Major Investments, Firm Financing Decisions, and Long-run Performance[*]

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Abstract

We identify firms undertaking major investments during the period 1989-99. Compustat's disaggregated flow-of-funds data indicates that major investments are mostly externally financed. New debt provides roughly half of the funds required for these investments, equity issuances supply only about 20%, and internal cash flows supply most of the remainder. When we evaluate the long-run performance of our sample firms, we find that large investments *per se* do not cause underperformance. Only firms financing large projects with external funds exhibit negative long-run abnormal returns, and this effect is most clearly associated with debt financing. Firms making major investments funded primarily with internally generated funds *do not* underperform. Our results raise doubts about underperformance explanations based on managerial overinvestment, for which negative value effects should be the most pronounced under internal financing.

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1. Introduction

At its most basic level, corporate finance concerns the choice of new investments and decisions about how to finance those investments. In an efficient market, managers with appropriate incentives are supposed to add value, and should almost certainly not destroy value, via their investment and financing decisions. However, recent research has concluded that large investments in operating assets tend to reduce firm value, perhaps reflecting over-optimism (Heaton [2002]) or a preference for "empire building" (Jensen [1986]).[1] Contemporaneously, research into the average wealth effects of external finance concludes that the average firm issuing *any* sort of external financial claim subsequently underperforms (e.g. Spiess and Affleck-Graves [1995, 1999], Hertzel *et al*. [2002], Billett, Flannery and Garfinkel [2003]). These latter results are consistent with at least two hypotheses: managers may time the market when issuing securities, or they may over-invest when new funds are available to them.

If they can be taken at face value, these conclusions about managerial overinvestment and security issuance behaviour raise serious questions about the efficacy of corporate forms. Yet the conclusions based on the extant evidence may be too blunt. Surely, not *all* investment projects are overdone, and surely *some* external finance enhances firm value. Perhaps it has proven difficult to separate the effects of investment and financing decisions because they are so closely intertwined. New investments must be financed, and the financing decision may itself affect firm value by changing investors' expectations. Unfortunately, most researchers have selected firms on the basis of *either* their financing *or* their investment activities, without explicitly controlling for the interaction between the two.

[1] See for example, Richardson and Sloan [2003], Titman, Wei and Xie [2003], and Baker, Stein and Wurgler [2003], all of whom conclude that faster growth in operating assets is followed by long-run underperformance in the stock market.

This paper seeks to disentangle the effects of financing and investment decisions. We begin by identifying firms that make "major" investments during the period 1989-1999, and then we determine how the investments were financed. In the first step, we select firms with large year-over-year increases in investment expenditures that exceed a certain proportion (30%) of the firm's (book) total assets. In doing so, we separately identify major internal or "built" investments (Compustat item #128, "capital expenditures") and investments "acquired" from outside the firm (Compustat item #129, "acquisitions"). In the second step, we use Compustat flow-of-funds data to infer how these major investments were financed. Finally, we compute the long-run returns to equity following various combinations of investment types and financing sources.

Our analysis has several innovative features. First, our sample includes only firms with major investment activities. Such large investments presumably attract serious attention from the firm's stakeholders. Moreover, the concomitant, large financing decisions should reveal something about the firm's attitude towards its optimal capital structure. Second, we analyze both internal (built) and acquired investment events. Many previous papers have evaluated mergers and acquisitions, but we know rather less about the effects of built investments. We also note that our Compustat acquisition sample includes purchases of private firms, which are not comprehensively reported in the databases (like SDC) from which prior studies have drawn their samples. Third, our dynamic analysis of financing decisions reveals more about capital structure preferences than studies that simply compare static balance sheet positions across time. We identify the full range of funding sources for each major investment and we track net changes in those sources across a three-year period centered on the investment event.

Finally, we analyze the sample firms' long-run equity returns following major investments financed in different ways. We identify each investment's predominant financing sources (internal versus external financing and debt versus equity), then separate the valuation effects of investment from the effects of financial decisions. This separation is at the heart of our contribution. We also test the specific hypothesis that underperformance is due to managerial overinvestment. Underperfor-

mance caused by inefficient investment choices should be more pronounced when they are financed from internal cash flows, because managers are not encumbered by external financiers' additional monitoring.

Our results can be summarized as follows. We find that major investments are mostly externally financed, predominantly by issuing new debt. For the typical investment event in our sample, the proceeds of new debt provide about half the required funds. Only about 20% of the typical major investment is financed by the sale of equity, with internal funds supplying most of the remainder. Over time, internal (retained equity) funds accumulate, mitigating the initial effect of debt finance on leverage. Debt finance is even more prominent for acquired investments, which are financed with only about 13% external equity. We also find that financing proportions vary with firm size. Smaller firms rely more on external equity funds, which seems inconsistent with the pecking order theory of capital structure (Frank and Goyal [2003], Fama and French [2003]).

Financing decisions also have an important effect on equity returns following these major investment events. When the firms' 3-year equity returns are equal-weighted, we estimate that firms with externally-funded projects exhibit significant underperformance on the order of 6 – 11% per year. (Statistically, this effect is most significant for investments funded with new *debt*.) By contrast, firms do not underperform when major investments are predominantly financed with internal funds. The estimated mean long-run returns following internally-financed built and acquired major investments are mostly positive, albeit statistically indistinguishable from zero. These findings are not consistent with the hypothesis that managers routinely over-invest in net operating assets.

The rest of this paper is organized as follows. Section 2 sets the stage for our analysis with a short literature review. Section 3 explains how we identify "major" investments, and describes the features of our resulting sample firms. Financing patterns for these investments are evaluated in Section 4, and the long-run performance results appear in Section 5. The next section reports some robustness tests, and the paper concludes with a summary and a discussion of the implications for other research.

2. Literature Review

Finance theory has long hypothesized that a firm's capital structure affects its market value, although empirical evidence remains unclear about the specifics. (E.g., compare Shaym-Sunder and Myers [1999] to Frank and Goyal [2003].) The empirical evidence on capital structure choice is further complicated by evidence that the long-run impact of external financing on firm performance is negative. Almost regardless of the securities issued, firms raising external funds underperform otherwise comparable firms for up to five years following the financing event (see Spiess and Affleck-Graves [1999] and Datta, Iskandar-Datta, and Raman [2000] on bonds; Ritter [1991] and Spiess and Affleck-Graves [1995] on equity; Hertzel *et al.* [2002] on private equity; and Billett, Flannery, and Garfinkel [2003] on bank loans).[2] Although some of these conclusions do not withstand econometric refinements (Mitchell and Stafford [2000]), the broad implication that all external fund-raising generates negative stock returns provides a serious challenge to conventional conceps of market efficiency.

Richardson and Sloan [2003] use accounting data to observe how a firm deploys the resources raised by issuing new securities. They point out that some "new" cash simply replaces another funding source, as when a maturing bond is replaced by another. In other cases, newly issued securities enable the firm to grow faster than internal funds alone would permit. Richardson and Sloan [2003] conclude that new securities issuance *per se* does not cause negative long-run performance. Rather, they find that underperformance is associated with the subset of new securities whose proceeds are invested in net operating assets.[3] (See also Richardson [2002].) Titman, Wei and Xie [2003] also find that firms with relatively large increases in net operating assets (NOA) significantly

[2] The one exception is carve-outs, for which neither the parent nor the newly-listed subsidiary underperforms in the long-run (Vijh [1999]). Ritter [2003] provides a comprehensive discussion of the long-run performance effects of securities issuance.

[3] In our terminology these are "built investments".

underperform firms with low NOA increases. However, neither Richardson and Sloan [2003] nor Titman, Wei, and Xie [2003] controls for the firm's financing source. Our sample permits us to separate the effects of investment and financing on long-run performance.

Because we have identified both built and acquired investment events, our paper also has links to the extant literature on mergers and acquisitions. Many studies conclude that the typical acquiring firm loses market value in the short term. Much like the "overinvestment hypothesis", Roll [1986] attributes this loss to managerial "hubris". The literature also finds that the means of payment for an acquisition significantly affects announcement returns, with equity-financed acquisitions generating more negative abnormal returns for the acquirer. However, the evidence on acquisitions' long-run returns is mixed. Franks, Harris, and Titman [1991] find no underperformance, but Loughran and Vijh [1997] and Mitchell and Stafford [2000] find that negative longer-run returns are most pronounced for stock-financed acquisitions.[4] Our results indicate that built and acquired investments have very similar implications for long-run stock performance. Internally-financed acquisitions are followed by insignificant abnormal returns, and externally-financed acquisitions seem to cause negative long-run returns – particularly when they are financed by issuing new debt.

