# The Effects of Accounting Restatements on Firm Growth

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## Abstract

Do restatements result in lower firm growth? One argument in support of this contention is that accounting restatements hurt contracting relations between the firm and outside parties such as a firm's customers and suppliers, negatively impacting firm cash flows. The negative impact on cash flow reduces the level of internal cash holdings available for investment. Another argument is that restatements dampen firm growth by increasing the firm's cost of external financing. We empirically evaluate these arguments by using the standard sales growth based financial planning model. In carrying out our analysis, we distinguish the effects of restatement on overall firm growth as well as its components of internally and externally financed growth. Our findings suggest that overall firm growth rates decline following a restatement. Furthermore, we find that accounting restatements have a greater adverse impact on externally financed growth rates. We also find that not all restatements yield identical effects: the impact of restatements is more pronounced for the subsample of firms identified to have undertaken the more egregious fraudulent reporting than the subsample of firms that reported restatements to correct previous accounting errors. We also find that firms with severe restatements, measured based on announcement period market reactions, have lower externally financed growth. Overall, our evidence highlights the adverse impact of restatement on firm growth, particularly through external financing.

# 1. Introduction

Financial statements are an important mechanism to convey firm specific information to dispersed shareholders. Though financial statements are prepared in accordance with Generally Accepted Accounting Principles (GAAP), accounting standards provide discretion which can be used to inflate firms' income statement and balance sheet accounts, leading to restatements.[1] The Securities and Exchange Commission describes restatements as "the most visible indicator of improper accounting - and source of new investigations" (Schroeder, 2001). Graham et al. (2008, p. 44) state that some restatements "reduced previously reported earnings by billions of dollars" and further contend that:

"restatements are potentially very costly to the firms involved. They may shake investor confidence in the credibility of corporate disclosure, depress demand for a firm's securities, and constrain corporate opportunities thereby leading to a substantial loss in market value."

Given the importance of restatements, recent research (e.g., Graham et al., 2008; Newberry and Parthasarathy, 2007; Hribar and Jenkins, 2004) has placed great interest in examining the effects of accounting restatements. Graham et al. (2008) focus on debt markets and find an increase in loan spreads and fees following a restatement and find that the effects are more severe for fraudulent restating firms than for non-fraudulent restating firms. In a similar vein, Newberry and Parthasarathy (2007) examine the public debt market and find higher credit-spreads following restatements. Recent evidence also suggests that accounting restatements increase the cost of equity financing (Palmrose et al., 2004; Anderson and Yohn, 2002).

An implication resulting from the higher cost of debt and equity financing is that it will impede firm ability to pursue potentially profitable investment projects. Specifically, if

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[1] A restatement occurs when a company, either voluntarily or prompted by auditors or regulators, revises previously reported public financial information (GAO-03-138, p. 1).

1

restatements create uncertainty about a firm's future prospects, they may impede firm ability to obtain lower cost external funds. The inability to access lower cost external financing can limit firm investment and contribute to lower firm growth, particularly externally financed firm growth.

It is also worth noting that restatements can fray existing contracting relationships such as those between the firm and its suppliers and customers (Karpoff et al., 2008). In part, this is viewed as the negative reputational effects of firm restatement and reduces firm cash flows. The reduction in firm cash flows can also negatively impact firm growth, particularly internally financed firm growth.

We follow Dermiguc-Kunt and Maksimovic's approach (1998, 2002) and compute and compare both internally and externally financed growth rates prior to and after the announcement of a restatement. Our sample spans the period from 1997 to 2009 and includes 1,044 restating firms and a matched sample of non-restating firms. A negative relation implies that costly external financing or deterioration in internal cash flows impedes firm ability to pursue potentially profitable investment opportunities. We find, on average, a decline in sales growth rates following restatements which is driven by a decline in externally financed growth rates. Our findings support the argument that restatements negatively impact firm ability to access lower cost external funds, impeding ability to undertake potentially profitable investments. Furthermore, we find the effects are more pronounced for firms that undertake restatements due to fraudulent reporting. We also find that firms with more severe restatements, measured by announcement period market reactions, have lower externally financed growth following restatements.

We contribute to two streams of extant research. We contribute to the literature examining the effects of restatements. Palmrose and Scholz (2004) and Simmons (2011) provide evidence on the legal consequences of restatements. Other prior research has largely focused on the impact of restatements on firm information environment, and the cost of equity and debt financing (Anderson and Yohn, 2002; Palmrose et al., 2004; Graham et al., 2008; Wilson, 2008; Barniv and Cao, 2009). They generally find that restatements lead to deterioration in firm information environment and increase external financing cost. We depart from this line of research in that we focus on whether restatements impose a binding constraint on firm investments and consequently firm growth. Furthermore, our finding that the growth effects of restatement are through its impact on external financing complements the restatement literature which investigates the effect of restatements on cost of capital.

We also contribute to the literature examining firm growth, in particular externally financed firm growth. Prior cross-country research has found that firms in countries that lack institutions to address information asymmetry and agency conflicts, have limited ability to access external funds and hence suffered lower externally financed growth rates (Dermiguc-Kunt and Maksimovic, 1998). Examining firms within a single country, Khurana et al. (2006) find that firms that adopted a more expanded disclosure policy exhibit greater externally financed growth rates. We contribute to this line of inquiry by examining whether corporate misreporting impedes firm ability to achieve growth through external financing.

Our findings provide information for creditors and analysts who rely on financial planning and externally financed growth to determine the credit worthiness of a firm. Taken together our results will also be of interest to academics, practitioners, and investors who are concerned about the fallout of accounting restatements and firms' future prospects. From a

regulatory and standard setter perspective it is useful to have a broad understanding of the consequences of accounting restatement associated with destruction of shareholder wealth including the decrease in firm growth due to the increased cost of external financing. Also relevant to regulators is the finding that more egregious fraudulent accounting restatements lead to a larger punitive decrease in firm growth as compared to restatements due to error, suggesting that firms are punished for their transgressions. As such, our study highlights the merits of enacted statutes such as the Sarbanes-Oxley Act which severely penalizes managers for financial misreporting. These statutes limit opportunistic reporting that can lead to considerable loss of investor wealth.

The rest of the paper is organized as follows: Section 2 reviews the related literature and develops the hypotheses; Section 3 discusses the data and empirical methods; Section 4 presents the results; and Section 5 concludes the paper.

## 2. Related literature

A rich literature in finance points to the role of market imperfections, such as information asymmetry, in creating a wedge between a firm's internal and external cost of financing (e.g., Myers and Majluf, 1984). The higher cost of external financing can prevent a firm from pursuing potentially profitable investment projects. Consistent with this argument, prior research finds that market imperfections constrain firm investments to its internal cash flows (Fazzari et al., 1988). Such under-investments are costly in that they impede firm growth. In fact, Dermiguc-Kunt and Maksimovic (1998) find systematically lower growth among firms from countries with an inactive stock market and a small banking sector.

Baber et al. (2009, p. 1) define restatements "as corrections of accounting misstatements made previously by negligent, or in the extreme, opportunistic managers." A

4

firm will undertake a restatement voluntarily or at the urging of the firm's auditors or regulators (Graham et al., 2008). Restatements are not inconsequential and can impede firm ability to raise external funds at a lower cost. There are several arguments underlying this contention. First, restatements create uncertainty about the reliability of a firm's financial reporting as the restatement "informs investors they were using inaccurate information to value the company" (Karpoff et al., 2008, p. 596). Consequently, restatements can cause investors "to question other aspects of the firm's operations and reported performance" (Graham et al., 2008). Second, restatements are posited to lead to a revision in beliefs about a firm's future cash flows. Graham et al. (2008, p. 46) note that "a restatement changes historic financial numbers, and thus changes forecasts that are based on these numbers". Given that a majority of restatements reduce earnings, restatements can negatively impact firm ability to raise external funds in that the restatement reveals that the company is in worse condition than it previously appeared. Third, restatements can lead to future litigation concerns that can worsen a firm's future prospects (Palmrose and Scholz, 2004). In turn, these concerns can impede firm ability to access lower cost external financing. Finally, a restatement can harm a firm's reputation which can create negative real cash flow effects and consequently lower firm valuation (Graham et al., 2008). For instance, investors, customers, and suppliers can change their terms of trade. Taken together, these arguments suggest that restatements will hinder firm ability to raise lower cost external funds.

