Fixed Asset Revaluation and External Financing during the Financial Crisis: Evidence from Korea

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ABSTRACT

During the 2008–2010 global financial crisis, the Korean government allowed firms to revalue their fixed assets to strengthen their balance sheets, helping distressed firms to obtain external financing. Using firm listed on the Korea Exchange from 2008 to 2010, this study finds that subsequent to fixed asset revaluation, firms in need of financing use long-term debt financing more than short-term debt and equity financing. The increased long-term debt financing is in the form of private debt rather than public debt. Increase in private long-term debt financing is also more pronounced in financially constrained firms than in financially healthy firms. Our findings imply that fixed asset revaluation is an effective policy tool in Korea for helping firms obtain long-term debt financing, and the benefits are greatly pronounced in firms with financial constraints.

JEL classification: G3; M4

Key Words: Revaluation; Debt financing; Equity financing; External financing; Fixed assets; Financial crisis; Private debt; Public debt

I. Introduction

In 2008, the U.S. subprime crisis affected the global economy, freezing capital markets worldwide. In response to the contraction of capital markets, the Korean government allowed firms to revalue their fixed assets[1] in the hope that lowering book leverage[2] ratio would facilitate external financing.[3] Following this change in accounting rules, a significant number of firms in Korea revalued their fixed assets during the financial crisis.[4] Several prior Korean studies document positive stock market reactions to announcements of firms conducting fixed asset revaluation in Korea (Choe and Son 2011; Song et al. 2011; Kim et al. 2012; Yoo et al. 2012). By contrast, few studies examine the real economic consequences of fixed asset revaluation. This study focuses on the effect of asset revaluation on the external financing of firms.[5] This research question is important because if fixed asset revaluation facilitates external financing, then this relatively simple accounting change may mitigate the contraction of the access to external financing for firms in need of financing during the economic crisis.

Recently, fair value accounting is one of the central issues in accounting. However, not every asset is valued at its fair value. Generally, financial assets are valued at their fair value. When the fair value of financial assets changes either upwardly or downwardly, these assets are immediately recognized at their fair value. On the contrary, fixed assets are generally valued at their historical cost. Fixed assets are recognized at their fair value only when their fair value downwardly deviates from their historical cost due to impairments. By contrast, upward adjustments of fixed asset values are not allowed under the historical cost model. Fixed

[1] Another term for fixed assets is tangible assets or property, plant, and equipment (PP&E).
[2] Book leverage indicates value of leverage or liabilities marked in balance sheet. It is the book value of leverage.
[3] On December 23, 2008, in the middle of the global financial crisis, the Financial Services Committee (FSC) announced the introduction of asset revaluation to improve the financial ratios of firms by recognizing the asset values that were not reflected under previous historical costs.
[4] In 2008, 22 percent of Korea Exchange (KRX) listed firms voluntarily revalued their assets, and their debt ratio declined by approximately 41 percentage points on average (Park et al., 2011).
[5] In this study, "asset revaluation" indicates revaluation of fixed assets, not all assets. Thus, we interchangeably use fixed asset revaluation and asset revaluation.

assets are not allowed to be marked at their fair value because measuring the fair value of these assets is difficult given their illiquid markets (Aboody et al. 1999; Barth and Landsman 1995; Barth and Clinch 1998). Under certain accounting standards, asset revaluation allows a fixed asset to be valued at its fair value regardless of the direction of price changes.[6] Prior to the introduction of the International Financial Reporting Standards (IFRS), asset revaluation was allowed only in a few countries, such as Australia, Brazil, and the UK; it was prohibited in many countries, such as Korea, US, and Japan.[7]

From the Korean government perspective, fixed asset revaluation can be an effective policy tool during the recent financial crisis because of the unique economic environments of the country. Specifically, since the 1997 Asian financial crisis, the Korean government required most domestic companies to lower their reported debt-equity ratio to less than 200% ("200% rule"). Since then, due to the "200% rule," the book value of leverage is important for Korean firms to borrow money from banks.

In addition, the Korean financial system is bank-oriented; A major source of financing of Korean companies is bank loans, which constitute most of the private debts in Korea and the Korean government implements its economic policy through banks. In addition, banks loans are collateralized by fixed assets, which are the subject (subject to???) of asset revaluation. Thus, asset revaluation enables firms to recognize increased collateral value, enabling banks to lend money to firms with improved book leverage. Given that book leverage is an important criterion to gauge firm soundness due to "the 200% rule", and Korea is bank-centered economy, asset revaluation is likely to affect the external financing of firms, in particular, private debt

[6] IFRS allows revaluation of fixed assets as well as intangible assets. However, because the Korean government allowed only fixed assets to be revalued in response to the global financial crisis, we focus on fixed asset revaluation.

[7] One key feature of IFRS is its emphasis on fair value accounting. Ultimately, IASB is moving toward full fair value accounting. In this regard, IFRS allows a firm to have the option to revalue fixed assets and intangible assets at their fair value. Recently, with the widespread adoption of IFRS, many countries allow asset revaluation. Nevertheless, some countries, such as the US and Japan, prohibit asset revaluation.

financing.

In examining the effect of asset revaluation on debt financing, we focus on two dimensions of debt characteristics. First, we investigate whether asset revaluation affects short-term and long-term debt differently. Under asymmetric information, debt providers require more assurance when they provide funds for a longer period (Flannery 1986; Barclay and Smith 1995). Thus, demands for collateral and restrictive covenants are greater for long-term debt contracts than for short-term debt contracts. Given that asset revaluation provides useful information for collateral and covenant decisions, its effect is expected to be larger for long-term debt than for short-term debt.[8]

We further examine whether asset revaluation affects public and private debt differently. In addition to the unique economic environments of Korea, asset revaluation is more likely to affect private debt than public debt in the following reasons. Compared to public debt investors, private debt providers rely more on non-pricing mechanisms (i.e., collateral and covenants) than on pricing mechanisms (i.e., interest spreads) (Begley and Freeman 2004; Bharath et al. 2008; DeAngelo et al. 2002; Nikolaev 2010). This reliance implies that collateral and restrictive covenants are more important for private debt contracts than public debt contracts. Fixed asset revaluation is likely to increase the reliance of firms on private debt financing rather than on public debt financing because the values of fixed assets used as collaterals for private debts are appreciated based on asset revaluation. Moreover, considering the debt maturity effect, the difference in the effect of asset revaluation on public and private debt is expected to be more pronounced in long-term debt financing than in short-term debt financing.

Finally, we investigate whether the effect of asset revaluation on debt financing varies

[8] Gul and Goodwin (2010) document that short-term debt is negatively related to audit fees. Frequent renewals of short-term debt can be an effective monitoring and governance mechanism over managerial opportunism.

depending on the financial constraints of firms. We predict that an increase in the reliance of firms on debt financing after asset revaluation will be larger when firms are financially constrained than when firms are not. An improvement in debt capacity and an ease of restrictive covenants (e.g., leverage and net worth requirements) due to asset revaluation should greatly affect firms with limited access to external financing.

