Financing Major Investments:

Information about Capital Structure Decisions

Ralf Elsas [a]

Mark J. Flannery [b]

Jon A. Garfinkel [c]

Abstract

We evaluate U.S. firms' leverage determinants by studying how 1,801 firms paid for 2,073 very large investments during the period 1989-2006. This approach complements existing empirical work on capital structure, which typically estimates regression models for a broad set of CRSP/Compustat firms. If firms making large investments generally raise new external funds, their securities issuances should provide information about managers' attitudes toward leverage. Our data indicate that large investments are mostly externally financed and that firms issue securities that tend to move them quite substantially toward target debt ratios. Firms also tend to issue more equity following a share price runup or when the market-to-book ratio is high. We find little support for the standard pecking order hypothesis.

February 1, 2012

JEL Classification: G14, G31, G32

Keywords: firm financing, firm investments, capital structure

This paper has been improved substantially from comments provided by seminar participants at Singapore Management University, Nanyang Technical University, National University of Singapore, Norwegian School of Economics and Business Administration (Bergen), the Bank of Italy, the Stockholm School of Economics, the University of Washington, the Federal Reserve Board, and HKUST's annual finance conference. Special thanks to Evan Dudley for careful comments about a previous draft and Brandon Lockhart for extraordinary research assistance.

---

[a] Institute for Finance and Banking, LMU München, elsas@bwl.uni-muenchen.de.
[b] Department of Finance, University of Florida, flannery@ufl.edu.
[c] Department of Finance, University of Iowa, jon-garfinkel@uiowa.edu.

1. Introduction

The study of corporate finance basically concerns selecting new investments and deciding how to finance them. These activities are clearly inter-related, particularly if accessing external capital markets involves nontrivial transaction costs (Fisher et al. (1989)). However, researchers have often studied capital structure separately from investment decisions by estimating cross-sectional or pooled regression models for the population of (nearly) all firms in the CRSP-Compustat universe (e.g. Hovakimian et al. (2001), Leary and Roberts (2005), Flannery and Rangan (2006), Lemmon et al. (2008)).[1] This introduces two potential concerns. First, firms' cash flows and financing needs vary widely, so their inclinations to make capital structure adjustments probably vary as well (Strebulaev (2007), Faulkender et al. (2011)). Second, the resulting dynamic panel models pose estimation challenges that have made it difficult to produce definitive results (e.g. Chirinko and Singha (2000), Chang and Dasgupta (2009), Iliev and Welch (2010)).

This study approaches the capital structure question from a different perspective. We evaluate how firms choose to pay for their largest investment expenditures, which almost certainly require them to raise new external funds. There are several advantages to this approach. First, regardless of capital structure adjustment costs, these firms' financing decisions should reflect their attitudes toward leverage. Second, by focusing on large investments, we potentially reduce the variation in capital needs that may influence the conclusions drawn from very broad samples. Third, our event-based methodology complements more traditional, regression-based methods of estimating how firms choose leverage. Rather than concentrate on leverage changes, we use firm's Statement

---

[1] Recent notable exceptions, studying the interaction between financing and investment decisions, are Dudley (2009), Harford et al. (2009), DeAngelo et al. (2011).

of Cash Flows (SCF) data to identify the roles of debt, equity, internal cashflow and other sources in financing large investments.

Our empirical approach incorporates three major capital structure theories. The *dynamic trade-off hypothesis* asserts that each firm has an optimal capital ratio reflecting its specific characteristics. Under this hypothesis, a firm should raise external funds by issuing the type of security (debt or equity) that brings it closer to its target. Myers' [1984] *pecking order hypothesis* contends that asymmetric information imposes costs on existing shareholders when a firm sells new risky claims to the public. Accordingly, firms prefer to finance investments with internally generated funds. When investment requirements exceed the available internal funds, firms hypothetically prefer to issue debt over equity. Thus the debt component of leverage should be inversely related to past profitability, *ceteris paribus* (Fama and French (2002)). Finally, capital structure may be subject to the *market timing hypothesis*, under which firms try to issue overpriced securities when they go to the market (Asquith and Mullins (1983), Korajzyk et al. (1991), Loughran and Ritter (1997), Baker and Wurgler (2002), Huang and Ritter (2009)). Under this hypothesis, outside investors often misvalue firm securities and managers raise funds by issuing the most over-valued type of claim. When investors are overly bullish, managers issue shares; relatively bearish investors lead managers to issue debt. A firm's leverage at any point in time therefore reflects the correlation between historical security mis-pricings and new investment opportunities.

Empirical research has not uniformly supported any one of these hypotheses over the other two. Nor has it ruled out multiple influences on corporate leverage. [2] Much research supports the trade-off hypothesis, but other researchers question the power of these tests (Chang and Dasgupta (2009), Strebulaev (2007), Iliev and Welch (2010)). The pecking order receives support from Shyam-

---

[2] For example, pecking order or market timing behaviors might be fully consistent with the trade-off hypothesis over a longer time frame (Baker and Wurgler (2002), page 2).

Sunder and Meyers' (1999) observation that leverage tends to vary inversely with profitability, but several papers question their methodology and/or inferences. Hovakimian et al. (2004) attribute the correlation to costly, incomplete adjustment toward target ratios. Chirinko and Singha (2000) show that the Shaym-Sunder and Myers methodology has low power at reasonable equity ratios. Frank and Goyal (2011) show that the correlation is driven by the influence of profitability on leverage through the denominator (firm value), consistent with Strebulaev's (2007) simulations. Moreover, Frank and Goyal further show that debt *issuance* is increasing in profitability. Finally, a firm's propensity to issue shares following a price runup is consistent with the market timing hypothesis, but the long-run effect of opportunistic security issuances on observed leverage has not been fully established (Baker and Wurgler (2002), Hovakimian (2004)).

Further clouding inferences, researchers often have tested one capital structure hypothesis at a time, rather than testing them concurrently.[3] Our work potentially offers new insights because our event-based design – examining large investments that almost surely require external financing[4] – offers a different view of concurrent capital structure hypothesis tests. We also separate large investments into two categories: "Built" capital expenditures (Compustat SCF item #128) and Acquisitions (Compustat SCF item #129, supplemented by merger transaction data from SDC). This admits the possibility that firms undertaking different types of investments may prefer different financing approaches.

We find that the typical major investment is financed largely with outside funds. In the event year, our median firm finances 36.8% of its Built investments and 40.6% of its Acquired investments with new debt. Equity issuance provides 6.7% and 30.8% of the financing for major Built

---

[3] Larkin (2010) recognizes potential interaction between the market timing and trade-off hypotheses, but her tests are not event-based. The results likely reflect varying financing needs across her sample firm/years.

[4] We define a "major" investment event as a firm-year with investment expenditures exceeding 30% of book assets and 200% of the firm's trailing investment expenditures (as a proportion of total assets).

and Acquired investments respectively. More importantly, our multivariate regressions show that firms choose debt or equity issuance at least partly on the basis of their deviation from target leverage, consistent with the trade-off hypothesis. We also find that more profitable firms finance major investments with a greater proportion of internal funds (operating cash flow), consistent with the pecking order hypothesis. However, in contrast with the usual pecking order story, these internal funds primarily replace *equity* issuance, not debt (as Myers (1984) would predict). Substituting retained earnings for equity issuance leaves leverage unchanged, and hence profitability does not substantially affect a firm's leverage when they undertake a large investment. Finally, we present evidence relating to the market timing hypothesis. Firms with a high Q value issue more shares, but these share issues primarily replace internal funds, with (again) no net effect on leverage. A large recent stock price runup also elicits more share issuance while depressing debt finance for acquisition financing. Both results support the market timing hypothesis.

The prior papers most comparable to ours are Mayer and Sussman (2005) and Harford et al. (2009). Mayer and Sussman evaluate financing activity associated with one-year "spikes" within a contiguous five-year investment history, relying exclusively on SCF data. As we discuss below, SCF data misrepresent the scale and financing composition of many acquisitions, which account for 48% of their sample. When we supplement SCF acquisitions data with transaction information from Securities Data Corporation's U.S. Mergers and Acquisitions (SDC) database, our sample of major investments includes 65% acquisition events. Moreover, Mayer and Sussman generally do not distinguish between built and acquired investments while we evaluate them separately. Harford et al. (2009) share our motivation that firms should be particularly aggressive in moving toward their leverage targets (if they have them) when deciding how to finance an acquisition. Their evidence confirms this hypothesis for acquisitions identified via SDC. Our sample is broader and more inclusive than Harford et al.'s: they study no built (internal) investment events and we identify about 601 (out of 1,780) acquisitions that are not covered in SDC. Indeed, we find that deviations from target capital structures differentially influence financing behavior for built vs. acquired investments. Finally, we separately evaluate the decisions to finance with debt, equity, internal cashflow, or other (internal) sources, in order to understand how financing decisions affect leverage.

Our final contribution to this literature is our treatment of the possibility that large investment decisions may be endogenous. To alleviate the concern that our results are driven by a capital structure adjustment motivation for investing (Uysal (2011)), we control for selection bias with a Heckman selection regression. Our conclusions do not change.

This paper is organized as follows. Section 2 defines “major” investments and describes the features of our sample firms. Section 3 estimates each firm’s target leverage ratio, and then presents evidence on firms’ adjustments toward their leverage targets when financing major investment projects. Multivariate regression models in Section 4 test the relevance of all three capital structure hypotheses simultaneously, finding support for the trade-off and market timing hypotheses. Section 5 reports some robustness results, and the last section concludes

2. Identifying Major Investment Events

Our research design is based on the simple proposition that a firm’s large investments must be financed and that this financing pattern will reflect its attitude toward leverage. Theory provides no clear method for identifying “major” investment events. We therefore proceed with one plausible rule: an investment is “major” if it

- exceeds 200% of the firm’s past three years’ average (“benchmark”) investment, *and*
- is at least 30% of the firm’s prior year-end total assets.[5]

[5] Analysis based on a less restrictive, alternative rule (100% of trailing investment and 20% of total assets) yields similar results.

We compute separate investment levels for each firm-year's Built and Acquired capital expenditures.

Before identifying firms with major investments, we trimmed the universe of CRSP-Compustat firms, by excluding firm-years in which:[6]

- The firm's book value of equity is negative.
- Data is missing for capital expenditures *and* acquisitions (items #128 and #129), or for income before extraordinary items (item #123, used to calculate cash-flows).
- The firm belongs to a regulated industry or one with unusual capital structures: two-digit NAICS industry codes equal to 22 (utilities), 52 (finance and insurance), 55 (management of companies and enterprises), or exceeding 90 (public administration).
- The firm has a CRSP share code not equal to 10, 11, or 12; and/or the exchange code is not NYSE, Amex, or NASDAQ.

This screen leaves a "restricted Compustat" sample with 83,576 annual observations for 11,438 firms in the 1989-2006 period, which we search for major investment events.[7]

2.1 Data

The Appendix lists the variables reported in Compustat's SCF data. We aggregate these variables into four exhaustive financing sources for a firm's investments:

DEBT$_i$ is the ith firm's debt (long-term plus short term) issued minus debt retired for cash (Compustat items 111 plus 114 less 301).

EQUITY$_i$ is the the dollar value of the ith firm's net issuance of common and preferred shares for cash (Compustat items 108 + 115).

[6] Comparisons between our sample of event firms and the "Compustat universe" later in the paper refer to this restricted universe.
[7] Firms that chose to make large investments may differ from other Compustat firms in other ways as well. However, sample selectivity (Heckman) corrections described in our robustness analysis in Section 5 confirm our main conclusions.