Consistent with these arguments, prior research has documented an adverse impact of restatements on (1) firm information environment, and (2) the cost of equity and debt financing. Examining the first issue, Anderson and Yohn (2002) find an increase in bid-ask spreads, primarily for restatements related to revenue recognition issues. Wilson (2008) provides

further evidence by showing a decline in the earnings response coefficient for restatement firms, indicating a negative impact of restatement on investor perception about the quality of firm earnings. Palmrose et al. (2004) find negative mean market reactions to restatement announcements of -9.2% over a two-day announcement window and that restatements involving fraud experience an even higher negative return. They find restatements contribute to greater forecast dispersion which is again indicative of restatements increasing uncertainty about the quality of earnings. Barniv and Cao (2009) use restatements as a proxy for information uncertainty and find that investors in restatement firms rely more on analyst characteristics associated with forecast accuracy.

Turning to debt markets, Graham et al. (2008) argue that restatements increase the information asymmetry between borrowers and lenders which increases the monitoring costs of lenders and leads to an increased cost of debt. Kravet and Shevlin (2010) focus on equity markets and find an increase in the pricing of discretionary information risk after a restatement, which results in an increase in the estimated cost of equity capital.

We depart from this line of research in that we focus on whether a higher cost of external financing as a result of restatements imposes a binding constraint on firm investments and consequently firm growth. Given the consequences of restatements documented in prior research and the possible negative impact of costly external financing on firm investment and growth, we expect that externally financed firm growth will be lower after a restatement. As such, our testable hypothesis in the alternate form can be stated as follows:

**H1: Ceteris paribus, restatement firms will have lower externally financed growth rates after a financial restatement in comparison to a control group of firms in the same time period.**

It is important to note that costly external financing does not necessarily diminish firm growth within the context of restatement firms. McNichols and Stubbens (2008) and Kedia and Phillipon (2009) largely conclude that restatement firms over-invested during their misreporting period and when the misreporting is recognized, investment levels decline. The authors argue that the subsequent lower investment level matches well with the investment opportunities in place. In these studies, financing is not considered an impediment to investment. Rather, in the aforementioned studies, it is the improvement in firm information environment that restricts over-investment and leads to a lower level of investment. As such, it is not clear whether financing considerations restricted the growth of these restatement firms.

Graham et al. (2008, p. 45) point out that "fraud-related misreporting is more egregious than error-related misreporting". The authors argue that fraudulent reporting firms are riskier and have greater information problems than other restating firms. We anticipate that the market will punish fraudulent reporting more heavily than other restatements (Palmrose et al., 2004; Graham et al., 2008). Specifically, we expect externally financed growth rates to be lower for firms that restate due to fraudulent reporting than for firms that restate due to an error. As such, our testable hypothesis in the alternate form can be stated as follows:

**H2: Ceteris paribus, firms that restate due to fraudulent reporting will have lower externally financed growth rates after a financial restatement in comparison to non-fraudulent restating firms.**


## 3. Empirical methodology and Sample

To test the influence of restatements on externally financed growth, we compare the pre- and post-restatement levels of externally financed growth for restatement firms to those of control firms over the same period. The comparison of restatement firms against control

firms helps us account for potential temporal trends in externally financed growth rates over our sample period. Our baseline model is as follows:

$$EFG_{it} = \alpha + \beta_1\, DIV_{it}/TA_{it} + \beta_2\, NI_{it}/NS_{it} + \beta_3\, NS_{it}/NFA_{it} + \beta_4\, LOG\_TA_{it} + \beta_5\, LTD_{it}/TA_{it}$$

$$+ \beta_6\, NFA_{it}/TA_{it} + \beta_7 Q_{it} + \beta_8 POST_{it} + \beta_9 RESTATEMENT_{it} + \beta_{10} POST * RESTATEMENT_{it} + \varepsilon_{it} \quad (1)$$

Where:

| | |
|---|---|
| $EFG_{i,t}$ | = A measure to capture growth made possible by external financing. |
| $DIV_{i,t}/TA_{i,t}$ | = Total Dividends/Total Assets. |
| $NI_{i,t}/NS_{i,t}$ | = Earnings after interest and taxes/Net Sales. |
| $NS_{i,t}/NFA_{i,t}$ | = Net Sales/Net Fixed Assets. |
| $LOG\_TA_{i,t}$ | = Natural Log of Total Assets. |
| $LTD_{i,t}/TA_{i,t}$ | = Long-term Debt/Total Assets. |
| $NFA_{i,t}/TA_{i,t}$ | = Net Fixed Assets/Total Assets. |
| $Q_{i,t}$ | = Tobin's Q defined as the sum of the Market Value of Equity plus Assets minus the Book Value of Equity deflated by Total Assets. |
| $POST_{i,t}$ | = A dichotomous variable equal to 1 in the years after the announcement of a restatement. The variable equals 0 for years prior to the announcement of a restatement. |
| $RESTATEMENT_{i,t}$ | = A dichotomous variable equal to 1 for a firm with a restatement. The variable equals 0 for a control firm. |
| i, t | = specific firm and time period involved respectively. |

In Equation (1), we regress a firm's externally financed growth rate on a set of firm-specific characteristics related to external financing needs (as identified by Dermiguc-Kunt and Maksimovic, 1998, 2002), and our test variable, the interaction term POST * RESTATEMENT. It is important to note that we construct all variables with data based on restated accounting numbers. The use of restated numbers allows for meaningful comparisons in *actual* firm growth across time as well as between firms. We measure the variables as of the year the dependent variable is computed. Before turning to the measurement of externally financed firm growth, we briefly explain the relation between the control variables and the dependent variable.

We expect a negative relation between DIV/TA and externally financed firm growth. The argument is that dividend paying firms have cash in excess of funds needed for investment purposes (Dermiguc-Kunt and Maksimovic, 1998). Firm performance generates cash flows and represents an important source of internal funds. We measure firm performance through the return-on-assets ratio decomposed into the components, profit margin (NI/NS) and asset turnover (NS/NFA). A higher return on assets will result in less dependence on external financing to fund potentially profitable projects, thus we predict a negative relation between firms' externally financed growth and both profit margin (NI/NS) and asset turnover (NS/NFA).

Almeida et al. (2004) note that larger firms are less financially constrained because they are likely to fund growth through internal funds and are more likely to exhibit lower externally financed growth rates. Hence, we predict a negative coefficient on LOG_TA. In contrast, firms with greater reliance on external long-term capital, proxied by long-term debt divided by total assets (LTD/TA), are likely to exhibit more externally financed growth. Thus, we expect a positive coefficient on LTD/TA.

Firms with more growth opportunities tend to utilize external financing to pursue potentially profitable projects and should exhibit higher externally financed growth. Smith and Watts (1992) argue that the higher the ratio of fixed assets in place to firm value, the lower the ratio of investment opportunities to firm value. We measure growth opportunities as the ratio of net fixed assets to total assets (NFA/TA). The higher the NFA/TA, the lower the externally financed growth. Following La Porta et al. (2000), we use Tobin's Q as an alternative proxy for growth opportunities. The greater the value of Q, the higher the externally financed growth.

To assure we have adequate controls for factors associated with declining investment opportunities and the cost of external financing, we include three additional variables to control

for cash flow volatility (LOG_CFO_VOL), default risk (ALTMANZ), and investment grade (INVESTMENT_GRADE). Cash flow volatility captures firm risk which may affect the cost of external funds. LOG_CFO_VOL is calculated as the natural log of cash flow volatility over the prior five years. We expect a negative coefficient on LOG_CFO_VOL. We proxy for default risk with Altman's Z-Score. Altman's Z-Score is defined as 3.3 (earnings before interest and taxes divided by total assets) + 1.0 (sales divided by total assets) + 1.4 (retained earnings divided by total assets) + 1.2 (working capital divided by total assets) (Altman, 1968). Lower values of Altman's Z-score indicate weak credit quality and higher risk of financial distress. Thus, we predict a positive coefficient on ALTMANZ. Firms with credit ratings are better able to access funds from external markets (Almeida et al., 2004). We create a dichotomous variable, INVESTMENT_GRADE, equal to 1 for firms with an S&P bond rating of BBB+ or higher, and 0 otherwise. We expect the coefficient on INVESTMENT_GRADE to be positive. Since the inclusion of these additional control variables results in a smaller sample, we report the regression results separately from the results based on the main model.

To distinguish between restatement and control firms, we include an indicator variable (RESTATEMENT) in the model, coded 1 for restatement firm-year observations, and 0 for control firm-years. To test whether a restatement is accompanied by lower externally financed growth, we include an indicator variable, POST, coded 1 for the year after a restatement announcement year, and 0 for the year prior to a restatement announcement. To the extent that a restatement firm's externally financed growth decreases after a restatement compared to a control firm, the coefficient on the interaction between POST and RESTATEMENT is expected to be negative. To control for systematic industry effects influencing a firm's externally financed growth, we include industry (based on two-digit SIC codes) fixed effects in

10

our multivariate model. To correct for heteroskedasticity, t-statistics are calculated using Huber-White robust standard errors (White, 1980). We adjust standard errors for firm and year clustering (Petersen, 2009).