Our work most closely resembles that of Mayer and Sussman [2003], who also construct a sample of firms making large investments. They conclude that most large investments are initially financed by new debt, consistent with the pecking order theory of capital structure. Our study expands upon Mayer and Sussman [2003] by distinguishing between "built" capital expenditures and acquisitions, by examining sample firms' long-run equity performance, and by employing several alternate definitions of "major" investments.[5]

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[4] By evaluation only "major" acquisitions, we (presumably) concentrate on the most important influences on corporate value. Our list of acquisitions may also be more complete that in earlier studies, which often identify acquisitions using the Securities Data Corporate (SDC) database. We believe that Compustat more completely identifies the acquisition of private firms.

[5] Mayer and Sussman [2003] seek firms with large investment "spikes" – one large investment that is surrounded by stable, lower investment expenditures. Examining the time series of investments associated with our major events (not reported here) suggests that the "spike" nature of Mayer and Sussman's filter rule will identify more acquisitions than built investments.

To summarize, our contributions to the literature are: i) we analyse major investments, differentiating acquisitions from built investments; ii) we disaggregate investments' financing sources and have an event-driven perspective; iii) we control for the predominant type of investment funding and assess associated long-run stock performance; and iv) we complement previous studies of M&A external financing by relying on Compustat's more comprehensive flow-of-funds data.

3. Sample Selection Criteria

Starting in 1974, Compustat divides "investment" into two categories: capital expenditures and acquisitions. We refer to internal investment projects (pure capital expenditures) as *built investments*, and to external investments as *acquired investments* or *acquisitions*. Annual Compustat financial information would permit us to identify major investment events starting in 1974, but detailed financing information becomes available in Compustat's flow-of-funds data only in 1988. We therefore focus on events that occurred from 1989-1999.[6]

Firms are excluded from the sample for any year in which:

- The firm's book value of equity is negative in the current or the previous year.
- A firm is missing data for capital expenditures *and* acquisitions (items #128 and #129), or for income before extraordinary items (item #123, used to calculate cash-flows).

We also exclude firms from regulated industries or industries with unusual capital structures: all firms with two-digit NAICS industry codes equal to 22 (utilities), 52 (finance and insurance), 55 (management of companies and enterprises), or exceeding 90 (public administration). Finally, we drop firms without a reliable link to CRSP equity returns, which are required for the long-run return analyses in Section 5. These screens leave 76,448 annual observations (for 11,090 firms), which we search for major investment events.

[6] The observation period ends in 1999 so that we can examine three full years of stock returns for all event firms.

3.1. Defining "Major" Investments

Our research design requires a set of "major" investment events, which reveal information about a firm's preferred capital structure and the market's reaction to the investment and financing decisions. Theory provides no clear definition of "major" investments, so we proceed with one plausible rule, that an investment is "major" if

- it exceeds 200% of the firm's past three years' average investment level (its "benchmark" investment), *and*
- the investment is at least 30% of the firm's prior year-end total assets.

For each firm-year, we compute separate benchmark investment levels for built and acquired capital expenditures. We experiment with a second basic filter rule, as described in Section 6.1 below, without changing any important results. For simplicity, we concentrate on the results associated with this "200 / 30" definition of major events.

Table 1 reports the frequency distribution of the firms and events in our sample. We identify 703 firms with major built investments and 602 firms with major acquisitions. Because some firms have multiple built investments and/or acquisitions, the full sample includes 977 built events and 734 acquisitions. However, as our analysis of financing patterns and long-run performance is categorized by whether the investment is built or acquired, we omit the relatively small number of firms with both built and acquired major investments during the 1989-99 sample period.

3.2. Sample Characteristics

Table 2 reports the event firms' industry affiliations. About 25% of firms with built investment belong to the mining industry, and another 28% operate in the manufacturing industry (NAICS = 31, 32, or 33). Nearly half of the firms with major acquisitions belong to the broad manufacturing sector. Within industries, only two manifest an apparent concentration of built investments: mining (with 24% of the firms having major built investments in at least one sample year) and accommodation and food services (17%). By contrast, major acquisitions are much less concentrated: Health Care

and Social Assistance (NAICS = 72) is the only industry that has more than 10% of its firms making a major acquisition.

The relevant variables describing our firms with major investments are often ratios, which can take extreme values if the denominator is close to zero. Although these extremes occur for only a small number of observations, their magnitudes can distort the sample means or variances. Tables 3 and 4 therefore provide descriptive statistics for a truncated sample that eliminates the 0.5% highest and 0.5% lowest observations.[7] We also concentrate our discussion on the Tables' *median* values. As noted above, to identify statistical differences between the built and acquired firms, the descriptive statistics are based on the sample of firms making either built or acquired investments, but not both.

Table 3 compares the built vs. the acquiring firms' raw financial ratios for the year preceding the investment event. These two groups differ significantly in almost all measured characteristics. Most notably, the acquiring firms are far larger than firms with built investments and exhibit a significantly higher median debt ratio (19% versus 14%). For both groups, the median market-to-book ratio for equity is fairly high (around 2.5), indicating that the market had been anticipating growth for firms making major investments. The two groups' recent growth rates are high, and statistically indistinguishable.

Table 3 may include an unavoidable element of inter-temporal comparison, since the built and acquired investments need not occur at the same rate through time. Table 4 compares each event firm to the set of nonevent firms at the same point in time. We can thus see how event firms differ from non-event firms and whether these differences vary between firms with built investment and firms with acquisitions. The first implication of Table 4 is that all median differences between event and non-event firms are significantly different from zero, except for

- the debt ratio of firms with built investments, and
- the liabilities ratio of firms with acquisitions.

[7] The sample is truncated only when reporting the statistics in Tables 3 and 4. We use all observations when identifying event firms and conducting tests of financing and long-run performance.

Event firms generally have a higher market-to-book ratio, faster growth, and higher profits than non-event firms. The rank sum test results in the last column of Table 4 indicate that the cross-sectional differences between firms with built investment and acquisitions resemble those in Table 3.

4. Financing Major Investments

Compustat's annual flow-of-funds data record how our sample firms financed their investment expenditures. The Appendix reports how we aggregated the cash-flow items into five financing sources, so that the following identity must hold for each firm:

$$\boldsymbol{Invest_{it} = Equity_{it} + Debt_{it} + Internal_{it} + Divest_{it} + Other_{it}} \quad (1)$$

where $\boldsymbol{Invest_{it}}$ is the sum of firm i's capital (built) and acquisition expenditures during year t

$\boldsymbol{Equity_{it}}$ is the dollar value of (net) common and preferred share sales during year t (Compustat items 108 + 115).

$\boldsymbol{Debt_{it}}$ is the net change in long-term and short term debt during year t (Compustat items 111 plus 114 less 301).

$\boldsymbol{Internal_{it}}$ is operating cash-flows during year t: after tax income before extraordinary items plus depreciation and amortization less cash dividends (Compustat items 123 + 125 - 127).

$\boldsymbol{Divest_{it}}$ is the sale, during year t, of property, plant and equipment and other investments that were in place at the end of year t-1 (Compustat items 107 + 213).

$\boldsymbol{Other_{it}}$ is the aggregate of all other funds flow categories (including statistical discrepancies) during year t.

Equation (1) completely accounts for the way a firm's investments are financed.