CASHFLOW$_i$ is the i[th] firm's operating cash-flows, defined as after-tax income before extraordinary items plus depreciation and amortization less cash dividends and the increase in cash and cash equivalents (Compustat items 123 + 125 – 127 - 274). Note that a firm that finances new investment by running down its accumulated cash balances will have a higher CASHFLOW, *ceteris paribus*.

OTHER$_i$ aggregates all other SCF categories (assets less liabilities) for firm i.

For SCF data the following identity needs to holds for each firm over any time interval:

$$\text{INVEST}_i = \text{DEBT}_i + \text{EQUITY}_i + \text{CASHFLOW}_i + \text{OTHER}_i \tag{1}$$

where INVEST$_i$ is the sum of firm i's capital expenditures and acquired assets. Because cash flow statement presentations were not standardized until 1988 (SFAS 95), we consider only investment events that occurred between 1989 and 2006.[8]

It is important to understand how each of the financing categories in (1) affects a firm's leverage. Obviously, a DEBT (EQUITY) issuance increases (decreases) leverage, *ceteris paribus*. Financing new assets from operating CASHFLOW increases retained earnings and hence reduces leverage. Consequently, substituting CASHFLOW for EQUITY financing leaves leverage unaffected. The effect of OTHER financing on leverage is ambiguous because this category combines asset and liability items.

The Built projects are adequately described by Compustat's SCF item 128, "capital expenditures." However, the SCF information does not fully record the value of all acquisitions. Compustat item 129, "acquisitions", recognizes only acquired assets purchased with <u>cash</u> or by <u>assuming</u> the target's debt. Equity constitutes the most common non-cash payment in an acquisition, but some firms pay a target's shareholders with newly-issued debt securities. Neither is recorded in the SCF:

> if one company acquired another at a cost of $10 billion, but only $1 billion of it was in cash, with the rest paid in the form of debt and equity instruments, the cash flow statement would show only the $1 billion cash amount paid as the cost of the acquisition. The other $9 billion would be relegated to a footnote. (Weiss and Yang [2007])

---

[8] We eschew analysis beyond 2006 because of the financial crisis and its uncertain effects on capital availability.

In other words, SCF data alone could under-represent the scale of acquisitions and distort their (apparent) financing. We therefore augment the SCF data with information from Thomson Financial's SDC Mergers and Acquisitions Database. We identifiy all SDC transactions that specify the source(s) of at least 98% of the deal's required financing.[9] We then match SDC acquirers against our initial Compustat dataset and adjust the acquirer's

- "acquisitions" amount (Compustat item 129) by adding the value of total shares and debt paid for the asset,
- "sale of common and preferred equity" (Compustat item 108) by adding the value of equity paid, and
- "issuance of long term debt" (Compustat item 111) by adding the value of debt paid.

These adjustments increase the number of major acquisitions in our sample by 50.1%. SCF data alone identify 1,186 major acquisitions made by 914 firms, compared to the augmented dataset's 1,780 major acquisitions by 1,316 firms.[10] More importantly, including equity compensation substantially changes the financing proportions for acquiring firms. The SCF data alone indicate that the median debt financing proportion for acquisitions was 59.09%, while equity financed (in the median) only 1.43% in the event year. Incorporating the SDC information reduces the median debt portion to 42.1% and raised equity's share to 28.7%.

2.2. Sample Characteristics

Table 1 describes the selected events: 1,205 major Built investments at 787 firms and 1,780 major Acquisitions at 1,316 firms. In order to evaluate built and acquired events separately, we omit

[9] The SDC file included 105,031 deals, of which only 34,426 recorded compensation equal to at least 98% of the acquired assets. We were able to identify 19,115 acquirers, of which 18,410 could be matched to Compustat gvkeys. If the full recorded compensation was less than 100% of acquired assets, we assumed that the remainder (never more than 2%) was paid for with equity (shares of stock).

[10] Two examples indicate the potential importance of this adjustment. On June 1, 1992, Mesa Airlines acquired WestAir Holding Inc. for $43.6 million in shares. The SCF amount for acquisitions was less than $1 million and would not have constituted a "major" investment. Similarly, Texas Instruments acquired four companies in 2000 in return for $7.9 billion in shares, while the company's SCF acquisitions were reported as zero.

114 firms with both Built and Acquired major investments during the 1989-2006 sample period.[11] This yields 1,023 Built events and 1,616 Acquired events. When major investments occur in adjacent years, we combine them into a single "economic event," in order to identify pre-event and post-event financing changes that are not complicated by additional large investments. Our definition of economic events yields a main test sample of 728 Built events at 622 firms and 1,345 Acquired events at 1,179 firms.[12]

Table 2 compares the industry distribution of our sample firms to the distribution of the corresponding Compustat population during the 1989 - 2006 period. Neither the Built nor the Acquired sample randomly represents Compustat's cross-industry distribution of firms. Built investments are particularly common in some Manufacturing segments (NAICS = 32, 33), in Mining (21), and in the Information (51) industry, while Transportation (48), and Arts and Accommodations (71, 72) firms undertake relatively few such actions. Acquisition events are unusually frequent in Manufacturing (33) and Information (51).

Table 3 defines variables and presents two types of comparisons of event firms' characteristics. Many of the relevant variables are ratios, which can take extreme values when the denominator is unusually small. We therefore winsorize the series reported in Table 3 at the 0.5% and the 99.5% levels and concentrate our discussion on the *median* values. Panel A of Table 3 compares the Built vs. Acquiring firms' median values at the yearend preceding their investment events. These two groups exhibit similarly high total assets growth (median values of 11.5-13%) and market-to-book equity (Q) ratios (median about 2.7), consistent with their observed major investment expenditures. However, they differ significantly in most other dimensions, including size and profitability.

---

[11] All results remain qualitatively unaffected when incorporating the firms with both major Built investments and major Acquisitions.

[12] There are 380 economic events with multiple adjacent event periods, of which 319 have two, 53 have three, 5 have four, and 3 have five adjacent event years. Omitting these multi-year events has no substantial effect on our results, as noted in the Robustness section below.

For example, acquiring firms are larger, more profitable, and operate with slightly lower equity ratios. If Built and Acquired events were concentrated in different sample years, Panel A might be comparing these two samples across substantially different points in time. In addition, Panel A provides no comparison between the event firms and the contemporaneous Compustat populations. Panel B of Table 3 therefore compares each event firm to the median Compustat non-event firm at the end of the year preceding the event. (The reported figures in Panel B thus represent differences from the same-date Compustat median value.) Both sample groups' median characteristics differ significantly from the contemporary non-event firms in most dimensions.[13] Both groups are larger than the median Compustat firm, had been growing more quickly, and exhibit higher Q-ratios.

2.3 Financing Proportions and Dynamics: Univariate Results

Table 4 provides univariate measures of the investment events' size and financing proportions. Panel A reports mean (dollar) expenditures; Panels B and C report median financing proportions. The left half of Panel A demonstrates that the average Built expenditure is larger in the event year than in adjacent years, although Built expenditures in years $\tau = -1$ and $\tau = +1$ constitute roughly 30 – 60% of their peak (event) year's level. Built investments thus appear to occur within a continuing growth process, despite the fact that the year 0 investment exceeds 200% of the past three years' average. Note further that the average firm makes some (relatively small) acquisitions even during its "major" Built event year. Similarly, the right half of Panel A shows some modest Built investments even in years with a major Acquisition. In contrast to Built events, Acquisition events show a more distinct "spike" in the time series on acquired assets. Panel B of Table 4 describes each financing source's median proportional contribution to investment spending in the event year alone

[13] Test results are not reported in the table, but are available upon request.

(τ = 0). For each firm-year observation, we calculate the ratio of each financing source (equity, debt, etc.) to the sum of built and acquired investment expenditures during that firm-year, and report the median of these ratios. (Note that the medians need not sum to 100% of required financing.)

New external finance provides the largest share of funds for our major Built projects: the median project is funded with 36.8% new debt and 6.72% new equity. Operating CASHFLOW pays for 22.67% of Built investments and the OTHER category finances only 4.47%. Acquisitions are financed even more heavily by external funds, presumably reflecting the typical acquisition's larger size. Acquisitions also entail much more equity funding (a median of 30.84% vs. 6.72% for Built investments), consistent with the common practice of paying a target with the acquirer's shares.

Figure 1 shows a break-down of median financing ratios when event firms are sorted each fiscal year into size terciles (based on total assets). The figure illustrates the prominence of external funds (debt plus equity) in financing major investments across all size classes. However, the smallest firms finance their projects with less CASHFLOW and much more new EQUITY than larger firms, in particular if the project is an acquisition. This pattern appears to contradict the usual pecking order exposition, in which smaller firms suffer greater lemons costs when issuing equity, and hence rely on CASHFLOW or DEBT to finance their growth.

The importance of external finance for major investments (nearly twice that of internal finance, in the median) helps justify our decision to study leverage in the context of major investment expenditures. The differential role of equity in Built vs. Acquired investments suggests that studying them separately may yield new insights about capital structure adjustments. We revisit this in greater detail in section 4.2 below.

2.4. Financing Adjustments Outside the Event Year

A firm's ultimate financing choices need not be manifested during the investment year (Mayer and Sussmann [2005]). Dudley [2009] finds that firms making large capital expenditures adjust financing over the course of their investment project's life, and Harford et al. (2009) show that acquiring firms soon retire much of the debt they issue to finance the acquisition. For example, suppose that a firm's cash flow statements indicate a large decline in cash balances accompanying a large capital expenditure. This could mean that the firm financed its investment through accumulated retained earnings, or that it issued EQUITY or DEBT in year τ = -1 and held the proceeds as cash until investment bills came due. Another possible multi-year financing is that a firm borrows in year τ = 0 to finance an acquisition, and then issues shares in year τ = +1 to repay the loan. In this case, the event-year values in (1) would mistakenly indicate a DEBT-financed investment. Other examples can be readily constructed. The general point is that a firm might make advance arrangements to fund a planned large investment, or it might use a temporary source of funds while intending to obtain permanent financing later.

We investigate the possible dynamics of investment financing in Panel C of Table 4, which illustrates the extent to which financing proportions change over time. For each year, we report the median funding proportions, expressed as a percentage of total Built plus Acquired investments over the widest event window, τ = [-1, +1].[14] DEBT and EQUITY issuances are heavily concentrated in the event year for both Built investments and Acquisitions. OTHER financing manifests large proportional fluctuations, but it constitutes a small component of total financing. Only CASHFLOW shows substantial contributions outside the event year. The median major investment – Built <u>or</u> Acquired -- is roughly 30% funded by CASHFLOW over the widest event window (τ = [-1, +1]).

[14] Financing proportions thus differ for τ= 0 between Panels B and C because they reflect different deflators.

3. Adjustment toward Target Leverage

The trade-off hypothesis states that a firm wishes to attain a target ("optimal") capital ratio reflecting its characteristics. In order to assess the tradeoff hypothesis alongside the pecking order or market timing hypotheses (which specify no target leverage ratio), we need estimates of each firm's target leverage. We define leverage as

$$LEV_t = \frac{D_t}{D_t + E_t} \qquad (2)$$

where $\boldsymbol{D_t}$ denotes the book value of interest-bearing debt (Compustat items 9 plus 34) at time *t*, $\boldsymbol{E_t}$ is the firm's equity value. We present results based on the market value of equity (price per share times the number of shares outstanding) in Tables 5 - 7 below, although similar results obtain when we use equity's book value.