*3.1. Measurement of externally financed growth*

To measure externally financed growth, we follow Dermiguc-Kunt and Maksimovic's (1998, 2002) "percentage of sales" approach to financial planning and estimate the maximum rate of growth that can be financed internally.[2] The financial planning model, externally financed need and growth rate measures have practical applications. For example, "sustainable growth is often used by bankers and other external analysts to assess a company's creditworthiness" (Ross et al. 2002, p. 115). In the financial planning model, the external financing needs of a firm at time t can be expressed as follows:

$$EFN_t = [g_t * A_t] - [(1 + g_t) * (E_t * b_t)] \tag{2}$$

where $EFN_t$ = A measure of external financing need.
$g_t$ = Growth rate in sales of a firm at time period t.
$A_t$ = Assets of a firm at time period t.
$b_t$ = The proportion of the firm's earnings that are retained for reinvestment at time t.
$E_t$ = Earnings after interest and taxes at time t.

The expression on the right-hand side of the equation represents the difference between the required investment for a firm growing at $g_t$ and the internally available capital for investment.[3] Assuming EFN to be zero, we compute three measures of constrained growth ($g_t$), denoted as the internally financed growth rate (IG), short-term financed growth rate (SFG), and the maximum sustainable growth rate (SG). $IG_t$, the most conservative estimate, represents the maximum growth rate that can be attained if a firm relies only on its internal resources and the

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[2] The percentage of sales approach to financial planning is discussed in most introductory corporate finance textbooks (Dermiguc-Kunt and Maksimovic, 1998).
[3] The ratio of assets used in production to sales and the firm's profit rate per unit of sales are both assumed constant (Dermiguc-Kunt and Maksimovic, 1998, 2002). We also assume economic depreciation equals depreciation reported in the firms' financial statements.

payout ratio is assumed constant. To estimate $IG_t$, we set $EFN_t$ to zero and compute the variable $g_t$, using equation (2). The growth rate reduces to

$$IG_t = (ROA_t * b_t)/(1 - ROA_t * b_t), \tag{3}$$

where $ROA_t$ is the ratio of earnings after interest and taxes to assets.

$SFG_t$ represents the maximum growth rate attained through internal cash flows and short-term debt.[4] The growth estimate, $SFG_t$, is obtained by setting $b_t$ in equation (2) to 1, implying the payout ratio is zero. The implied growth rate of the firm is:

$$SFG_t = ROLTC_t/(1 - ROLTC_t), \tag{4}$$

where $ROLTC_t$ = the ratio of earnings after interest and taxes to long-term capital.

We estimate a third constrained growth measure, $SG_t$, which represents the maximum growth rate attainable through internal cash flows, short-term debt, and long-term debt. This estimate assumes that the payout ratio is zero and that the firm does not issue equity or increase leverage beyond the realized level. $SG_t$, is obtained by setting $b_t$ in equation (2) to 1 and using the book value of equity in place of total assets. We set $EFN_t$ to zero and solve for $g_t$, to derive the implied growth rate:

$$SG_t = ROE_t/(1 - ROE_t), \tag{5}$$

where $ROE_t$ is the ratio of net income to equity.[5]

Next, we calculate three metrics to proxy for externally financed growth for each firm in a given year (Dermiguc-Kunt and Maksimovic, 1998). The difference between each firm's realized sales growth rate and the firm's predicted internally financed growth rate (IG) is denoted as EXCESS_GR_IG. The second metric is the difference between the annual realized

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[4] The amount of short-term borrowing is restricted such that the short-term debt to assets ratio is maintained, which ensures that the growth rate is feasible.
[5] Firms with negative earnings are unlikely to have funds (generated from their current earnings) available to finance their growth. Therefore, we set IG, SFG, and SG equal to zero when firms experience a loss during a specific year.

sales growth rate and its predicted short-term financed growth rate (SFG), EXCESS_GR_SFG. The third metric is the difference between the annual realized sales growth rate and its predicted growth rate financed through internal cash flows, short-term debt, and long-term debt (SG), EXCESS_GR_SG.[6]

*3.2. Sample selection and data*

We obtain restatement data from the *Financial Restatement Database* gathered by the U.S. Government Accountability Office (GAO). The database includes 2,309 restatement announcements made because of financial reporting fraud and/or accounting errors from 1,894 unique public firms from the period January 1, 1997 to September 30, 2005. The database also includes 396 restatement announcements by 362 unique public firms from the period October 1, 2005 through June 30, 2006. In addition, we hand collect recent restatement announcements from July 1, 2006 to December 31, 2009. We searched for restatement announcements using the *Lexis-Nexis U.S. Newspapers and Wires* database, and performed keyword searches 'restat!', 'adjust', 'amend', and 'revise', all within 50 words of 'financial restatement' or 'earning' consistent with prior restatement research (Li et al., 2011; Barniv and Cao, 2009; Desai et al., 2006; Palmrose and Scholz, 2004; GAO-03-138; GAO-03-395R; GAO-06-678).[7] Our full sample spans the time period January 1, 1997 to December 31, 2009. The last year included in our sample is 2009 as we require the availability of *Compustat* data in the post-restatement year for the analysis.

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[6] Negative EXCESS_GR_IG, EXCESS_GR_SFG, and EXCESS_GR_SG are set to equal zero. We also use a continuous measure of our three externally financed growth measures in lieu of a dichotomous measure. Our results are qualitatively unchanged.
[7] Following the method used to create the *Financial Restatement Database,* we exclude restatement announcements that resulted from normal activity or presentation issues (i.e. mergers and acquisitions, discontinued operations, stock splits, issuance of stock dividends, currency conversion, change in business segment definitions, changes due to transfers of management, litigation settlements, and general accounting changes under GAAP).

We merge the restatement sample with *Compustat* and restrict the sample to firms that have financial data in *Compustat* for at least one year before and after the restatement year. We exclude the restatement year from our sample. In addition, we exclude firms with multiple restatements. These restrictions yield a sample of 1,044 restatements by 1,044 unique restatement firms. Each firm has one observation in the pre-restatement year and one observation in the post-restatement year yielding 2,088 cross-sectional and time-series firm-year observations. We next create a matched sample of firm-years where the matched firm (1) does not have a restatement; (2) has the required *Compustat* financial statement information; (3) has sales growth nearest to the comparison firm in the pre-restatement period; and (4) has the same three-digit standard industrial classification (SIC) code as the comparison firm.[8] The final sample includes 4,176 firm-year observations.

Hennes et al. (2008) develop a procedure to distinguish between whether the restatement was caused by an error or fraud.[9] The authors identify restatement firms by reviewing all Form 8-K filings on EDGAR between 2002 and 2005. Hennes et al. (2008) then read all restatement announcements and relevant subsequent filings and classify a restatement as fraud if at least one of the following criteria are met: 1) the words "fraud" or "irregularity" are used when referring to the misstatement 2) SEC or Department of Justice investigations exist related to the restatement 3) an independent investigation related to the restatement

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[8] We follow prior restatement research that uses a matched sample of non-restatement firms including Burks (2010) and Stanley and DeZoort (2007). As a robustness check we try several other control samples. First, we match restatement firms with non-restatement firms based on firm-profit (NI/NFA) in the pre-restatement year, and three-digit SIC industry. Second, we match restatement firms with non-restatement firms based on firm leverage (LTD/TA) in the pre-restatement year, and three-digit SIC industry. Third, we create three separate control samples in which non-restatement firms are matched with restatement firms based on our three externally financed growth measures, EXCESS_GR_IG, EXCESS_GR_SFG, EXCESS_GR_SG, in the pre-restatement year, respectively, and three-digit SIC industry. Our results continue to hold with the alternative control samples.
[9] Hennes et al. (2008, p. 1488) note that "the distinction between fraud and irregularities has become blurred over the years, and recent auditing guidelines (e.g., SAS No. 82, AICPA 1997) use the term 'fraud' to refer to all intentional misstatements." We follow recent auditing guidelines and refer to all irregularities as fraud.

exists. If none of the three criteria is met, the restatement is classified as an error. We use the author's data to distinguish errors from fraud from January 1, 1997 through to June 30, 2006, the sample period of their dataset. We then follow their classification to distinguish errors from fraud in our hand-collected sample from July 1, 2006 through December 31, 2009. Table 1 Panel A presents descriptive statistics for the variables used in multivariate regressions.[10] Approximately 20.6% (4,176*10.3%/2,088) of restatements occur due to fraud.

**Insert Table 1**

Table 1, Panel B reports the descriptive statistics for the firm-level variables for restatement firms and includes univariate tests comparing the median values of the variables between the pre- and post-restatement periods. The firm's sales growth rate, SALES_GR, and the three externally financed growth metrics, EXCESS_GR_IG, EXCESS_GR_SFG, and EXCESS_GR_SG, are significantly lower during the post-restatement period. This result provides preliminary support that restatements impede firm growth by limiting access to lower cost external funds. The median value of Tobin's Q (Q) is significantly lower in the post-restatement period, suggesting that growth opportunities decline after a restatement.