Korea provides an interesting setting that is adequate for our research question in three aspects. First, unique Korean economic circumstances allow us to examine the usefulness of asset revaluation as a policy tool. Korea is a bank-centered economy, and the Korean government recommends domestic banks to use book leverage ratio ("the 200% rule") as an important criterion for their lending decisions. Thus, the 2008 asset revaluation in Korea provides an interesting setting to test the effectiveness of an accounting rule change as a policy tool. Second, the 2008 asset revaluation in Korea enables us to capture the effect of asset revaluation on the financing choice of firms, while avoiding compounding factors. The Korean Generally Accepted Accounting Principles (K-GAAP) did not allow asset revaluation prior to IFRS adoption in 2008, although the Korean government occasionally made exceptions to achieve certain economic goals.[9] In many other countries, asset revaluation became an option when they adopted IFRS; thus, separating the effect of asset revaluation from the influence of IFRS adoption became difficult. Third, the Korean financial reporting system provides unique data to test the difference between private and public debt financing because the system requires firms to report private debt and public debt as separate line items. Most private debts

[9] The Korean government occasionally allowed asset revaluation to achieve certain economic goals (Choe and Son 2010). The latest asset revaluation prior to 2008 was allowed from 1998 to 2000 to support firms suffering from the 1997 Asian financial crisis. Prior revaluation policies mandated tax payments on the revaluation surplus, but the current revaluation policy is without tax implications and does not directly affect cash flows. Between the two policies, the current policy provides a better setting to examine the effect of asset value changes that only affect the balance sheet.

are provided by banks, whereas public debts are mostly invested by institutional investors.[10]

Using companies listed on the Korea Exchange (KRX) from 2007–2010, we examine external financing behaviors around asset revaluation. First, we find that asset revaluation increases the debt financing of firms instead of equity financing. Second, an increase in debt financing through asset revaluation is more driven by long-term debt than short-term debt and by private debt financing than public debt financing. Finally, asset revaluation increases the private long-term debt financing of financially constrained firms, but it does not significantly affect the financing activities of financially healthy firms.

We acknowledge that the choice to revalue fixed assets can be a non-random decision, raising the endogeneity problem. Particularly, a firm with financial constraints (i.e., having difficulty in raising long-term debt due to high leverage) would opt to increase the value of fixed assets through revaluation and such revaluation allows the firm to obtain the proceeds from long-term debt financing. We use the propensity score matching to address the possibility that our results are driven by endogeneity between asset revaluation and financial distress. We find that our overall results remain similar when we use one-to-one matched sample based on the propensity score of asset revaluation.

Our study contributes to the literature in several ways. First, our study contributes to the literature on uses of accounting treatments to mitigate shocks from economic crises. Prior studies show that accounting treatments, such as deferred tax accounting and financial asset reclassification option, alleviate shocks from economic crises (Skinner 2008; Fiechter 2011). We show that, under the unique economic environments of Korea, fixed asset revaluation assist distressed firms to facilitate private debt financing during a financial crisis. Second, our study

[10] This feature of the Korean financial reporting enables researchers to address certain research questions that cannot be resolved with the US data. For example, Haw et al. (2014) use data on Korean firms, and they find that the initiation of public debt issuance significantly increases accounting conservatism for private firms, whereas private debt issuance does not significantly affect accounting conservatism.

contributes to the literature on asset revaluation. Most prior studies focus on either the determinants of asset revaluation or the market reaction to disclosures of asset revaluation (Choi et al. 2012; Barth and Clinch 1998; Aboody et al. 1999). By contrast, our study examines the effect of asset revaluation on the financing choice of firms. Third, our study provides additional evidence that private and public debt investors respond differently to financial information. Prior studies document that private and public debt investors consider a different set of information in issuing debts (Diamond 1984), and they respond differently to accounting quality (Bharath et al. 2008). Our study shows that fixed asset revaluation provides accounting information more useful to private debt lenders than to public bond holders under the unique economic environments of Korea.

Our finding provides the following implications. For policymakers, we show that accounting treatment changes can be used as a policy tool to mitigate an economic crisis by increasing the access of firms to external financing. Policymakers should consider accounting treatments as a policy tool when the economy faces another crisis. For investors, we document that the benefits of asset revaluation are limited to financially distressed firms. Investors should consider this finding when making investment decisions.

The remainder of the paper is organized as follows. Section 2 presents the literature review and hypothesis development. Section 3 specifies the research design, and Section 4 describes the sample and descriptive statistics. Section 5 reports the empirical results, and Section 6 concludes.

II. Literature Review and Hypothesis Development

2.1 Asset Revaluation in Korea

Although asset revaluation was planned to be introduced with the implementation of IFRS, the Korean government allowed revaluation prior to IFRS in 2008 during the financial crisis to improve the financial conditions of Korean firms. As a result, 21.2 percent and 14.0 percent of KRX–listed firms conducted asset revaluation in 2008 and 2009, respectively, decreasing their debt ratio by 41 percent point and 24.7 percent point on average (Korea Listed Companies Association 2010).

Under the asset revaluation policy in Korea, firms can choose either the historical cost model or the fair value model as their accounting policy and apply the selected policy to an entire class of Property, Plant, and Equipment (PP&E). Under the fair value model, PP&E is recognized as the fair value at the date of revaluation, and the gain from asset revaluation is recorded as revaluation surplus under other comprehensive income. Therefore, earnings management through asset revaluation is impossible under the implemented regulations. In addition, if the revaluation is performed on depreciable assets, the increase in asset value is recorded as other comprehensive income, whereas the increase in depreciation is deducted from future earnings. By contrast, a decrease in asset value that exceeds the revaluation surplus of the asset is recorded as a loss. A total of 87 percent of the revalued sample in this study considered this potential deterioration of future profitability from the revaluation of depreciable assets and revalued only land during this period. Merely 11 percent of firms revalued their depreciable assets together with land, and only 2 percent of firms revalued purely depreciable assets.

2.2 Related Literature and Hypothesis Development

Prior studies document accounting treatments that can be used to mitigate the negative impacts of economic crisis. For example, Skinner (2008) shows that in 1998 during the Japanese financial crisis, the Japanese government introduced deferred tax accounting as a

policy tool for helping banks to meet regulatory capital requirements, given that deferred tax assets (DTA) are a component of regulatory capital. He finds that by recognizing more DTA than usual, Japanese banks, especially weak banks, bolster their regulatory capital ratio under the regulatory forbearance of the Japanese government.

In the recent global financial crisis, accounting treatments were also used as a policy tool. The International Accounting Standards Board (IASB) amended IAS 39 to grant companies the option of abandoning fair value recognition of selected financial assets by reclassifying them into other measurements. Fiechter (2011) examines how firms are affected by the reclassification option of financial assets to forgo the recognition of fair value losses and finds that a significant number of firms reclassify their financial assets and improve return-on-assets (ROA), returns-on-equity (ROE), and regulatory capital. Our study evaluates the effectiveness of asset revaluation as a policy tool for mitigating the exacerbating financing conditions of firms during the recent financial crisis.

Asset revaluation has two strands of literature. One strand investigates stock market reactions to or the value relevance of asset revaluation. Numerous prior Korean studies provide evidence that stock market investors positively perceive fixed asset revaluation during the recent financial crisis (2008–2010) over various time horizons. For instance, in short-horizon studies using event study methodologies, Song et al. (2011) and Choe and Son (2011) document that the Korean stock market positively reacts to announcements of 1) conducting asset revaluation (Song et al. 2011; Yoo et al. 2012) and 2) disclosing asset revaluation results (Choe and Son 2011) in each announcement period. In long-horizon studies, Kim et al. (2012) report that revaluation surplus is positively associated with annual stock returns. Yoo et al. (2012) find that buy-and-hold abnormal returns of more than one year from the announcement of asset revaluation are positive for firms that revalue fixed assets. Some evidence shows that asset revaluation is good news in countries other than Korea. For example, Barth and Clinch

(1998) and Aboody et al. (1999) document positive stock market reactions after asset revaluation in Australia and UK, respectively. Other evidence also shows that asset revaluation is bad news. For instance, Lopes and Walker (2012) suggest that revaluation is negatively related to stock price in Brazil. This inconsistency may be caused partially by the different capital structures and management motivations of each country. Regardless, ample evidence shows that in Korea, asset revaluation from 2008–2010 is viewed as good news by capital markets.