The possibility that firms encounter costs of adjusting their capital structure suggests a partial-adjustment model to describe firms' leverage changes:

$$LEV_{i,t} - LEV_{i,\,t-1} = \lambda\,(LEV_{i,t}^* - LEV_{i,\,t-1}) + \tilde{\delta}_{i,t} \qquad (3)$$

According to this specification, the typical firm annually closes a proportion λ of the deviation between its desired ($\boldsymbol{LEV_{i,t}^*}$) and its actual ($\boldsymbol{LEV_{i,t-1}}$) leverage. Specifying the desired (target) leverage as a linear combination of firm characteristics ($\boldsymbol{X_{i,t-1}}$) gives the estimable model

$$LEV_{i,\,t} = (\lambda\,\beta)\,X_{i,t-1} + (1-\lambda)LEV_{i,t-1} + \tilde{\delta}_{i,t}\,. \qquad (4)$$

Following previous researchers, the vector ***X*** includes earnings, depreciation, fixed assets and R&D expenditures (all as a proportion of total book assets), the assets' market to book ratio, the log of (real) total assets, the firm's industry median leverage, a dummy variable indicating whether the firm has a credit rating, and firm fixed effects. We estimate (4) with the Blundell-Bond system GMM estimator over the period 1971-2006 but do not report the results to save space.[15] The estimated coefficients $(\hat{\beta}, \hat{\lambda})$ are then used to compute a target debt ratio ($\widehat{LEV}^*_{i,t-1}$) for each firm at the end of each year.

We define each firm's deviation from its target leverage as

$$DEV_{i,t} = \widehat{LEV}^*_{i,t-1} - LEV_{i,t-1} = \hat{\beta} X_{i,t-1} - LEV_{i,t-1} \qquad (5)$$

Given this estimated leverage target, we can estimate a modified version of (3) via OLS:

$$\mathrm{LEV}_{i,t} - \mathrm{LEV}_{i,\,t-1} = \lambda_1 (\widehat{DEV}_{i,t}) + \delta_{it} \qquad (3a)$$

Recall that the partial adjustment specification reflects adjustment costs that offset the (presumed) benefits of moving toward target leverage. Event firms are likely to be seeking external funds. They therefore have unusually low adjustment costs of changing leverage, and should find it cost effective to make financing decisions that reduce $|DEV_{i,t}|$. Table 5 provides information about the relation between large investment events and leverage adjustments derived from the tradeoff model.

The first column of Table 5 estimates (3a) using only event firm-years. (We utilize bootstrapped standard errors to account for the generated regressor $\widehat{DEV}_{i,t}$). The significant positive coefficient on $\widehat{DEV}_{i,t}$ indicates that firms with major investments move 43% of the way toward the targets we have estimated – substantially faster than the adjustment speeds estimated from a broad population of firms.

But perhaps our event firms simply adjust their caital structure unusally rapidly (for some reason), without any special emphasis on the eevent as a catalyst to speed up their adjustment to-

---

[15] The estimated adjustment speed is 21.3% per year, in line with other recent estimates such as Lemmon et al. (2008).

wards target leverage. To investigate this possibility, we augment (3a) to distinguish between event and non-event years:

$$LEV_{i,t} - LEV_{i,\,t-1} = \lambda_1 (\widehat{DEV}_{i,t}) + \lambda_2 (\text{D-EVENT}_{i,t} * \widehat{DEV}_{i,t}) + \delta_{it} \qquad (3b)$$

where $\text{D-EVENT}_{i,t}=1$ if the ith firm has a large investment during year t, otherwise = 0.

The second column of Table 5 reports results from estimating (3b) using all of the event firms' available data. The coefficient on $\widehat{DEV}_{i,t}$ indicates that these firms have a 27% speed of adjustment in non-event years – at the high end of the range typically reported in recent papers. During the event year, however, the adjustment speed is 36% higher at 63%.[16] Similar results occur in column (3), which reports (3b) estimates for all firm-years in the restricted Compustat universe.

Columns (4) and (5) differentiate between Built and Acquired event firms (in comparison with the restricted Compustat universe). Event year adjustment is substantially faster for either type of investment, although the Built firms apparently adjust less rapidly than the Acquiring firms do. This is further confirmed in Column (6), which includes a separate event-year adjustment coefficient for the two types of firms: those with Built investments close 12% less of their leverage gaps in the event year. (We return to this issue in Section 4.2 below.)

Finally, column (7) of Table 5 examines how event firms converge toward their target leverage in the years preceding large investments. Event firms manifest no differential adjustment speed two years before the event; but in the immediately-preceding year event firms move significantly away from target leverage. This finding is consistent with the notion that adjustment costs are substantial, and firms anticipating a near-term entry to external capital markets will worry less (than other firms) about their leverage, knowing that they will make a large adjustment in the event year.

---

[16] The same specification without firm fixed effects yields significant estimated coefficients of 0.27 and 0.30 for λ_1 and λ_2 respectively.

Overall, we conclude from Table 5 that our computed leverage targets are meaningful, and that firms reliably move toward our estimates of their target leverage at very high adjustment speeds.

4. Multivariate Tests of Capital Structure Hypotheses

4.1 Capital Structure Analysis for all Event Types

The tests in Table 5 focus on the trade-off hypothesis. It is also important to assess the extent to which sample firms' behavior is consistent with the two other basic capital structure hypotheses. To do so, we estimate a set of four "seemingly unrelated" regressions to explain how firms pay for their major investments. Specifically, we estimate

$$\boldsymbol{F_{ijt}} = \alpha_j + \beta 1_j \, \boldsymbol{DEV_{i,t-1}} + \beta 2_j \, \boldsymbol{Profit_{i,t-1}} + \beta 3_j \, \boldsymbol{Runup_{i,t-1}} + \beta 4_j \, \boldsymbol{Q_{i,t-1}}$$

$$+ \beta 5_j \, \boldsymbol{ln(Size_{i,t-1})} + \beta 6_j \, \boldsymbol{INV\_TA_{i,t-1}} + \beta 7_j \, \boldsymbol{FA\_TA_{i,t-1}} + \sum_{y=1989}^{2005} \delta y \boldsymbol{Dy}_j + \tilde{\varepsilon}_{ijt} \qquad (6)$$

where $\boldsymbol{F_{ijt}}$ = the proportion of the i[th] firm's new investment financed by each of the four funding sources (j = ***EQUITY***, ***DEBT***, ***CASHFLOW***, ***OTHER***) during period t.

$\boldsymbol{DEV_{i,t}} = \widehat{LEV}^*_{i,t-1} - LEV_{i,t-1}$, which proxies for the i[th] firm's deviation from target leverage at the end of period t-1.

$\boldsymbol{Profit_{i,t-1}}$ = net annual income before extraordinary items, as a proportion of book assets. Under the pecking order hypothesis, firms should issue DEBT when internal CASHFLOW cannot finance available investment projects.

$\boldsymbol{Runup_{i,t-1}}$ = the stock's excess return over the market, during a 12-month period preceding the start of the event period.[17] Firms tend to issue stock following a share price runup (Korajczyk et al. [1991]).

$\boldsymbol{Q_{i,t-1}}$ = the ratio of the firm's equity market value to the book value of equity. ***Q*** measures the firm's investment opportunity set.

[17] For event windows beginning in year 0, this return is computed over the months [-24,-12] relative to the start of the event fiscal year. For the event window [-1, +1], this excess return is computed over the months [-36,-24] relative to the start of the event's fiscal year.

Firm Size$_{i, t-1}$ = log of the ith firm's book assets, measured in year-2000 dollars.

INV_TA $_{i, t-1}$ = the ratio of (built plus acquired) investments during the event window to book total assets at the end of the year preceding the event window. Larger investments may be financed differently.

FA_TA $_{i, t-1}$ = a measure of "debt capacity": the firm's yearend book value of fixed assets (item #7) as a proportion of total assets at the end of the year preceding the event window.

Dy$_j$ =1 in year ***y*** (y = 1989, 2005), else zero. (Coefficients not reported in Table 6.)

Our primary interest lies with the first four explanatory variables, which capture the three alternative capital structure hypotheses. ***Firm Size, INV_TA***, and ***FA_TA***, control for investment and firm characteristics that might influence financing decisions.

The accounting identity (1) imposes two cross-equation constraints on the equation system (6):[18]

- All investments must be financed, requiring that the four regressions' intercept terms sum to 100%.
- Slope coefficients in (6) measure the (*ceteris paribus*) impact of the associated regressors on the firm's use of each type of financing. Since these funding shares sum to unity, the regressors' coefficients must sum to zero across funding sources for any time interval.

To allow for systematic revisions to financing patterns outside the event year, we estimate variants of (6) over three different event windows:

τ = 0, the event year

τ = [0, 1], the event year and one successive year

τ = [-1, +1], a three year period centered on the event year.

[18] Data from the Statement of Cash Flows should obey these constraints by construction. We estimate the four versions of (6) via SUR and impose these two constraints on the coefficients. The data fail to reject the imposed constraints, implying that the accounting is correctly done. OLS results in the last four columns of Table 7 are virtually identical to the SUR estimates presented in Table 6.

Consistent with the limited issuance of DEBT and EQUITY outside the event year (Table 4C), estimation results vary little across the alternative event windows.

The trade-off hypothesis implies that firms should choose financing methods that increase (decrease) leverage when ***DEV*** > 0 (***DEV*** < 0). Accordingly, ***DEV*** should carry a positive (negative) coefficient in the DEBT (EQUITY) regression. The trade-off hypothesis further implies a negative coefficient on ***DEV*** in the CASHFLOW regression because retained earnings reduce leverage. Under the pecking order hypothesis, higher profits should be accompanied by less external financing, and particularly less debt financing (Fama and French, 2002). *Across equations*, the pecking order hypothesis further implies that the coefficients on profit in the DEBT and CASHFLOW regressions should have opposite signs. Finally, to the extent that ***Runup*** and ***Q*** indicate over-priced equity, the market timing hypothesis predicts that external claims – particularly EQUITY -- will be used more when these variables are high.

Table 6 presents the results of estimating (6) separately for Built and Acquired investments, using a market-value based measure of the *DEV*iation from target leverage. Although we present results for three event windows, our discussion emphasizes the narrowest event window ($\tau = 0$, in columns (1) – (4)) because the wider event windows yield qualitatively similar conclusions about the main hypotheses. Panel A reports results for firms with major Built investments. The positive coefficient on *DEV* in the DEBT regression (column (1)) indicates that under-levered firms (*DEV* > 0) use more debt financing, consistent with the trade-off hypothesis. The negative coefficient on *DEV* in the EQUITY regression (column (2)) is also consistent with trade-off behavior, and the similar-sized coefficients on ***DEV*** in the DEBT and EQUITY regressions suggest an approximate symmetry in leverage adjustments. A one standard deviation increase in *DEV* (6.34 percentage points for event years at the firm level) raises the proportion of DEBT funding in the event year by 5.45% (= 0.86*6.34) of the investment amount and reduces EQUITY funding by a 7.80%. The tradeoff hypothesis receives significant support.

The estimated coefficients on ***Profit*** for τ = 0 indicate that more profitable firms finance more of their major investments with internal CASHFLOW. (Recall that CASHFLOW includes changes in the firm's cash balances.) Although this observation is consistent with the pecking order hypothesis, it is not the end of the story. The usual pecking order story asserts that adverse selection costs lead firms to issue DEBT when CASHFLOW is insufficient to finance their desired investments.[19] But here, the negative (zero) coefficient on ***Profit*** in the EQUITY (DEBT) regression indicates that CASHFLOW substitutes primarily for EQUITY issuance, leaving leverage approximately unaffected by firm profitability. Overall, pecking order receives mixed support at best from these results.