Table 1, Panel C reports the descriptive statistics for the firm-level variables for the control sample in the pre- and post-restatement periods. The median value of firm's sales growth, SALES_GR, is significantly lower post-restatement. However, the median value of EXCESS_GR_IG, EXCESS_GR_SFG, and EXCESS_GR_SG, externally financed growth measures, are not statistically different between the pre- and post-restatement periods. We also test the difference of the median differences between the pre- versus post-announcement period between the restatement and control subsamples for sales growth, the three measures

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[10] We winsorize outliers (top and bottom 1 percent) for all dependent variables and all firm-level control variables.

of internally financed growth, and the three measures of externally financed growth. The differences are statistically different from zero at least at the 0.05 level for sales growth and the three measures of externally financed growth. However, the differences for the three measures of internally financed growth are not statistically significant at the 0.10 level. Together, these findings provide preliminary support that externally financed firm growth generally does not appear to be affected for control firms. Univariate tests (untabulated) comparing the mean values of the variables between the pre- and post-restatement periods for both restatement and control firms yield qualitatively similar inferences.

Moreover, when we compare growth measures between restatement and control firms in the pre-restatement period, it appears that restatement firms generally require external financing to grow at a faster rate than control firms, while restatement firms' internally financed growth is at a slower rate than control firms. This finding suggests that restatement firms have greater difficulty in generating internal funds for financing growth opportunities and therefore have to rely on external capital, which can potentially induce managers to misstate financial information in order to obtain external funds at a lower cost.

Table 1, Panel D, provides the Pearson correlation coefficients among the growth variables. The predicted internally financed growth metrics are highly positively correlated. Similarly, the three externally financed growth metrics are highly positively correlated. The results suggest that the internal and the external growth metrics capture similar constructs, respectively. Furthermore, SALES_GR is only significantly correlated with externally financed growth, suggesting firm growth is mainly financed using external funds. Overall, the univariate results provide support for the argument that restatements impede firm growth. However, they do not control for cross-sectional variation in firm characteristics that may impact

externally financed growth and do not take into consideration the change in externally financed growth of restatement firms relative to that of control firms. We turn to multivariate analysis to address these issues.

**4. Empirical results**

We first focus on SALES_GR, measured as sales in period t minus sales in period t-1 divided by sales in period t-1, to examine the impact of restatement on overall firm growth. Our panel consists of 4,176 observations. As reported in Columns (1) and (5) of Table 2, our test variable, POST * RESTATEMENT, is negative and significant in the SALES_GR model, indicating that there is a negative impact on restatement firm growth post-restatement compared to control firms.

**Insert Table 2**

The overall impact of restatement on firm growth raises the question as to the underlying causal mechanism. There are two non-mutually exclusive explanations. One view is that restatements hurt a firm's contracting relations in place, which negatively impacts firm cash flow and consequently dampens firm growth. A second view is that restatements impede firm ability to raise external funds and hence the firm is forced to forgo potentially profitable projects. To evaluate the first view, we focus on a firm's internally financed growth rates. As mentioned previously, GR_IG represents the maximum growth rate achieved by strictly relying on existing internal cash, GR_SFG captures the growth rate from relying on existing internal cash and short term debt, and GR_SG measures the growth rate achieved through relying on existing internal cash, short-term and long-term debt. We find that the coefficient on POST * RESTATEMENT is not statistically significant in columns (2)-(4) and (6)-(8), suggesting that the

17

decline in growth following a restatement is not due to the decline in internally financed growth rates.

Before proceeding, we note several points from the regression results. The adjusted r-squares in the models range from 0.103 to 0.510. With the inclusion of the three additional control variables, the sample size is reduced from 4,176 firm-year observations to 2,416 firm-year observations. The adjusted r-squares are generally higher than in the main models. Consistent with prior research, we find profit margin (NI/NS), net sales (NS/NFA), and log of assets (LOG_TA) are positively and significantly related to internally financed growth metrics in the main models, suggesting that firms with higher net income and sales, and larger firms have higher internally financed growth rates. The coefficient on long-term debt (LTD/TA) is negative and significant in the internally financed growth rate models, suggesting that more highly levered firms have lower internally financed growth rates. The coefficient on ALTMANZ is negative and significant in the internally financed growth rate models, indicating that firms that are financially healthy are more likely to rely on external funds to finance their growth.

We next examine the view that restatements hamper firm growth by limiting firm access to lower cost external funds. To this end, we examine the impact of restatement on a firm's externally financed growth rate. Table 3 reports the ordinary least squares (OLS) regression results of estimating model (1) for our three externally financed growth metrics.[11] The adjusted r-squares for the models range from 0.140 to 0.202. The coefficient on the interaction term, POST * RESTATEMENT, is negative and significant, suggesting that

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[11] We also directly examine external financing following Dermiguc-Kunt and Maksimovic (1998, p. 15). Our results are qualitatively similar to the results in Table 3. In an untabulated robustness test, we also follow Dermiguc-Kunt and Maksimovic (1998) and compute three additional metrics to reduce the effect of outliers: PROP_IG, PROP_SFG, and PROP_SG, which measure the proportion of years that a firm's actual sales growth rate in three consecutive years pre- and post-restatement exceeds its (1) predicted internally financed growth rate, (2) predicted short-term financed growth rate, or (3) predicted sustainable growth rate, respectively. The results are qualitatively similar to those reported in Table 3.

restatement firms exhibit lower externally financed growth rates in the post-restatement year as compared to control firms. Results in Table 2 and Table 3 suggest that the impact of restatements on externally financed growth rates is more severe than on internally financed growth rates. This result supports the contention that restatements impede access to lower cost external funds and limit restatement firms' ability to take advantage of their investment opportunities.

**Insert Table 3**

Profit margin (NI/NS), size (LOG_TA) and net fixed assets (NFA/TA) are negatively and significantly related to our excess growth metrics, suggesting that firms with a higher profit margin, larger firms, and firms with more fixed assets are less dependent on external financing to fund their potentially profitable projects. Long-term debt (LTD/TA) and Tobin's Q (Q) are positively and significantly related to the excess growth metrics, suggesting that firms that rely more on external long-term capital and firms with more growth opportunities exhibit higher externally financed growth. The coefficients on ALTMANZ and INVESTMENT_GRADE are significantly positive, suggesting that firms with lower financial distress risk and favorable investment grade (S&P credit ratings) rely more on external funds to achieve their growth.

We next examine whether the negative association between accounting restatements and externally financed growth rates is more pronounced for fraudulent reporting than for other restatements. Recall that Table 1, Panel A reports that approximately 20.6% of the restatements in our sample occur due to fraud. We decompose RESTATEMENT into two dichotomous variables: whether fraud occurred (FRAUD) and whether the restatement is non-fraudulent (NON_FRAUD). We include the interaction of the POST variable with both FRAUD and NON_FRAUD. The benchmark group in this setting is the control firms that do

not have a restatement. The dependent variables are EXCESS_GR_IG, EXCESS_GR_SFG, and EXCESS_GR_SG. Our focus is on the interaction terms between POST and FRAUD and between POST and NON_FRAUD. If restatement impedes growth by limiting firm access to lower cost external funds more for fraudulent restating firms than for other restating firms, then the negative relation between the interaction term, POST * FRAUD, and the externally financed growth measures will be more pronounced than the negative relation between POST * NON_FRAUD, and the externally financed growth measures.

Table 4 reports the OLS regression results for our three excess growth metrics. The main effect of the POST variable is negative and statistically significant when externally financed growth is measured using EXCESS_GR_IG and EXCESS_GR_SFG. The interaction between POST and NON_FRAUD in columns (1)-(3) is not significant, indicating that externally financed growth rates post-restatement are not statistically different for non-fraudulent restatement firms than for control firms. The interaction term between POST and FRAUD is negative and statistically significant, indicating that fraudulent reporting firms in the post-restatement period experience a significant decrease in externally financed growth rates compared to control firms. A t-test of the difference in coefficients reveals that the coefficient on POST * FRAUD is significantly more negative than that on POST * NON_FRAUD at the 0.01 level. This finding suggests that fraudulent reporting as compared to restatement due to error is associated with a more severe impact on externally financed growth in the post-restatement period. The effect of restatements is also economically significant. For example, in the EXCESS_GR_IG model, the sum of the coefficients on POST and POST * NON_FRAUD is significant at the 0.01 level. Thus, holding all else constant, restatement due to an error leads to a 7.8% (-5.7 + -2.1) decrease in firm externally financed growth. The sum of the coefficients on POST and POST *

FRAUD is also significant at the one percent level which indicates that fraudulent reporting leads to a much larger effect than non-fraudulent reporting: a 15.8% (-5.7 + -10.1) decrease in firm externally financed growth.

