More Frequent Than You Think: Revisiting Capital Structure Adjustment

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Abstract

This paper revisits the empirical evidence on capital structure adjustment and the prevalence of financing "inaction." We show that the conclusion that firms adjust leverage infrequently is sensitive to two methodological choices: the use of relatively high adjustment thresholds and the reliance on net balance-sheet changes. Using lower thresholds and gross financing flows from cash-flow statements, we find that capital structure adjustment is substantially more frequent than previously documented. We highlight that the relevant empirical pattern is not simply more adjustment across the board but pronounced heterogeneity by firm size. Smaller firms exhibit substantial inertia, consistent with meaningful fixed adjustment costs; while the largest firms—the top 1% by assets—behave as if they face negligible frictions: financing activity is nearly continuous, and measured adjustment frequencies rise sharply as thresholds are lowered. While models with wide inaction regions may describe smaller firms reasonably well, models with nearly frictionless recapitalization appear to provide a more relevant benchmark for the leverage dynamics of the largest firms.

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1 Introduction

Leverage adjustment costs are a cornerstone of dynamic capital structure theory. Since Myers's (1984) influential observation that "large adjustment costs could possibly explain the observed wide variation in actual debt ratios," these frictions have been central to our understanding of corporate financing decisions. In theoretical models, fixed adjustment costs serve multiple critical roles: they provide a form of commitment that aligns active financing choices with static trade-off predictions (Fischer et al., 1989; Goldstein et al., 2001); they explain why firms might persistently deviate from their optimal capital structure; and they create a crucial friction that prevents firms from continuously recapitalizing to avoid default, thereby giving meaning to the "tradeoff" in tradeoff theory. Without such costs, firms could face severe agency conflicts between different classes of investors, leading to leverage dynamics that diverge sharply from standard models (DeMarzo and He, 2021).

The prevailing empirical view, shaped significantly by the work of Leary and Roberts (2005), is that firms adjust their capital structures infrequently. Using quarterly financial statement data, they find that in approximately 72% of firm-quarters, companies make no significant changes to their debt or equity levels. This finding of widespread "inaction" has provided strong empirical support for dynamic models that feature substantial fixed adjustment costs, suggesting that firms only rebalance their leverage when deviations from the target become sufficiently large. Empirical researchers have therefore either focused on capital structure choices at "active" rebalancing points, or the determinants of the "inaction" region (e.g. Fischer et al., 1989; Strebulaev, 2007).

In this paper, we revisit this conclusion and argue that the picture of capital structure adjustment is more nuanced and dynamic than previously documented. Our analysis reveals that the perception of infrequent adjustment hinges critically on two methodological choices: the thresholds used to define a "significant" change and the reliance on balance sheet data. First, we show that the high frequency of inaction reported by Leary and Roberts (2005) is largely an artifact of their relatively high adjustment thresholds (e.g., 5% of assets for debt changes). When we explore a range of lower thresholds, a pattern of more frequent, smaller adjustments emerges.

Second, Leary and Roberts (2005) rely on balance sheet data to measure changes in debt financing. From the perspective of our research question on how firms adjust their leverage, the cash flow statement has the advantage of showing actual debt inflows and outflows, allowing us to measure debt issuance and repayment separately. In contrast, balance sheet data only captures the quarterly net changes in debt, which reflect the difference between issuance and repayment.[1] The gross adjustment data, from both

[1] We discuss other important differences between balance sheet and cash flow statements in Section 3.4—including M&A and financing leases—and how they affect the measurement of debt and equity

equity and debt, largely support our primary finding: capital structure adjustment is more frequent than previously documented, especially for large firms.

We begin by documenting firms' *gross* adjustments in key liability categories–long-term debt, short-term debt, and equity—as a function of the adjustment threshold. For long-term debt, issuance frequencies are flatter than repayment frequencies, consistent with fixed costs of issuance (e.g., underwriting and market access), whereas repayment largely reflects passive amortization. On the equity side, issuance frequencies rise sharply as the threshold approaches zero, while repurchase frequencies remain relatively flat. This contrast reflects higher adjustment costs for repurchases, whereas issuance—such as stock-based compensation and at-the-market offerings—can occur with lower or negligible fixed costs.[2]

Our most striking result emerges when we examine heterogeneity by firm size. We find that the largest firms — e.g. those in the top 1% by assets — behave as if they face negligible fixed adjustment costs. For this group, financing activity is nearly continuous—for instance, long-term debt and equity issuance occur in 72.3% and 67% of total firm-quarter observations for these large firms. After including reductions, the resulting frequency of capital structure adjustment for this group is also substantial, approaching 91.8% for debt changes and 77.8% for equity changes.[3] In contrast, smaller firms exhibit far more inertia, consistent with the presence of meaningful fixed costs. This heterogeneity suggests that a one-size-fits-all approach to modeling adjustment costs is inadequate. While models with significant fixed costs and inaction regions may aptly describe smaller firms, models assuming frictionless adjustment, such as that in DeMarzo and He (2021), appear more suitable for the largest, most economically significant firms.

We synthesize our empirical findings by developing a simple framework in which firms face size-independent fixed costs of adjustment and size-proportional benefits, generating a cutoff rule for adjustment. Our model predicts that smaller firms, for which fixed costs are relatively large, exhibit truncated small adjustments, leading to flat frequency-threshold profiles at low thresholds, lower unconditional adjustment rates, but larger conditional adjustments when they do act. In contrast, for larger firms, fixed costs are negligible, so adjustment frequencies decline smoothly with thresholds. The framework also accommodates differences across financial instruments via variation in effective fixed costs. Empirical evidence on long-term debt issuance and repayment strongly supports these predictions: unconditional adjustment rates and the probability of action increase

adjustments in the context of our paper.

[2]Treating stock-based compensation (SBC) as a financing activity, we include it in our equity issuance measure. The prevalence of small equity issuances persists even when SBC is excluded; see Figure III. At-the-market offerings allow firms to sell new shares gradually directly into the secondary market at current market prices, typically through a designated broker-dealer to minimize costs and market impact.

[3]These numbers are based on a threshold of zero. If we use a 0.1% threshold, then long-term debt and equity issuance occur in 56.5% and 35% of total firm-quarter observations for these large firms, and the frequency of capital structure adjustment is 78.2% for debt changes and over 58.9% for equity changes.

with firm size, while conditional adjustment magnitudes display the opposite pattern, consistent with fixed-cost-driven truncation effects.

Transaction costs are a key friction shaping the optimal behavior of economic agents in standard models (Eberly, 1994; Stokey, 2008). In a classic single-agent dynamic optimization setting, transaction costs affect the frequency of actions, often by determining the size of the inaction region in an s-S policy. However, as emphasized at the outset of the introduction, transaction costs influence not only issuance strategies of shareholders but, more importantly, their ability to commit to future leverage choices. This commitment channel is central to dynamic capital structure theories, where agency conflicts between different classes of investors play a pivotal role. Commitment shapes the equilibrium pricing of newly issued debt by rational investors and, in turn, feeds back into shareholders' optimal issuance decisions. As a result, the commitment role of transaction costs fundamentally determines the equilibrium outcome of the dynamic game between shareholders and debtholders (DeMarzo et al., 2023). As shown by DeMarzo and He (2021), the absence of commitment produces leverage dynamics and debt pricing that diverge sharply from static trade-off predictions. In their model, leverage mean reverts gradually, and tax benefits are fully offset by expected default costs in equilibrium, leaving little scope for the standard static trade-off theory to identify an "optimal" leverage.

The remainder of this paper is organized as follows. After explaining our sample and data sources in Section 2, we revisit the analysis of Leary and Roberts (2005) to demonstrate the sensitivity of inaction frequency to the chosen adjustment threshold as well as the difference between balance sheet and cash flow statement data in Section 3. Section 4 uses the cash flow statement data to provide a more granular analysis of issuance and repayment activities for debt and equity. There, we present our main findings on the heterogeneity of adjustment behavior across firm size categories (Section 4.2) and consider a simple theoretical framework to relate this variation to potential adjustment costs (Section 4.3). Section 5 concludes.