The significantly positive coefficient on ***Runup*** in column (2) indicates that firms with higher recent stock returns finance their Built investments with more EQUITY, consistent with the market timing hypothesis that managers strategically issue overpriced equity. ***Runup*** has no significant effect on DEBT, but depresses the firm's use of internal CASHFLOW, leaving only a limited impact of ***Runup*** on leverage. The coefficient estimates for ***Q*** are also consistent with the market timing hypothesis, if we interpret a higher ***Q*** as implying more over-priced shares (Baker and Wurgler (2002)).[20] As for ***Runup***, ***Q*** does not significantly affect the DEBT financing proportion, but causes substitutions between EQUITY and CASHFLOW. In short, the proxies for over-valued shares affect funding sources, but not the resulting leverage.

---

[19] The typical pecking order logic assumes that equity is subject to larger lemons discounts than debt (Myers (1984)), because asymmetric information concerns the mean value of assets in place (as in Myers and Majluf (1984)). In a footnote, however, Myers (1984) observes "If there is asymmetric information about the variance rate, but not about firm value at the time of issue, the pecking order could be reversed." (footnote 13, page 584). We interpret the "usual pecking order story" to imply that debt is preferred over equity when the firm needs to raise external funds.

[20] The positive effect of ***Q*** on equity finance is also consistent with the hypothesis that firms with more growth options prefer to avoid leverage.

Firm asset composition and the investment's relative size also affect funding. The estimated coefficients on ***INV_TA*** indicate that larger investments are financed with more ***CASHFLOW*** and less new EQUITY, although both these effects are small.[21] The coefficients on ***FA_TA*** indicate that firms with more tangible assets rely less on external financing (particularly EQUITY) and more on internally generated funds (***CASHFLOW*** and ***OTHER***), consistent with tangible assets generating higher, depreciation-related cash flows. Finally, ***Firm Size*** carries insignificant coefficients, suggesting that funding choices for major Built investments are not closely related to firm size.

Panel B of Table 6 presents estimation results for firms making major Acquisitions. We again concentrate on the event year's financing ($\tau = 0$). The impact of ***DEV*** on DEBT and EQUITY (columns (1) and (2)) again supports the hypothesis that firms with large financing needs pursue outside financing that moves them toward their target leverage ratios (as in Harford et al. (2009)). Also, as with Built investments, ***DEV*** carries similar-sized coefficients, suggesting symmetry in the implied leverage adjustments. The effect of ***Profit*** again contradicts the usual pecking order story. More profitable firms use CASHFLOW to replace new EQUITY, not DEBT. Indeed, new DEBT issuance is <u>positively</u> related to profitability (consistent with Frank and Goyal (2011) and Harford et al. (2009)). As in Panel A, the market timing hypothesis is supported by the estimated effects of ***Runup*** and ***Q***. Higher ***Runup*** encourages EQUITY issuance at the expense of OTHER. Higher ***Q*** also encourages EQUITY issuance, which primarily displaces CASHFLOW in financing Acquisitions. On net, ***Runup*** and ***Q*** have little effect on leverage because EQUITY primarily replaces internal funds. Among the control variables' coefficients in Panel B, the size of the investment (***INV_TA***) has no significant effect on financing patterns, and firms with more tangible assets (***FA_TA***) tend to finance major Acquisitions with less EQUITY and more DEBT. Larger firms tend to finance Acquisitions more with internal funds.

---

[21] Despite the positive coefficient, internal financing in the event year remains a smaller component of investment funding than external (particularly in the mean).

Several broad conclusions emerge from Table 6. The trade-off hypothesis receives strong support: DEBT and EQUITY financing proportions reflect firms' deviations from their target leverage ratios. Higher profits lead firms to finance more with internal funds, consistent with the usual pecking order hypothesis. But the internal CASHFLOW replaces EQUITY issuance, not DEBT issuance. This substitution leaves leverage unchanged and contradicts the hypothesis that firms generally choose to issue debt over the more information-sensitive equity claims. When outsiders have a more positive assessment of the firm's value (as indicated by higher ***Runup*** or ***Q***), new EQUITY replaces internal funds. It thus appears that firms have specific target leverage ratios, but are willing to move away from their targets when their external claims appear to be mis-valued (consistent with Larkin (2010)). Assuming that security mis-valuations disappear over time, the regressions in Table 6 indicate that financing decisions ultimately reflect *DEV*iations from target leverage.

4.2 Built Investments versus Major Acquisitions

The results in Tables 5 and 6 present evidence suggesting important differences in the influence of DEV on leverage across built vs. acquired investments. At the same time, this evidence (at first blush) seems somewhat contradictory. Table 5 indicates that Built firms close 12% less (than Acquiring firms) of their leverage deviation during the event year. Yet Table 6 estimates that Built firms adjust their debt and equity issuances more aggressively in response to DEV. For example, the coefficient on DEV in the DEBT regression of Table 6 Panel A is 0.86 for Built investments vs. 0.70 in Panel B for Acquisitions (both results measured for τ=0). Likewise, DEV carries a coefficient of -1.23

(-0.63) in the EQUITY regression for Built (Acquiring) firms. The DEV coefficients in the Debt and Equity regressions differ reliably from one another at the 1% confidence level.[22]

To better understand this apparent contradiction we begin by computing the effect of DEV on the project-induced change in leverage. Let

L = D/(D+E)

where D = the dollar value of pre-investment debt outstanding,

E = the dollar value of pre-investment equity outstanding.

Then

$$\frac{\partial L}{\partial D} = \frac{E}{(E+D)^2}, \quad \frac{\partial L}{\partial E} = \frac{-D}{(E+D)^2}$$

and

$$\mathrm{dL} = \frac{\partial \mathrm{L}}{\partial \mathrm{D}} \frac{\partial D}{\partial DEV} dDEV + \frac{\partial L}{\partial E} \frac{\partial E}{\partial DEV} dDEV \tag{7}$$

Table 6 estimates the impact of DEV on the proportions of new financing raised from a specific source. Therefore

$$\frac{\partial D}{\partial DEV} = \frac{\partial (\frac{D}{INV})}{\partial DEV} * INV \tag{8a}$$

where $\frac{\partial (\frac{D}{INV})}{\partial DEV}$ = 0.86 (0.70) for Built (Acquired) investments. Likewise

$$\frac{\partial E}{\partial DEV} = \frac{\partial (\frac{E}{INV})}{\partial DEV} * INV \tag{8b}$$

where $\frac{\partial (\frac{E}{INV})}{\partial DEV}$ = -1.23 (-0.63) for Built (Acquired) investments.

---

[22] In unreported regressions (available from the authors upon request), we re-estimate the system of equations in Table 6 for the pooled sample of Built and Acquired events. We ran two versions of this regression: one in which all the RHS variables were permitted to take different coefficients for Built vs. Acquired events, and another in which only the intercept and the slope on DEV were permitted to differ between the two investment types. In both cases, the absolute slope on DEV was significantly larger ($p < 0.01$) for Built investments.

The effect of a new investment on a firm's leverage depends on the relative sizes of the investment and the firm. Take a standardized firm with assets of \$100 and leverage equal to 15% (which is about the mean for our sample firms). The average event investment constitutes 62% of asset size, or \$62 for our standardized firm. Substituting estimated coefficients and assumed firm features into (7), (8a), and (8b) yields

$$\begin{aligned}
&\text{Built:} && dL = \frac{85*0.86*62+15*1.23*62}{(100)^2} = 0.57 \\
&\text{Acquisitions:} && dL = \frac{85*0.70*62+15*0.63*62}{(100)^2} = 0.43
\end{aligned} \tag{9}$$

In words, the typical investment will change leverage by 57% (43%) of a firm's DEV for built (acquiring) firms. These adjustments differ significantly ($p < 0.05$).

These estimated adjustment proportions appear to be inconsistent with the 12% slower estimated adjustment speed for Built firms in Table 5. The resolution comes from recognizing that Table 5 estimates an adjustment per dollar of DEV, while equation (6) estimates leverage adjustment per dollar of INV. Built INV averages less than Acquired INV – 52% of total assets vs. 68%. Substituting these values for INV into (9) yields estimated leverage changes of 0.36 (0.47) for Built (Acquired) firms. That is, the typical Built project causes a smaller leverage adjustment because it requires less external finance than those required for the typical acquisition. Dollar-for-dollar, however, Built projects are accompanied by more aggressive changes toward target leverage.

Why might this be the case? We conjecture that acquiring firms have more leverage-related considerations than a firm that is simply purchasing property, plant and equipment. In particular, asymmetric information, target shareholders' taxes, and corporate governance may influence acquisition financing, while these considerations are either absent or at best minor in large built investment expenditures.[23] For example, Hansen (1987) argues that uncertainty regarding target asset values encourages bidders to offer shares to target shareholders. If the target is then over-valued, paying with bidder shares spreads the loss across both sets of shareholders. Evidence consistent with Hansen (1987) is provided by Faccio and Masulis (2005).

Brown and Ryngaert (1991) explain the effects of tax incentives on acquisition financing in the absence of information asymmetries between the bidder and the target. An all-equity deal is not a taxable event for the target's shareholders, while a cash deal (which Harford et al. (2009) show is likely to be largely debt financed) requires target shareholders to realize a taxable gain. As predicted by Myers and Majluf (1984), Brown and Ryngaert (1991) find that acquisition financings before 2001 tend to be bi-modal, offering predominantly equity or predominantly cash.

Corporate governance issues may also affect the medium of payment. If the target's ownership is concentrated, the acquirer may prefer not to pay with equity in order to avoid creating a new block shareholder (Faccio and Masulis 2005). For a similar built investment, equity financing would mandate a SEO, thus having a much smaller potential impact on the acquirer's governance.

Overall, acquisitions entail more leverage-related considerations than built investment financing. Our result that financing for built investments conforms more closely to the target-adjustment model than acquisition financing is therefore quite plausible.

---

[23] Panel C of Table 4 indicates that equity constitutes a much more important financing source for acquisitions than for built investments, and Figure 1 shows that this holds across all firm sizes.

5. Robustness

5.1 Sample Selectivity

One major concern with any event-study is that conditioning on an event leads to selection bias in the results. This does not eliminate the validity of patterns in the data, and the conclusions still apply to the sample firms. Yet the results may not generalize if the incidence of major investments somehow depends on a firm's ability to raise new funds.

To test whether our results in Section 4 are affected by selectivity, we estimate a two-step Heckman (1979) model to explain the occurrence of a major investment and the choice of its financing simultaneously. Exclusion restrictions serve to identify the Heckman model's two equations.[24] We define five variables that may affect the investment decision without directly affecting the financing choice:

Rated_{it} is a dummy variable equal to one if firm i has a credit rating at the end of year t, otherwise zero.

D-Mining_{it} is a dummy variable equal to one if firm i belongs to the mining industry at the end of year t, otherwise zero.

Ind_Inv_t is the industry's median ratio of built plus acquired investments to lagged total assets in year t. Industries are defined according to two-digit NAICS codes.

Ind_Q_t is the industry's median lagged Q in year t. Industries are defined according to two-digit NAICS codes.