The other strand of the literature focuses on the motivation or characteristics of firms that conduct asset revaluation. Using Korean firms that revalue fixed assets from December 2008 to March 2009 during the early financial crisis, Choi et al. (2012) find that firms tend to revalue their assets to improve their borrowing capacity and financial positions or reduce debt contracting costs. Missonier-Piera (2007) obtains similar results using Swiss data. Despite a handful of prior studies on asset revaluation, few examine the effect of asset revaluation on external financing.

Our study examines the economic impact of asset revaluation on firm behavior. We are interested in whether asset revaluation influences the external financing of firms. Pecking order theory suggests that firms initially borrow to fund investments and consider equity financing only as a last resort (Myers 1984). This behavior is because information asymmetry between the manager and outside investors is more severe in equity financing than in debt financing, thus making equity financing more expensive. Consistent with this theory, debt financing is documented as the primary source of external financing (Armstrong et al. 2010).

Some researchers argue that asset revaluation may not be effective because it does not change firms' economic fundamentals. However, the literature provides convincing arguments on the usefulness of asset revaluation. First, prior studies report that asset revaluation increases debt financing because it signals the debt capacity of the firm (Cotter and Zimmer 1995;

Missionier-Piera 2007). Second, numerous accounting studies document that debt contracting between the borrowing firm and lender is made based on accounting numbers (e.g., Armstrong et al. 2010; Watts 2003). An increase in book value of fixed assets reduces book leverage and alleviate the constraints imposed by covenants (Lin and Peasnell 2000), which, in turn, increases the slack between the firm position and covenant thresholds in debt contracts. Thus, the firm can use more debt financing after asset revaluation by reducing the burden of the covenants in debt contracts.

In addition, Korea features unique economic environments in which asset revaluation can be effective. In Korea, the government and domestic banks rely on book leverage to gauge firm soundness. Specifically, in the middle of the 1997 Asian financial crisis, the Korean government required Korean companies to lower their debt-equity ratios to below 200% to improve their soundness. Domestic banks were also required to use debt-equity ratio of 200% as an important criterion for their lending decisions, and, thus, firms with debt-equity ratio above 200% experience difficulties in obtaining further loans from banks ("the 200% rule"). As a result, Korean firms are incentivized to improve the book value of leverage to access debt financing. Therefore, asset revaluation is likely to affect the debt financing of firms in Korea.

We further consider two debt characteristics because firms often employ various types of debt with different properties (Colla et al. 2013). First, we examine the effect of asset revaluation on debt maturity. Under an asymmetric information environment, debt investors require more assurance when they invest for a longer period because the expanded investment horizon can amplify the information asymmetry problem (Flannery 1986; Barclay and Smith 1995). For this reason, compared with short-term debt contracts, long-term debt contracts have greater demand for collateral and are more likely to contain restrictive covenants. New information on the asset value from asset revaluation can further improve the access to long-term debt financing, whereas the effect of asset revaluation on short-term debt financing is

likely weaker. Based on this argument, we predict that asset revaluation will greatly influence long-term debt than short-term debt financing.

Hypothesis 1

After conducting asset revaluation, firms in need of financing will use more long-term debt financing than short-term debt or equity financing.

Second, we examine whether asset revaluation affects private and public debt differently. Private debt includes more restrictive covenants than public debt (Begley and Freeman 2004; Bharath et al. 2008; DeAngelo et al. 2002; Nikolaev 2010). In addition, the largest source of Korean firms' external financing is private debts, which are mostly provided by banks in Korea. Most bank loans are collateralized by fixed assets, which is the subject of asset revaluation. Furthermore, an important criterion in the lending decision of Korean banks is book value of leverage due to the 200% rule. Thus, fixed asset revaluation enables firms to recognize appreciated values of fixed assets, which lead to increase in collateral values and decrease in book leverage ratio. Asset revaluation is likely to facilitate private debt financing rather than public debt financing.

Given that we hypothesize that the asset revaluation effect is larger in long-term debt than in short-term debt (Hypothesis 1), the effect of whether the debt is private or public will be more pronounced for long-term debt financing than for short-term debt financing. As a result, we focus on long-term debt to examine the effect of asset revaluation on private and public debt. Based on this argument, we posit the following hypothesis:

Hypothesis 2

After conducting asset revaluation, firms in need of financing will use more private long-term debt financing than public long-term debt financing and other types of external financing.

We extend our investigation into whether the effect of asset revaluation varies depending on the financial constraints of the firm. The Korean government adopted asset revaluation in 2008 for helping financially constrained firms to obtain external financing. Thus, whether financially constrained firms benefit from asset revaluation when accessing external financing is an interesting question. The role of collateral requirements and restrictive covenants in debt contracting is particularly important when firms are financially constrained because these firms tend to default and renegotiate debt contracts. In addition, when financially constrained firms violate covenants or fail to repay principal and interest, debt investors should assess the capability of these firms to repay the debt using incumbent assets. Given that the fair value recognition of noncurrent assets under asset revaluation improves the capability of debt investors to accurately assess the debt capacity of firms, the effect of asset revaluation on debt financing is likely to be stronger for financially constrained firms than for financially healthy firms. Based on this argument, we propose the following hypothesis:

Hypothesis 3

The increase in debt financing after asset revaluation is more pronounced in financially constrained firms than in financially healthy firms.

III. Research Design

3.1 Empirical models

To examine the effect of asset revaluation on a firm's reliance on external financing, we use the pecking order regression model (Bharath et al. 2009; Shyam-Sunder and Myers 1999), which tests how firms issue debt or equity to cover financing deficits. The model focuses on financing activities related to investment activities because investments are the main driver of external financing (Myers and Majluf 1984).

$$External\_Financing_{i,t} = \alpha + \beta_1 Def_{i,t} + \beta_2 z_{i,t} + Industry,\ year\ dummy + \varepsilon_{i,t,} \qquad (1)$$

where $External\_Financing_{i,t}$ is the measure of external financing (i.e., net short-term debt issue, net long-term debt issue, net short/long-term private debt issue, net short/long-term public debt issue, and net equity issue). *Def* refers to the financing deficits, which are calculated as the sum of the dividend payments, capital expenditures, and changes in working capital minus the operating cash flows and the sale of property, scaled by the total assets of the previous year. *z* is the set of other determinants of external financing.

To estimate the effect of asset revaluation on the external financing choices, we introduce a dummy variable, *Revalfirm*, which takes the value of 1 if the firm revalued its asset from 2008 to 2009; 0, otherwise. We include the indicator variable *Revalfirm* and its interaction term with the changes in financing deficit. We employ the change form of (1), a difference-in-difference model, to capture the change in external financing before and after asset revaluation for revaluating firms and with non-revaluating firms. The change specification eliminates the uncontrolled firm-specific factors that can simultaneously influence the decision to revalue fixed assets and external financing choices.

$$\Delta External\_Financing_{i,t} = \alpha + \beta_1 \Delta Def_{i,t} + \beta_2 Revalfirm_{i,t-1} + \beta_3 Revalfirm_{i,t-1} * \Delta Def_{i,t} + \beta_4 \Delta x_{i,t} + Industry,\ year\ dummy + \varepsilon_{i,t} \quad , \qquad (2)$$

where $\Delta External\_Financing$ and ΔDef represent the changes in external financing and financing deficit before and after the asset revaluation, respectively. *Revalfirm* is a dummy variable, which takes the value of1 if the firm revalued its asset from 2008 to 2009; 0, otherwise. $\Delta x_{i,t}$ is the changes in the control variables. We predict that the coefficient (β_3) on the interaction between the revaluation dummy and financing deficits (*Revalfirm*ΔDef) will be positive when the dependent variable is the amount of long-term debt financing (H1). We set the dependent variable in Equation (2) as public and private debt to test our second hypothesis.