2 Data and Sample

We use the quarterly Compustat–CRSP merged sample during the period of 1984-2018, constructed following Leary and Roberts (2005). Applying the same sample filters as in Leary and Roberts (2005) for the identical period 1984–2001,[4] we obtain a sample twice as large as that in the original study (259,938 firm-quarter observations versus 127,308). The larger sample size likely reflects improvements in the Compustat–CRSP

[4]The filter includes removing financial (SIC code 6000-69999) and utility companies (SIC code 4900-4999), and dropping observations with missing values for book assets, long-term debt, short-term debt, stock issuance, stock repurchase, or firms with less than four years (16 quarters) of observations. We do not apply the annual CPI adjustment, as in Leary and Roberts (2005), because doing so would mechanically introduce changes when imposing the zero threshold.

linking procedure relative to the early 2000s, as well as the expansion of Compustat coverage over time. By updating the sample to 2018, we nearly double it again (479,999 firm-quarter observations). Our sample ends in 2018 to minimize the impact of the accounting rule changes related to operating leases.[5]

We use both balance sheet and cash flow statement data in our analysis. In contrast to the balance sheet, which reports only the total book value of outstanding debt, cash flow statements separately identify debt issuance (gross increases) and debt repayment (gross decreases). These flows are further disaggregated into short-term and long-term components for both issuance and repayment. On the equity side, cash-flow statements similarly report gross equity activities, distinguishing between issuances and repurchases of common and preferred stock.

We obtain cash-flow statement data both from Compustat–CRSP merged sample and from the Capital IQ website using the standard template and period type "YTD." Long-term debt issuance, long-term debt repayment, equity issuance, and equity repurchase are available in Compustat–CRSP merged sample and are used directly. We additionally use Capital IQ, which began providing comprehensive coverage in 1994 for cash flow statements, because issuance and repayment data for short-term debt and total debt are not available in Compustat–CRSP merged sample.[6] We therefore construct a merged Compustat–CRSP–Capital IQ sample spanning 1994–2018, based on which our figures are produced.[7] The resulting dataset contains 8,585 unique GVKEYs and 343,812 firm-quarter observations, of which 7,502 unique GVKEYs and 269,088 observations are linked from Capital IQ. In other words, our short-term debt sample has about 78% of the coverage as our sample for long-term debt and equity.

Similar to Leary and Roberts (2005), we do not exclude firm-quarter observations that involve M&A transactions. M&A transactions often involve non-cash consideration, such as the transfer of existing liabilities to the acquirer and the issuance of equity to the target. These changes will appear on the balance sheet but not in our measure of cash flows. As a result, filtering the sample based on M&A transactions is unnecessary, particularly given that the primary contribution of our paper is to provide new evidence based on cash flow statement measures.

[5]Financial Accounting Standards Board Accounting Standards Update No. 2016-02, Leases (Topic 842), requires all U.S. public firms to recognize most leases – including operating leases – on the balance sheet as a right-of-use (ROU) asset and a lease liability after 2018. This change increases reported debt for a substantial fraction of firms, even in the absence of active financing decisions.

[6]We begin with the GVKEY–Company ID crosswalk provided by Capital IQ and download cash-flow statements using Company ID. For foreign firms, Capital IQ may report cash-flow statements in local currency; we exclude these observations.

[7]Except for Panel (a) in Figure I, we use Compustat-CRSP merged sample to reproduce Leary and Roberts (2005), who used an earlier sample period.

3 Capital Structure Adjustment: Balance Sheet and Cash Flow

This section revisits Leary and Roberts (2005) by examining capital structure adjustments using two types of financial statement data: balance sheet data and cash flow statement data. We show that the assessment of adjustment frequency is sensitive to the inaction thresholds used to define changes, and that this conclusion holds consistently across both earlier and more recent sample periods.

3.1 Measuring Debt and Equity Changes

This section defines the key terms we use to describe firms' capital structure changes. For each liability item (debt or equity), throughout we use "decreases/increases" as the *net* changes of this liability item over a given quarter; only the net change can be observed using balance sheet data. For cash flow statement, for each liability item we can measure gross changes in both directions; and throughout we use "issuance/repayment" for debt gross changes and "issuance/repurchase" for equity gross changes. Finally, we use the term "adjustment" to refer to any net or gross changes. Detailed variable definitions are provided in Appendix A.

Balance sheet (net change). For any given quarter-firm observation, we first follow Leary and Roberts (2005) to define the corresponding debt increase and debt decrease (calculated relative to the lagged book asset value).[8] More specifically, define

$$\Delta book_debt_t \equiv book_debt_t - book_debt_{t-1};$$

a debt increase is then defined as an indicator of whether $\Delta book_debt_t$ scaled by lagged book assets exceeds a threshold percentage:

$$\mathbb{1}\left\{\frac{\Delta book_debt_t}{asset_{t-1}} > threshold\right\}. \tag{1}$$

Similarly, a debt decrease is defined as an indicator of the debt change as a percent of lagged assets is below a negative threshold:

$$\mathbb{1}\left\{\frac{\Delta book_debt_t}{asset_{t-1}} < -threshold\right\}. \tag{2}$$

[8] In Leary and Roberts (2005), there are four variables called debt issuance, debt retirement, equity issuance, and equity repurchase, respectively. But each of them reflects net change only. Given our focus is on the contrast of gross change vs net changes between balance sheet and cash-flows data, we modify the terminology to reflect the nature of the empirical measurement.

For equity, following Lemmon et al. (2008) we define Δequity as the product of the split-adjusted change in shares outstanding and split-adjusted average stock price in the interval $(t-1, t)$; this captures the change in equity in dollar terms. We then scale by lagged book assets and follow the same approach as in (1) and (2) to define whether an equity increase or decrease occurred. Finally, if a firm has either a debt or equity adjustment, then this observation is coded as a "capital structure adjustment."

Cash flow statement (gross change). To understand the mechanism of adjustment, the major advantage of the cash flow statement is that it includes *gross* debt issuance and repayment, as well as equity issuance and repurchase.

More specifically, for long-term debt, the Compustat quarterly variable *"dltisy"* is in year-to-date format, which we first convert to a quarterly value (*"dltissued"*) by taking the first difference across quarters within each fiscal year. The same is done to convert year-to-date long-term debt repayment (Compustat quarterly variable *"dltry"*) to a quarterly value (*"dltrepaid"*).[9] We then construct the occurrence of issuance or repayment (repurchase) if the corresponding adjustment scaled by lagged assets exceeds a threshold, similar to (1) and (2). Specifically, long-term debt issuance is an indicator defined as follows:

$$\mathbb{1}\left\{\frac{dltissued_t}{asset_{t-1}} > threshold\right\}, \tag{3}$$

and long-term debt repayment is defined as follows:

$$\mathbb{1}\left\{\frac{dltrepaid_t}{asset_{t-1}} > threshold\right\}. \tag{4}$$

Short-term debt reporting conventions in the cash flow statement are different from that of long-term debt. Specifically, short-term debt with original maturities of three months or less is reported on a net basis, rather than separately disclosing gross issuance and repayments.[10] Consequently, we are constrained to examining only net changes in short-term debt. We explain the construction shortly when constructing "net changes from cash flow statement."

On the equity side, following Hovakimian et al. (2001) we first convert year-to-date sale of common and preferred shares (Compustat quarterly variable *"sstky"*) and purchase of common and preferred stocks (Compustat quarterly variable *"prstkcy"*) to quarterly terms. Each of them gives the gross quarterly equity issuance and repurchase for each firm (from financing activities).

We further include quarterly Stock-Based Compensation (SBC), measured using an

[9] Different from $\Delta book_debt_t$ in (2) which uses balance sheet information, long-term debt repayment based on cash flow statement information is in positive value.

[10] See FASB Codification ASC 230-10-45-7 through 230-10-45-9 for details.

income-statement variable *"stkcoq"* from Compustat-CRSP merged quarterly data, which includes the fair value of restricted stock units (RSUs) or vesting options, to equity adjustment. There are two reasons for this treatment. First, given one of the goals of this paper is to compare balance sheet and cash flow statements, it is useful to recognize that SBC helps explain the wedge between these two statements.[11] Second, we take the perspective that SBC serves as a form of financing activities; in essence, SBC is as if the firm gets financing from their employees.

In sum, we add SBC to the equity issuance from the cash flow statement as our measure of the equity financing activities. We then define occurrence of equity issuance and repurchase relative to a threshold as in (3) and (4).[12]

Net changes from cash flow statement. To enable a comparison to balance sheet information, we also construct "net" changes—for both debt and equity—from the cash flow statement by netting the gross amounts. We further call positive net changes "increases" while negative ones "decreases." We then apply the inaction threshold as in (1) and (2)—that is, an increase/decrease occurs when the net change exceeds the corresponding threshold. As before, we define capital structure adjustment as the occurrence of equity or debt adjustments exceeding a particular threshold.