Table 5 reports average financing proportions separately for major built and acquired investments during 1989-1999. The dollar figures in Table 5 are mean values across all firms in the sample. For example, the top left-hand number ($23.32) represents the average net sale of common plus preferred equity (book values) for the 899 major built investment events. In this table, we avoid the potential distortive effects of extreme values on the mean ratios by reporting the ratio of averages in-

stead of the average of firms' individual ratios.[8] For example, we compute the ratio of new equity to investment amount as the average of the sample firms' new equity issues divided by the average of their investment expenditures, yielding the value 20.56% for built investments during the event year ($\tau = 0$). The other ratios (for ***Debt***, ***Internal***, ***Divest***, and ***Other***) are computed analogously. We report flow-of-funds data separately for the event year ($\tau=0$), and for the sum of three years [-1, 0, +1] in event time, in order to capture leads and lags in the firm's ultimate financing decision. For example, a firm that sold new bonds in year $\tau = -1$ and held the proceeds in cash assets until paying for the new investment in year $\tau = 0$ would appear to have paid for the major investment by disinvesting. We reduce the incidence of such misleading changes by totaling financing and investment amounts over the [-1, +1] event time period. The precision of the flow-of-funds data is indicated in the last four rows of Table 5, which show that sources and uses of investment funds match one another very closely.[9]

The left half of Table 5 indicates that built major investments are primarily financed by external funds. During the event year, these firms issued new debt equal to 49.33% of their total investment expenditures, with only 20.56% raised in the form of new equity shares. The second most important source of financing for firms with built investments is ***Internal*** - operating cash-flows – which contributed 24.4% in the event year. ***Divest*** and ***Other*** funds contribute only 5 – 8 % of investment expenditures.[10] Over the wider event window [-1, +1] in Table 5, the importance of new debt for built investments diminishes to 38.5% while ***Internal*** funds rise to 30.7%. The predominant reliance on external funds remains, as does the importance of debt as the means of raising external funds.[11]

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[8] Loughran and Ritter [1997] and Fama and French [2003] use the same construction.

[9] The sum of the funding sources' ratios-of-averages need not correspond precisely to the dollar value of investments, but it should be close.

[10] Tables 6 and 7 will show that the median contributions from ***Divest*** and ***Other*** are zero. The non-trivial mean contributions in Table 5 reflect a few large outliers.

[11] Mayer and Sussman [2003] also find that external funds (especially debt) finance the bulk of their "spike" investments.

The right half of Table 5 describes firms with major acquisitions, which we see are substantially larger (in dollar terms) than built investments. Major acquisitions are also financed primarily by external funds, but here the role of debt is even more pronounced. In the event year, new debt finances 59.64% of total investment. New ***Equity*** and ***Internal*** funds each provide only about 14% of the funds spent, followed by about 10% from ***Divest*** and ***Other.*** The acquiring firms exhibit the same dynamic feature as built firms: their reliance on debt financing falls to 42.6% over the [-1, +1] period, as ***Internal*** funds rise. Although ***Debt*** remains the most important source of funds for major investments, the effect is smaller than one would infer from examining just the event year.

Table 6 reports the same financing information in the form of median *firm-level* ratios, for a finer partition of the event time period. In addition to the event year and the [-1, +1] period, we also report financing changes for $\tau = -1$ and $\tau = +1$. For each time period, we report the median value of each firm's financing source as a proportion of that firm's total investment expenditures over the [-1, 1] event window. Again, to sharpen the comparison between built and acquired investments, we exclude all (60) firms that undertook both types of investment during the 1989-99 sample period.

Table 6 again indicates the limited role of external equity in financing major investments. Built investors' median equity issuance in the event year ($\tau = 0$) raised one-third as much as new debt issues did (7.5% vs. 22.2%), and only about half of the funds obtained from ***Internal*** sources (7.5% vs. 13.5%). Aggregating across the three-year event window, we see that half of the major built investment firms raised less than 22.65% of the required funds from new equity issues. By contrast, the median firm relied on new ***Debt*** and ***Internal*** funds for nearly one-third (each) of its investment expenditures. The relative contribution of ***Equity*** is even smaller for acquired investments: 11.4% over the three-year interval compared with 47.5% for ***Debt*** and 33.1% for ***Internal*** funds. The majority of ***Debt*** is raised in the event year, while the ***Internal*** contributions are more balanced over the three-year window.

The non-parametric tests documented in the right-most column of Table 6 compare the [-1, +1] financing patterns of firms with built vs. acquired investments. The median ***Equity*** contribution is

significantly smaller for acquired investments, while the reliance is significantly greater on ***Debt*** and ***Internal*** funding. ***Divest*** and ***Other*** financing do not differ significantly between the two groups. Indeed, their median ratios are often zero, suggesting that these two sources of funds play no important role for the typical major investment.

Table 7 describes how funding decisions vary with firm size. For each fiscal year, we sort the universe of Compustat firms that were searched for major investments into equal-sized groups on the basis of their book assets. Our event firms are then placed into the "Small", "Medium", or "Large" subset. [12] We report median financing ratios for each size group over two event periods ($\tau = 0$ and $\tau = [-1, +1]$). For both built and acquired investments, debt provides the largest proportion of investment funds in the event year ($\tau = 0$). This is true for all size groups, but the effect is somewhat stronger among the large firms. Over the broader [-1, +1] window, Small firms with built investments raise a plurality of their funds through ***Equity*** issues. More generally, though, ***Debt*** continues to finance the largest share of both built and acquired major investments. Over time, firms replace some of the ***Debt*** issued in year 0 with ***Internal*** funds and new ***Equity***, but debt is always important. Mann/Whitney rank sum tests indicate that major acquiring firms use more debt and less equity financing than firms with built investments, particularly in the event year. Figure 1 summarizes financing patterns by firm size for the event year ($\tau = 0$).

Before turning to the long-run performance issues, we can summarize the observed financing patterns for major investments. First, the typical investment is financed from multiple sources, although we can identify a predominant financing source for most events. Second, debt is the most important source of funds for major investments, followed by internal financing and only then by external equity issuances. Third, the typical major investment is externally financed: for both the mean and the median firm, the sum of equity and debt substantially exceeds internal financing. Finally, the financing patterns of built and acquired investments are similar, though debt is more prominent for ac-

[12] The results are qualitatively similar when we form size groupings on the basis of equity market value instead of book assets.

quisitions. Acquired investments are more often undertaken by large firms, so the typical acquired investment in our sample is much larger than the typical built investment.

5. Long-run Equity Returns

We now assess the long-run stock return performance of firms undertaking built or acquired major investments. Because previous studies indicate that long-run performance (LRP) depends in part on the type of securities issued, it is important to identify groups of investing firms with similar and distinct financing. We therefore identify groups of firms for which one type of financing predominates in year $\tau = 0$.[13] "Predominant" financing can be identified at two levels: *Internal* vs. *External* and (among the latter firms) *Debt* vs. *Equity*.

Internal vs. External

- *Internal*: Operating cash flows finance at least 50% of investment expenditures, while the debt and equity ratios (and the remaining types) each contribute less than 50%.[14]
- *External*: The sum of the equity and debt ratios are at least 50% of investment expenditures, and the internal funds (and remaining funds) contribute less than 50%.

Of the investments financed primarily with *External* funds, some are predominantly financed by equity or debt.

External Equity versus External Debt

- *Equity*: The equity ratio is at least 50% of investment expenditures, and internal and debt financing (and the remaining funds) contribute less than 50%.
- *Debt*: The debt ratio is at least 50%, and internal and equity financing (and the remaining funds) contribute less than 50%

[13] The dynamic patterns in Tables 5 – 7 indicate that the dominant financing source appears in the event year. We therefore base the identification of predominant financing patterns in the event year.

[14] This rule recognizes the possibility that refinancing transactions (e.g. issuing equity to repay debt) may lead to more than one type of funds accounting for 50%, while at least one type of funds has a negative contribution.

The fourth column of Table 8 ("No. of Events") can be used to clarify these categorizations. Out of 732 major built investments for which we have CRSP data, 101 were "Predominantly Internally" financed, 396 were "Predominantly Externally" financed, and (by subtraction) 235 were funded with a relatively balanced mix of Internal and External funds. Of the 396 Externally financed, built investments, 118 used "Predominantly Equity" and 232 used "Predominantly Debt". By subtraction, therefore, 46 firms had no dominant source of external funds.

Before presenting our long-run performance statistics, we explain how we measure abnormal returns.

5.1. Methodology

Lyon, Barber, and Tsai [1999, p. 198] observe that "the analysis of long-run abnormal returns is treacherous." An extensive literature evaluates alternative methodologies for measuring the long-run performance of stocks (e.g., Barber and Lyon [1997], Kothari and Warner [1997], Lyon, Barber, and Tsai [1999], Mitchell and Stafford [2000]). Obstacles to computing meaningful statistics include the skewness of abnormal return distributions, the characteristics of benchmark or peer groups, and cross-sectional correlation of events. The potential cross-sectional correlation problem looms particularly large when analyzing firm investments, since corporate investments are well-known to depend on the business cycle. Furthermore, Table 2 shows that major investments tend to cluster in specific industries. Mitchell and Stafford [2000] show that cross-sectional correlations can be accommodated by constructing event portfolios that contain returns of all firms with an event in the preceding (typically) 36 months. We will report estimation results using three distinct methodologies to ensure robustness of our results.