We also control for several firm characteristics related to financing choices. Firm size (*Size*) is included because large firms have a larger debt capacity and thus are more likely to use debt rather than equity financing. We control for growth opportunities proxied by the market-to-book ratio (*Mb*) because firms with large growth opportunities frequently obtain external financing to expand their operations. Stock returns volatility (*Returnvolatility*) is included in the set of control variables because higher volatility is associated with a lower level of investments (Minton and Schrand 1999). Moreover, we control for reporting losses in net income (*Loss*) because poor operating performance can reduce the ability of the firm to pay interests and dividends and for tangibility (*Tangibility*) which represents the number of assets that can be offered as collateral. R&D expenses (*Rd*) are included because firms with intangible assets have low earnings quality, restricting their access to external financing (Srivastava 2014). We also control for past stock returns (*Stockreturns*) to address the market timing of financing activities (Baker and Wurgler 2002). Finally, to address the potential effects of IFRS adoption on external financing, we include an indicator variable, which is equal to 1 for firms reporting financial statements under K-IFRS; 0, otherwise. In all the tests, standard errors are clustered at firm level.

IV. Sample

4.1 Sample Selection

We examine asset revaluations from 2008 to 2010. Our sample period starts from 2008 because asset revaluation was only allowed from 2008. The sample period ends in 2010 because most firms finalized asset revaluation in the 2008–2010 period before the mandatory IFRS implementation in 2011.[11] We obtain the list of firms that conduct revaluation from the Korea Investors Network for Disclosure (KIND) system operated by the KRX, which provides the contents of disclosures from firms listed on the KRX.[12] If necessary, we examine the reported asset revaluation surplus on balance sheets and audit reports to confirm the list.

[Insert Table 1 around Here]

Table 1 summarizes the sample selection process. A total of 644 firms conducted asset revaluation during the period of 2008 to 2010. We exclude 46 firms that conducted asset revaluation more than twice because the net effect of asset revaluation for those firms is unclear. Afterward, we identify the control group of non-revaluating firms, which do not actually conduct asset revaluation between 2008 and 2010. We examine the financial information from 2007 to 2011 for the test and control sample firms to compare financing a year before asset revaluation with that of a year after asset revaluation. We also require sample firms to have financial data in the FnData Guide Pro database during the pre- and post-revaluation periods. Therefore, the final sample of firms with all necessary change variables comprises 2,866 firms

[11] The numbers of firms which have revaluation balance without revaluation experience and meet sample selection criteria are only 18, 8, 5, and 9 firms in 2011, 2012, 2013, and 2014, respectively. We extend the sample period to include these samples and test the hypothesis, and the results are qualitatively similar as the main findings in this study.

[12] In April 2009, Korea Stock Exchange revised the Stock Market Disclosure Regulation to mandate all listed firms to disclose asset revaluations when the firm decides to perform asset revaluation and when the revaluation surplus is confirmed to exceed 5% (2.5% for large firms) of total assets. In February 2013, KRX deleted this clause from the regulation and asset revaluation is no longer a mandatory disclosure item.

with 533 revaluating firms and 2,333 non-revaluating firms. To mitigate the effect of outliers, we winsorized continuous variables at the top and bottom 1 percent.

V. Empirical results

Panel A of Table 2 provides the descriptive statistics. The change in net debt issuance (*ΔDebt*) of firms without asset revaluation (*Non-revalfirm*) has a mean value of -0.005 and a median value of 0.000, whereas that of firms with asset revaluation (*Revalfirm*) has a mean value of -0.052 and a median value of -0.007. Similarly, the components of debt financing, such as short-term debt financing (*ΔSd*), long-term debt financing (*ΔLd*), private debt financing (*ΔPrivate*), and public debt financing (*ΔPublic*) have lower mean values for *Revalfirm* compared to *Non-revalfirm*. Despite inconsistencies with our prediction, these results are based on descriptive statistics which does not control for the relation between external financing activities and financing deficit. Also, these statistics does not consider the correlation with other firm characteristics which we use as control variables in the regression analysis. Thus, we do not put much importance on those statistics.

Panel B of Table 2 presents the sample description of *Revalfirm*. Among the 533 revalued samples, 463 firms (87%) only revalued the land, while 61 firms (11%) revalued the land together with a tangible asset. The remaining ten firms (2%) only revalued depreciable asset. Most firms report the revaluation profit, with one exception. On average, revaluation profit is approximately 104 million dollars[13], which is 13.9% of total assets. The debt ratio decreases by 6 percentage points on average (5 percentage points in the median) after asset revaluation, while the debt ratio of firms without revaluation increases by an average of 3 percentage points (3 percentage points in the median) during the same period.

[13] The average revaluation profit is 116,145 million Korean won, and we apply the exchange rate 1,120 as of the end of December 2011.

[Insert Table 2 around Here]

Table 3 shows the correlation matrix of the variables used in our regression analysis. An indicator variable of asset revaluation, *Revalfirm*, is negatively related to debt financing variables, such as *ΔDebt*, *ΔSd*, and *ΔLd*. The interaction between the indicator variable of asset revaluation (*Revalfirm*) and the change in financing deficits (Δ*Def*), *Revalfirm**Δ*Def*, is positively associated with *ΔEquity*, *ΔLd*, *ΔLtprivate,* and *ΔLtpublic* and negatively associated with *ΔSd*, *ΔStprivate,* and *ΔStpublicd*. This indicates that firms with asset revaluation use more equity and long-term debt than short-term debt to fund investments.

[Insert Table 3 around Here]

Table 4 shows the estimation result to test the effect of asset revaluation on external financing. We show the baseline result without the asset revaluation dummy in Columns (1) and (3) to illustrate that our sample follows the pecking order of financing choices documented in the prior studies. The coefficient on *ΔDef* is positive but insignificant when the dependent variable is the change in debt financing (*ΔDebt*), but the coefficient is significantly positive when the dependent variable is the change in equity financing (*ΔEquity*). An insignificant coefficient on the change in financing deficit in Column (1) is mainly attributed to short-term debt financing rather than long-term debt financing because the coefficient on the change in financing deficit in Column (5) is significantly negative. However, that in Column (7) is significantly coefficient at 0.136, suggesting that long-term debt financing in our sample follows the pecking order. This estimated regression coefficients are comparable to the coefficients in the prior studies. For example, the coefficient on the change in financing deficit in the debt financing regression ranges from 0.087 to 0.675 for the sample from 1990 to 1998 in Table 6 of Frank and Goyal (2003). With regard to the Korean study, Kim (2011) documents that the coefficient on the change in financing deficit in the debt financing regression ranges from 0.9 to 0.14 for the Korean firms from 2000 to 2010 (Table 9).

Columns (2) to (4) in Table 4 show the regression results of Equation (1). When the dependent variable is the changes in total debt financing (*ΔDebt*), the coefficient on *Revalfirm* is significantly negative. This can be attributed to the findings of prior studies in which firms with high leverage are more likely to revalue their fixed assets than those with low leverage. More importantly, while the coefficient on *Revalfirm_ΔDef* is insignificantly negative when the dependent variable is the change in net equity financing (column (4)), the coefficient becomes positive and marginally significant when the dependent variable is the change in debt financing (column (2)). This indicates that firms increase their reliance on debt financing to fund financing deficits after asset revaluation.[14] The coefficient on *Revalfirm_ΔDef* is insignificantly negative when the dependent variable is the change in short-term debt financing (column (6)); however, the coefficient is significantly positive when the dependent variable is the change in long-term debt financing (column (8)). This suggests that the increase in debt financing to fund financing deficits after asset revaluation is mainly attributed to the increase in long-term debt financing.[15] The results on control variables show that long-term debt financing is issued more by firms with a larger size, more growth opportunities, higher tangibility, and lower return volatility.