For short-term debt, as discussed above, we can only construct net changes due to the reporting convention. Specifically, when only one of issuance or repayment is reported, we treat the observed flow as the net change. When both are reported separately, we compute the net change as issuance minus repayment. We then obtain quarterly net changes by first-differencing the year-to-date values. Note that this treatment likely understates the true frequency of short-term debt adjustments.

3.2 Inaction Thresholds

One crucial parameter to this empirical exercise is the threshold of "inaction" or "no adjustment." In Leary and Roberts (2005), the threshold rule is "5% for debt increase, debt decrease, equity issuance, and 1.25% for equity repurchase, " where equity repurchases use a 1.25% cutoff because many repurchase programs are relatively small.[13]

[11] To see this, consider the case of RSUs. When RSUs are vested, they bring no cash inflow at all, but in the balance sheet measure we multiply the increased RSUs with market price. Similarly, when employees exercise their vested options, our balance sheet measure uses market prices while the cash flow statement uses the corresponding strike prices (which are always lower than the market prices).

[12] We note U.S. GAAP only mandated reporting of SBC in the cash flow statement after 2005. Our estimates prior to this change therefore underestimate the amount of equity issuance. Finally, to enable a direct comparison to Leary and Roberts (2005), in Figure III we also calculate the equity adjustment excluding SBC to match their approach.

[13] On page 2600 of Leary and Roberts (2005), the authors state: "With the exception of equity repurchases, all spike definitions use the 5% cutoff. Equity repurchases use a 1.25% cutoff to avoid missing the numerous smaller-sized repurchase programs in place." In footnote 29, the authors further explain: "We thank Roni Michaely and Ray Groth for bringing our attention to this issue."

However, the above threshold—e.g., 5% for debt changes—is quite high given our goal of detecting the presence of fixed adjustment costs and the implied "inaction region." We therefore explore the following five thresholds in a decreasing order, where the thresholds are set in proportion to the original one denoted by "5:"

- 3: 3% for debt and 0.75% for equity adjustments;
- 1: 1% for debt and 0.25% for equity adjustments;
- 0.5: 0.5% for debt and 0.125% for equity adjustments;
- 0.1: 0.1% for debt and 0.025% for equity adjustments;
- 0.05: 0.05% for debt and 0.0125% for equity adjustments;
- 0: 0% for all items.

3.3 Reproducing Leary and Roberts (2005)

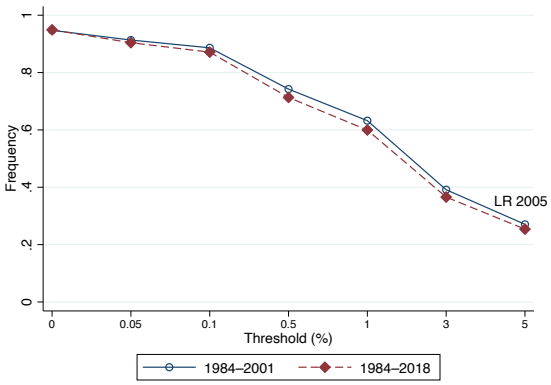
We first reproduce Leary and Roberts (2005) results with our data. To do so, it is important to note that they identify debt adjustments based on balance sheet data but use the cash flow statement for equity adjustments; and adjustment is defined as "net" changes.[14] Second, they do not include SBC when they measure the firm's equity adjustment.

Following the exact definition as in Leary and Roberts (2005), we reproduce their "capital adjustment" frequency, which essentially counts one whenever there is a debt or equity adjustment (excluding SBC) exceeding 5% rule over a quarter. In Figure I, Panel (a), the far-right point of the blue solid curve reports this value using their sample period of 1984–2001. The estimate is approximately 27%, which is slightly lower than the 28% reported in Leary and Roberts (2005). The same panel repeats the exercise for the more recent sample 1984-2018, which is plotted in dash-red line; the result is 25.4%.

Figure I Panel (a) also presents how the frequency of capital structure adjustment increases as we lower the inaction threshold. As there is little difference between the two

[14]We clarify two points on the choices by Leary and Roberts (2005). First, they focus on *net* changes. While the net change is appropriate for testing the trade-off theory of capital structure, our objective is to capture firms' actual adjustment *activity* on both the equity and debt sides; and for this question *gross* changes constitute the more natural object of study. Second, using cash flow statement data is likely intended to maintain consistency with the prior literature. On page 2600 of Leary and Roberts (2005), the authors state "to define when a change in capital structure has occurred, we follow the approach used by Hovakimian et al. (2001)." And, footnote 4 of Hovakimian et al. (2001) explains that equity adjustment is based on the difference between cash flow statement item 108 "Sale of Common and Preferred Stock" (often denoted as SSTK) and item 115 "Purchase of Common and Preferred Stock (PRSTKC). For the question that Leary and Roberts (2005) is after, it is unclear which measure is better; in fact, Lemmon et al. (2008) uses balance sheet information to measure equity changes, and Leary and Roberts (2010) adopt both in their analysis.

(a) Net Adjustment in Two Sample Periods



(b) Net Adjustment in Two Statements (1994-2018)

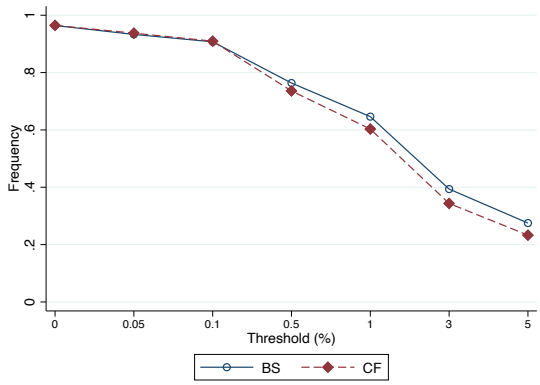


Figure I. Capital Structure Adjustment

This figure presents the frequencies of capital structure net adjustments across different thresholds. The adjustment definitions follow Leary and Roberts (2005) in Panel (a) for two sample periods: 1984–2001, as in Leary and Roberts (2005), and an extended period of 1984–2018. Panel (b) uses both balance sheet data and cash flow statement information for the period 1994-2018, as specified in Section 3.1. For better comparison between two financial statements, "adjustment" in this figure is defined as occurrence when either debt or equity has a *net* change over a quarter exceeding certain threshold; that is, we code a firm-quarter observation as with "capital structure adjustment" if the increase/decrease of equity/debt (relative to the lagged asset) is above certain threshold. Cash-flow statement includes financing activities and SBC from operating activities. Detailed variable definitions are provided in Appendix A.

sample periods, from now on we focus on the recent one. Note that the percentage of "active" firms rises significantly when we lower the threshold toward zero. For instance, during 1984-2018, the adjustment percentage is about 94.7% (so about 5% no adjustment) for the zero threshold.

3.4 Balance Sheets versus Cash Flows

We now compare the measures of adjustment frequency derived from the two financial statements.

Capital structure adjustment. In Panel (b) of Figure I we compare the capital structure adjustments based on "net changes" calculated from the two financial statements. Relative to balance sheet data, cash flow statement data suggest somewhat fewer capital structure actions—and thus greater inaction—by firms, particularly at the 5% threshold. As we will discuss in more detail below, this difference is consistent with the idea that accounting rules may generate mechanical changes in balance sheet items that are not reflected in cash flows. Nevertheless, the difference in implied inaction frequencies across the two datasets and, perhaps more importantly, the patterns that emerge as we vary the thresholds are broadly similar.

Next we examine the specific types of adjustment underlying these results.