**Insert Table 4**

We also include three additional control variables in columns (4)-(6): cash flow volatility (LOG_CFO_VOL), default risk (ALTMANZ) and investment grade (INVESTMENT_GRADE). With the inclusion of the additional control variables, the coefficient on POST * NON_FRAUD becomes significant. The magnitude of the coefficient on POST * NON_FRAUD is smaller than the coefficient on POST * FRAUD. A t-test of the difference in coefficients reveals that the coefficient on POST * FRAUD is significantly more negative than that on POST * NON_FRAUD at the 0.01 level. Taken together, the findings suggest an interesting hierarchy in that restatements due to fraudulent reporting have the largest negative impact on externally financed firm growth, but restatements due to error are also punished with lower externally financed growth relative to control firms that do not have a restatement.

Thus far, we document a negative association between restatements and externally financed growth. It is possible that the effect of a restatement may be stronger depending on the severity of the restatement. To capture restatement severity, we follow prior restatement literature and calculate the 3-day announcement period (-1, 1) market reaction to the restatement and rank the restatement firms into deciles (groups 1 through 10) accordingly.[12]

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[12] As an alternative proxy for restatement severity we measure the magnitude of the restatement. We first identify the misreporting periods for each restatement by searching information in the SEC filings. Then we merged the misreporting periods to the *Compustat* unrestated dataset, which includes unrestated earnings for each quarter. We define restatement magnitude as the absolute value of the difference between restated and unrestated earnings, summed over the restatement periods, scaled by average total assets over the restatement period (Palmrose et al., 2004). We rank the restatement firms into deciles (groups 1 through 10) based on restatement magnitude. Group 10 consists of firms with the largest correction of prior earnings. The control firms serve as the benchmark group (group 0). The results are consistent with the results reported in Table 5. Specifically we find

Group 10 consists of firms having the most negative market reaction. The control firms serve as the benchmark group (group 0). Table 5 reports the OLS regression results for our three externally financed growth metrics. The interaction between POST and RESTATEMENT SEVERITY is negative and significant indicating that restatement firms with larger negative market reactions during the announcement period have a larger decrease in externally financed growth after a restatement.

**Insert Table 5**

*4.1 Sensitivity Analyses*

We further examine whether the association between restatement and externally financed growth varies with certain firm characteristics. In untabulated tests, we examine the OLS regression results for our three externally financed growth metrics for subsamples partitioned based on median growth opportunities, median firm size or median leverage. The interaction between POST and RESTATEMENT is negative and significant in all subsample analyses, however there is not a significant difference in the coefficients between subsamples. Together, these results suggest that even large firms, firms with better access to external funds, and firms with more growth opportunities are negatively impacted by a restatement.

As a robustness check we use two alternative sample time periods: 1) 1 year before a restatement to 3 years after a restatement, and 2) 3 years before and after a restatement. Similar to our findings in Table 3, we find that restatement firms have lower externally financed growth post-restatement relative to control firms even using longer event windows. We also examine overall and internally financed growth before and after restatement for our sample firms. Regression analysis suggests that relative to control firms, restatement firms' overall

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that firms with larger restatement magnitude have a significantly larger decrease in externally financed growth after a restatement.

22

growth is significantly lower but internally financed growth is not significantly lower post-restatement. The findings suggest that the adverse effect of restatements on firm growth is not short-term and the firm is having difficulty in resuming its longer-term pre-restatement average growth even 3 years after the restatement. Taken together, our findings also suggest that the lower overall growth post-restatement is mainly driven by lower externally financed growth due to the reduced ability to obtain external financing.

## 5. Conclusion

Are restatements consequential? We answer this question by examining the impact of restatements on firm growth. Two non-mutually exclusive arguments warrant this inquiry. One view is that restatements hurt existing contracting relations. This reduces firm cash flows and impedes firm ability to pursue potentially profitable investments. A second view is that restatements create uncertainty and consequently limit firm ability to raise lower cost external funds for financing growth. This paper examines the impact of restatements on firm growth and attempts to identify the channel through which it arises. Our results suggest that firms that restate have lower realized growth rates. Decomposing firm growth into its components, we find restatements negatively impact subsequent externally financed growth rates.

Probing further, we find the firms identified to be involved in fraudulent reporting experience lower externally financed growth than other restatements. This finding reveals a compelling hierarchy in that fraud firms experience the largest punitive effect on externally financed growth but restatements due to error are also penalized compared to control firms that did not have a restatement. We also find that firms with larger negative market reactions during the announcement period have much lower externally financed growth after a restatement.  Overall, our results provide evidence of a negative association between firm

growth and restatements that is consistent with the argument that restatements impede firm growth by limiting access to lower-cost external financing.

Taken together, our study provides further insight on the destruction of shareholder wealth from accounting restatement as reflected by the decrease in firm growth due to the increased cost of external financing. Our finding that more egregious fraudulent accounting restatements lead to a larger decrease in firm growth as compared to restatements due to error will be of interest to regulators who are concerned about the consequences of accounting restatements and firms' future prospects. Our study also highlights the merits of enacted statutes such as the Sarbanes-Oxley Act which severely penalizes managers for financial misreporting and thus limits opportunistic reporting that can lead to substantial loss of investor wealth.

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## Table 1 Descriptive Statistics and Pearson Correlations

This table reports summary statistics for the variables used in the empirical analysis. The sample period is January 1, 1997 through December 31, 2009. The sample includes 1,044 unique restatement firms. Each firm has one observation in the pre-restatement year and one observation in the post-restatement year yielding 2,088 cross-sectional and time-series firm-year observations. The final sample consists of both restatement and matched control firms with a total of 4,176 firm-year observations. The details of definitions and measurements of the variables are reported in the Appendix. Panel A presents descriptive data for the variables for the full sample. Panel B reports descriptive statistics for the variables for the restatement firms in the pre- and post-restatement period. Panel C reports descriptive statistics for the variables for the control firms in the pre- and post-restatement period. Univariate tests comparing the median values of the variables between the pre- and post-restatement period are reported. Panel D reports the Pearson correlation coefficients among the dependent variables.

Panel A: Descriptive statistics for the whole sample

| Variable | N | Mean | Std Dev | Q1 | Median | Q3 |
|---|---|---|---|---|---|---|
| RESTATEMENT | 4,176 | 0.500 | 0.500 | 0 | 0.500 | 1 |
| FRAUD | 4,176 | 0.103 | 0.305 | 0 | 0 | 0 |
| SALES_GR | 4,176 | 0.188 | 0.501 | -0.018 | 0.090 | 0.245 |
| GR_IG | 4,176 | -0.008 | 0.134 | -0.039 | 0.020 | 0.063 |
| GR_SFG | 4,176 | 0.008 | 0.192 | -0.040 | 0.039 | 0.101 |
| GR_SG | 4,176 | 0.018 | 0.300 | -0.097 | 0.064 | 0.157 |
| EXCESS_GR_IG | 4,176 | 0.234 | 0.488 | 0.000 | 0.068 | 0.238 |
| EXCESS_GR_SFG | 4,176 | 0.234 | 0.508 | 0.000 | 0.046 | 0.241 |
| EXCESS_GR_SG | 4,176 | 0.260 | 0.562 | 0.000 | 0.041 | 0.278 |
| DIV/TA | 4,176 | 0.010 | 0.025 | 0.000 | 0.000 | 0.009 |
| NI/NS | 4,176 | -0.257 | 1.333 | -0.048 | 0.025 | 0.072 |
| NS/NFA | 4,176 | 11.935 | 21.050 | 2.313 | 5.483 | 11.573 |
| LOG_TA | 4,176 | 5.548 | 2.131 | 3.976 | 5.500 | 7.058 |
| LTD/TA | 4,176 | 0.144 | 0.162 | 0.000 | 0.091 | 0.245 |
| NFA/TA | 4,176 | 0.271 | 0.236 | 0.079 | 0.193 | 0.412 |
| Q | 4,176 | 2.018 | 1.867 | 1.104 | 1.481 | 2.252 |
| LOG_CFO_VOL | 2,416 | 2.448 | 1.903 | 1.070 | 2.433 | 3.771 |
| ALTMANZ | 2,416 | 4.043 | 5.396 | 1.712 | 3.175 | 5.025 |
| INVESTMENT_GRADE | 2,416 | 0.082 | 0.274 | 0 | 0 | 0 |