[Insert Table 4 around Here]

We estimate Equation (2) using private and public debt financing as the dependent variable to test the second hypothesis that revaluating firms use private debt more than public debt financing to fund investments in the post-asset revaluation period. In Table 5, the coefficients on *Revalfirms_ΔDef* are significantly positive only when the dependent variable is

[14] When we use the change in cash holdings as the dependent variable, the coefficient on *Revalfirm_ΔDef* is significantly negative (untabulated). The result in Table 4 suggests that after asset revaluations, firms use more debt financing and less cash holdings to fund financing deficit. Thus, an improved access to debt market after asset revaluation enables the firm to substitute debt financing for cash holdings.

[15] To address the potential multicollinearity issue, we check the VIF value for each variable in the regression. All of them show VIF values between 1 and 2. Therefore, we conclude that there is no evidence that multicollinearity issue affects the results of our study.

the change in private long-term debt issuance (*ΔLtprivate*, column (3)), whereas the coefficients are insignificant when the dependent variables are other components of the change in debt financing. This result indicates that revaluating firms use more private long-term debt financing to fund their investments after asset revaluation compared with non-revaluating firms because asset revaluation improves debt capacity and allows the firm to avoid restrictive covenants, which are more frequently used for private debt than public debt financing.[16, 17]

[Insert Table 5 around Here]

In Table 6, we test the third hypothesis that the increase in debt financing after asset revaluation is larger for financially constrained firms than for unconstrained firms. We use book leverage and Altman's Z-Score to gauge financial constraints. In each panel of Table 6, the first four columns show the results of financially constrained firms (i.e., firms with leverage higher than the median, or firms with a Z-Score lower than the median). In panel A, the coefficient on *Revalfirms_ΔDef* is significantly positive only when the dependent variable is the change in private long-term debt issuance (Δ*Ltprivate*) and the sample firms are financially constrained, whereas the interaction term coefficients are statistically insignificant in other regression results. Similarly, when we partition the sample firms based on Z-Score in panel B, the coefficient on *Revalfirms_ΔDef* is significantly positive only in column (2) and is insignificant in other columns. These results indicate that asset revaluation increases the reliance of financially constrained firms on private long-term debt financing and does not have

[16] We test whether the results vary with the revaluation of depreciable assets or land or both. Among 533 *Revalfirm* samples, 10 samples (1.9%) revalue only depreciable asset and 61 (11.4%) revalue both depreciable asset and land, whereas the rest (86.7%) revalue only land. The result indicates that firms that revalue only land shows the significant increase in long term debt, especially long term private debt at 1% level, whereas the firms that revalue including depreciable asset shows increase in long term debt at 10% level but no significant increase in private debt. This result may indicate that the managers decision to revalue only land not to deteriorate future profitability enhance the ability to finance the long term private debt, whereas the decision to revalue together with depreciable asset does not. However the low significance of revaluation including depreciable asset may be due to the small sample size.

[17] We also test whether the result varies by the revaluation size, and untabulated results suggest both revaluation surplus and revalued asset size does not affect the results.

a significant influence on the other components of debt financing, which is consistent with our prediction.

[Insert Table 6 around Here]

Robustness test

One concern in our analysis is that uncontrolled firm characteristics may influence the decision of firms to revalue its noncurrent assets as well as external financing choices. This influence may bias us to find the significant effects of asset revaluation on external financing choices. We use the propensity score method to find matching firms and then replicate the main analysis to further alleviate the concern on the correlated omitted variable problem. Specifically, we run a logistic regression of the asset revaluation dummy (*Revalfirm*) on firm size (the natural log of the total asset), profitability (ROA), liquidity (leverage, cash flow from operation), tangibility (PPE ratio to the total asset), and growth opportunity (*Mb*) within each year. Then, we match each 533 *Revalfirm* sample to a non-*Revalfirm* sample based on the closest propensity score without replacement. The procedure leads to 1,066 samples.

[Insert Table 7 around Here]

Table 7 presents the re-estimated result of Tables 4 and 5 using the sample firms after propensity score matching. The overall results are qualitatively similar to the main results. The coefficients on *Revalfirm_Def* are significantly positive when the dependent variables are long-term debt and long-term private debt financing (columns [4] and [6]). The coefficients are statistically insignificant in other columns. The untabulated result shows that the coefficient on *Revalfirm_Def* is also significantly positive when the leverage is high (coefficient 0.070; t-value 2.13) and when z-score is low (coefficient 0.56; t-value 1.96), which is consistent with Table 6. Thus, the estimation results in Table 7 indicate that our previous findings are robust to the concern on protential endogenous relation between asset revaluation and financing

choices.

We also use the system of equations using debt financing, equity financing, and the change in cash as the dependent variables with a restriction that the source of funds (the sum of debt financing and equity financing) are equal to the use of funds (the sum of the change in cash and financing deficit). Gatchev et al. (2009; 2010) document that financing choices are interrelated, and failure to consider such interdependence can bias the empirical results. Furthermore, pecking order theory suggests that the firms use the internal cash holding before tapping the external capitals to fund investments (e.g., Majulf and Myers 1984; Myers 1984). Thus, the system of equations approach with the restriction on coefficients allows the researcher to examine a broad set of external financing activities with a low probability of the empirical bias due to the omitted variable problem.

Table 8 presents the re-estimated result of Tables 4 and 5 using the sample firms after propensity score matching. Similar to Tables 4 and 5, we find that firms use more debt financing and less equity financing to fund financing deficit after asset revaluation.

[Insert Table 8 around Here]

Information Asymmetry and the Relation between Asset Revaluation and External Financing

Although we find that asset revaluation is followed by more use of long-term debt financing relative to other financing sources, the reason why asset revaluation improves the access of firms to long-term debt financing remains unclear. As explained in Chapter 2, this can be attributed to (1) the provision of the debt capacity of firms through asset revaluation or (2) the ease of debt contracting through low leverage after asset revaluation. If asset revaluation signals the debt capacity of the firm and thus provide new information to debt investors, then such an effect should be larger for firms with higher information asymmetry than firms with

lower information asymmetry. By contrast, if asset revaluation provides access to long-term debt financing through the ease of debt covenants related to leverage, then the relation between asset revaluation and long-term debt financing should hold even in firms with low information asymmetry.

In Table 9, we partition the sample into high and low information asymmetry based on the number of analysts, return volatility, and firm size. Firms with more analyst following, lower return volatility, and larger firm size are assumed to be under low information asymmetry. In each panel, we find that the coefficients on *Revalfirm_*Δ*Def* in debt financing regression and long-term debt financing regression are significantly positive only for firms with higher information asymmetry. For low information asymmetry firms, the relation between asset revaluation and external financing activities are weak in most regressions. This finding provides a supporting evidence that asset revaluation improves the access to long-term debt financing because it provides more information regarding the debt capacity of firms.

[Insert Table 9 around Here]

VI. Conclusion

Accounting deals with the measurement of the financial position and performance of firms. The effect of accounting can extend beyond the firm and affect the entire economy. Thus, accounting treatments can be used as a policy tool to mitigate economic crisis. Our study shows that the firms in need of financing that revalue their fixed assets can use additional debt financing after asset revaluation. This finding indicates that asset revaluation in Korea was an effective policy tool for facilitating external financing, particularly private debt for firms that suffered from the 2008–2010 global financial crisis.

Our findings should be interpreted with caution. The effectiveness of fixed asset

revaluation in Korea is based on the unique economic environments of the country. In using an accounting treatment as a policy tool, policy makers in different countries should consider their own economic situations for the accounting treatment to achieve their policy goals.