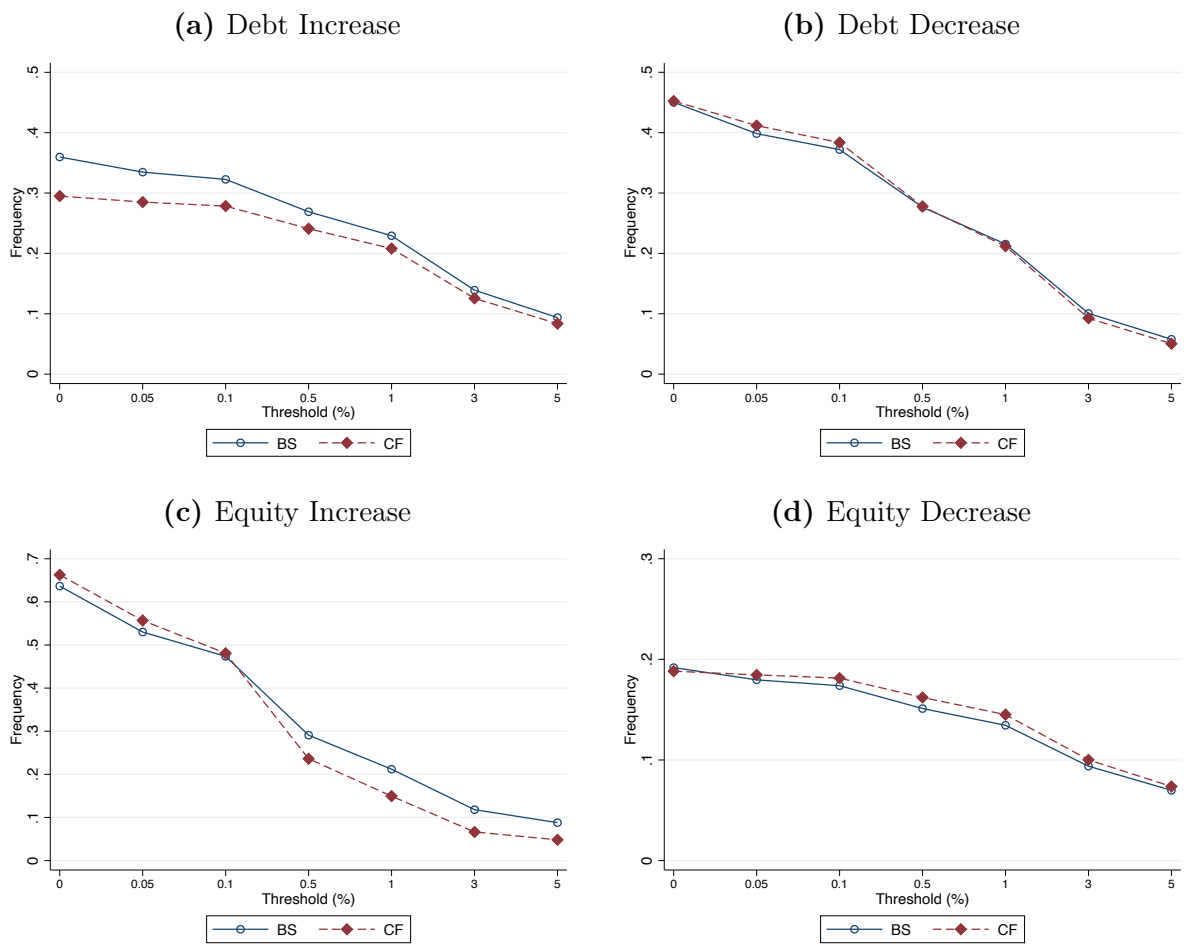


Figure II. Capital Structure Adjustment (Two Statements, 1994-2018)

This figure presents the frequencies of capital structure adjustments across various thresholds, using balance sheet (BS) data and cash flow (CF) statement information for the period 1994–2018. An increase or decrease in a given quarter is identified when the net change in total debt or equity, normalized by the lagged book assets, exceeds the corresponding threshold. The comparison illustrates the extent to which the choice of accounting source influences the measurement of firms' capital structure adjustment behavior. Detailed variable definitions are provided in Appendix A.

Debt adjustment. First, we study debt adjustment in Figure II Panels (a)-(b). We again observe small differences between balance sheet and cash flow data, with balance sheets recording a higher likelihood of debt increase (36%) than cash flows do (29.5%) at the zero threshold; such a difference is absent in debt decreases. In addition to M&A, another potential source of this asymmetry is that financing leases are reflected immediately as new debt on the balance sheet, but will only be recorded subsequently as debt payments in the cash flow statement.

We highlight one noticeable pattern: At the 5% threshold we observe more debt increases than decreases, but when we lower the threshold toward zero, the frequency of debt decreases rises faster and ultimately exceeds that of debt increases. This pattern implies that debt decreases tend to be smaller and more regular than debt increases.[15]

[15]One can infer that there are ∼16.8% of no-debt-change observations in the 1984-2018 sample. Over 80% of these no adjustment cases are due to zero-leverage firms.

While the flattening of the debt increase frequency below the 0.1% threshold is suggestive of fixed costs, an important component of debt decreases is the repayment of maturing debt, which involves little cost.

Equity adjustment. Panel (c)-(d) reports increases and decreases of equity based on two financial statements. Panel (d) shows that equity decrease from both statements match surprisingly well; and the gap in equity increase in Panel (c) can be explained by M&A activities and the difference in treatment of SBC.[16] Note also that in the case of equity, increases rise more steeply as we lower the adjustment threshold as shown in Panel (c). On the other hand, equity decreases flatten as shown in Panel (d), suggesting the presence of fixed costs associated with share repurchases.

Overall, the main takeaway from Figure II is that both balance sheet data and cash flow statement data display similar patterns in firms' financing activities, particularly in their degree of activeness as the inactivity threshold varies. From this point onward, we therefore focus on cash flow statement data.

4 Gross Adjustment of Debt and Equity

The cash flow statement data has the key advantage that it directly represents incremental financing activity; in contrast, balance sheet changes only allow such activities to be inferred. Further, cash flow statements provide more granular detail, most notably by allowing us to separate gross issuance and gross repayment rather than observing only net changes. We therefore use this data going forward to enable a sharper characterization of firms' financing decisions and the timing of their leverage adjustments, thereby helping us better understand how firms manage their capital structure in practice.

4.1 Issuance and Repayment Activities

Following the same adjustment definition in balance sheet data, we define issuance (repayment or repurchase) as occurring when the amount of debt or equity issued (repaid), scaled by lagged book assets, is greater than the threshold. We further separate debt into long-term debt and short-term debt (though for short-term note that only net changes are reported; see Section 3.1). The results are in Figure III.

Panel (a) of Figure III plots issuance and repayment activities for debt. Red diamonds denote the frequency of long-term debt issuance, while green triangles denote the

[16] As noted earlier, paying a target with new shares would affect the balance sheet but not the statement of cash flows. Conversely, stock-based compensation is not reflected in the balance sheet until options are exercised.

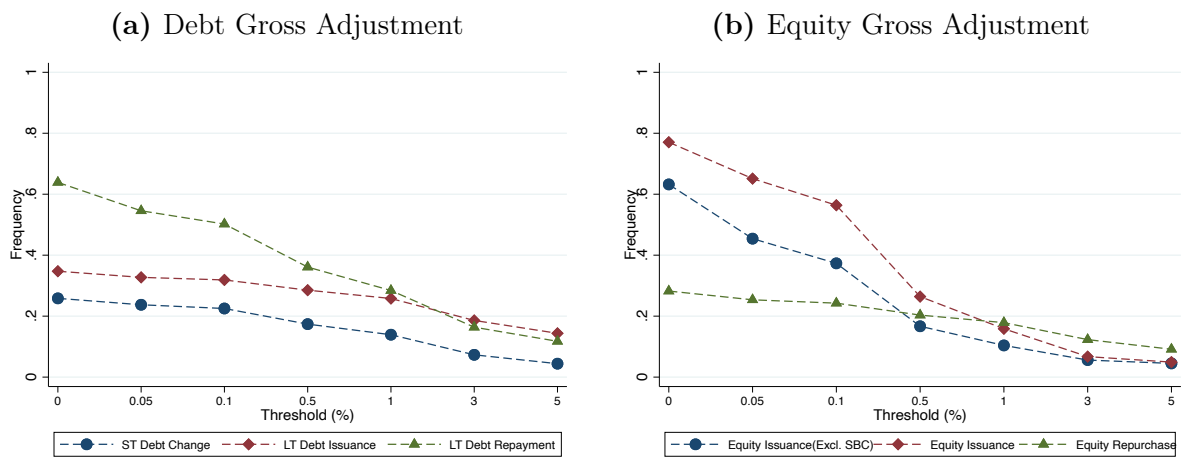


Figure III. Capital Structure Adjustment (Cash Flow, 1994-2018)

This figure reports the frequencies of debt and equity gross adjustments using cash flow statement data during 1994–2018. An adjustment occurrence in a given quarter is identified when the dollar amount of gross adjustment, normalized by the lagged book assets, exceeds the corresponding threshold. Detailed variable definitions are provided in Appendix A.

frequency of long-term debt repayment. As expected, both frequencies increase when we lower the threshold.

We highlight a clear empirical pattern: as a function of the threshold, the frequency of long-term debt issuance is flatter than that of long-term debt repayment. This pattern is consistent with the presence of a fixed cost associated with debt issuance but not with debt repayment; intuitively, issuance involves a costly underwriting and market-access process, whereas repayment largely reflects firms passively paying down outstanding obligations. We will further study this issue by investigating the size heterogeneity in Section 4.2. Panel (a) also plots the adjustment on short-term debt (blue circles).