$\text{Ind\_R\&D}_t$ is the industry's median ratio of R&D expenses to lagged total assets in year t. When a firm does not report R&D expenditures, we treat them as zero. Industries are defined according to two-digit NAICS codes.

---

[24] Uysal (forthcoming) reports that acquiring firms are further below their estimated targets before making the acquisition. If we include DEV in the first-step probit, our financing equations remain qualitatively unchanged. We chose to omit DEV from the probit specification because we find the hypothesis that firms make large investments in order to adjust their leverage as quite implausible. One possible explanation for Uysal's result is that firms eschew financing toward the target in the year prior to an acquisition, in anticipation of the acquisition's forthcoming financing, which is consistent with column (7) of our Table 5.

Rated firms (**Rated** = 1) may be better able to finance large projects. Although Faulkender and Petersen (2006) show that access to public debt markets can influence a firm's leverage, **Rated** is not significant in our financing equation, so we can use it for identification purposes in the selection equation. We include a dummy indicating the mining industry (**D-Mining**) as an identifying restriction because Table 2 shows a concentration of firms undertaking built investments in this industry. The industry's median investment ratio, median Q ratio and median R&D expenses (**Ind_Inv**, **Ind_Q**, **Ind_R&D**, respectively) are included to control for investment expenditures, investment opportunities and R&D activities which are typical for the industry a firm operates in. Firm-specific deviations from these typical patterns are then picked-up by the corresponding firm-specific regressors in the financing regression. Estimation results are robust when we vary this set of restrictions, for example excluding the rated-dummy, or dropping some of the industry-median variables. Note that identification could in principle be based just on the non-linearity of the probit model (Greene (2008)).

Table 7 reports the Heckman model results.[25] Although Table 7 does not include separate results for built vs. acquiring firms, similar results apply when estimate separate regressions for each sub-sample. (The coefficient standard errors in columns (2) – (5) are clustered by type of investment – built vs. acquired.) The estimated coefficients on **DEV, Profit, Runup,** and **Q** are basically unaffected by adding the IMR to the original regression specifications. The only new result concerns **Firm Size**, which significantly reduces EQUITY issuance and raises CASHFLOW in the Heckman model.

5.2. Further Robustness Tests

We conduct a series of robustness tests that vary the sample selection and estimation methodology. These exercises yield qualitatively similar results to those reported in Tables 5-7.

---

[25] We estimated the Heckman versions of (2) one equation at a time. For comparison, columns (6) – (9) of Table 7 report OLS estimates of the financing equations (2) that are estimated via SUR in Table 6.

<u>Defining "Major" Investments</u>. Our definition of "major" firm investments is essentially arbitrary, though, in our opinion, intuitively appealing. One potential issue with our filter criterion is that requiring major investments to constitute at least 30% of a firm's pre-event total assets introduces some selection towards smaller firms. However, the Heckman selectivity analysis in the preceding analysis controls for this size effect and demonstrates the robustness of our results. As an additional check, we used an alternative filter, in which "major" investments exceed only 100% of the trailing years' average investment and 20% of the firm's prior year-end assets. Our main conclusions are unchanged.

<u>Sample Composition</u>. Our main test sample included investment events by firms with either Built or Acquired investments, but not both. For robustness, we included firms with multiple events of one kind or the other, and defined multi-year investment events when a firm made large expenditures in adjacent years. Changing any of these sample features affected the number of observations in Table 6, but did not affect our qualitative results.

<u>Book Leverage Measure</u>. The ***DEV***iation variable assumes that firms target *market*-valued leverage ratios. Some researchers prefer to measure leverage with book values, although published research often reports similar findings for the two leverage measures. When we define leverage in book-value terms and construct book-valued targets, the results closely resemble those reported in Tables 5, 6, and 7.

<u>Measuring Target Leverage</u>. Firms' target debt ratios are computed from the partial adjustment model suggested by Flannery and Rangan (2006), estimated using the Blundell/Bond "system" GMM estimator for dynamic panels (Lemmon et al. 2008). As a robustness exercise, we have also used the fixed effects instrumental variable estimator suggested by Flannery and Rangan (2006). This generally leads to a faster estimated speed of adjustment for all sample firms on average (35% vs. 21% using Blundell/Bond), but we continue to observe a strong systematic adjustment towards

target leverage for event firms. We also investigated whether computing leverage targets based on post-investment characteristics (at τ = +1)_affects the coefficients on DEV in Table 6. That change has no qualitative effects.

Errors-in-Variables. The ***Dev*** variable in Table 6 is a generated regressor, which could bias the estimated coefficient standard errors unless the measurement errors in ***Dev*** are uncorrelated with the regression residuals. We therefore conduct two robustness checks. First, we estimate the same set of regressions individually using 2SLS, where ***Dev*** is treated as an endogenous variable (we use lagged ***Dev*** as the instrument). Second, we employ a bootstrap procedure for all SUR, OLS or 2SLS regressions to estimate the true distribution of coefficient errors. Neither of these approaches alters the main conclusions from Table 6.

The Mining Industry. Table 2 indicates that the distribution of major investments across industries reveals a concentration of Built investments in the mining industry. To test whether this affects our financing results, we dropped all firms from the mining industry (NAICS = 21), and repeated the SUR analysis of the financing of built investments. The sample reduces to 471 built events. The only notable change is that Tobin's ***Q*** no longer significantly affects equity financing (the stock price ***Runup*** remains positively significant, however).[26]

6. Summary and Conclusions

We have studied U.S. firms that made relatively large capital expenditures or acquisitions during the 1989-2006 period. Such investments are typically accompanied by external funding, and a firm's security choice can affect its leverage. Even with fixed costs of accessing capital markets (Fisher et al. (1989)), these financing decisions should reflect managerial attitudes toward the firm's

---

[26] This robustness result is in accordance with controlling for firms belonging to the mining industry in the selection equation of the Heckman model reported in Table 7.

overall capital structure. We use these financing events to test three views of leverage determination: the trade-off, pecking order, and market timing hypotheses.

The evidence consistent with target adjustment behavior for our sample firms is strong. The proportion of debt (equity) used to finance a large investment significantly depends on the DEViation between a firm's target and actual leverage. For example, over-levered firms issue less debt and more equity when financing large projects. Moreover, we find that large capital expenditures generate more convergence to target leverage (per dollar of investment) than do acquisitions. Apparently, acquisitions incorporate more influences on financing choices, making it somewhat less important to move the firm toward target leverage.

Although we find share issuance decisions that are consistent with the market timing hypothesis, the resulting effect on leverage is not strong. A firm's recent stock price runup and its Q value are both positively related to new equity issuance, but these equity issues do not replace debt issues. Rather, they displace operating cash flows and the residual financing category ("OTHER"), leaving leverage relatively unaffected. Moreover, security pricing errors presumably revert toward zero over time, leaving target adjustment as the primary influence on financing choices. The multivariate regression results in Table 6 strongly support the trade-off hypothesis of capital structure, while recognizing that managers also behave strategically in selling shares to the public.

Our analysis suggests one obvious avenue for further research, related to the potentially distinct effects of public vs. private debt on corporate decisions. Compustat's flow of funds data do not distinguish between private ("bank") debt and publicly issued bonds or commercial paper. Because private debt includes more complex covenants, it may also engender more effective external monitoring. Understanding how private debt is used to finance large investments may yield important further insights about corporate control over major expenditures.

References

Andrade, Greogor, Mark Mitchell, and Erik Stafford (2001): New Evidence and Perspectives on Mergers, Journal of Economic Perspectives 15, 103-120.

Asquith, Paul, and David W. Mullins (1983), The impact of initiating dividends on shareholder wealth, Journal of Business 56, 77-96.

Baker, Malcolm and Jeffrey Wurgler (2002), Market timing and capital structure, Journal of Finance 55, pp. 2219-2257.

Chang, Xin and Sudipto Dasgupta (2009), Target Behavior and Financing: How Conclusive is the Evidence?, *The Journal of Finance*. 64(4), 1767 – 1796.

Chirinko, Robert S. and Anuja R. Singha (2000), Testing static tradeoff against pecking order models of capital structure: a critical comment, Journal of Financial Economic, 58(3), 417-425.

DeAngelo, Harry, Linda DeAngelo and Toni M. Whited (2011), Capital Structure Dynamics and Transitory Debt, Journal of Financial Economics, 99, 235-261.

Dudley, Evan (2009), Capital structure and large investment projects, University of Florida working paper, Warrington College of Business Administration.

Faccio, Mara, and Ronald Masulis (2005): The Choice of Payment Method in European Merger & Acquisitions, Journal of Finance 60, 1345-1388.

Fama, Eugene and Kenneth French (2002), Testing trade-off and pecking order predictions about dividends and debt. Review of Financial Studies 15, 1–34.

Faulkender, Michael, and Mitchell A. Petersen (2006), Dioes the Soruce of Capital affect Capital Structure, Review of Financial Studies 19(1), 45-79.

Faulkender, Michael, Mark Flannery, Kristine Hankins, and Jason Smith (2011), “Cashflows and Leverage Adjustments”, Journal of Financial Economics, forthcoming.

Flannery, Mark J., and Kasturi P. Rangan (2006), Partial Adjustment toward Target Capital Structures, Journal of Financial Economics, 79(3), 469–506.

Fischer, Edwin O., Robert Heinkel, and Josef Zechner (1989), "Optimal Dynamic Capital Structure Choice: Theory and Tests", The Journal of Finance, 44, 19-40.

Frank, Murray Z. and Vidhan K. Goyal (2003): Testing the pecking-order theory of capital structure, Journal of Financial Economics 67, pp. 217-248.

__________ (2011), Profits and Capital Structure, Hon Kong University of Science and Technology, working paper.

Greene, William H. (2008): Econometric Analysis, 6th edition, Pearson.

Harford, Jarrad, Sandy Klasa, and Nathan Walcott (2009), "Do firms have leverage targets? Evidence from acquisitions," Journal of Financial Economics, 93(1), 1-14.

Heckman, James J. (1979), Sample Selection Bias as a Specification error, Econometrica 47(1), 153-161.

Hovakimian, Armen (2004), "The Role of Target Leverage in Security Issues and Repurchases," Journal of Business, 77(4), 1041-1072.

Hovakimian, Armen, Tim Opler, and Sheridan Titman (2001): The debt-equity choice, Journal of Financial and Quantitative Analysis 36, 1-24.

Hovakimian, Armen, G. Hovakimian and H. Tehranian (2004): "Determinants of Target Capital Structure: The Case of Combined Debt and Equity Financing,' Journal of Financial Economics 71(3), 517-540.

Huang, Rongbing and Jay Ritter (2009), "Testing Theories of Capital Structure and Estimating the Speed of Adjustment," *Journal of Financial and Quantitative Analysis,* 44(2), 237-271.

Iliev, Peter and Ivo Welch (2010), Reconciling Estimates of the Speed of Adjustment of Leverage Ratios, working paper.

Korajczyk, Robert, Deborah Lucas, Robert McDonald (1991), The Effect of Information Releases on the Pricing and Timing of Equity Issues, Review of Financial Studies 4(4), 685-708.

Larkin, Yelena (2010), Strike While the Iron is Hot: Timing the Market on the Way to the Optimal Capital Structure, Cornell University, working paper.

Leary, Mark T. and Michael Roberts (2005), Do Firms Rebalance Their Capital Structures?, Journal of Finance, 60, 2575-2619.

Lemmon, M., Roberts, M., Zender, J. (2008), Back to the beginning: persistence and the cross-section of corporate capital structure. Journal of Finance 63, 1575-1608.