The first method, based on the Fama and French [1993] three-factor model, is called the *calendar-time portfolio approach*. Each month, we form a portfolio of all firms with an event within the last 36 months, and regress the portfolio's excess return on the three Fama and French [1993] factors:

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$$r_{p,t} - r_{f,t} = \alpha_p + \beta_p(r_{m,t} - r_{f,t}) + s_p SMB_t + h_p HML_t + \varepsilon_{p,t} \qquad (2)$$

where $r_{p,t}$ denotes a portfolio return at time t,

$r_{f,t}$ is the risk-free interest rate,

$r_{m,t}$ is the return of the market portfolio

SMB_t is the zero-investment portfolio representing the return difference between a portfolio of small and large stocks,

HML_t is the return difference between a portfolio of high book-to-market and low book-to-market stocks.

A positive intercept (α_p) indicates overperformance and a negative α_p indicates underperformance.

Our second version of the *calendar time portfolio approach* is based on the empirical fact that the three-factor model (2) does not fully explain stock returns. That is, portfolios of stocks may have non-zero intercepts even without an event. To control for this "normal" under- or over-performance (i.e., model mispricing), Mitchell and Stafford [2000] suggest choosing, with replacement, a random sample of matching non-event firms with similar sizes and book-to-market ratios. Since for each event firm a matched firm is chosen at the same point in time (determined by the event), the matching firm portfolio is equivalent to the event portfolio in terms of the calendar time, size and book-to-market characteristics.[15] The average monthly matched-firm portfolio returns are then regressed on the three factors. The estimated intercept is the *expected* under- or over-performance that would result from an equivalent portfolio without a major investment. We use a benchmark intercept equal to the average intercept from 1,000 matched portfolios. Inference is based on the test whether the event portfolio intercept is significantly different from the average matched-firm intercept. Mitchell and Stafford [2000] show that their approach accounts well for cross-sectionally correlated abnormal returns, both in terms of the size and the power of the test.

[15] Event firm returns are included for 36 successive months following the event. A firm is included in the event portfolio only once, even if it has multiple events within a 36-month period. If a firm gets delisted, the resulting shorter time period is used. If an event firm has a missing return *between* valid returns, the firm and its peer is excluded in this month. If returns for a matched firm are missing at any point in time up to the maximum determined by the corresponding event firm, the return of the corresponding size/book-to-market portfolio is substituted.

The Fama-French regression approach constrains the parameter values (2) to be stable over the entire estimation window (Mitchell and Stafford [2000]). Vijh [1999] method of *calendar-time abnormal returns* (CTAR) is also based on a portfolio of event firms, but permits the slope coefficients in (2) to vary over time. To implement this third approach, we first calculate the monthly return to the portfolio of firms that had an event within the last 36 months. We then subtract the monthly return on a similar portfolio of peers to obtain monthly excess returns. We calculate a t-statistic for the average of these monthly excess returns using the time series standard deviation of monthly excess returns.

The peer firm selected in the CTAR approach is more closely matched to its event firm than is possible in the intercept-adjusted Fama-French estimation (which requires 1,000 matched firms for each event firm). To choose peer firms, we follow Spiess and Affleck-Graves [1999]. We first identify all other firms that trade on the same exchange whose equity market value lies within 10% of the sample firm's at the prior yearend.[16] Among these firms, the chosen peer has the smallest sum of the absolute percentage differences in size and book-to-market equity value, using data from the preceding year.

For all three methodologies, long-run performance is measured from the first month of the fiscal year following the event.[17] Book equity is based on common equity. Market equity is the fiscal year-end market capitalization. Size is measured as a firm's market capitalization at the beginning of the month. Finally, we report both equal- and value-weighted results, and find that significant underperformance appears primarily for the equal-weighted event portfolios. This is a common finding in previous studies, presumably because return patterns are more difficult to arbitrage for smaller firms (Loughran and Ritter [2000]).

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[16] The 10% size proximity criterion addresses Barber and Lyon's [1997] finding that matched firm (peer) adjusted returns are mis-specified when the event firm is very large. They attribute this to allowing peer firms to be within [70% to 130%] of the event firm's market cap. Very large event firms may have significantly smaller peer firms unless the size match criterion is tightened.

[17] Our results are robust to shifting the start date by ± 6 months.

5.2. Results

Table 8 reports estimation results for equal-weighted portfolios, according to the type of major investment (built vs. acquired) and the type of predominant financing.[18] Abnormal returns and the associated p-values are shown in three pairs of columns, one for each of the outlined methodologies, i.e. the Fama/French calendar time portfolio approach, the adjusted calendar time portfolio approach, and the CTAR approach. We also report the p-value from a test of whether the abnormal returns of built and acquired investment portfolios jointly equal zero.[19]

All three estimation methods yield similar results for the equal-weighted portfolios, so we do not differentiate among the methods when discussing the results. The first row of estimated abnormal returns – for all major built investments, regardless of financing – shows long-run abnormal returns of about (-0.6%) per month (< -7.0% annually) for the three years following the investment event. Row 2 shows similar, significant estimates for major acquired investments. The hypothesis that both the built and the acquisition portfolios have zero abnormal returns is rejected at the 1% level (Row 3). So far, it appears that major investments destroy shareholder value over the long run.

However, differentiating major investments by the type of financing reveals that the aggregate underperformance is driven by externally-financed events. Rows 4 and 5 indicate that built and acquired major investments both exhibit insignificant abnormal returns when they are predominantly internally financed. (Indeed, the point estimates in Rows 4 and 5 are all positive, albeit insignificant.) By contrast, firms whose major investments are predominantly externally financed show significant

[18] Note that the number of events is smaller than in Table 1 because we use only firms that had either a built investment or an acquisition, but not both, during the 1989-99 sample period. Moreover, Table 8 requires equity return information (from CRSP), which is not available for all the firms in Table 1.

[19] For the Mitchell/Stafford approach this corresponds to the test of whether the adjusted intercepts (i.e. event portfolio intercept minus the simulated average intercept from 1,000 sets of matched firms) are jointly equal to zero.

underperformance during the subsequent three years (Rows 7 – 9). Further differentiating the externally financed investments (into predominantly debt vs. predominantly equity) reveals that the underperformance following externally-funded acquisitions is associated with selling new debt. The estimates in Rows 13 – 15 suggest that debt financed, acquired investments underperform by 0.4% - 0.9% per month for three years. Built investments financed with debt do even worse, with underperformance in the range of 11% annually for three years. By contrast, both built and acquired investments predominantly financed by raising new equity have insignificant abnormal returns, although the point-estimates are fairly large in absolute value.[20]

We also investigate the time-distribution of long-run underperformance. In unreported results, we partition the three years following major investments into three one-year segments and conduct Fama/French *calendar-time portfolio regressions* for each period. Underperformance is concentrated in the first year for built investments, and the first two years for acquired investments. Neither built nor acquired investment firms underperform in the third year. Internally financed investments never underperform significantly.

Taken together, the equal-weighted portfolio results suggest that large investments imply poor future stock performance. This result holds for both built and acquired investments overall, but is driven by externally financed investments. Sorting further, we find that *debt* financed investments appear to lie at the heart of the underperformance. In contrast to much of the previous literature, we find no significant underperformance following equity issues associated with large investments. The extant literature's conclusions about long-run underperformance following an equity issue thus seem to be driven by equity-for-debt refinancings or equity issued to finance relatively small investments.

Table 9 reports similar estimation results for value-weighted event portfolios. These results indicate no long-run underperformance for either type of internally-financed major investment. Among the externally-funded investments, the value-weighted results vary somewhat by methodol-

[20] One might suspect that our tests have low power because only 12% of the major acquisitions (70 out of 582) are financed predominantly by new equity. We contend that the small sample size is itself an important finding.

ogy. Only built investments exhibit statistically significant underperformance in Table 9. Unlike the equal-weighted case, however, we find some evidence that both equity and debt funding are associated with reliably negative abnormal returns over the following three years for built investments.