## Table 1 Descriptive Statistics (Continued)

Panel B: Descriptive statistics for restatement firms in the pre- and post-restatement period

| Variable | Pre-restatement period | | Post-restatement period | | | |
|---|---|---|---|---|---|---|
| | N | Median | N | Median | Diff. | p-values |
| SALES_GR | 1,044 | 0.108 | 1,044 | 0.065 | -0.043 | <.0001 |
| GR_IG | 1,044 | 0.021 | 1,044 | 0.015 | -0.006 | 0.115 |
| GR_SFG | 1,044 | 0.035 | 1,044 | 0.031 | -0.004 | 0.294 |
| GR_SG | 1,044 | 0.050 | 1,044 | 0.047 | -0.004 | 0.600 |
| EXCESS_GR_IG | 1,044 | 0.076 | 1,044 | 0.053 | -0.023 | 0.005 |
| EXCESS_GR_SFG | 1,044 | 0.062 | 1,044 | 0.033 | -0.029 | 0.009 |
| EXCESS_GR_SG | 1,044 | 0.076 | 1,044 | 0.035 | -0.041 | 0.001 |
| DIV/TA | 1,044 | 0.000 | 1,044 | 0.000 | 0.000 | 0.711 |
| NI/NS | 1,044 | 0.021 | 1,044 | 0.016 | -0.004 | 0.221 |
| NS/NFA | 1,044 | 5.284 | 1,044 | 5.859 | 0.574 | 0.096 |
| LOG_TA | 1,044 | 5.643 | 1,044 | 5.778 | 0.135 | 0.221 |
| LTD/TA | 1,044 | 0.098 | 1,044 | 0.091 | -0.007 | 0.484 |
| NFA/TA | 1,044 | 0.194 | 1,044 | 0.185 | -0.009 | 0.540 |
| Q | 1,044 | 1.499 | 1,044 | 1.421 | -0.078 | 0.054 |
| LOG_CFO_VOL | 604 | 2.494 | 604 | 2.643 | 0.149 | 0.497 |
| ALTMANZ | 604 | 3.123 | 604 | 2.895 | -0.228 | 0.141 |
| INVESTMENT_GRADE | 604 | 0 | 604 | 0 | 0 | 0.302 |

Panel C: Descriptive statistics for control firms in the pre- and post-restatement period

| Variable | Pre-restatement period | | Post-restatement period | | | |
|---|---|---|---|---|---|---|
| | N | Median | N | Median | Diff. | p-values |
| SALES_GR | 1,044 | 0.104 | 1,044 | 0.083 | -0.021 | 0.044 |
| GR_IG | 1,044 | 0.026 | 1,044 | 0.020 | -0.005 | 0.137 |
| GR_SFG | 1,044 | 0.048 | 1,044 | 0.044 | -0.003 | 0.431 |
| GR_SG | 1,044 | 0.084 | 1,044 | 0.076 | -0.008 | 0.336 |
| EXCESS_GR_IG | 1,044 | 0.082 | 1,044 | 0.065 | -0.011 | 0.137 |
| EXCESS_GR_SFG | 1,044 | 0.050 | 1,044 | 0.035 | -0.015 | 0.221 |
| EXCESS_GR_SG | 1,044 | 0.030 | 1,044 | 0.022 | -0.008 | 0.431 |
| DIV/TA | 1,044 | 0.000 | 1,044 | 0.000 | 0.000 | 0.754 |
| NI/NS | 1,044 | 0.036 | 1,044 | 0.032 | -0.003 | 0.382 |
| NS/NFA | 1,044 | 5.153 | 1,044 | 5.622 | 0.469 | 0.096 |
| LOG_TA | 1,044 | 5.189 | 1,044 | 5.360 | 0.171 | 0.161 |
| LTD/TA | 1,044 | 0.086 | 1,044 | 0.078 | -0.008 | 0.600 |
| NFA/TA | 1,044 | 0.208 | 1,044 | 0.187 | -0.021 | 0.189 |
| Q | 1,044 | 1.516 | 1,044 | 1.485 | -0.031 | 0.484 |
| LOG_CFO_VOL | 604 | 2.232 | 604 | 2.389 | 0.158 | 0.413 |
| ALTMANZ | 604 | 3.353 | 604 | 3.372 | 0.019 | 0.907 |
| INVESTMENT_GRADE | 604 | 0 | 604 | 0 | 0 | 0.624 |

**Table 1 Descriptive Statistics (Continued)**

Panel D: Pearson correlations among growth variables

| Variable | SALES_GR | GR_IG | GR_SFG | GR_SG | EXCESS_GR_IG | EXCESS_GR_SFG |
|---|---|---|---|---|---|---|
| GR_IG | -0.015 | | | | | |
| | (0.34) | | | | | |
| GR_SFG | -0.001 | 0.931 | | | | |
| | (0.96) | <.0001 | | | | |
| GR_SG | -0.008 | 0.702 | 0.774 | | | |
| | (0.61) | <.0001 | <.0001 | | | |
| EXCESS_GR_IG | 0.944 | -0.294 | -0.262 | -0.212 | | |
| | <.0001 | <.0001 | <.0001 | <.0001 | | |
| EXCESS_GR_SFG | 0.912 | -0.340 | -0.347 | -0.282 | 0.981 | |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | |
| EXCESS_GR_SG | 0.847 | -0.348 | -0.343 | -0.408 | 0.923 | 0.936 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |

P-values are reported in parentheses. The details of definitions and measurements of the variables are reported in the Appendix.

## Table 2 The Impact of Restatements on Sales Growth and Internally Financed Growth

This table reports the ordinary least squares pooled regression results for alternative dependent variables, SALES_GR, GR_IG, GR_SFG, and GR_SG. Each column includes industry fixed effects and includes one year before and after the accounting restatement. To correct for heteroskedasticity and serial correlation, we calculate all t-statistics using Huber-White robust standard errors (White, 1980). We also adjust for firm and year clustering.

| Variable | Parameter estimates | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (t-statistics in parenthesis) | | | | | | | |
| | (1) SALES_GR | (2) GR_IG | (3) GR_SFG | (4) GR_SG | (5) SALES_GR | (6) GR_IG | (7) GR_SFG | (8) GR_SG |
| Intercept | 0.131** | -0.091*** | -0.129*** | -0.170*** | -0.028 | -0.084*** | -0.121*** | -0.154*** |
| | (2.52) | (-10.81) | (-9.93) | (-7.07) | (-1.17) | (-11.87) | (-7.43) | (-3.79) |
| DIV/TA | -0.909*** | -0.863*** | 0.382** | 1.106*** | -0.855*** | -0.815*** | 0.412* | 1.073** |
| | (-3.42) | (-10.99) | (2.23) | (3.92) | (-3.23) | (-5.79) | (1.84) | (2.89) |
| NI/NS | -0.003 | 0.050*** | 0.062*** | 0.085*** | 0.006 | 0.080*** | 0.101*** | 0.161*** |
| | (-0.17) | (16.12) | (14.90) | (14.59) | (0.21) | (11.04) | (15.50) | (9.64) |
| NS/NFA | -0.001 | 0.001*** | 0.001** | 0.001** | 0.001 | 0.001*** | 0.000 | 0.000 |
| | (-0.22) | (5.69) | (2.78) | (2.12) | (0.83) | (4.07) | (1.05) | (0.60) |
| LOG_TA | -0.002 | 0.019*** | 0.028*** | 0.037*** | 0.019** | 0.019*** | 0.028*** | 0.031*** |
| | (-0.76) | (16.13) | (15.27) | (11.35) | (2.28) | (10.85) | (8.01) | (3.29) |
| LTD/TA | 0.168** | -0.080*** | -0.116*** | -0.208*** | 0.059 | -0.016** | -0.020 | -0.079 |
| | (2.16) | (-6.14) | (-6.14) | (-3.98) | (1.10) | (-2.30) | (-1.04) | (-1.23) |
| NFA/TA | -0.082 | 0.033*** | 0.031*** | 0.092*** | -0.016 | 0.006 | -0.008 | 0.038* |
| | (-1.59) | (4.44) | (3.08) | (6.81) | (-0.37) | (0.73) | (-0.60) | (1.96) |
| Q | 0.058*** | 0.005*** | 0.009*** | 0.016*** | 0.054*** | -0.008*** | -0.009** | 0.006 |
| | (7.67) | (3.49) | (3.96) | (3.43) | (4.62) | (-3.07) | (-2.08) | (0.90) |
| LOG_CFO_VOL | | | | | -0.018* | -0.007*** | -0.009** | -0.003 |
| | | | | | (-2.03) | (-3.65) | (-2.55) | (-0.39) |
| ALTMANZ | | | | | 0.001 | -0.007*** | -0.010*** | -0.011*** |
| | | | | | (0.09) | (-12.40) | (-9.20) | (-6.40) |
| INVESTMENT_GRADE | | | | | 0.049*** | -0.008 | -0.011 | 0.004 |
| | | | | | (3.08) | (-1.44) | (-1.11) | (0.14) |
| POST | -0.072** | -0.011*** | -0.018*** | -0.030*** | 0.003 | -0.003** | -0.007 | -0.020* |
| | (-2.27) | (-4.92) | (-5.17) | (-3.30) | (0.16) | (-2.15) | (-1.14) | (-1.75) |
| RESTATEMENT | 0.009 | -0.012*** | -0.022*** | -0.051*** | 0.015*** | -0.004 | -0.016** | -0.041*** |
| | (1.05) | (-3.22) | (-3.43) | (-5.52) | (3.30) | (-0.95) | (-2.03) | (-3.90) |
| POST*RESTATEMENT | -0.043** | -0.005 | -0.001 | 0.010 | -0.051*** | -0.005 | 0.004 | 0.014 |
| | (-2.84) | (-0.70) | (-0.12) | (0.91) | (-5.46) | (-0.95) | (0.42) | (1.16) |
| Industry fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 4,176 | 4,176 | 4,176 | 4,176 | 2,416 | 2,416 | 2,416 | 2,416 |
| Adjusted R-square | 0.107 | 0.426 | 0.348 | 0.286 | 0.103 | 0.510 | 0.427 | 0.310 |