Panel (b), on the right-hand side of Figure III, reports equity issuance and repurchase activities at various threshold levels. Equity issuance increases substantially as we lower threshold toward zero, suggesting that firms engage in small and frequent equity issuances. In contrast, equity repurchases, plotted as green triangles, occur at roughly similar frequencies as the threshold is reduced toward zero. This pattern is consistent with the presence of a significant fixed cost associated with equity repurchases, following logic similar to that in Panel (a).

Finally, it is well recognized in the literature that SBC, that is, issues of stock to employees via options and grants, tends to be small but high frequency (Fama and French, 2005; Leary and Roberts, 2010). We show that the rising frequency of equity issuance toward the zero threshold, as shown in Panel (b) of Figure III, is not driven solely by SBC. We construct an alternative measure of equity issuance that excludes SBC and plot it as blue circles, which exhibit a similar upward pattern as the threshold approaches zero; this pattern is likely driven by activities such as at-the-market offerings of common

or preferred shares, which involve relatively low fixed costs of equity issuance.[17]

4.2 Firm Size Heterogeneity

We now examine the frequency of capital structure adjustment by firm size. Figure IV plots short-term debt changes and long-term debt issuance and repayment for different size groups in Panels (a) and (b)-(c), where firms are sorted into 4 groups based on their book assets at the end of the previous quarter: top 1%, top 10%, top 50%, and bottom 50%. Large firms engage more frequently in small (relative to their size, of course) debt adjustments than small firms do. In fact, for firms in the bottom 50% size group, there are almost no variations when we vary adjustment thresholds from 5% to zero. But for the largest (top 1%) firms, the change is significant: for short-term debt changes, the frequency rises from 2.2% to 69.4%; and for long-term debt issuance, the frequency rises from 7.2% to 72.3%.

Another interesting observation from comparing Panel (b) and Panel (c) is that small long-term debt repayment is more frequent than small long-term debt issuance. This pattern holds throughout, but is strongest for smaller firms. For example, for the bottom 50% by size (blue diamond dashed line), long-term debt repayments occur at more than double the frequency of long-term debt issuance. This asymmetry is quite natural: firms may have the option to repay long-term debt without any significant adjustment cost, while debt issuance typically involves some adjustment cost.

Finally, Figure IV Panel (d)-(e) plot equity issuance and repurchase for firms across four size groups. Overall, we observe that larger firms issue less and repurchase shares more often than smaller firms.[18] In other words, larger firms pay out to their shareholders, while smaller firms finance from their shareholders.

Considering the smallest thresholds, Panel (d) reveals that firms frequently engage in small equity issuances. In contrast, Panel (e) shows that smaller firms tend to refrain from repurchasing small amounts of equity, while larger firms are much more inclined to do so. These patterns are likely driven by the fact that repurchases entail some fixed adjustment costs, whereas equity issuance often includes stock-based compensation for employees or at-the-market offerings, which involve little or no fixed costs.

[17] In our data, SBC represents about 20% of equity issuance. The rising frequency of equity issuance (excluding SBC) when lowering threshold toward zero can still be driven by employee compensation. For example, when employees exercise their vested stock options, the proceeds (number of option units multiplying by their strike prices) are recorded in equity issuance (not SBC). Employee stock purchase plans are another form of equity issuance. Detailed variable definitions are provided in Appendix A.

[18] The overall pattern in Panel (d) remains the same if we exclude SBC from equity issuance.

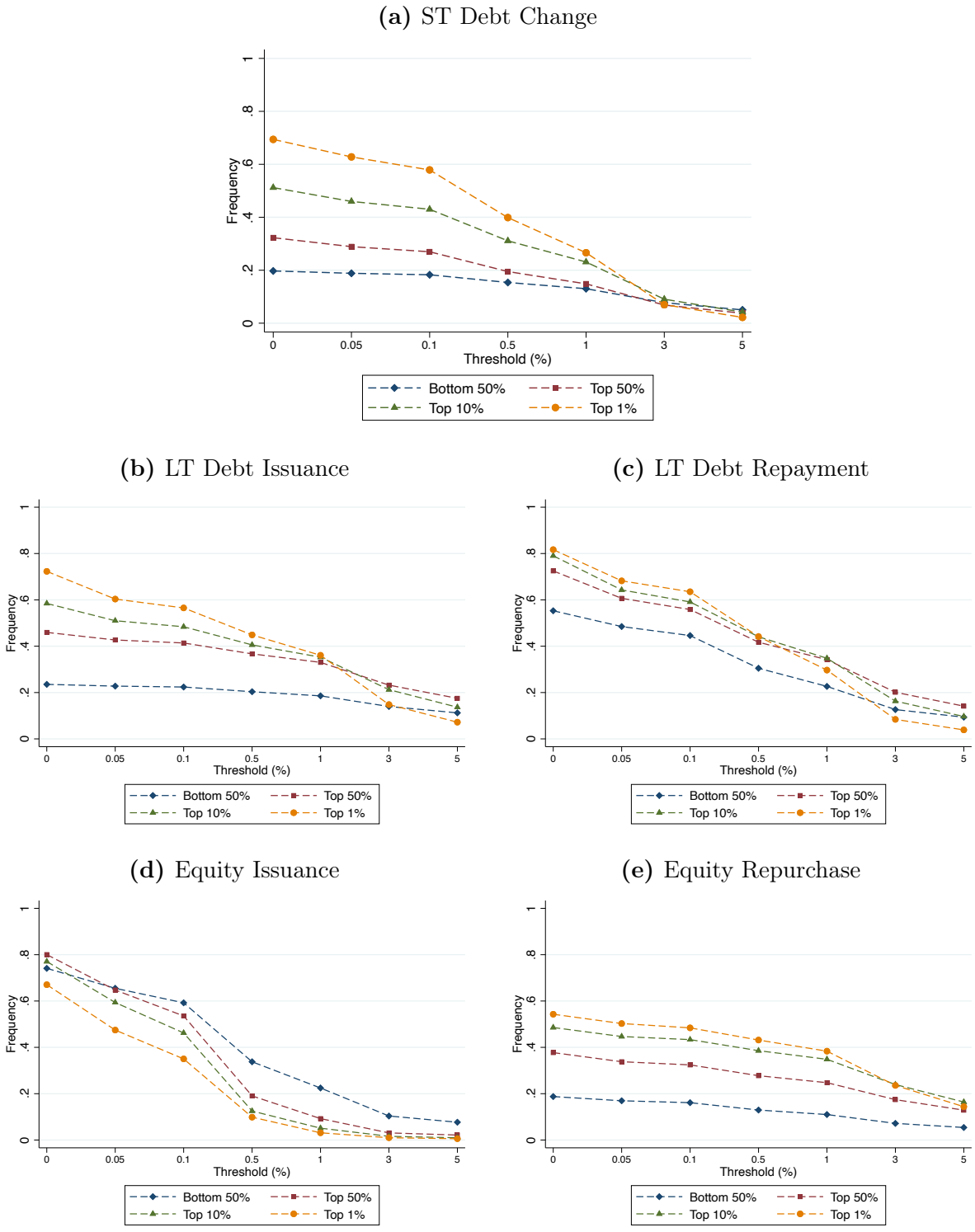


Figure IV. Capital Structure Adjustments by Asset Size (Cash Flow, 1994-2018)

This figure reports the frequencies of debt and equity gross adjustments across different thresholds by firm asset size, using cash flow statement data for the period 1994–2018. An adjustment occurrence in a given quarter is identified when the dollar amount of gross adjustment, normalized by the lagged book assets, exceeds the corresponding threshold. Firms are grouped by lagged asset size into four categories: bottom 50%, top 50%, top 10%, and top 1%. The comparison highlights how debt adjustment behavior varies systematically across the firm size distribution. Detailed variable definitions are provided in Appendix A.

4.3 Discussion and Additional Empirical Tests

Our evidence points to a simple interpretation of the cross-sectional patterns in financing activity. The key empirical fact is not merely that capital structure adjustment is more frequent than previously documented, but that its frequency varies sharply with firm size. Small firms display substantial inaction, especially for debt issuance and equity repurchases, while the largest firms adjust much more frequently and show little evidence of a wide inaction region. A natural interpretation is that fixed adjustment costs matter, but that their importance declines with firm size because many financing costs are better viewed as fixed in dollar terms rather than proportional to assets. Under this view, the same fixed cost can generate substantial inertia for small firms while becoming nearly negligible for very large firms.