Overall, we find several major results regarding long-run performance. Our most robust finding is that firms undertaking internally financed investments do not underperform. This result raises doubts about the most common explanation for underperformance patterns -- that agency problems permit managers to over-invest. If managerial empire building or overconfidence were causing underperformance, the long-run returns should be most pronounced when managers are not subject to the scrutiny of external capital markets. Yet we find the reverse – that underperformance is greatest when managers must raise new funds from outside investors.

Second, even after selecting our sample according to different criteria from those used in previous studies of external financing, we find that firms depending largely on external financing underperform. Our evidence is strongest for major built investments financed by debt. Across most methodologies and weighting schemes, abnormal returns for firms with built major investments are statistically and economically negative under debt financing. The evidence that equity financing leads to underperformance following built investments is much weaker, and appears only with value-weighting. The estimated abnormal returns following equity-financed *acquisitions* never differ statistically from zero, and the absolute returns are quite low (particularly with value-weighting). This finding contrasts with the more typical conclusion based on samples drawn from SDC. [21]

[21] We should also note that our criteria for identifying "major" investments could explain the difference between our conclusions about the long-run performance following acquisitions, and those of the extant literature.

6. Robustness

Theory offers no guidance about empirically defining major investments, and the measurement of long-run equity returns remains controversial. We therefore assess the robustness of our results to changes in methodology.

6.1. Alternate Definition of Major Investment Events

We replicate much of the preceding analysis for an alternate definition of major investment events: investment in any fiscal year is "major" if

- it exceeds 100% of the firm's past three years' average investment level (its "benchmark" investment), and
- the investment is at least 20% of the firm's prior year-end total assets.

These criteria identify 2,121 major built events by 1,068 firms, and 848 major acquisition events by 633 firms (after matching Compustat data with price data from CRSP).[22] The (unreported) financing patterns for these "100 / 20" sample investment events are generally similar to those in Tables 5 – 6. One notable difference occurs for firms with built investment: ***Internal*** funds are more important than ***Debt*** financing, although ***Equity***, ***Divest*** and ***Other*** funding sources continue to play only minor roles.

Table 10 reports the equal-weighted long-run abnormal returns for this new sample, which closely resemble the results in Table 8 for a more restrictive definition of major investments. We find significant negative long-run returns for predominantly external and predominantly debt-financed investments. The long-run abnormal returns to predominantly equity financed investments are again insignificant, although their point estimates are close to those on predominantly debt-financed in-

[22] The first criterion is satisfied quite often, because it requires only that a firm exceed its recent investment levels. The more binding constraint is the second one, which requires that major investments exceed 20% of total assets.

vestments. Finally, internally financed investments again exhibit small, insignificant abnormal returns supporting the view that investments financed from cash-flows do not underperform.

We also computed value-weighted abnormal returns for the new sample. The results are similar to those reported in Table 9. In particular, we do not find underperformance of internally financed investments.

6.2. Young Firms

One possible explanation for our sample firms' long-run underperformance is that new firms are also making large investments. The long-run abnormal returns might then reflect only the underperformance of IPO firms documented by Ritter [1991]. Moreover, if new firms dominate our sample, their financing patterns might not represent those of a more general sample.

To determine the effect of firm age on our results, we identify the investments in our original sample that occur within three years of the firm's IPO.[23] Table 11 indicates that new firms' investments do not dominate our sample: only about 20% of our major investment events occurred within three years of the firm's IPO. Moreover, old and new firms generally exhibit similar financing patterns for their major investments. Even when the financing proportions differ significantly -- for internally financed built investments and equity-financed acquisitions -- the economic magnitude of those differences is small. Our financing pattern results appear unrelated to firm age.

Tables 12 and 13 present long-run performance results for the sub-sample of major investments occurring more than three years after the IPO. The results closely resemble those for the overall sample: internally financed investments do not lead to underperformance, firms with debt financed, built investment firms significantly underperform, and firms with equity financed, built investment underperform only in the value-weighted case. It thus appears that new firms do not drive our earlier results.

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[23] We thank Jay Ritter for providing access to his IPO database.

7. Summary and Conclusions

This paper studies U.S. firms that have made relatively large investments in the form of internal capital expenditures or acquisitions of other firms. Such activities are necessarily accompanied by major financing decisions. Because these activities represent a substantial proportion of our sample firms' expenditures, we anticipate that the financing decisions will reflect managerial attitudes toward their overall capital structure.

We find that built and acquired major investments are financed in quite similar ways. Equity has a relatively small role in both cases. Debt issues pay for the largest proportion of new investments in the event year, particularly for large firms. Over time, debt financing tends to be replaced with internally generated funds. This pattern might well indicate a pecking order approach to capital structure, except that smaller firms rely more on issuing new equity than larger firms do. This seems inconsistent with the pecking order theory of capital structure, because smaller firms are often said to confront higher information costs in selling their shares (Frank and Goyal [2003]).

Our data set permits us to separate the valuation effects of investment and financing decisions. As expected, we document significant long-run underperformance by firms making major investments. However, the poor performance is most significant for firms financing these investments by issuing *debt*. In contrast to some previous work, we find that equity-issuers have insignificant, albeit negative, abnormal returns in the equal-weighted case. It thus appears that the poor stock returns following external equity issuance is not driven by wasteful, major investments. Rather, the extant literature's results on this matter are driven by equity based refinancings and/or poor decisions about smaller investment projects.

Our most interesting finding is that firms using primarily internal cash flows to finance a major investment do not subsequently underperform. By contrast, Richardson [2002] concludes that firms with substantial free cash flows tend to over-invest in real projects. Richardson's result thus suggests that market scrutiny is stricter when a firm is trying to raise new funds, while we find the

converse. One possible explanation for the difference between our results and Richardson's is that our firms' *large* projects are more likely to attract attention from all monitors. Perhaps Richardson's over-investment comes in the form of many small, internally-financed projects, rather than a single large one.

Our analysis also suggests several areas for further research. Compustat's flow of funds data do not permit us to identify various types of debt. Yet private ("bank") debt may have very different effects than publicly issued bonds or commercial paper, because private debt presumably involves better ("inside") information, monitoring incentives and more complex covenants. Given the negative results associated with debt in this study, it seems important to determine whether public and private debt have similar implications for long-run firm performance. We also know that debt maturity structure influences investors' monitoring incentives. Investigation of the maturity structure effects on performance following large investments may be fruitful.

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Table 1: Frequency Distribution of Major Investment Events 1989-1999

Type of Firm	Number of Firms	Events
With major built investment (…only)	703 (643)	977 (899)
With major acquisition (…only)	602 (542)	734 (659)
With *both* built and acquired investment	60	78 (invest) / 75 (acq)

Table 2: Industry Affiliation of Event Firms (event period 1989-1999)

NAICS	Definition	Built Investments			Acquired Investments		
		Number firms	% of event firms	% of all firms in industry	Number firms	% of event firms	% of all firms in industry
21	Mining	178	25.32%	23.77%	38	6.31%	5.07%
31	Manufacturing (Food, Beverages…)	28	3.98%	5.17%	20	3.32%	3.69%
32	Manufacturing (Wood,…)	67	9.53%	4.93%	75	12.46%	5.51%
33	Manufacturing (Metal,…)	102	14.51%	3.11%	186	30.90%	5.68%
42	Wholesale Trade	11	1.56%	1.93%	37	6.15%	6.48%
51	Information	72	10.24%	4.26%	58	9.63%	3.43%
54	Professional, Scientific and Technical Services	17	2.42%	2.31%	32	5.32%	4.35%
62	Health Care and Social Assistance	23	3.27%	7.03%	38	6.31%	11.62%
72	Accommodation and Food Services	51	7.25%	16.78%	11	1.83%	3.62%
---	Other (<5% each)	154	21.91%		107	17.77%	
	Sum	703	100%	Avg = 6%	602	100%	Avg = 5%

Table 3: Descriptive Statistics for Event Firms in the Year Preceding the Investment Event

Summary statistics for event firms in the year preceding the investment event (event period: 1989-1999). Calculations are based on the sample of firms that had either built or acquired investments, but not both. The number of observations for each statistic may differ from the maximum number because of missing values and subsequent events. A non-parametric Mann/Whitney rank sum test on differences in medians between firms with built and acquired investment is conducted, where *** denotes significance at 1%-level. Note that all variables have been deflated to the base year 1983 and ratios have been multiplied by 100.

