment (SOA)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	High	Low	Young	Old	Small	Big	No Rating	Rating	Non-Payer	Div payer
SOA	0.382	0.458	0.417	0.425	0.420	0.501	0.374	0.540	0.431	0.568
Lag Leverage	0.618*** (0.0169)	0.542*** (0.0114)	0.583*** (0.0157)	0.575*** (0.0112)	0.580*** (0.0125)	0.499*** (0.0106)	0.626*** (0.0082)	0.460*** (0.0153)	0.569*** (0.0079)	0.432*** (0.0113)
Size	0.0114*** (0.00256)	0.0588*** (0.0028)	0.0254*** (0.0028)	0.0555*** (0.0026)	0.0383*** (0.00313)	0.0343*** (0.0018)	0.0540*** (0.00182)	0.00575* (0.00319)	0.0387*** (0.00173)	0.0382*** (0.00178)
Industry Leverage	0.395*** (0.0193)	0.786*** (0.0192)	0.902*** (0.0331)	0.638*** (0.0153)	0.611*** (0.0259)	0.699*** (0.0146)	0.654*** (0.0125)	0.711*** (0.0236)	0.824*** (0.0154)	0.540*** (0.0128)
Dividend	0.0959* (0.0495)	-0.176** (0.0706)	-0.193** (0.0949)	0.0805 (0.0553)	-0.137** (0.0634)	0.112* (0.0623)	-0.0330 (0.0352)	0.147* (0.0879)		
Tangibility	0.111*** (0.0133)	0.212*** (0.0179)	0.119*** (0.0177)	0.201*** (0.0164)	0.196*** (0.0140)	0.0819*** (0.0159)	0.184*** (0.00993)	0.0558*** (0.0260)	0.190*** (0.0104)	0.0804*** (0.0152)
MB	-0.0075*** (0.000360)	-0.0401*** (0.00586)	-0.0069*** (0.000664)	-0.0132*** (0.00097)	-0.0073*** (0.000404)	-0.0204*** (0.00240)	-0.0093*** (0.0004)	-0.0560*** (0.00651)	-0.0093*** (0.0004)	-0.0368*** (0.00279)
ROA	-0.0544*** (0.00314)	-0.209*** (0.0141)	-0.0552*** (0.00498)	-0.119*** (0.00757)	-0.0623*** (0.00326)	-0.465*** (0.0287)	-0.0867*** (0.00322)	-0.426*** (0.0372)	-0.0764*** (0.00310)	-0.406*** (0.0213)
Constant	-0.0662*** (0.0131)	-0.275*** (0.0169)	-0.166*** (0.0139)	-0.344*** (0.0161)	-0.109*** (0.0089)	-0.168*** (0.0173)	-0.270*** (0.00896)	0.120*** (0.0353)	-0.201*** (0.00805)	-0.122*** (0.0149)

Cont. Table C
Impact of Financial Constraints on Speed of Leverage Adjustment (SOA)

	(1) High	(2) Low	(3) Young	(4) Old	(5) Small	(6) Big	(7) No Rating	(8) Rating	(9) Non-Payer	(10) Div payer
Observations	53,088	57,518	32,296	63,490	48,233	61,459	140,405	26,711	112,018	55,098
Number of gvkey	11,462	11,549	11,628	5,587	8,532	6,167	17,362	3,095	15,528	6,025
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table presents the regression results for different financial constraints based on Equation (1), following the methodology explained in Table 3. The model was estimated using a two-step generalized method of moments (GMM) estimator, as presented by Blundell and Bond (1998). The table shows the impact of various financial constraints on the speed of leverage adjustment (SOA) using different classification methods. Firms are categorized based on high vs. low market-to-book ratio (MB), young vs. old age, small vs. large size, rating vs. no rating, and dividend payer vs. non-dividend payer. The dependent variable is the market leverage. All other variables are defined in Table 1. Standard errors are shown in parentheses. Significance levels are indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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