The details of definitions and measurements of all the variables are reported in the Appendix. *, **, *** indicate significance at 10%, 5%, 1% level, respectively.

## Table 3 The Impact of Restatements on Externally Financed Growth

This table reports the ordinary least squares pooled regression results for our primary dependent variables that include three externally financed growth metrics (EXCESS_GR_IG, EXCESS_GR_SFG, and EXCESS_GR_SG). Each column includes industry fixed effects and includes one year before and after the accounting restatement. To correct for heteroskedasticity and serial correlation, we calculate all t-statistics using Huber-White robust standard errors (White, 1980). We also adjust for firm and year clustering.

| Variable | Parameter estimates | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | (t-statistics in parenthesis) | | | | | |
| | (1) EXCESS_GR_IG | (2) EXCESS_GR_SFG | (3) EXCESS_GR_SG | (4) EXCESS_GR_IG | (5) EXCESS_GR_SFG | (6) EXCESS_GR_SG |
| Intercept | 0.284*** | 0.319*** | 0.354*** | 0.153*** | 0.189*** | 0.249*** |
| | (5.38) | (5.70) | (6.37) | (6.54) | (7.37) | (5.14) |
| DIV/TA | -0.047 | -0.437 | -0.434 | -0.011 | -0.405 | -0.316 |
| | (-0.16) | (-1.26) | (-1.19) | (-0.04) | (-1.21) | (-0.74) |
| NI/NS | -0.062*** | -0.068*** | -0.083*** | -0.089*** | -0.104*** | -0.143*** |
| | (-3.34) | (-3.49) | (-3.83) | (-3.08) | (-3.07) | (-3.52) |
| NS/NFA | -0.001 | -0.001 | -0.001 | 0.001 | 0.001 | 0.001 |
| | (-0.90) | (-0.71) | (-0.72) | (0.60) | (1.08) | (1.06) |
| LOG_TA | -0.023*** | -0.029*** | -0.034*** | -0.015** | -0.025*** | -0.039*** |
| | (-9.20) | (-11.76) | (-12.39) | (-2.25) | (-3.54) | (-3.52) |
| LTD/TA | 0.225** | 0.232** | 0.448*** | 0.081 | 0.071 | 0.281*** |
| | (2.63) | (2.58) | (3.77) | (1.58) | (1.39) | (3.23) |
| NFA/TA | -0.127** | -0.135** | -0.198*** | -0.032 | -0.025 | -0.077* |
| | (-2.62) | (-2.91) | (-3.62) | (-0.85) | (-0.72) | (-1.80) |
| Q | 0.047*** | 0.045*** | 0.044*** | 0.052*** | 0.055*** | 0.053*** |
| | (7.15) | (6.85) | (6.65) | (4.59) | (4.66) | (4.05) |
| LOG_CFO_VOL | | | | 0.003 | 0.009 | 0.018 |
| | | | | (0.47) | (1.19) | (1.68) |
| ALTMANZ | | | | 0.005** | 0.008*** | 0.009*** |
| | | | | (2.23) | (2.99) | (3.09) |
| INVESTMENT_GRADE | | | | 0.024* | 0.017* | 0.021* |
| | | | | (1.72) | (1.71) | (1.68) |
| POST | -0.057* | -0.051* | -0.053 | 0.007 | 0.011 | 0.015 |
| | (-2.06) | (-1.81) | (-1.65) | (0.65) | (1.01) | (1.33) |
| RESTATEMENT | 0.021** | 0.034** | 0.044*** | 0.020*** | 0.035*** | 0.045*** |
| | (2.27) | (2.63) | (3.72) | (3.05) | (3.28) | (3.31) |
| POST*RESTATEMENT | -0.038** | -0.044** | -0.043*** | -0.047*** | -0.060*** | -0.062*** |
| | (-2.44) | (-2.16) | (-2.68) | (-4.47) | (-4.18) | (-2.97) |
| Industry fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 4,176 | 4,176 | 4,176 | 2,416 | 2,416 | 2,416 |
| R-square | 0.140 | 0.142 | 0.141 | 0.188 | 0.202 | 0.186 |

The details of definitions and measurements of all the variables are reported in the Appendix. *, **, *** indicate significance at 10%, 5%, 1% level, respectively.

## Table 4 The Impact of Fraudulent Restatements on Externally Financed Growth

This table reports the ordinary least squares pooled regression results for fraudulent restatements. The primary dependent variables, EXCESS_GR_IG, EXCESS_GR_SFG, and EXCESS_GR_SG are used in this analysis. Each column includes industry fixed effects and includes one year before and after the accounting restatement. To correct for heteroskedasticity and serial correlation, we calculate all t-statistics using Huber-White robust standard errors (White, 1980). We also adjust for firm and year clustering.

| Variable | Parameter estimates | | | | | |
|---|---|---|---|---|---|---|
| | (t-statistics in parenthesis) | | | | | |
| | (1) EXCESS_GR_IG | (2) EXCESS_GR_SFG | (3) EXCESS_GR_SG | (4) EXCESS_GR_IG | (5) EXCESS_GR_SFG | (6) EXCESS_GR_SG |
| Intercept | 0.284*** | 0.319*** | 0.354*** | 0.154*** | 0.189*** | 0.250*** |
| | (5.41) | (5.71) | (6.39) | (6.48) | (7.26) | (5.09) |
| DIV/TA | -0.045 | -0.435 | -0.431 | -0.013 | -0.405 | -0.311 |
| | (-0.15) | (-1.27) | (-1.19) | (-0.04) | (-1.22) | (-0.73) |
| NI/NS | -0.062*** | -0.068*** | -0.083*** | -0.089*** | -0.104*** | -0.143*** |
| | (-3.34) | (-3.48) | (-3.83) | (-3.08) | (-3.07) | (-3.54) |
| NS/NFA | -0.001 | -0.001 | -0.001 | 0.001 | 0.001 | 0.001 |
| | (-0.90) | (-0.72) | (-0.72) | (0.59) | (1.08) | (1.05) |
| LOG_TA | -0.022*** | -0.029*** | -0.034*** | -0.015** | -0.025*** | -0.039*** |
| | (-9.09) | (-11.70) | (-12.21) | (-2.23) | (-3.50) | (-3.47) |
| LTD/TA | 0.226** | 0.233** | 0.449*** | 0.081 | 0.071 | 0.281*** |
| | (2.65) | (2.60) | (3.81) | (1.57) | (1.38) | (3.23) |
| NFA/TA | -0.129** | -0.137*** | -0.200*** | -0.033 | -0.026 | -0.078* |
| | (-2.65) | (-2.95) | (-3.61) | (-0.89) | (-0.75) | (-1.82) |
| Q | 0.047*** | 0.045*** | 0.044*** | 0.051*** | 0.055*** | 0.053*** |
| | (7.21) | (6.90) | (6.68) | (4.60) | (4.66) | (4.06) |
| LOG_CFO_VOL | | | | 0.003 | 0.009 | 0.018 |
| | | | | (0.49) | (1.20) | (1.67) |
| ALTMANZ | | | | 0.005** | 0.008*** | 0.009*** |
| | | | | (2.23) | (2.99) | (3.09) |
| INVESTMENT_GRADE | | | | 0.024* | 0.018* | 0.021* |
| | | | | (1.79) | (1.74) | (1.69) |
| POST | -0.057* | -0.051* | -0.053 | 0.007 | 0.011 | 0.015 |
| | (-2.06) | (-1.81) | (-1.65) | (0.65) | (1.00) | (1.33) |
| NON_FRAUD | 0.016 | 0.029* | 0.038*** | 0.018* | 0.032** | 0.039** |
| | (1.38) | (2.09) | (2.98) | (2.05) | (2.64) | (2.66) |
| POST* NON_FRAUD | -0.021 | -0.029 | -0.026 | -0.037** | -0.049** | -0.048* |
| | (-0.95) | (-1.10) | (-0.84) | (-2.36) | (-2.62) | (-1.95) |
| FRAUD | 0.041* | 0.051* | 0.067** | 0.030 | 0.049* | 0.069** |
| | (1.80) | (1.94) | (2.31) | (1.41) | (1.91) | (2.16) |
| POST*FRAUD | -0.101*** | -0.100*** | -0.106*** | -0.085*** | -0.103*** | -0.117*** |
| | (-3.93) | (-3.42) | (-3.46) | (-3.32) | (-3.68) | (-3.04) |
| Industry fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 4,176 | 4,176 | 4,176 | 2,416 | 2,416 | 2,416 |
| R-square | 0.140 | 0.142 | 0.142 | 0.188 | 0.202 | 0.186 |

The details of definitions and measurements of all the variables are reported in the Appendix. *, **, *** indicate significance at 10%, 5%, 1% level, respectively.