Panel A: Financial Indicators

	Firms with Built Investment (max. 899 events)			Firms with Acquisitions (max. 659 events)		
	Mean	Std.Dev	Median	Mean	Std.Dev	Median
Size [Million $]	125.90	424.23	28.93	368.76	921.69	95.40 ***
M/B Ratio	4.11	16.95	2.66	3.28	4.27	2.47 ***
Profit [%]	-5.84	49.18	3.58	4.15	12.17	5.80 ***
Growth [%]	48.46	169.18	18.51	56.34	415.34	12.86
Equity Ratio [%]	57.00	21.46	56.02	53.95	17.79	53.54 ***
Debt Ratio [%]	19.10	19.11	14.04	22.15	18.06	19.22 ***
Liabilities (other)	19.87	12.86	17.77	23.91	11.31	22.93 ***
Investment Ratio [%]	24.80	34.18	17.03	9.23	17.53	5.87 ***
Acquisition Ratio [%]	3.26	14.60	0	17.41	93.65	3.59 ***
R&D [%]	8.87	23.99	1.60	4.49	6.96	2.27

Panel B : Definition of Variables

Variable	Definition	Compustat
Size	Total Assets	#6
M/B	Market Value Equity / Book Value Equity	#199/(#60/#125)
Profit	Income before extraordinary items over total assets	#123 / #6
Growth	Percentage change in total assets.	(#6-#6[t-1]) / (#6[t-1])
Equity Ratio	Common and preferred equity over total assets	(#60+#130) / #6
Debt Ratio	Long-term debt and current debt over total assets	(#9+#34) / (#6)
Other Liabilities Ratio	Other Liabilities which are not long-term debt or debt in current liabilities (e.g. accounts payable, deferred taxes, etc.)	(#181-#9-#34) / #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])
R&D	R&D expenditures over total assets	#46 / #6

Table 4: Descriptive Statistics on Differences from Non-Event Firms

Summary statistics for event firms in the year preceding the investment event (event period: 1989-1999). For variable definitions, see Table 3. Calculations are based on the sample of firms that had either built or acquired investments, but not both. Values are measured as differences between actual event firm values and the median value of all non-event firms in the same calendar year. A non-parametric Mann/Whitney rank sum test on differences in medians between firms with built and acquired investment is conducted, where *** denotes significance at the 1%-level.

	Firms with Built Investment (max. 899 events)			Firms with Acquisitions (max. 659 events)		
	Mean	Std.Dev	Median [a]	Mean	Std.Dev	Median [a]
Size [Million $]	69.97	448.02	-19.11	337.29	971.02	45.69***
M/B Ratio	2.52	12.07	0.75	1.11	3.52	0.44***
Profit [%]	-9.27	54.18	0.71	1.38	12.00	2.78***
Growth [%]	42.73	174.98	13.93	31.90	72.61	8.05
Equity Ratio [%]	9.43	22.41	9.87	0.90	19.57	0.19***
Debt Ratio [%]	1.12	19.46	-3.56	4.14	17.76	1.27***
Liabilities (other)	-4.14	13.45	-6.63	1.26	11.51	0.38***
Investment Ratio [%]	19.52	28.50	12.31	1.49	5.77	-0.02***
Acquisition Ratio [%]	2.39	14.11	0	14.03	28.44	4.12***
R&D [%]	5.20	27.27	-2.71	0.13	6.08	-1.59

[a] All built event firms' median ratios differ significantly from those of the non-event firms, except for Debt Ratio and Liabilities (other).

[b] All acquired event firms' median ratios differ significantly from those of the non-event firms.

Table 5: Mean Financing Patterns Associated with Major Built and Acquired Investments

Average financing patterns associated with major built and acquired investments, for two alternative event windows. Within each cell, we report the average financing raised from the indicated source. The numbers in parentheses result from dividing this average by the average dollar amount of investment expenditures (built investment plus acquisition expenditures). Amounts are measured in millions of 1983 dollars.

Type	Built (max. 899 events)		Acquired (max. 659 events)	
	Event $\tau = 0$	Event $\tau = [-1, +1]$	Event $\tau = 0$	Event $\tau = [-1, +1]$
Equity	\$23.32	\$40.93	\$42.28	\$56.09
	(20.56%)	(20.88%)	(13.79%)	(13.60%)
Debt	\$55.97	\$75.52	\$182.82	\$175.71
	(49.33%)	(38.52%)	(59.64%)	(42.60%)
Internal	\$27.71	\$60.08	\$42.75	\$122.9
	(24.42%)	(30.65%)	(13.95%)	(29.80%)
Divest	\$13.7	\$20.74	-1.01	-2.74
	(12.08%)	(10.58%)	(-0.33%)	(-0.66%)
Other	\$-8.34	\$-3.34	\$35.58	\$54.97
	(-7.35%)	(-1.70%)	(11.61%)	(13.33%)
Sum of Financing	\$112.36	\$193.93	\$302.42	\$406.93
Built Investment	\$100.13	\$175.44	\$38.89	\$98.25
Acquisition	\$13.32	\$20.59	\$267.63	\$314.19
Discrepancy: Financing - Investment Expenditures	-0.97%	-1.08%	-1.36%	-1.35%

Table 6: Median Financing Patterns for Separate Event Periods

Financing patterns for firms with major built and acquired investments during 1989-1999. τ denotes event time. The median value of each financing type is reported as a proportion of total investments over the [-1, +1] window. Asterisks in the last column indicate results from a non-parametric test of differences in the [-1, +1] medians between firms with built and acquired investments. **, *** denote significance at the 5%, and 1%-level, respectively.

	Built (N = max. 899)				Acquired (N = max. 659)			
	Event τ = -1	Event τ = 0	Event τ = +1	Event τ = [-1,1]	Event τ = -1	Event τ = 0	Event τ = +1	Event τ = [-1,1]
Equity [%]	0.5	7.5	0.3	22.65	0.2	1.21	0.14	11.36 ***
Debt [%]	0	22.2	0	32.25	0	47.22	0	47.52 ***
Internal [%]	8.09	13.52	9.92	29.02	9.45	13.37	14.71	33.10 **
Divest [%]	0	0	0	0.23	0	0	0	0
Other [%]	-0.27	0	0	0	-1.75	0	0	-1.52

Table 7: Financing Patterns Differentiated by Firm Size

Numbers provided are median ratios of funds raised by the respective source to total investment expenditures per firm over the corresponding event window. The size classification is based on total assets of the population of Compustat firms, as defined in Section 3, and updated yearly. The median financing ratios for built and acquired investments were compared using a non-parametric Mann/Whitney rank sum test. *, **, and *** denote that the median ratios differ at the 10%, 5% and 1%-level, respectively.

Type of Financing	Built		Acquired	
	Event $\tau = 0$	Event $\tau = [-1, +1]$	Event $\tau = 0$	Event $\tau = [-1, +1]$
Panel A: Small Firms [N(Built) = 284 / N(Acquired) = 51]				
Equity	21.46%	39.73%	14.97%	33.83%
Debt	30.84%	28.93%	55.27% **	45.35% **
Internal	6.28%	15.48%	11.15%	13.63%
Panel B: Medium Firms [N(Built) = 356 / N(Acquired) = 228]				
Equity	8.00%	20.21%	3.15% *	14.47%
Debt	34.49%	30.12%	59.55% ***	38.01%
Internal	28.19%	37.02%	20.99% ***	34.58%
Panel C: Large Firms [N(Built) = 259 / N(Acquired) = 380]				
Equity	5.59%	18.60%	0.82% ***	7.73% ***
Debt	46.49%	38.30%	68.50% ***	49.30% ***
Internal	27.32%	33.76%	17.95% ***	33.23%

Table 8: Long-run Performance of Equal-weighted Event Portfolios Differentiated by Type of Investment and Financing

The table reports long-run performance estimates for equal-weighted event-portfolios differentiated by type of predominant financing and type of investment. Predominant financing occurs when the indicated source of funds contributes at least 50% of investment expenditures. The three different estimation methods are explained in the text. Abnormal returns are measured as excess returns on a monthly basis. Standard errors for the Fama/French time series regressions are Newey/West robust standard errors. *Jointly Zero* reports p-values of the test that the abnormal returns of event-portfolios comprising firms with built and acquired investments are jointly equal to zero. *, **, and *** denote significance at the 10%, 5%, and 1%-level, respectively. The number of months varies between 156 and 162 across various sub-samples.