The purpose of this section is to show that a simple fixed-cost framework can account for the main patterns in the data. In particular, it can explain why the frequency-threshold relation is relatively flat for smaller firms over a range of low thresholds, but declines immediately for the largest firms, and why the probability of adjustment rises with firm size. We do not view the framework as a full structural model. Rather, it is a parsimonious way to organize the evidence and clarify which features of the data are naturally consistent with fixed adjustment costs.

A simple theoretical framework. Consider a firm i of size S_i that receives adjustment opportunities of random size $\tilde{\delta}_i \sim F(\cdot)$, where $\tilde{\delta}_i > 0$ is the gross adjustment as a fraction of firm size. The dollar benefit of acting on an opportunity is $b_i S_i \tilde{\delta}_i$, where $b_i > 0$ is a firm-specific parameter reflecting the value of capital structure optimization. Firms face a fixed cost $K > 0$ per adjustment, so firm i acts if and only if:

$$\tilde{\delta}_i \geq \bar{\delta}_i \equiv \frac{K}{b_i S_i}. \tag{5}$$

A firm can avoid incurring the fixed cost K for each transaction by setting up a trading desk ex ante, with infrastructure cost K_0; doing so is optimal when $b_i \geq \bar{b}(S_i)$, where $\bar{b}(S_i)$ is decreasing in S_i.[19] For such firms $K = 0$ and hence $\bar{\delta}_i = 0$. The effective cutoff is therefore:

$$\bar{\delta}_i = \frac{K}{b_i S_i} \cdot \mathbf{1}\{b_i < \bar{b}(S_i)\}. \tag{6}$$

Equation (6) implies the threshold for action, $\bar{\delta}_i$, decreases with firm size S_i, and the

[19] The threshold $\bar{b}(S_i)$ can be microfounded by assuming potential adjustments arrive at rate λ and K_0 is the per-period cost of maintain a trading desk. Then $\bar{b}$ is the endogenous level at which the expected savings from eliminating the per-transaction cost equal the infrastructure cost; that is, $\lambda K \cdot \Pr[\tilde{\delta}_i \geq K/(\bar{b}(S_i)S_i)] = K_0$. The left side is increasing in $\bar{b}$ for fixed S_i, ensuring $\bar{b}(S_i)$ is uniquely defined, and increasing in S_i for fixed $\bar{b}$, ensuring $\bar{b}(S_i)$ is decreasing in S_i.

frequency-threshold relationship is:

$$y_i(x) = 1 - F\big(\max(x,\, \bar{\delta}_i)\big)\,. \tag{7}$$

That is, the frequency of adjustment y_i is flat for thresholds $x < \bar{\delta}_i$, and then strictly decreasing for $x > \bar{\delta}_i$.

Predictions. As firm size S_i increases, $\bar{\delta}_i$ declines through two reinforcing channels: directly, because the dollar benefit of any given percentage adjustment is larger; and indirectly, because larger firms are more likely to find it worthwhile to maintain a trading desk, setting $\bar{\delta}_i = 0$ entirely; this point can be seen clearly in (6) when S_i is large so that $\bar{b}(S_i) < b_i$ holds. Both forces reduce the flat region in $y_i(x)$ (that is, where $x < \bar{\delta}_i$), producing the continuously steepening frequency-threshold profiles across size groups in Figure IV.

The same logic accommodates heterogeneity across financing instruments by allowing K to vary: a higher effective fixed cost for debt issuance than for debt repayment produces a flatter frequency-threshold profile for issuance, consistent with Figure III.

The model has additional predictions for expected adjustment size, all driven by $\bar{\delta}_i$ declining with firm size:

1. The unconditional mean $\mathbb{E}[\tilde{\delta}_i] = \int_{\bar{\delta}_i}^{\infty}(1 - F(x))\,dx$ is strictly decreasing in $\bar{\delta}_i$, so it *increases* with firm size.

2. The conditional mean $\mathbb{E}\left[\tilde{\delta}_i \mid \tilde{\delta}_i \geq \bar{\delta}_i\right]$ *decreases* with firm size: as $\bar{\delta}_i$ declines, smaller opportunities enter the conditional distribution, pulling the conditional mean down from the upper tail of F.

3. The probability of action $\Pr\left[\tilde{\delta}_i \geq \bar{\delta}_i\right] = 1 - F(\bar{\delta}_i)$ *increases* with firm size.

We analyze these three patterns in Figure V below.

Mean long-term debt adjustment: unconditional versus conditional. We provide further evidence on long-term debt issuance and repayment to support the above theoretical framework. For each firm-quarter observation, we calculate the debt adjustment scaled by the lagged asset as $\delta_{it} = \frac{\Delta_{it}}{A_{i,t-1}}$. We then sort each firm-quarter observation into six bins based on the firm's lagged book assets using fixed dollar cutoffs, defined as [10,50), [50,250), [250, 500), [500,1000), [1000,2500), [2500, >) million dollars.

We are interested in two versions of the mean adjustment within each bin. The first is the unconditional mean $\mathbb{E}\left[\delta_{it}\right]$, regardless whether adjustment occurs (i.e., $\delta_{it} > 0$) or not (i.e., $\delta_{it} = 0$). The unconditional mean can then be decomposed as the mean conditional

(a) LT Debt Adjustment Unconditional Mean **(b)** LT Debt Adjustment Conditional Mean

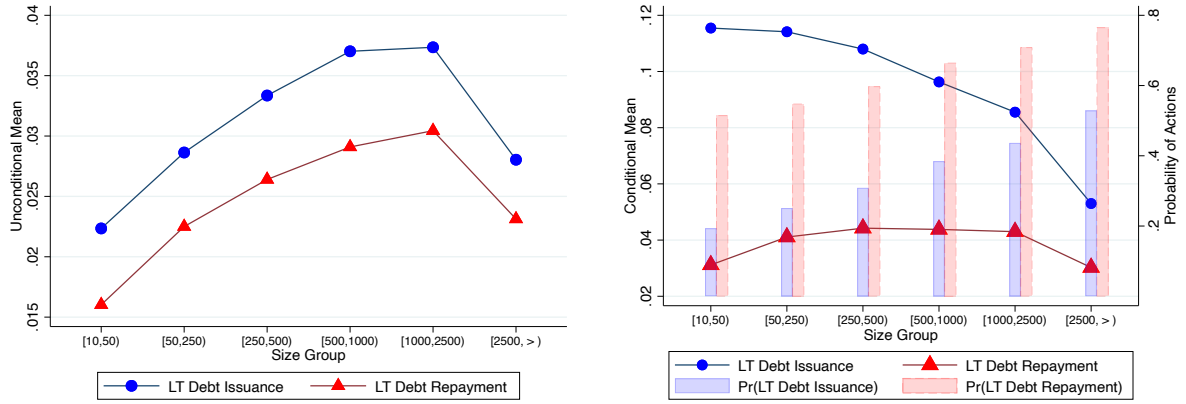


Figure V. Debt Adjustment by Asset Size Group (Cash Flow, 1994-2018)

This figure reports the magnitude of debt adjustments across different thresholds by firm size, using cash flow statement data for the period 1994–2018. The long-term debt issuance (repayment) ratio is calculated as the dollar amount of long-term debt issuance (repayment), normalized by the lagged book assets. The unconditional mean is calculated based on all observations. The conditional mean is calculated for firm-quarters with non-zero long-term debt in both the current and previous quarters, and additionally with non-zero long-term debt issuance or repayment, respectively. Size groups are defined by lagged book assets (in million dollars). Detailed variable definitions are provided in Appendix A.

on adjustment, that is, $\mathbb{E}\left[\delta_{it}|\delta_{it}>0\right]$, and the probability of action $\Pr[\delta_{it}>0]$:

$$\mathbb{E}\left[\delta_{it}\right]=\Pr\left[\delta_{it}>0\right]\cdot\mathbb{E}\left[\delta_{it}\left|\delta_{it}>0\right.\right]. \tag{8}$$

Figure V offers strong empirical support to our simple theory. Panel (a) on the left plots mean long-term debt adjustment $\mathbb{E}\left[\delta_{it}\right]$, and Panel (b) on the right plots the associated conditional mean $\mathbb{E}\left[\delta_{it}\left|\delta_{it}>0\right.\right]$ together with the probability of action $\Pr\left[\delta_{it}>0\right]$ in bars. Focus on first the debt issuance, which is plotted in blue circles. Consistent with our theory, Panel (a) shows that unconditional mean adjustment monotonically increases from bin 1 to bin 5. The unconditional mean adjustment goes down for the top 1%; one potential reason is that the size-homogeneity assumption might fail for these mega-firms.