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Appendix
Definition of Variables

Dependent Variables

Stprivate	=	Net short-term borrowings calculated by short term borrowings minus previous year's short term borrowings, scaled by lagged total assets
Ltprivate	=	Net long-term borrowings calculated by long term borrowings minus previous year's long term borrowings, scaled by lagged total assets
Stpublic	=	Net short-term bond issuance calculated by short term bond minus previous year's short term bond, scaled by lagged total assets
Ltpublic	=	Net long-term bond issuance calculated by long term bond minus previous year's long term bond, scaled by lagged total assets
Private	=	Net borrowings calculated by borrowings minus previous year's borrowings, scaled by lagged total assets
Public	=	Net bond issuance calculated by bond minus previous year's bond, scaled by lagged total assets
Sd	=	Net short term debt issuance calculated as sum of short-term net borrowings and short-term net bond issuance over lagged total assets
Ld	=	Net short term debt issuance calculated as sum of long-term net borrowings and long-term net bond issuance over lagged total assets
Debt	=	Net debt issuance calculated as sum of net borrowings and net bond issuance over lagged total assets
Equity	=	Net equity issuance calculated by paid-in capital increase minus capital deduction scaled by lagged total assets

Test Variables

Revalfirm	=	An indicator variable that takes the value of one if the firm revalued its asset during 2008 to 2009, and zero otherwise
Def	=	Financing deficit variable calculated by subtracting the operating cash flows and the sale of property from the sum of dividend payments, capital expenditures and changes in working capital, scaled by the previous year's total assets

Control Variables

Size	=	Natural logarithm of total assets
Mb	=	Total market value to book value of equity
Depre	=	Depreciation and amortization cost scaled by total assets
Tangibility	=	Fixed assets to total assets
Rd	=	Research and development expenses scaled by sales
Stockreturns	=	Annual stock returns

Returnvolatility	=	Standard deviation of one year daily stock returns
Loss	=	An indicator variable that takes one if the firm reports net loss

Table 1
Sample Selection Process

A. **Revalfirm**	
Firms revalued their asset during 2008 to 2010	644
(-) Firms which revalued the asset more than twice	(46)
Total *Revalfirm* sample	**598**
B. **Non-Revalfirm**	
*Non-Revalfirm*with no revaluation experience	**2,815**
C. Total Sample Firms (A+B)	**3,413**
Firm-year with 1 year prior to- and 1 year post-asset revaluation (**C** x 2 years)	6,826
(-) Samples without financial data	(553)
(-) Samples if any one of pre- or post data is not available	(541)
D. Final Firm-year	**5,732**
Final Sample Firm (D/2)	**2,866**
- *Revalfirm*	533
- *Non-revalfirm*	2,333

Table 2
Sample Description

Panel A. Descriptive Statistics of Full sample

	Non-revalfirm (n=2,333)			*Revalfirm* (n=533)		
Variable	Mean	Median	std.dev	Mean	Median	std.dev
ΔDebt	-0.005	0.000	0.207	-0.052	-0.007	0.230
ΔEquity	0.003	0.000	0.199	0.006	0.000	0.115
ΔSd	-0.006	0.000	0.157	-0.041	-0.007	0.185
ΔLd	0.004	0.000	0.134	-0.008	0.000	0.141
ΔPrivate	0.000	0.000	0.149	-0.037	-0.009	0.194
ΔPublic	-0.004	0.000	0.143	-0.032	-0.005	0.169
ΔStprivate	-0.001	0.000	0.131	-0.005	0.000	0.093
ΔLtprivate	0.002	0.000	0.069	-0.014	0.000	0.115
ΔStpublic	-0.004	0.000	0.088	-0.009	0.000	0.078
ΔLtpublic	0.001	0.000	0.118	-0.003	0.000	0.094
ΔDef	0.015	0.014	0.365	0.015	0.005	0.277
ΔSize	0.163	0.166	0.360	0.269	0.289	0.339
ΔMB	0.031	0.005	1.443	-0.184	-0.152	1.229
ΔDepre	-0.001	0.000	0.011	-0.001	-0.001	0.006
ΔTangibility	-0.012	-0.008	0.102	0.052	0.049	0.123
Δrd	0.000	0.000	0.001	0.000	0.000	0.001
ΔStockreturns	0.072	0.161	1.084	0.176	0.149	1.178
ΔReturnvolatility	-0.003	-0.003	0.013	-0.002	-0.002	0.013
ΔLoss	-0.024	0.000	0.495	-0.026	0.000	0.565

Panel B. *Revalfirm* description

Revaluation asset

	Land only	Depreciable asset only	Land with depreciable asset	Total
- Number of firms	463	10	61	533
(%)	(86.8%)	(1.8%)	(11.4%)	(100%)

Revaluation profit

	Mean	25%	Median	75%	Std. dev
mn $	103.7	7.0	18.1	50.5	505.2
(% of total asset)	(13.9%)	(6.0%)	(6.0%)	(18.7%)	(0.103)

Debt ratio (total debt /total equity)

	1 year before revaluation		One year after revaluation	
	mean	median	mean	median

Revalfirm	1.37	1.04	1.31	0.99
Non-revalfirm	0.77	0.49	0.81	0.52

Panel A of this table reports descriptive statistics for variables used in estimating the changes in debt and equity issuance after asset revaluation. See Appendix for variable definitions. Panel B reports the *Revalfirm* sample composition. For revaluation profit, exchange rate 1,120 as of end of 2011 is used.

Table 3
Correlation

	ΔDebt	*ΔEquity*	*ΔSd*	*ΔLd*	*ΔPrivate*	*ΔPublic*	*ΔStprivate*	*ΔLtprivate*	*ΔStpublic*	*ΔLtpublic*	*Revalfirm*	*ΔDef*	*ΔSize*	*ΔMb*	*ΔDepre*	*ΔTangibility*	*ΔRd*	*ΔStockreturns*	*ΔReturn volatility*
ΔEquity	-0.036	1.000																	
	0.056																		
ΔSd	0.711	-0.097	1.000																
	<.0001	*<.0001*																	
ΔLd	0.603	0.040	-0.103	1.000															
	<.0001	*0.033*	*<.0001*																
ΔPrivate	0.737	-0.061	0.708	0.287	1.000														
	<.0001	*0.001*	*<.0001*	*<.0001*															
ΔPublic	0.654	-0.008	0.276	0.589	-0.000	1.000													
	<.0001	*0.670*	*<.0001*	*<.0001*	*0.996*														
ΔStprivate	0.631	-0.058	0.818	-0.002	0.858	-0.006	1.000												
	<.0001	*0.002*	*<.0001*	*0.903*	*<.0001*	*0.763*													
ΔLtprivate	0.371	-0.009	0.007	0.575	0.497	0.007	0.008	1.000											
	<.0001	*0.636*	*0.720*	*<.0001*	*<.0001*	*0.717*	*0.685*												
ΔStpublic	0.294	-0.089	0.531	-0.189	-0.011	0.480	-0.021	-0.002	1.000										
	<.0001	*<.0001*	*<.0001*	*<.0001*	*0.573*	*<.0001*	*0.255*	*0.911*											
ΔLltpublic	0.481	0.061	-0.117	0.812	0.014	0.717	0.014	0.016	-0.243	1.000									
	<.0001	*0.001*	*<.0001*	*<.0001*	*0.450*	*<.0001*	*0.456*	*0.384*	*<.0001*										
Revalfirm	-0.087	0.008	-0.085	-0.030	-0.090	-0.027	-0.085	-0.035	-0.024	-0.012	1.000								
	<.0001	*0.658*	*<.0001*	*0.104*	*<.0001*	*0.144*	*<.0001*	*0.061*	*0.193*	*0.508*									
ΔDef	0.032	0.401	-0.261	0.338	-0.012	0.050	-0.133	0.209	-0.263	0.267	0.000	1.000							