Financing Type	Row #	Investment Type	No. of Events	Fama / French Calendar Time Portfolio Regression		Adjusted Fama / French Calendar-Time Portfolio Regression		Calendar-Time Abnormal Returns	
				Abnormal Return	p-value	Abnormal Return	p-value	Abnormal Return	p-value
All types of financing	1.	Built	732	-0.558% *	0.055	-0.584% **	0.045	-0.708% ***	0.009
	2.	Acquired	582	-0.505% **	0.032	-0.537% **	0.023	-0.485% ***	0.021
	3.	Jointly Zero			0.010		0.006		0.003
Predominantly Internal	4.	Built	101	0.248%	0.582	0.185%	0.681	-0.066%	0.881
	5.	Acquired	18	0.119%	0.847	0.133%	0.829	0.395%	0.658
	6.	Jointly Zero			0.763		0.838		0.901
Predominantly External	7.	Built	396	-0.883% **	0.014	-0.876% **	0.015	-0.904% ***	0.008
	8.	Acquired	469	-0.558% **	0.047	-0.624% **	0.027	-0.664% ***	0.008
	9.	Jointly Zero			0.001		0.000		0.001
Predominantly Equity	10.	Built	118	-0.721%	0.355	-0.618%	0.427	-0.838%	0.296
	11.	Acquired	70	-0.834%	0.115	-0.685%	0.195	-0.480%	0.486
	12.	Jointly Zero			0.068		0.148		0.485
Predominantly Debt	13.	Built	232	-0.870% ***	0.003	-0.941% **	0.001	-0.906% ***	0.014
	14.	Acquired	371	-0.398%	0.164	-0.481% *	0.093	-0.566% ***	0.026
	15.	Jointly Zero			0.002		0.000		0.003

Table 9: Long-run Performance of Value-weighted Event Portfolios Differentiated by Type of Investment and Financing

The table reports long-run performance estimates for value-weighted event-portfolios differentiated by type of predominant financing and type of investment. Predominant financing occurs when the indicated source of funds contributes at least 50% of investment expenditures. The three different estimation methods are explained in the text. Abnormal returns are measured as excess returns on a monthly basis. Standard errors for the Fama/French time series regressions are Newey/West robust standard errors. *Jointly Zero*: reports p-values of the test that the abnormal returns of event-portfolios comprising firms with built and acquired investments are jointly equal to zero. *,**, and *** denote significance at the 10%, 5%, and 1%-level, respectively. The number of months varies between 156 and 162 across various sub-samples.

Financing Type	Row #	Investment Type	No. of Events	Fama / French Calendar Time Portfolio Regression		Adjusted Fama / French Calendar-Time Portfolio Regression		Calendar-Time Abnormal Returns	
				Abnormal Return	p-value	Abnormal Return	p-value	Abnormal Return	p-value
All types of financing	1.	Built	732	-0.151%	0.713	-0.022%	0.958	-0.217%	0.603
	2.	Acquired	582	-0.328%	0.140	-0.404% *	0.069	0.016%	0.960
	3.	Jointly Zero			0.252		0.165		0.876
Predominantly Internal	4.	Built	101	0.034%	0.960	0.096%	0.885	0.431%	0.530
	5.	Acquired	18	0.060%	0.937	0.255%	0.738	0.201%	0.844
	6.	Jointly Zero			0.983		0.906		0.754
Predominantly External	7.	Built	396	-0.787% *	0.082	-0.540%	0.231	-0.880% *	0.057
	8.	Acquired	469	-0.301%	0.269	-0.431%	0.114	-0.036%	0.920
	9.	Jointly Zero			0.108		0.127		0.163
Predominantly Equity	10.	Built	118	-1.369% **	0.045	-1.009%	0.139	-2.523% ***	0.018
	11.	Acquired	70	-0.364%	0.542	-0.222%	0.710	-0.942%	0.297
	12.	Jointly Zero			0.028		0.141		0.042
Predominantly Debt	13.	Built	232	-1.109% **	0.022	-0.802% *	0.096	-0.810%	0.109
	14.	Acquired	371	-0.096%	0.728	-0.252%	0.363	0.244%	0.478
	15.	Jointly Zero			0.067		0.178		0.207

Table 10: Alternate Selection Criteria: Long-run Performance of Equal-weighted Event Portfolios Differentiated by Type of Investment and Financing

The table reports long-run performance estimates for equal-weighted event-portfolios differentiated by type of predominant financing and type of investment. Predominant financing requires that only the source of funds under consideration contributes at least 50% of investment expenditures. The three different estimation methods are explained in the text. Abnormal returns are measured as excess returns on a monthly basis. Standard errors for the Fama/French time series regressions are Newey/West robust standard errors. *Jointly Zero* reports p-values of the test whether the abnormal returns of event-portfolios comprising firms with built and acquired investments are jointly equal to zero. *, **, *** denotes significance at the 10%, 5%, and 1%-level, respectively. The number of months varies between 156 and 162 across various sub-samples.

Financing Type	Row #	Investment Type	No. of Events	Fama / French Calendar Time Portfolio Regression		Adjusted Fama / French Calendar-Time Portfolio Regression		Calendar-Time Abnormal Returns	
				Abnormal Return	p-value	Abnormal Return	p-value	Abnormal Return	p-value
All types of financing	1.	Built	2121	-0.279	0.120	-0.371 **	0.039	-0.477***	0.006
	2.	Acquired	848	-0.384 *	0.086	-0.415 *	0.063	-0.507***	0.006
	3.	Jointly Zero			0.094		0.033		0.000
Predominantly Internal	4.	Built	666	0.051	0.800	-0.033	0.870	-0.201	0.334
	5.	Acquired	71	-0.056	0.885	0.003	0.994	0.476	0.349
	6.	Jointly Zero			0.652		0.993		0.578
Predominantly External	7.	Built	744	-0.711 ***	0.006	-0.773 ***	0.003	-0.720***	0.002
	8.	Acquired	555	-0.540 **	0.043	-0.606 **	0.023	-0.671***	0.004
	9.	Jointly Zero			0.001		0.000		0.000
Predominantly Equity	10.	Built	233	-0.535	0.305	-0.513	0.325	-0.699	0.152
	11.	Acquired	81	-0.719	0.309	-0.695	0.325	-0.697	0.400
	12.	Jointly Zero			0.279		0.304		0.313
Predominantly Debt	13.	Built	443	-0.568 **	0.014	-0.695 ***	0.003	-0.617**	0.013
	14.	Acquired	446	-0.395	0.141	-0.472 *	0.079	-0.541**	0.023
	15.	Jointly Zero			0.029		0.005		0.004

Table 11: Financing Patterns Differentiated by Firm Age

We report the median and {in brackets} mean proportions of total investment expenditures raised from new shares, new debt, and internal funds in the event year. The age classification reflects the number of years since the investing company's IPO. Using a non-parametric Mann/Whitney rank sum test, we test whether the median financing ratios differ between investments undertaken with (vs. more than) 3 years of the IPO. ** denotes significant differences, at the 5% level.

		Built		Acquired	
		Within 3 years of the IPO	More than 3 years after IPO	Within 3 years of the IPO	More than 3 years after IPO
Number of events (firms)		190 (139)	709 (504)	113 (95)	546 (447)
Proportion of the sample's total events		21.13%	78.87%	17.15%	82.85%
Equity [τ=0]	Median	12.7	4.94	3.63**	1.03
	Mean	{29.42}	{39.77}	{21.46}	{14.27}
Debt [τ=0]	Median	18.1	23.2	43.26	47.38
	Mean	{28.76}	{29.84}	{40.99}	{44.55}
Internal [τ=0]	Median	16.34**	12.87	13.71	13.31
	Mean	{11.69}	{0.25}	{13.94}	{10.64}

Table 12: Long-run Performance of Equal-weighted Event Portfolios Excluding Events Potentially Affected by IPOs

The table reports long-run performance estimates for equal-weighted event-portfolios differentiated by type of predominant financing and type of investment. Events that occurred within 3 years of a firm's IPO are excluded from the sample. Predominant financing requires that only the source of funds under consideration contributes at least 50% of investment expenditures. The three different estimation methods are explained in the text. Abnormal returns are measured as excess returns on a monthly basis. Standard errors for the Fama/French time series regressions are Newey/West robust standard errors. *Jointly Zero* reports p-values of the test that the abnormal returns of event-portfolios comprising firms with built and acquired investments are jointly equal to zero. *, **, and *** denote significance at the 10%, 5%, and 1%-level, respectively. The number of months varies between 156 and 162 across various sub-samples.