In Panel (b), in contrast, we observe that the probability of issuance as shown in bars is monotonically increasing across firm sizes; from the lens of our model this is because smaller firms face relatively larger fixed cost. What is more, as expected, the conditional mean, plotted in blue circles again, exhibits an opposite pattern in Panel (b). The smallest bin has a conditional mean adjustment slightly below that of the second group, possibly reflecting a different $\tilde{\delta}_i$ distribution for the smallest firms.

Move on to long-term debt repayment which is plotted in red triangles in both panels, we observe a similar pattern as issuance, though the size-dependence is less pronounced. The weak size-dependence is most salient for the probability of action $\Pr\left[\delta_{it}>0\right]$ in Panel (b), potentially because repayment involves less fixed cost.

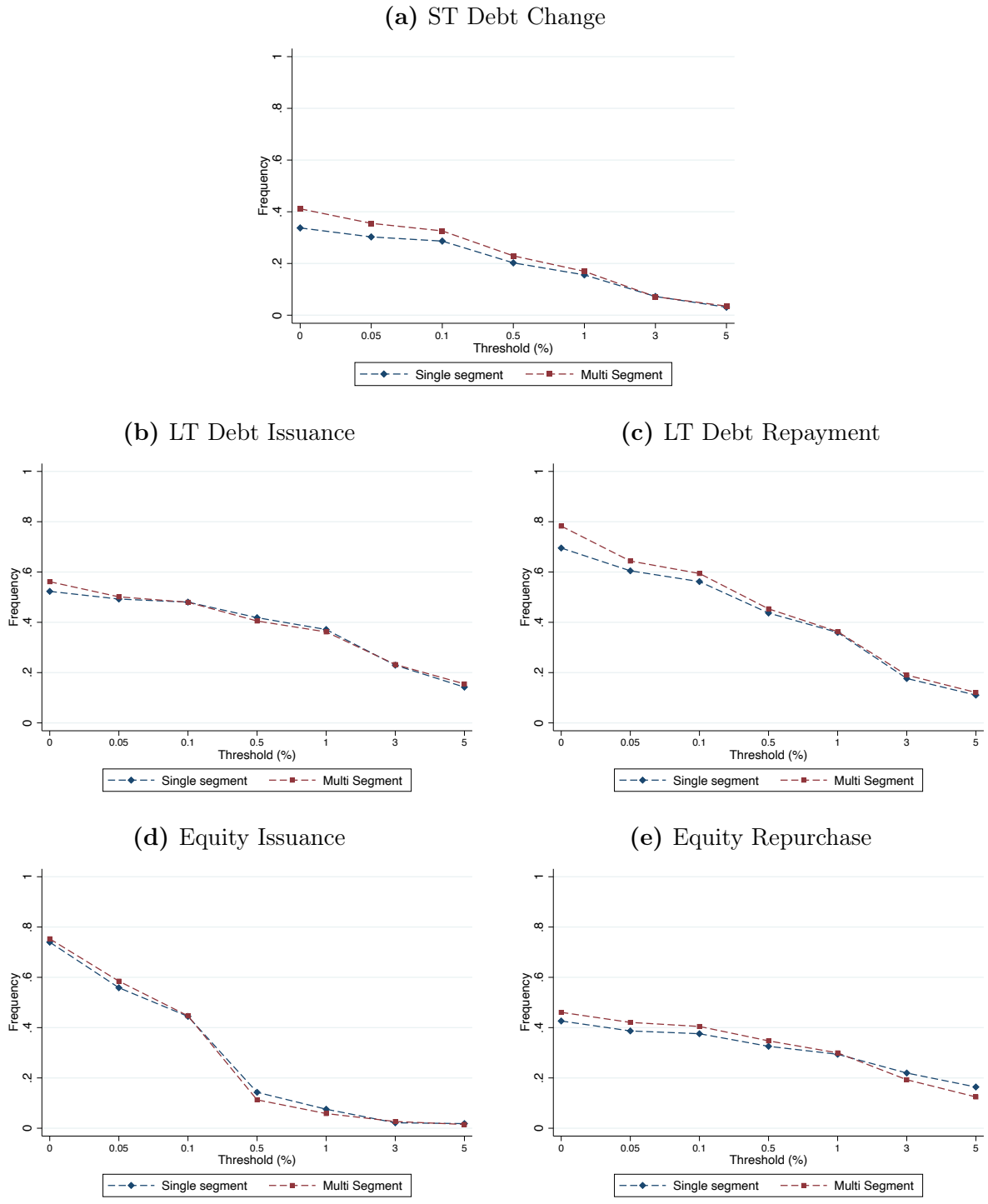


Figure VI. Capital Structure Adjustments by Number of Segments (Cash Flow, 1994-2018)

This figure reports the frequencies of capital structure adjustments across different thresholds by single vs. multi-segment firms; the sample is firms with top 10% asset, cash flow statement data, during the period 1994-2018. Single-segment firms those with only one business segment reported in the Compustat Segment database. Each single-segment firm is matched to a multi-segment firm within the same SIC3 industry-quarter, with the ratio of lagged book assets (multi- to single-segment firm) constrained to the range of 90% to 110%. An adjustment occurrence in a given quarter when the dollar amount of gross adjustment, normalized by the lagged book assets, exceeds certain threshold. Detailed variable definitions are provided in Appendix A.

Alternative hypotheses and additional evidence. Before we conclude, let us discuss other alternative theories that may explain the empirical pattern we document based

on the cash-flow statement. One reasonable alternative mechanism, which does not involve fixed cost but still generates the pattern in Figure IV, is an additive model of firm growth.[20] Suppose that firms are large because they have many different and independent business units. Each business unit i can take an adjustment of $\tilde{\delta}_i > 0$ with $\tilde{\delta}_i \sim F(\cdot)$; without fixed adjustment cost the firm will take all adjustment activities.

What is the implication of this alternative model on firm size and frequency-threshold relationship as we plot in Figure IV? For larger firms, the simple diversification effect will imply a steeper curve Panel (b)—that is, large firms, relative to its size, have more, frequent small adjustment but less, infrequent large adjustment.

Clearly, this alternative model alone cannot explain the key pattern that, as shown in Panel (b) in Figure IV, the bottom 50% firms rarely have tiny long-term debt issuance. Also, without truncation (arising from fixed costs), it is conceptually difficult to generate the opposite patterns of conditional and unconditional means shown in Figure V.

We present another empirical test that does not support this alternative view. Taking advantage of the Compustat data on business segments, we examine differences in capital structure adjustments across firms with varying organizational complexity. Specifically, we merge Compustat segment data to measure the number of business segments in which a firm operates. Because in general only large firms might have multiple business segments, to hold asset size relatively constant, we restrict the sample to firms in the top 10% of the asset distribution (by lagged book assets), and then match each single-segment firm to a multi-segment firm in the same SIC3 industry-quarter. We further limit the lagged book asset ratio between multi- to single-segment firms to the range of [90%, 110%].

Figure VI compares debt and equity adjustment behavior between single- and multi-segment firms.[21] Interestingly, we observe little difference in long-term debt and equity adjustments (Panels (b)-(e)) across the two groups. For short-term debt changes in Panel (a), differences emerge only at low thresholds, indicating that multi-segment firms engage in more small-scale short-term debt adjustments. One possible explanation is that short-term debt reflects segment-level business decisions that are not perfectly correlated across segments, whereas long-term debt is more likely to reflect centralized, headquarters-level decisions.

5 Concluding Remarks

This paper revisits the empirical evidence on capital structure adjustment, a cornerstone of dynamic financing theory. The prevailing view, established by Leary and Roberts (2005), characterizes firms as adjusting their leverage infrequently–a pattern consistent

[20] One can view the model we propose in Section 4.3 is a multiplicative model, as the activity and benefit scale with size.

[21] Separating the sample at the median number of segments (three) yields qualitatively similar patterns.

with sizable fixed adjustment costs and broad inaction regions. We demonstrate, however, that this conclusion is sensitive to two methodological choices: the threshold used to define a capital structure action and the primary reliance on balance-sheet data, which records only net changes. By lowering the adjustment threshold and examining financing flows directly through cash flow statements, a markedly different picture emerges: capital structure adjustment is substantially more frequent than previously documented.