Loughran, Tim, and Jay Ritter (1997), The operating performance of firms conducting seasoned equity offerings, Journal of Finance 52, 1823-1850.

Mayer, Colin, and Oren Sussman (May 2005): A new test of capital structure, Working Paper, Said Business School, Oxford.

Myers, Stewart C. (1984), The Capital Structure Puzzle, The Journal of Finance 39(3), 575-92.

__________ (2001), Capital Structure, The Journal of Economic Perspectives 15(2), 81-102.

__________, and N. Majluf (1984), Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have, Journal of Financial Economics, 13, 187-221.

Shyam-Sunder, Lakshmi and Stewart C. Myers (1999), Testing the static tradeoff against pecking order models of capital structure, Journal of Financial Economics 51, 219-244.

Strebulaev, Ilya A., 2007, Do Tests of Capital Structure Theory Mean What They Say? *Journal of Finance* 62, 1747-1787.

Sufi, Amir (2009), "Bank Lines of Credit in Corporate Finance: An Empirical Analysis," Review of Financial Studies, March, 22(3), 1057-1088

Uysal, Vahap B. (2011): Deviation from the target capital structure and acquisition choices, Forthcoming: Journal of Financial Economics.

Weiss, Neil S. and James G.S. Yang (2007), **"**The Cash Flow Statement: Problems with the Current Rules", The CPA Journal Online (May 2007), http://www.nysscpa.org/cpajournal/2007/307/essentials/p26.htm

Table 1: Frequency Distribution of Major Investments 1989-2006

The table shows the frequency distribution of major investments (built investments versus acquisitions). The filter rule used to identify these events requires that a firm's capital or acquisition expenditures exceed 200 percent of their benchmark expenditures (a three year trailing average), and that expenditures exceed 30% of total assets. Economic events (Panel C) are defined as major investments with adjacent event years, starting with a pre-event year and ending with a post-event year (e.g. a sequence in event time of [-1,0,0,+1] over four years).

Type of Event	**Number of Firms**	**Events**
	Panel A: Initial Sample	
With major built investment	787	1,205
With major acquisition	1,316	1,780
Overlap: Events at firms with *both* Built and Acquired major investments	114	182 (Built) / 162 (Acquired)
	Panel B: Clean Sample (Firms that either Built or Acquired, but not both)	
With only major built investment(s)	673	1,023
With only major acquisition(s)	1,202	1,616
	Panel C: Economic Sample (Successive Event Years are treated as One)	
Major built investment	622	728
Major acquisition	1,179	1,345

Table 2: Industry Affiliation of Event Firms (1989-2006)

		Built Investments			Acquisitions		
NAICS	Definition	# firms	%of event firms	% of all firms in industry	# firms	% of event firms	% of all firms in industry
11	Agriculture, Forestry, Fishing and Hunting	2	0.32%	4.26%	2	0.17%	4.26%
21	Mining	182	29.26%	24.33%	23	1.99%	3.07%
23	Construction	6	0.96%	2.76%	11	0.95%	5.07%
31	Manufacturing (Food, Beverages,…)	25	4.02%	4.73%	37	3.20%	6.99%
32	Manufacturing (Wood, …)	66	10.61%	4.44%	133	11.51%	8.95%
33	Manufacturing (Metal,…)	104	16.72%	2.94%	365	31.57%	10.32%
42	Wholesale Trade	13	2.09%	1.83%	67	5.80%	9.42%
44	Retail Trade	11	1.77%	2.84%	23	1.99%	5.93%
45	Retail Trade	5	0.80%	1.49%	17	1.47%	5.06%
48	Transportation / Warehousing	35	5.63%	11.86%	15	1.30%	5.08%
51	Information	46	7.40%	2.54%	204	17.65%	11.28%
53	Real Estate and Rental and Leasing	22	3.54%	6.09%	13	1.12%	3.60%
54	Professional, Scientific, and Technical Services	19	3.05%	2.08%	85	7.35%	9.30%
56	Administrative and Support and Waste Management and Remediation Services	14	2.25%	3.17%	53	4.58%	12.02%
61	Educational Services	2	0.32%	3.51%	11	0.95%	19.30%
62	Health Care ad Social Assistance	14	2.25%	3.66%	62	5.36%	16.19%
71	Arts, Entertainment, and Recreation	9	1.45%	7.09%	5	0.43%	3.94%
72	Accommodation and Food Services	45	7.23%	14.11%	16	1.38%	5.02%
81	Other Services (except Public Administration)	2	0.32%	2.25%	14	1.21%	15.73%
	Sum	622	100		1156	100	

Table 3: Descriptive Statistics for Event Firms

Summary statistics for event firms in the year preceding the investment event (event period: 1989-2006) are shown in Panels A+B. Panel C reports or unconditional summary statistics for all variables. Calculations are based on the sample of firms that had either built or acquired investments, but not both. Ratios have been multiplied by 100. The number of observations for each statistic may differ from the maximum number because of missing values. The columns headed "Wilcoxon test: equal medians?" report a z-statistic for a non-parametric rank sum test on differences in medians. All estimates in Panel A and B are based on economic events, defined as major investments with adjacent event years, starting with a pre-event and ending with a post-event year (e.g. a sequence in event time of [-1,0,0,+1] over four years). *, *** denotes significance at the 10% and 1% significance-level, respectively.

Variable	**Definition**	**Calculation (Compustat items)**
Size [Million $, year 2000]	Total Assets, expressed in 2000 dollars	#6, deflated by the CPI
Age (years)	Number of years covered by Compustat	Linkdt
Profit [%]	Income before extraordinary items over total assets	#123 / #6
Book Debt Ratio [%]	(Long-term debt and current debt) over (total assets)	(#9+#34) / (#6)
Market Debt Ratio [%]	(Long-term debt and current debt) over (debt + equity's market value)	(#9+#34) / (#9+#34+#199)
DEV [%]	Target debt ratio - market debt ratio	Partial adjust model similar to Flannery/Rangan 2006, estimated using Blundell/Bond GMM estimator, see Section 3.
Equity Ratio [%]	Common and preferred equity over total assets	(#60+#130) / #6
Investment Ratio [%]	Capital expenditures over total assets [t-1]	#128 / (#6[t-1])
Acquisition Ratio [%]	Acquisition expenditures over total assets [t-1]	#129 / (#6[t-1])
Fixed Assets Ratio [%]	Property, Plant, Equipments (net, total) over total assets	#8 / #6
Rated [%]	Dummy indicating S&P rated company	#280
R&D [%]	R&D expenditures over total assets	#46 / #6
Q	Market Value Equity / Book Value Equity	#199 / (#60/#125)
Growth [%]	Percentage change in total assets	(#6(t)- #6(t-1)) / (#6(t-1))

Table 3, Panel A: Attributes of Firms with Built vs. Acquired Major Investments

Entries report financial characteristics of the Built and Acquired samples at the year-end preceding the event year. The column headed "Wilcoxon test: equal medians?" reports a z-statistic for a non-parametric rank sum test on differences in medians. *, **, *** indicate that median built vs. acquisition attributes differ significantly at the 10%, 5%, or 1% level respectively. n.s. denotes no statistically significant difference.

	Firms with Built Investment (max. 728 events)				Firms with Acquisitions (max. 1345 events)		
	Mean	Median	Std.Dev	Wilcoxon test: equal medians?	Mean	Median	Std.Dev
Size [Million $, year 2000]	348.42	62.65	1462.25	***	1650.79	237.44	6600.06
Age [years]	9.09	6.76	7.65	***	11.76	7.34	10.69
Profit [%]	-0.06	0.03	0.29	***	0.02	0.06	0.17
Book Debt Ratio [%]	18.84	13.56	19.12	n.s.	19.58	16.36	18.22
Market-Debt Ratio [%]	14.10	6.77	17.98	***	15.20	10.25	16.87
DEV (Target - MDR) [%]	12.05	8.47	18.73	n.s.	11.54	8.51	18.39
Equity Ratio [%]	60.16	60.39	21.87	***	55.12	55.23	20.80
Investment Ratio [%]	20.86	16.45	24.04	***	5.97	4.41	5.53
Acquisitions Ratio [%]	1.76	0.00	19.55	***	13.53	2.82	36.55
Fixed Assets Ratio [%]	50.14	51.40	25.63	***	21.69	16.35	17.89
Rated	0.10	0.00	0.30	***	0.22	0.00	0.42
R&D [%]	3.54	0.00	9.79	***	4.23	0.00	7.84
Q [%]	4.73	2.73	5.76	n.s.	4.16	2.72	4.67
Growth [%]	29.79	12.87	99.76	n.s.	35.36	11.64	117.64

Table 3, Panel B: Major Investment Firms vs. Contemporaneous, Non-Event Firm Population

Entries report differences between Built or Acquired sample firms' characteristics at year-end preceding event and the median Compustat firm at the same date. The column headed "Wilcoxon test: equal medians?" reports a z-statistic for a non-parametric rank sum test on differences in medians between Built and Acquired.

	Firms with Built Investment (max. 728 events)				Firms with Acquisitions (max. 1345 events)		
	Mean	Median	Std.Dev	Wilcoxon test: equal medians?	Mean	Median	Std.Dev
Size [Million $, year 2000]	239.23	-35.15	1457.74	***	1530.07	118.41	6596.18
Age [years]	2.71	0.67	7.63	***	5.44	1.00	10.73
Profit [%]	-0.08	0.01	0.29	***	0.00	0.03	0.17
Book Debt Ratio [%]	2.87	-1.85	19.46	***	4.75	1.56	18.18
Market-Debt Ratio [%]	1.80	-5.20	18.47	***	4.02	-1.56	16.92
DEV (Target - MDR) [%]	8.28	4.38	17.87	n.s.	7.13	3.77	16.79
Equity Ratio [%]	6.14	6.77	22.13	***	0.17	0.15	20.72
Investment Ratio [%]	16.37	11.96	23.99	***	1.73	0.18	5.99
Acquisitions Ratio [%]	1.95	0.00	20.46	***	14.02	2.80	38.44
Fixed Assets Ratio [%]	30.35	31.34	26.03	***	2.91	-2.42	17.78
Rated	0.10	0.00	0.30	***	0.22	0.00	0.42
R&D [%]	3.36	0.00	9.81	***	3.97	0.00	7.82
Q [%]	2.66	0.64	5.77	n.s.	2.07	0.67	4.69
Growth [%]	26.61	9.87	99.62	n.s.	32.19	8.01	117.51

Table 4: Financing Patterns Associated with Major Built and Acquired Investments

We report financing patterns for the event year itself (τ = 0), and the individual years on either side of the event year. Average investment amounts are reported in millions of year 2000 dollars (Panel A). The next four rows report median values for each financing source, expressed as the respective cash flow divided by the event year total investment expenditures (Panel B). Panel C reports median financing shares for separate event years, standardized by overall period's investment expenditures, i.e. total expenditures in τ=[-1, +1]. All calculations are based on economic events, which are defined as major investments with adjacent event years, starting with a pre-event and ending with a post-event year (e.g. a sequence in event time of [-1,0,0,+1] over four years).