	0.088	<.0001	<.0001	<.0001	0.518	0.008	<.0001	<.0001	<.0001	<.0001	0.986								
ΔSize	0.270	0.032	0.229	0.141	0.219	0.171	0.195	0.107	0.118	0.101	0.103	0.028	1.000						
	<.0001	*0.091*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*0.133*							
ΔMb	0.069	0.010	0.063	0.024	0.020	0.086	0.018	0.012	0.090	0.014	-0.053	-0.057	-0.035	1.000					
	0.000	*0.590*	*0.001*	*0.190*	*0.280*	*<.0001*	*0.345*	*0.510*	*<.0001*	*0.451*	*0.005*	*0.002*	*0.064*						
ΔDepre	-0.076	0.025	-0.054	-0.036	-0.044	-0.059	-0.040	-0.007	-0.031	-0.039	0.003	-0.064	-0.145	0.062	1.000				
	<.0001	*0.176*	*0.004*	*0.052*	*0.018*	*0.002*	*0.032*	*0.713*	*0.098*	*0.036*	*0.864*	*0.001*	*<.0001*	*0.001*					
ΔTangibility	0.010	-0.065	0.004	0.033	0.083	-0.068	0.043	0.107	-0.034	-0.036	0.212	-0.066	0.005	0.007	0.066	1.000			
	0.596	*0.001*	*0.817*	*0.080*	*<.0001*	*0.000*	*0.022*	*<.0001*	*0.069*	*0.053*	*<.0001*	*0.000*	*0.793*	*0.710*	*0.000*				
ΔRd	-0.024	0.058	-0.039	0.008	-0.035	0.001	-0.049	0.015	-0.000	0.002	0.002	0.020	-0.004	-0.003	-0.001	-0.001	1.000		
	0.191	*0.002*	*0.038*	*0.666*	*0.063*	*0.974*	*0.009*	*0.436*	*0.997*	*0.921*	*0.904*	*0.276*	*0.828*	*0.870*	*0.969*	*0.952*			
ΔStockreturns	-0.057	0.077	-0.065	-0.017	-0.085	0.004	-0.077	-0.033	-0.003	-0.001	0.040	0.073	0.032	0.315	-0.030	-0.028	0.048	1.000	
	0.002	*<.0001*	*0.001*	*0.375*	*<.0001*	*0.845*	*<.0001*	*0.074*	*0.865*	*0.972*	*0.032*	*<.0001*	*0.087*	*<.0001*	*0.107*	*0.141*	*0.011*		
ΔReturnvolatility	-0.034	0.199	-0.045	-0.004	-0.007	-0.048	0.004	-0.019	-0.091	0.012	0.036	0.120	-0.119	0.037	0.022	-0.035	-0.017	0.180	1.000
	0.071	*<.0001*	*0.016*	*0.841*	*0.702*	*0.010*	*0.849*	*0.300*	*<.0001*	*0.531*	*0.054*	*<.0001*	*<.0001*	*0.050*	*0.237*	*0.057*	*0.354*	*<.0001*	
ΔLoss	0.035	0.055	0.065	-0.030	0.053	-0.006	0.070	-0.030	0.018	-0.018	-0.002	-0.108	-0.132	-0.019	0.074	0.069	0.003	-0.216	0.048
	0.063	*0.003*	*0.001*	*0.110*	*0.004*	*0.751*	*0.000*	*0.104*	*0.327*	*0.326*	*0.926*	*<.0001*	*<.0001*	*0.310*	*<.0001*	*0.000*	*0.878*	*<.0001*	*0.010*

This table presents the Pearson correlation matrix for the variables used in this study. See Appendix for variable definitions. p-values (in italics) are two-tailed.

Table 4
Impact of Asset Revaluation on External Financing

	ΔDebt		ΔEquity		ΔSd		ΔLd	
Constant	-0.075	-0.062	0.009	0.010	-0.005	0.006	-0.064	-0.062
	(-0.69)	(-0.61)	(1.00)	(1.00)	(-0.08)	(0.10)	(-1.16)	(-1.14)
Revalfirm		-0.068***		0.007		-0.047***		-0.023***
		(-6.23)		(1.09)		(-5.49)		(-3.50)
Revalfirm_ΔDef		0.085*		-0.062		-0.011		0.089***
		(1.65)		(-1.38)		(-0.26)		(2.95)
Δ*Def*	0.024	0.015	0.206***	0.213***	-0.118***	-0.116***	0.136***	0.125***
	(1.33)	(0.75)	(10.77)	(10.24)	(-8.75)	(-8.15)	(11.80)	(10.16)
Δ*Size*	0.161***	0.169***	0.037***	0.036***	0.112***	0.117***	0.049***	0.052***
	(11.38)	(11.82)	(2.72)	(2.62)	(10.88)	(11.35)	(5.64)	(5.90)
Δ*Mb*	0.014***	0.012***	0.004	0.005	0.006*	0.005	0.006**	0.005*
	(2.98)	(2.61)	(0.95)	(1.04)	(1.79)	(1.53)	(2.23)	(1.91)
Δ*Depre*	-0.650	-0.660	1.056*	1.079**	-0.515	-0.493	-0.027	-0.056
	(-1.11)	(-1.13)	(1.95)	(2.00)	(-1.20)	(-1.14)	(-0.09)	(-0.18)
Δ*Tangibility*	0.034	0.087*	-0.087***	-0.092***	-0.020	0.018	0.083***	0.100***
	(0.73)	(1.84)	(-2.60)	(-2.60)	(-0.61)	(0.53)	(2.74)	(3.16)
Δ*Rd*	-2.790	-3.619	5.753**	6.108**	-3.554	-3.780	0.648	0.063
	(-0.95)	(-1.20)	(1.99)	(2.08)	(-1.40)	(-1.46)	(0.35)	(0.03)
Δ*Stockreturns*	-0.004	-0.001	-0.006	-0.007	-0.003	-0.002	-0.003	-0.001
	(-0.75)	(-0.25)	(-1.13)	(-1.26)	(-0.70)	(-0.37)	(-0.78)	(-0.39)

Δ*Returnvolatility*	-0.617	-0.546	2.678***	2.665***	0.024	0.065	-0.666***	-0.636***
	(-1.54)	(-1.36)	(6.67)	(6.64)	(0.08)	(0.22)	(-2.86)	(-2.71)
Δ*Loss*	0.030***	0.030***	0.037***	0.037***	0.024***	0.024***	0.004	0.004
	(3.09)	(3.19)	(5.37)	(5.35)	(3.43)	(3.47)	(0.67)	(0.77)
Observations	2,866	2,866	2,866	2,866	2,866	2,866	2,866	2,866
Adjusted R^2	0.102	0.116	0.209	0.210	0.139	0.150	0.141	0.150

This table reports results for estimating changes in debt and equity issuance after asset revaluation.

$\Delta External\_Financing = \alpha + \beta_1 Revalfirm + \beta_2 Revalfirm * \Delta Def + \beta_3 \Delta Def + \beta_4 \Delta Controls + \varepsilon$

T-statistics are presented beneath the coefficient within parenthesis. Standard errors are clustered by firm level. Coefficient and t-statistics colored directly related to our hypothesis. See Appendix for the definition of all variables. *, **, *** indicates the significance at 10, 5 and 1% level, respectively.