At the same time, our evidence reveals that the relevant empirical pattern is not simply "more adjustment" across the board, but rather a significant heterogeneity by firm size. While small firms continue to display substantial inertia—consistent with meaningful fixed adjustment costs related to debt issuance and equity repurchases—the largest firms behave fundamentally differently. For those in the top 1% of the asset distribution, debt and equity financing activity is nearly continuous, and the frequency of adjustment rises sharply as the threshold is lowered. For these systemically dominant firms, the data align far more closely with a benchmark of negligible fixed adjustment costs than with models featuring wide inaction regions.

These findings carry significant implications for both empirical and theoretical research. On one hand, they suggest caution in interpreting infrequent, large *net* balance-sheet changes as evidence of infrequent financing activity; *gross* financing flows contain vital information about active capital structure management that is often obscured in net measures. Furthermore, they imply that a single, universal model of adjustment costs is unlikely to fit the cross-section of firms. While models with sizable fixed costs provide a reasonable description of smaller entities, they appear much less appropriate for the largest and most economically significant firms. For this latter group, the absence of an empirical inaction region suggests that the "commitment" provided by adjustment frictions is largely missing, making models—such as DeMarzo (2019); DeMarzo and He (2021); Hu et al. (forthcoming)—that allow nearly frictionless recapitalization a more relevant benchmark for thinking about their leverage dynamics.

More broadly, our results suggest that the empirical relevance of dynamic tradeoff models depends not only on whether adjustment costs exist, but on where in the firm-size distribution one looks. Acknowledging this heterogeneity is essential for interpreting existing evidence, calibrating dynamic capital structure models, and evaluating the role of financing frictions in corporate decisions.

One natural direction for future research is to examine whether the frequent small adjustments we document for large firms accumulate into economically meaningful changes in leverage over time, or instead largely offset one another, implying that the relatively high 5% threshold imposed by Leary and Roberts (2005) is of limited importance for understanding firms' leverage dynamics. A fruitful approach would be to decompose multi-year leverage changes into contributions from large discrete adjustments versus

small continuous ones, separately by size group. Distinguishing these patterns empirically would sharpen the connection between the adjustment frequencies we document and the equilibrium leverage dynamics predicted by competing theoretical frameworks.

Beyond persistence, several other directions merit further investigation. One is to quantify more directly how adjustment costs vary not only with firm size but also across specific financing instruments, potentially leveraging institutional features such as underwriting requirements and issuance mechanisms to discipline these differences. Another is to examine how firms' adjustment behavior responds to episodes of tighter financing conditions, which may amplify effective fixed costs and temporarily widen inaction regions even for large firms. Finally, incorporating these empirical patterns into structural models that allow adjustment frictions to decline with scale would enable a more explicit analysis of the joint determination of firm size, financing activity, and equilibrium leverage, as well as the aggregate implications for capital structure dynamics.

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Appendix A Variable Definitions

Balance Sheet Statement:

- *Total Book Debt*: $bdq_t = dlcq_t + dlttq_t$
- *Debt Increase*: an indicator of $\frac{bdq_t - bdq_{t-1}}{atq_{t-1}} > threshold$
- *Debt Decrease:* an indicator of $\frac{bdq_t - bdq_{t-1}}{atq_{t-1}} < -threshold$
- *Equity Increase:* an indicator of $\frac{(cshoq_t - cshoq_{t-1} * \frac{ajexq_{t-1}}{ajexq_t}) * (prccq_t + prccq_{t-1} * \frac{ajexq_t}{ajexq_{t-1}})/2}{atq_{t-1}} > threshold$
- *Equity Decrease:* an indicator of $\frac{(cshoq_t - cshoq_{t-1} * \frac{ajexq_{t-1}}{ajexq_t}) * (prccq_t + prccq_{t-1} * \frac{ajexq_t}{ajexq_{t-1}})/2}{atq_{t-1}} < -threshold$

Cash Flow Statement:

- *Net Debt Change: net debt issued* is the difference between *total debt issued* and *total debt repaid*. *net debt change*$_t$ is calculated by taking the first difference of the year-to-date value of *net debt issued* within a GVKEY-fiscal year. Data Source: Capital IQ
- *Net Equity Change:* $sstk_t + stkcoq_t - prstkc_t$, where $sstk_t$ and $prstkc_t$ are calculated by taking the first difference of the year-to-date value *sstky* and *prstkcy* within a GVKEY-fiscal year. Stock-based compensation ($stkcoq_t$) is included as part of the equity issuance.
- *Debt Increase:* an indicator of $\frac{net\ debt\ change_t}{atq_{t-1}} > threshold$. Data Source: Capital IQ
- *Debt Decrease:* an indicator of $\frac{net\ debt\ change_t}{atq_{t-1}} < -threshold$. Data Source: Capital IQ
- *Equity Increase*: an indicator of $\frac{net\ equity\ change_t}{atq_{t-1}} > threshold$
- *Equity Decrease:* an indicator of $\frac{net\ equity\ change_t}{atq_{t-1}} < -threshold$
- *Net Short-term Debt Change:* when only one of *short-term debt issued* or *short-term debt repaid* is reported, the observed flow is the net change; *net short-term debt change* is calculated as *short-term debt issued - short-term debt repaid* when both of them are reported. *net short-term debt change*$_t$ is calculated by taking the first difference of the year-to-date value *net short-term debt change* within a GVKEY-fiscal year. Data Source: Capital IQ
- *Short-term Debt Change:* an indicator of $|\frac{net\ short-term\ debt\ change_t}{atq_{t-1}}| > threshold$. Data Source: Capital IQ
- *Long-term Debt Issuance:* an indicator of $\frac{dltissued_t}{atq_{t-1}} > threshold$, where $dltissued_t$ is calculated by taking the first difference of the year-to-date value *dltisy* within a GVKEY-fiscal year.
- *Long-term Debt Issuance Unconditional Mean:* $\frac{dltissued_t}{atq_{t-1}}$, where $dltissued_t$ is calculated by taking the first difference of the year-to-date value *dltisy* within a GVKEY-fiscal year. The unconditional mean is calculated for all observations.
- *Long-term Debt Issuance Conditional Mean:* $\frac{dltissued_t}{atq_{t-1}}$, where $dltissued_t$ is calculated by taking the first difference of the year-to-date value *dltisy* within a GVKEY-fiscal year. The conditional mean is calculated for firm-quarters with non-zero long-term debt in both the current and previous quarters, and additionally with non-zero long-term debt issuance.

- *Pr(Long-term Debt Issuance):* $\frac{Long-term\ debt\ issuance\ unconditional\ mean_t}{Long-term\ debt\ issuance\ conditional\ mean_t}$
- *Long-term Debt Repayment:* an indicator of $\frac{dltrepaid_t}{atq_{t-1}} > threshold$, where $dltrepaid_t$ is calculated by taking the first difference of the year-to-date value *dltry* within a GVKEY-fiscal year.
- *Long-term Debt Repayment Unconditional Mean:* $\frac{dltrepaid_t}{atq_{t-1}}$, where $dltrepaid_t$ is calculated by taking the first difference of the year-to-date value *dltry* within a GVKEY-fiscal year. The unconditional mean is calculated for all observations.
- *Long-term Debt Repayment Conditional Mean:* $\frac{dltrepaid_t}{atq_{t-1}}$, where $dltrepaid_t$ is calculated by taking the first difference of the year-to-date value *dltry* within a GVKEY-fiscal year. The conditional mean is calculated for firm-quarters with non-zero long-term debt in both the current and previous quarters, and additionally with non-zero long-term debt repayment.
- *Pr(Long-term Debt Repayment):* $\frac{Long-term\ debt\ repayment\ unconditional\ mean_t}{Long-term\ debt\ repayment\ conditional\ mean_t}$
- *Equity Issuance:* an indicator of $\frac{sstk_t+stkcoq_t}{atq_{t-1}} > threshold$, where $sstk_t$ is calculated by taking the first difference of the year-to-date value *sstky* within a GVKEY-fiscal year. Stock-based compensation ($stkcoq_t$) is included as part of the equity issuance.
- *Equity Issuance (Excluding SBC):* an indicator of $\frac{sstk_t}{atq_{t-1}} > threshold$, where $sstk_t$ is calculated by taking the first difference of the year-to-date value *sstky* within a GVKEY-fiscal year.
- *Equity Repurchase:* an indicator of $\frac{prstkc_t}{atq_{t-1}} > threshold$, where $prstkc_t$ is calculated by taking the first difference of the year-to-date value *prstkcy* within a GVKEY-fiscal year.

Note: Unless otherwise noted, variables are sourced from the Compustat-CRSP Merged dataset.