	Built Events			**Acquisition Events**		
Event Window:	τ = -1	τ = 0	τ = +1	τ = -1	τ = 0	τ = +1
Panel A: Mean Expenditures Amounts (year 2000 dollars, millions)						
Built Investments [$]	58.49	198.18	115.05	92.65	149.60	165.01
Acquisitions [$]	3.03	41.26	9.42	85.01	1241.71	159.15
Observations	723	723	613	1300	1300	1149
Panel B: Financing as a Median Proportion of Capital and Acquisition Expenditures (expenditures of economic event at τ =0)						
Equity [%]	---	6.72	---	---	30.84	---
Debt [%]	---	36.80	---	---	40.57	---
Cashflow [%]	---	22.67	---	---	14.04	---
Other [%]	---	4.47	---	---	1.06	---
Panel C: Financing as a Median Proportion of Capital and Acquisition Expenditures (**overall expenditures** of economic event at τ = -1, 0, =1)						
Equity [%]	0.72	3.81	0.54	0.51	22.47	0.61
Debt [%]	0.00	20.38	1.04	-0.03	28.71	-0.65
Cashflow [%]	6.37	13.16	11.81	6.97	10.59	12.07
Other [%]	1.01	2.45	2.75	-0.56	0.77	0.41

Table 5: Adjustment towards the Target Debt Ratio

This table reports the tendency of event firms to adjust leverage toward computed target ratios by estimating via OLS

$$\mathrm{LEV}_{i,t} - \mathrm{LEV}_{i,t-1} = \lambda_i\, \mathrm{DEV}_{i,t} + \sum_{\tau=0,1,2} \left(\gamma_{i,t-\tau} \mathrm{D-EVENT}_{t-\tau}\, \mathrm{DEV}_{i,t-\tau} \right) + \delta_{i,t} \qquad (6)$$

"Events firms" are those with a one-year-long investment event for which we have complete data. The "Compustat universe" includes all Compustat firm-years that were searched for major investment events. Reported standard errors are bootstrapped to account for the generated regressor ,$DEV_{i,t}$, which is the i^{th} firm's estimated target at for the end of year t less its actual leverage at the end of year t-1. D-EVENT equals unity in a firm's event year, and zero otherwise. D-EVENT$_{t-\tau}$ equals unity in the τ^{th} year before a firm's event year, and zero otherwise. D-BUILT equals unity if a firm had a built investment, and zero otherwise. p-values in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Event firms at tau=0	All available years for event firms	Compustat universe plus all event firms	Compustat universe plus Acquired event firms	Compustat universe plus Built event firms	Compustat universe plus all event firms	Compustat universe plus all event firms
$DEV_{i,t}$	0.43***	0.27***	0.29***	0.29***	0.30***	0.29***	0.30***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
D-EVENT$_t$ * $DEV_{i,t}$		0.36***	0.35***	0.38***	0.26***	0.26***	0.32***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
D-EVENT$_t$ * $DEV_{i,t}$ * D-BUILT						-0.12**	
						(0.01)	
D-EVENT$_{t-1}$ * $DEV_{i,t-1}$	---	---	---	---	---	---	-0.13***
							(0.00)
D-EVENT$_{t-2}$ * $DEV_{i,t-2}$	---	---	---	---	---	---	-0.04
							(0.19)
Firm fixed effects?	No	Yes	Yes	Yes	Yes	Yes	Yes
N	1,615	14,680	61,175	56,998	50,672	61,175	61,175
R^2	0.274	0.65	0.60	0.61	0.61	0.61	0.61

Table 6: Seemingly-Unrelated Regressions (SUR) estimates of four equations of the form:

$$F_{ijt} = a_i + y^* + \beta_1 \, DEV_{j,\,t-1} + \beta_2 \, Profit_{j,\,t-1} + \beta_3 \, Size_{j,\,t-1} + \beta_4 \, Investment\ Ratio_{j,\,t-1} + \beta_5 \, Fixed\ Assets\ Ratio_{j,\,t-1} + \beta_6 \, Runup_{j,\,t-1} + \beta_7 \, Q_{j,\,t-1} + \tilde{\varepsilon}_{ijt} \qquad (6)$$

where ***y**** represents a set of year dummy variables, covering 1989-2005.

F_{it} = the proportion of the net new investment financed by each of the four funding sources: (i = ***Equity***, ***Debt***, ***Cashflow***, and ***Other***) during the event window t.

DEV = the deviation from target leverage: the firm's estimated target debt ratio (based on a partial adjustment model and estimated by the Blundell/Bond-system GMM estimator) less its actual market debt ratio at before the event window (a τ = -1 if event window is 0, [0,1] and τ = -2 if event window is [-1,1]).

Profit = net annual income as a proportion of yearend total assets

Runup = the stock's excess return, relative to the market, measured over 12 months in the fiscal year preceding the event window under consideration. Hence, if the event window starts at τ=0, *Runup* is measured over the months [-24,-12]; if it starts at τ=-1, *Runup* is measured over the months [-36 -24]. Firms tend to issue stock following a runup in the price (Korajczyk, Lucas and MacDonald 1991).

Q = the ratio of the firm's equity market value to the book value of equity at the year-end preceding the event window. ***Q*** measures the firm's investment opportunity set.

***Firm Siz**e* = log of the firm's year-end book assets, measured in 2000 dollars.

Investment Ratio = the ratio of investments (built plus acquired) during the event window to book total assets at the yearend preceding the event window. Larger investments may be financed differently.

Fixed Assets Ratio = a measure of "debt capacity": the firm's yearend book value of fixed assets as a proportion of total assets.

a_i= Constant of regression i (i =1…4), reflecting the average financing share of each financing source at a given event window, after controlling for the average effect of all explanatory variables (needs to add up to 100%).

Within each event window, the system of equations is estimated using restrictions i) that each independent variable's four coefficients sum to zero, and ii) that constants need to add up to 100% across the four equations. The regressions are based on economic events, defined as major investments with adjacent event years, starting with a pre-event and ending with a post-event year (e.g. a sequence in event time of [-1,0,0,+1] over four years). p-values are in parentheses. * indicates statistical significance at least at the 10%-level.

Table 6 (cont'd.) Panel A: Market Leverage Measure, Built Investments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Event Window: τ=0				**Event Window τ=[0,+1]**				**Event Window: τ=[-1,+1]**			
Dependent Variable	Debt	Equity	Cashflow	Other	Debt	Equity	Cashflow	Other	Debt	Equity	Cashflow	Other
DEV	0.86*	-1.23*	0.41	-0.04	0.92*	-1.12*	0.24	-0.04	0.98*	-0.76*	0.04	-0.27
	(0.00)	(0.00)	(0.13)	(0.87)	(0.00)	(0.00)	(0.33)	(0.86)	(0.00)	(0.00)	(0.88)	(0.17)
Profit	-0.00	-3.14*	3.24*	-0.10	0.07	-3.33*	3.55*	-0.29*	0.15	-3.14*	3.33*	-0.35*
	(1.00)	(0.00)	(0.00)	(0.63)	(0.51)	(0.00)	(0.00)	(0.07)	(0.15)	(0.00)	(0.00)	(0.06)
Runup (12 months preceding event window)	-0.00	0.45*	-0.36*	-0.08	-0.02	0.40*	-0.25*	-0.12*	-0.01	0.25*	-0.16	-0.08
	(0.99)	(0.00)	(0.00)	(0.31)	(0.66)	(0.00)	(0.00)	(0.06)	(0.75)	(0.01)	(0.12)	(0.28)
Q	0.20	2.62*	-0.77	-2.05*	1.17*	1.52	-1.65*	-1.04	0.42	2.51*	-1.74	-1.20
	(0.70)	(0.07)	(0.47)	(0.04)	(0.03)	(0.13)	(0.09)	(0.21)	(0.43)	(0.03)	(0.18)	(0.19)
Investment Ratio	0.00	-0.03*	0.02*	0.00	-0.00	-0.02*	0.02*	0.00	0.00	-0.01*	0.01*	-0.00
	(0.61)	(0.04)	(0.03)	(0.81)	(0.74)	(0.01)	(0.01)	(0.92)	(0.58)	(0.00)	(0.01)	(0.69)
Fixed Assets Ratio	-0.08	-0.52*	0.35*	0.26*	-0.09	-0.51*	0.35*	0.24*	-0.08*	-0.60*	0.58*	0.10
	(0.15)	(0.00)	(0.00)	(0.02)	(0.13)	(0.00)	(0.00)	(0.01)	(0.10)	(0.00)	(0.00)	(0.24)
Firm Size	-1.11	0.63	1.58	-1.10	-2.22	-0.90	1.53	1.59	-2.12	-5.14	6.20*	1.06
	(0.46)	(0.88)	(0.61)	(0.71)	(0.15)	(0.76)	(0.59)	(0.50)	(0.15)	(0.12)	(0.09)	(0.68)
Const.	66.80*	88.96*	-27.60	-28.16	46.54*	111.91*	-34.30	-24.14	34.30*	136.14*	-73.11*	2.67
	(0.00)	(0.08)	(0.34)	(0.50)	(0.00)	(0.00)	(0.22)	(0.31)	(0.09)	(0.00)	(0.04)	(0.93)
Nobs	686	686	686	686	686	686	686	686	658	658	658	658
R^2	0.10	0.32	0.39	0.06	0.11	0.47	0.48	0.05	0.13	0.41	0.36	0.04

Table 6 (cont'd) Panel B: Market Leverage Measure, Acquired Investments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Event Window: τ=0				**Event Window τ=[0,+1]**				**Event Window: τ=[-1,+1]**			
Dependent Variable	Debt	Equity	Cashflow	Other	Debt	Equity	Cashflow	Other	Debt	Equity	Cashflow	Other
DEV	0.70*	-0.63*	-0.00	-0.07	0.72*	-0.61*	-0.09	-0.02	0.75*	-0.55*	-0.22*	0.02
	(0.00)	(0.00)	(0.95)	(0.37)	(0.00)	(0.00)	(0.31)	(0.84)	(0.00)	(0.00)	(0.02)	(0.84)
Profit	0.21*	-1.06*	1.39*	-0.54*	0.10	-1.19*	1.78*	-0.69*	0.12*	-1.08*	1.57*	-0.61*
	(0.01)	(0.00)	(0.00)	(0.00)	(0.13)	(0.00)	(0.00)	(0.00)	(0.04)	(0.00)	(0.00)	(0.00)
Runup (12 months pre-	-0.03	0.15*	-0.04	-0.07*	0.00	0.15*	-0.07*	-0.07*	-0.04*	-0.00	0.06	-0.01
ceding event window)	(0.15)	(0.00)	(0.12)	(0.01)	(0.99)	(0.00)	(0.02)	(0.00)	(0.04)	(0.97)	(0.11)	(0.61)
Q	-0.34	2.49*	-1.66*	-0.48	-0.34	2.15*	-1.88*	0.08	-0.14	3.39*	-3.27*	0.03
	(0.24)	(0.00)	(0.00)	(0.12)	(0.19)	(0.00)	(0.00)	(0.81)	(0.64)	(0.00)	(0.00)	(0.95)
Investment Ratio	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
	(0.15)	(0.43)	(0.37)	(0.20)	(0.15)	(0.24)	(0.18)	(0.15)	(0.26)	(0.15)	(0.15)	(0.27)
Fixed Assets Ratio	0.20*	-0.28*	0.07	0.01	0.08*	-0.27*	0.14*	0.05	0.05	-0.28*	0.16*	0.07*
	(0.00)	(0.00)	(0.11)	(0.73)	(0.01)	(0.00)	(0.00)	(0.23)	(0.16)	(0.00)	(0.01)	(0.10)
Firm Size	-2.22*	-1.05	1.54*	1.73*	-1.48*	-2.08*	1.79*	1.77*	-1.07*	-3.69*	1.57	3.18*
	(0.00)	(0.29)	(0.06)	(0.02)	(0.02)	(0.01)	(0.04)	(0.02)	(0.08)	(0.00)	(0.14)	(0.00)
Const.	27.49*	80.80*	-3.45	-4.84	26.29*	86.26*	-3.06	-9.48	21.10*	51.31*	21.66*	5.94
	(0.00)	(0.00)	(0.79)	(0.51)	(0.00)	(0.00)	(0.83)	(0.44)	(0.00)	(0.00)	(0.07)	(0.49)
Nobs	1233	1233	1233	1233	1233	1233	1233	1233	1155	1155	1155	1155
R^2	0.14	0.23	0.25	0.07	0.14	0.31	0.32	0.12	0.18	0.34	0.32	0.11