## Table 5 The Impact of Severe Restatements on Externally Financed Growth

Restatement severity is measured based on announcement period market reaction. The primary dependent variables, EXCESS_GR_IG, EXCESS_GR_SFG, and EXCESS_GR_SG are used in this analysis. Each column includes industry fixed effects and includes one year before and after the accounting restatement. To correct for heteroskedasticity and serial correlation, we calculate all t-statistics using Huber-White robust standard errors (White, 1980). We also adjust for firm and year clustering.

| Variable | Parameter estimates | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | (t-statistics in parenthesis) | | | | | |
| | (1) EXCESS_GR_IG | (2) EXCESS_GR_SFG | (3) EXCESS_GR_SG | (4) EXCESS_GR_IG | (5) EXCESS_GR_SFG | (6) EXCESS_GR_SG |
| Intercept | 0.213*** | 0.256*** | 0.300*** | 0.122*** | 0.157*** | 0.203*** |
| | (4.27) | (5.04) | (5.88) | (4.42) | (5.22) | (4.10) |
| DIV/TA | 0.225 | -1.005** | -1.601*** | -0.096 | -0.561 | -0.368 |
| | (0.69) | (-2.48) | (-3.40) | (-0.30) | (-1.67) | (-0.76) |
| NI/NS | -0.051*** | -0.062*** | -0.086*** | -0.090*** | -0.101*** | -0.152*** |
| | (-3.54) | (-4.18) | (-4.95) | (-3.29) | (-3.45) | (-4.02) |
| NS/NFA | -0.001 | -0.001 | -0.001 | 0.001 | 0.001 | 0.001 |
| | (-0.91) | (-0.96) | (-1.16) | (0.64) | (0.52) | (1.10) |
| LOG_TA | -0.019*** | -0.028*** | -0.037*** | -0.012 | -0.019** | -0.031** |
| | (-7.49) | (-9.78) | (-9.64) | (-1.44) | (-2.15) | (-2.56) |
| LTD/TA | 0.215** | 0.243** | 0.433*** | 0.062 | 0.055 | 0.287** |
| | (2.69) | (2.91) | (3.60) | (1.23) | (1.05) | (2.90) |
| NFA/TA | -0.096* | -0.097** | -0.187*** | -0.001 | -0.001 | -0.052 |
| | (-2.07) | (-2.20) | (-3.44) | (-0.01) | (-0.00) | (-1.14) |
| Q | 0.051*** | 0.047*** | 0.043*** | 0.059*** | 0.062*** | 0.063*** |
| | (8.22) | (7.17) | (6.14) | (5.34) | (5.26) | (4.59) |
| LOG_CFO_VOL | | | | 0.001 | 0.004 | 0.01 |
| | | | | (0.14) | (0.41) | (0.85) |
| ALTMANZ | | | | 0.007*** | 0.010*** | 0.011*** |
| | | | | (3.66) | (4.42) | (3.89) |
| INVESTMENT_GRADE | | | | 0.031* | 0.025 | 0.012* |
| | | | | (1.79) | (1.41) | (1.75) |
| POST | -0.035 | -0.030 | -0.035 | 0.015 | 0.017 | 0.019 |
| | (-1.57) | (-1.37) | (-1.52) | (1.49) | (1.65) | (1.33) |
| RESTATEMENT SEVERITY | 0.005*** | 0.007** | 0.006** | 0.004*** | 0.005** | 0.005* |
| | (3.34) | (2.73) | (2.47) | (3.11) | (2.67) | (1.78) |
| POST*RESTATEMENT SEVERITY | -0.012*** | -0.013*** | -0.011*** | -0.010*** | -0.011*** | -0.010** |
| | (-5.59) | (-4.66) | (-3.49) | (-4.71) | (-4.46) | (-2.75) |
| Industry fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 3,752 | 3,752 | 3,752 | 2,156 | 2,156 | 2,156 |
| R-square | 0.140 | 0.146 | 0.145 | 0.204 | 0.225 | 0.198 |

The details of definitions and measurements of all the variables are reported in the Appendix. *, **, *** indicate significance at 10%, 5%, 1% level, respectively.

# Appendix
## Definition of Variables

| Variable names | Variable definitions |
|---|---|
| SALES_GR | A firm's sales growth rate, measured as sales in period t minus sales in period t-1, divided by sales in period t-1. |
| GR_IG | A firm's predicted internally financed growth rate. For each firm, the predicted internally financed growth rate is defined as ROA*b / (1-ROA*b), where ROA is the ratio of earnings after taxes and interest to assets, and b is the proportion of the firm's earnings that are retained for reinvestment. |
| GR_SFG | A firm's predicted short-term financed growth rate. For each firm, the predicted short-term financed growth rate is defined as ROLTC / (1-ROLTC), where ROLTC is the ratio of earnings after tax and interest to long-term capital. |
| GR_SG | For each firm, the predicted sustainable growth rate is defined as ROE / (1-ROE), where ROE is the ratio of net income to equity. |
| EXCESS_GR_IG | A firm's actual sales growth rate exceeds its predicted internally financed growth rate. For each firm, the predicted internally financed growth rate is defined as ROA*b / (1-ROA*b), where ROA is the ratio of earnings after taxes and interest to assets, and b is the proportion of the firm's earnings that are retained for reinvestment. |
| EXCESS_GR_SFG | A firm's actual sales growth rate exceeds its predicted short-term financed growth rate. For each firm, the predicted short-term financed growth rate is defined as ROLTC / (1-ROLTC), where ROLTC is the ratio of earnings after tax and interest to long-term capital. |
| EXCESS_GR_SG | A firm's actual sales growth rate exceeds its predicted sustainable growth rate. For each firm, the predicted sustainable growth rate is defined as ROE / (1-ROE), where ROE is the ratio of net income to equity. |
| DIV/TA | Total Dividends/Total Assets. |
| NI/NS | Earnings after interest and taxes/Net Sales. |
| NS/NFA | Net Sales/Net Fixed Assets. |
| LOG_TA | Natural log of total Assets. |
| TD/TA | Long-term Debt/Total Assets. |
| NFA/TA | Net Fixed Assets/Total Assets. |
| Q | (Market value of equity — book value of equity + total assets)/total assets. |
| LOG_CFO_VOL | Natural log of cash flow volatility over prior 5 years. |
| ALTMANZ | 3.3 (earnings before interest and taxes/ total assets) + 1.0 (sales/ total assets) + 1.4 (retained earnings/ total assets) + 1.2 (working capital / total assets). |
| INVESTMENT_GRADE | An indicator variable equal to 1 if the firm has an S&P bond rating BBB+ and higher; and 0 otherwise. |
| POST | An indicator variable equal to 1 after the listing year, 0 for years prior to the cross-listing year. |
| RESTATEMENT | An indicator variable equal to 1 for a firm with a restatement; and 0 for a control firm. |
| FRAUD | An indicator variable equal to 1 if the restatement announcement explicitly refers to fraud or an irregularity as the reason for the restatement or discloses either an SEC investigation or an independent board investigation; and 0 otherwise. |
| NON_FRAUD | An indicator variable equal to 1 if the restatement announcement does not explicitly refer to fraud, an irregularity, an SEC investigation or an independent board investigation as the reason for the restatement; and 0 otherwise. |
| RESTATEMENT SEVERITY | Calculated market reaction to the announcement of restatements and ranked restatement firms into deciles (group 1 through 10). Group 10 consists of firms with the highest negative market reaction. The control firm serves as the benchmark group (group 0). |