Financing Type	Row #	Investment Type	No. of Events	Fama / French Calendar Time Portfolio Regression		Adjusted Fama / French Calendar-Time Portfolio Regression		Calendar-Time Abnormal Returns	
				Abnormal Return	p-value	Abnormal Return	p-value	Abnormal Return	p-value
All types of financing	1.	Built	602	-0.584*	0.055	-0.605**	0.047	-0.650**	0.031
	2.	Acquired	494	-0.486**	0.040	-0.517**	0.029	-0.478**	0.028
	3.	Jointly Zero			0.019		0.012		0.009
Predominantly Internal	4.	Built	70	0.464	0.401	0.358	0.517	0.650	0.246
	5.	Acquired	11	-0.181	0.850	-0.250	0.794	0.504	0.589
	6.	Jointly Zero			0.710		0.791		0.467
Predominantly External	7.	Built	299	-0.762**	0.039	-0.770*	0.037	-1.014***	0.006
	8.	Acquired	383	-0.406	0.160	-0.473	0.102	-0.636**	0.013
	9.	Jointly Zero			0.036		0.023		0.001
Predominantly Equity	10.	Built	83	-1.007	0.179	-0.833	0.266	-1.157	0.154
	11.	Acquired	50	-0.387	0.456	-0.314	0.544	-0.389	0.558
	12.	Jointly Zero			0.105		0.193		0.313
Predominantly Debt	13.	Built	179	-0.807**	0.010	-0.867**	0.006	-0.972**	0.019
	14.	Acquired	306	-0.316	0.257	-0.405	0.146	-0.542**	0.037
	15.	Jointly Zero			0.014		0.005		0.005

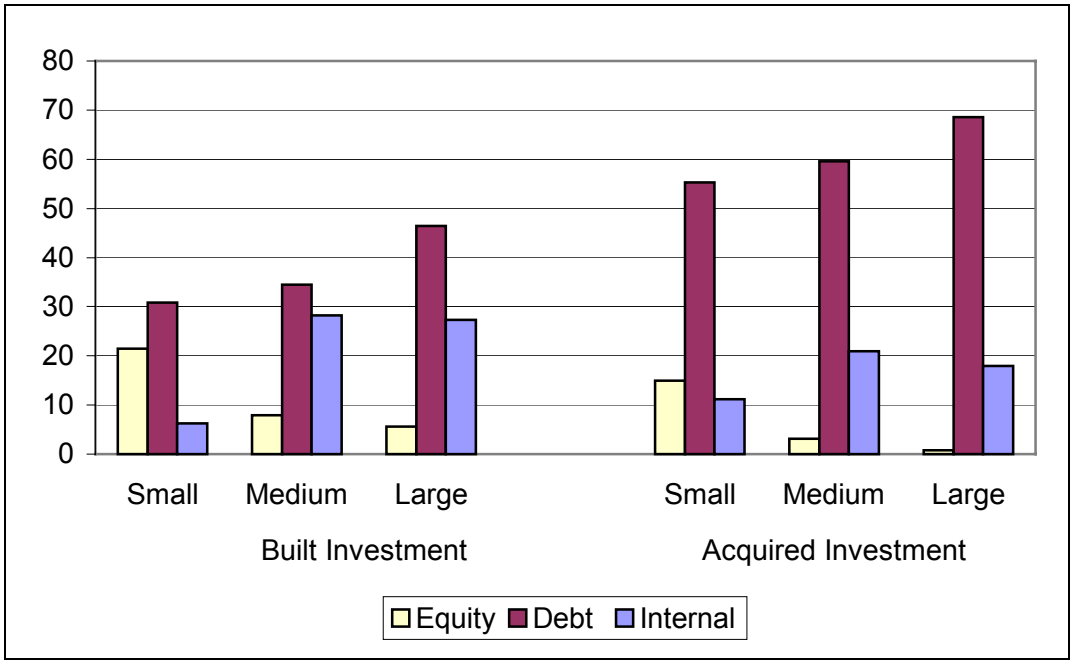
Table 13: Long-run Performance of Value-weighted Event Portfolios Excluding Events Potentially Affected by IPOs

The table reports long-run performance estimates for value-weighted event-portfolios differentiated by type of predominant financing and type of investment. Events that occurred within 3 years of a firm's IPO are excluded from the sample. Predominant financing requires that only the source of funds under consideration contributes at least 50% of investment expenditures. The three different estimation methods are explained in the text. Abnormal returns are measured as excess returns on a monthly basis. Standard errors for the Fama/French time series regressions are Newey/West robust standard errors. *Jointly Zero* reports p-values of the test that the abnormal returns of event-portfolios comprising firms with built and acquired investments are jointly equal to zero. *, **, and *** denote significance at the 10%, 5%, and 1%-level, respectively. The number of months varies between 156 and 162 across various sub-samples.

Financing Type	Row #	Investment Type	No. of Events	Fama / French Calendar Time Portfolio Regression		Adjusted Fama / French Calendar-Time Portfolio Regression		Calendar-Time Abnormal Returns	
				Abnormal Return	p-value	Abnormal Return	p-value	Abnormal Return	p-value
All types of financing	1.	Built	602	-0.158	0.722	-0.048	0.914	-0.288	0.527
	2.	Acquired	494	-0.273	0.219	-0.338	0.127	-0.007	0.982
	3.	Jointly Zero			0.389		0.284		0.816
Predominantly Internal	4.	Built	70	0.263	0.735	0.293	0.707	0.900	0.311
	5.	Acquired	11	-0.053	0.956	0.197	0.840	-0.050	0.962
	6.	Jointly Zero			0.921		0.878		0.596
Predominantly External	7.	Built	299	-0.868	0.125	-0.628	0.266	-0.673	0.182
	8.	Acquired	383	-0.232	0.393	-0.342	0.209	-0.052	0.881
	9.	Jointly Zero			0.246		0.285		0.409
Predominantly Equity	10.	Built	83	-1.841**	0.010	-1.394*	0.051	-2.138**	0.031
	11.	Acquired	50	-0.285	0.632	-0.158	0.791	-0.833	0.351
	12.	Jointly Zero			0.010		0.067		0.054
Predominantly Debt	13.	Built	179	-1.443***	0.009	-1.164**	0.034	-0.983*	0.097
	14.	Acquired	306	-0.040	0.883	-0.175	0.519	0.198	0.557
	15.	Jointly Zero			0.026		0.066		0.182

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

The figure shows the median proportions of financing sources as a proportion of total investment expenditures in the event year (τ=0). The size classes are based on total assets of the universe of COMPUSTAT firms as defined in Section 3. *Equity* is financing from the net sale of common and preferred stock, *Debt* is financing from new long- and short-term debt, and *Internal* is financing from operating cash-flows.



Appendix: Construction of Cash-Flow Financing Measures

The following table shows the exact definition of our financing measures. The scheme is based on Compustat's "Statement of Cash Flows," chapter 4 of the 2001 User's Manual, pp.15-16. Following Mayer and Sussman [2003], we assign zero values for missing data when a more aggregated item is present. 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.

Sign	**Definition**	**Compustat Data Item**
Invest		
+	Capital expenditures ("Built")	128
+	Acquisitions ("Acquired")	129
Equity		
+	Sale of equity	108
-	Purchase of equity	115
Debt		
+	Issuance of long-term debt	111
-	Retirement of long-term debt	114
+	Change in current debt	301
Internal Cash-flow from operations		
+	After tax income before extraordinary items	123
+	Depreciation and amortization	125
-	Cash dividends	127
Divest		
+	Sale of property, plant, equipment (book value)	107
+	Loss (gain) in sale of PPE and investments	213

Table A (continued)

OTHER		
+	Change in account payables and accrued liabilities	304
+	Change in accrued income taxes	305
+	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
+	Sale of investment	109
+	Increase in short-term investment	309
-	Change in cash and equivalent	274
+	Change in inventory	303