Table 7: Selectivity-Adjusted Financing Regressions

The table shows regression results for major investment financing based on simple OLS and a Heckman selection model. The first four columns report regressions of the same form as in Table 6, for the combined sample of Built and Acquired events. Unlike Table 6, we impose no cross-equation constraints on the coefficient estimates. We control for possible sample selectivity in the investment decision by estimating a two-step Heckman model. A probit regression, reported in column (1), predicts the incidence of a major investment (the selection regression is the same for each type of financing). Columns (2) –(5) then show estimates of the determinants of financing for the subset of firm-years with major investment, controlling for the inverse Mill's ratio. Regressions for each financing source (i.e. DEBT, EQUITY, CASHFLOW, OTHER) are estimated separately, without cross-equation restrictions. Unlike Table 6, here we report a single set of regressions for the combination of Built and Acquired investments. (Separate results for the Built and Acquired samples are similar.) We add several variables to identify the system of equations, including the dummy variable RATED, defined in Table 3. Additional identifying variables in the selection model are based on industry characteristics (industries are defined according to two-digit NAICS codes):

D-Mining$_{it}$	is a dummy variable equal to one if firm i belongs to the mining industry at the end of year t, otherwise zero.
Ind_Investment$_t$	is the industry's median ratio of built plus acquired investments to lagged total assets in year t. Industries are defined according to two-digit NAICS codes.
Ind_Q$_t$	is the industry's median lagged Q in year t. Industries are defined according to two-digit NAICS codes.
Ind_R&D$_t$	is the industry's median ratio of R&D expenses to lagged total assets in year t. When a firm does not report R&D expenditures, we treat them as zero.

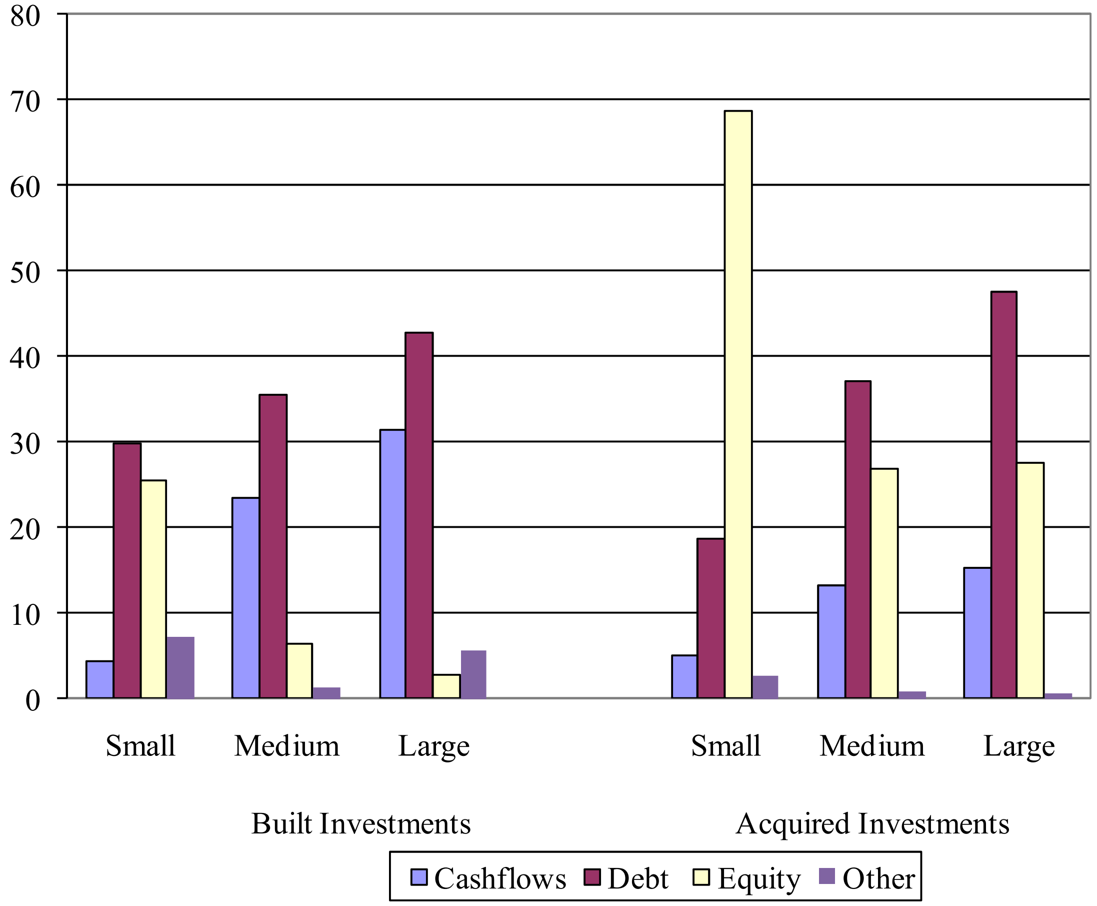
Other variable definitions are provided in Table 3. Standard errors are clustered by firm. p-values are reported in parentheses, where *, **, ** denotes statistical significance at the 10%-, 5%-, or 1%-level, respectively.

Table 7 (cntd.): Selectivity-Adjusted Financing Regressions

	Selection	Financing (Heckman Selectivity)				Financing (pooled Built & Acquisitions, OLS)			
	(1)	(2)	(3)	(4)	(5)	(5)	(6)	(7)	(8)
Dependent Variable	Selection	Debt	Equity	Cashflow	Other	Debt	Equity	Cashflow	Other
DEV	---	0.79***	-0.95***	0.20	-0.03	0.77***	-0.90***	0.17	-0.04
		(0.00)	(0.00)	(0.12)	(0.79)	(0.00)	(0.00)	(0.15)	(0.72)
Profit	0.01***	0.15*	-2.03***	2.31***	-0.38**	0.05	-2.31***	2.49***	-0.19**
	(0.00)	(0.10)	(0.00)	(0.00)	(0.02)	(0.39)	(0.00)	(0.00)	(0.05)
Runup	---	-0.02	0.28***	-0.17***	-0.09*	-0.02	0.28***	-0.17***	-0.09***
		(0.58)	(0.00)	(0.01)	(0.05)	(0.37)	(0.00)	(0.00)	(0.01)
Q	0.02***	0.45	3.68***	-2.08**	-1.89*	-0.05	3.33***	-1.79***	-1.37***
	(0.00)	(0.27)	(0.00)	(0.02)	(0.05)	(0.85)	(0.00)	(0.00)	(0.00)
Investment Ratio	---	-0.00	-0.00	0.00	0.00	-0.00	-0.00	0.00	0.00
		(0.44)	(0.84)	(0.84)	(0.19)	(0.21)	(0.50)	(0.56)	(0.27)
Fixed Assets Ratio	0.00***	0.13***	-0.25***	0.13**	-0.00	0.05*	-0.32***	0.18***	0.08*
	(0.00)	(0.00)	(0.01)	(0.04)	(0.97)	(0.08)	(0.00)	(0.00)	(0.06)
Size	-0.01**	-0.43	-7.11***	4.18***	3.03***	-1.59**	-1.48	1.44	1.42
	(0.03)	(0.53)	(0.00)	(0.00)	(0.00)	(0.02)	(0.35)	(0.23)	(0.18)
Rated	-0.00	---	---	---	---	---	---	---	---
	(0.91)								
D-Mining	0.45***	---	---	---	---	---	---	---	---
	(0.00)								
Ind_Investment	-0.00	---	---	---	---	---	---	---	---
	(0.47)								
Ind_Q	0.10***	---	---	---	---	---	---	---	---
	(0.00)								
Ind_R&D	-0.02**	---	---	---	---	---	---	---	---
	(0.02)								
Constant	-2.17***	-46.36**	34.12	32.50	72.87***	28.32***	62.37***	-4.75	11.17
	(0.00)	(0.05)	(0.45)	(0.40)	(0.00)	(0.00)	(0.00)	(0.70)	(0.35)
Inverse Mill's Ratio	---	33.44***	24.19	-21.54	-32.69***	---	---	---	---
		(0.00)	(0.24)	(0.20)	(0.00)				
N	72,125	1,919				1,919			

Figure 1: Financing Patterns for Firms with Built and Acquired Investment Differentiated by Size

The figure shows the median financing proportions in the event year (τ=0) for Small, Medium, and Large firms defined according to total assets of the universe of COMPUSTAT firms at the end of each fiscal year. Financing categories are defined in the Appendix.



Appendix: Construction of Cash-Flow Financing Measures

The following table defines our expenditures and four financing categories using data items from Compustat's "Statement of Cash Flows"(chapter 4 of the 2001 User's Manual, pp. 15-16). We assign zero values for missing data when a more aggregated item is consistent with such a substitution. For example, if there is a missing value for change in inventories (item 303), but the higher aggregate of operating activities – net cash flow (item 308) has a non-missing value, then we infer a zero value for change in inventories. We also check for each firm-year that the accounting identity *Invest=Debt+Equity+Cashflow+Other* holds.

Since the Statement of Cashflows information on acquisitions recognizes only acquired assets purchased with cash (Weiss and Yang 2007), we add acquisition expenditures from payments in own stock or by assuming debt to equity and debt financing, respectively, and acquisition expenditures. M&A transactions and financing are collected from SDC. We only take transactions into account where SDC provides information on 98% percent of a transaction's financing, see Section 2.

Sourse (+) or Use (-) of Cash	**Definition**	**Compustat Data Item**
Invest		
-	Capital expenditures ("Built")	128
-	Acquisitions ("Acquired")	129
-	Acquisitions payed in own stock	(SDC)
-	Acquisitions payed in debt	(SDC)
Debt		
+	Issuance of long-term debt	111
-	Retirement of long-term debt	114
+	Change in current debt	301
+	Acquisition financing payed in debt	(SDC)
Equity		
+	Sale of common and preferred equity	108
-	Re-purchase of equity	115
+	Acquisition financing payed in own stock	(SDC)
Cashflow (from operations)		
+	After tax income before extraordinary items	123
+	Depreciation and amortization	125
-	Cash dividends	127
-	Increase in cash and equivalents	274
Other		
+	Sale of property, plant, equipment (book value)	107

Sourse (+) or Use (-) of Cash	Definition	Compustat Data Item
+	Sale of investment	109
+	Loss (gain) on sale of PPE and investments	213
+	Equity in net loss (earnings)	106
+	Extraordinary items	124
+	Other funds from operations	217
+	Exchange rate effect	314
+	Change in receivables	302
+	Deferred tax	126
+	Change in other assets and liabilities	307
+	Other financing	312
+	Other investment	310
-	Increase in investment	113
+	Increase in short-term investment	309
+	Change in inventory	303
+	Excess Tax Benefit of Stock Options (since 2007)	(txbcof)