Table 5
The Impact of Asset Revaluation on Private Debt versus Public Debt Issuance

	Private Debt			*Public Debt*		
	Δ*Private*	Δ*Stprivate*	Δ*Ltprivate*	Δ*Public*	Δ*Stpublic*	Δ*Ltpublic*
Constant	-0.038	-0.000	-0.038	-0.024	0.004	-0.024
	(-0.55)	(-0.00)	(-1.01)	(-0.73)	(0.23)	(-1.37)
Revalfirm	-0.061***	-0.046***	-0.016***	-0.008	-0.004	-0.004
	(-6.68)	(-5.77)	(-3.75)	(-1.28)	(-1.10)	(-0.81)
Revalfirm_ΔDef	0.058	-0.006	0.061***	0.019	0.001	0.025
	(1.47)	(-0.16)	(2.98)	(0.63)	(0.04)	(1.09)
Δ*Def*	-0.007	-0.051***	0.041***	0.017	-0.065***	0.085***
	(-0.49)	(-4.35)	(6.12)	(1.24)	(-7.41)	(7.35)
Δ*Size*	0.109***	0.087***	0.022***	0.066***	0.029***	0.031***
	(10.80)	(9.92)	(5.00)	(5.92)	(4.84)	(3.62)
Δ*Mb*	0.003	0.002	0.001	0.010***	0.004*	0.004*
	(1.07)	(0.66)	(1.14)	(2.76)	(1.75)	(1.73)
Δ*Depre*	-0.168	-0.187	0.118	-0.488	-0.244	-0.209
	(-0.44)	(-0.56)	(0.96)	(-1.32)	(-1.12)	(-0.70)
Δ*Tangibility*	0.168***	0.072**	0.103***	-0.062**	-0.032*	-0.012
	(4.76)	(2.47)	(5.08)	(-2.00)	(-1.67)	(-0.50)
Δ*Rd*	-4.730**	-5.500***	0.551	1.184	1.354	-0.382
	(-2.14)	(-2.82)	(0.41)	(0.62)	(1.06)	(-0.26)
Δ*Stockreturns*	0.001	-0.001	0.001	-0.003	0.000	-0.004

	(0.22)	(-0.24)	(0.74)	(-0.65)	(0.08)	(-1.07)
Δ*Returnvolatility*	-0.087	0.274	-0.297**	-0.496*	-0.260	-0.237
	(-0.29)	(1.03)	(-2.14)	(-1.78)	(-1.50)	(-1.18)
Δ*Loss*	0.023***	0.021***	-0.001	0.009	0.003	0.005
	(3.17)	(3.37)	(-0.35)	(1.36)	(0.84)	(1.05)
Observations	2,866	2,866	2,866	2,866	2,866	2,866
Adjusted R^2	0.102	0.093	0.091	0.044	0.091	0.081

This table reports results for estimating changes in private debt and public debt issuance after asset revaluation.

$$\Delta Private\ (\Delta Public) = \alpha + \beta_1 Revalfirm + \beta_2 Revalfirm * \Delta Def + \beta_3 \Delta Def + \beta_4 \Delta Controls + \varepsilon$$

T-statistics are presented beneath the coefficient within parenthesis. Standard errors are clustered by firm level. Coefficient and t-statistics colored directly related to our hypothesis. See Appendix for the definition of all variables. *, **, *** indicates the significance at 10, 5 and 1% level, respectively.

Table 6
The impact of asset revaluation on Debt Financing and Financial Constraints

Panel A. Financial constraints measured by book leverage

	High leverage				*Low leverage*			
	ΔStprivate	*ΔLtprivate*	*ΔStpublic*	*ΔLtpublic*	*ΔStprivate*	*ΔLtprivate*	*ΔStpublic*	*ΔLtpublic*
Constant	0.048	-0.042	0.014	-0.049	-0.011**	-0.004	-0.007	-0.010**
	(0.87)	(-0.72)	(0.54)	(-1.62)	(-2.18)	(-1.39)	(-1.52)	(-2.04)
Revalfirm	-0.042***	-0.016***	-0.002	0.011	-0.013	-0.008	0.003	-0.015**
	(-4.00)	(-2.82)	(-0.29)	(1.48)	(-1.46)	(-1.13)	(0.51)	(-2.06)
Revalfirm_ΔDef	0.004	0.061**	0.018	-0.004	-0.054	-0.013	-0.004	0.002
	(0.09)	(2.49)	(0.84)	(-0.13)	(-1.32)	(-0.41)	(-0.18)	(0.05)
ΔDef	-0.049***	0.063***	-0.086***	0.123***	-0.044***	0.018***	-0.041***	0.049***
	(-2.64)	(5.73)	(-6.62)	(6.89)	(-3.63)	(3.21)	(-4.17)	(3.93)
ΔSize	0.111***	0.023***	0.037***	0.034***	0.049***	0.023***	0.014*	0.030***
	(8.07)	(3.29)	(4.55)	(2.69)	(4.90)	(4.49)	(1.78)	(2.94)
ΔMb	-0.001	0.002	0.005*	0.009**	0.005	0.000	-0.001	-0.001
	(-0.20)	(1.20)	(1.84)	(2.57)	(1.47)	(0.34)	(-0.32)	(-0.40)
ΔDepre	-0.455	0.151	-0.517	-0.393	0.003	0.029	0.045	-0.017
	(-0.95)	(0.80)	(-1.46)	(-0.81)	(0.01)	(0.16)	(0.21)	(-0.05)
ΔTangibility	0.049	0.112***	-0.046*	-0.063*	0.074**	0.099***	-0.036	0.048**
	(1.12)	(3.61)	(-1.74)	(-1.70)	(2.27)	(4.34)	(-1.40)	(2.15)
ΔRd	-8.713**	1.144	1.731	-2.235	-2.109	-0.048	0.576	2.286**
	(-2.52)	(0.47)	(1.03)	(-0.93)	(-1.47)	(-0.07)	(0.30)	(2.10)
ΔStockreturns	0.002	0.001	0.002	-0.005	-0.005	0.001	-0.001	-0.002
	(0.39)	(0.45)	(0.59)	(-1.12)	(-1.30)	(0.45)	(-0.52)	(-0.58)
ΔReturnvolatility	0.500	-0.394*	-0.241	-0.135	0.105	-0.118	-0.247	-0.162
	(1.17)	(-1.75)	(-0.89)	(-0.47)	(0.38)	(-0.89)	(-1.21)	(-0.63)
ΔLoss	0.024**	-0.005	0.002	0.007	0.018***	0.003	0.002	0.006
	(2.48)	(-0.99)	(0.38)	(0.97)	(2.83)	(0.97)	(0.38)	(1.20)

Observations	1,433	1,433	1,433	1,433	1,433	1,433	1,433	1,433
Adjusted R^2	0.108	0.117	0.125	0.117	0.058	0.068	0.039	0.047

Panel B. Financial constraints measured by Altman's Z-Score

	Low Z-Score				*High-Z-Score*			
	Δ*Stprivate*	Δ*Ltprivate*	Δ*Stpublic*	Δ*Ltpublic*	Δ*Stprivate*	Δ*Ltprivate*	Δ*Stpublic*	Δ*Ltpublic*
Constant	-0.026	-0.060	0.016	-0.040	-0.027***	0.009*	-0.006	-0.007
	(-0.50)	(-1.22)	(0.73)	(-1.60)	(-3.01)	(1.83)	(-1.11)	(-0.75)
Revalfirm	-0.028***	-0.012**	-0.008*	0.000	-0.069***	-0.020***	-0.001	-0.014
	(-2.84)	(-2.38)	(-1.96)	(0.02)	(-5.14)	(-2.74)	(-0.18)	(-1.53)
Revalfirm_ΔDef	0.051	0.086***	-0.006	0.012	-0.074	0.026	-0.002	0.052
	(0.96)	(3.29)	(-0.31)	(0.40)	(-1.37)	(0.89)	(-0.08)	(1.61)
Δ*Def*	-0.024	0.060***	-0.046***	0.061***	-0.062***	0.033***	-0.074***	0.093***
	(-1.01)	(5.77)	(-3.12)	(3.51)	(-4.72)	(4.11)	(-6.92)	(6.49)
Δ*Size*	0.092***	0.016**	0.019**	0.036***	0.079***	0.024***	0.033***	0.025**
	(5.95)	(2.37)	(2.12)	(3.37)	(7.44)	(4.10)	(4.01)	(2.03)
Δ*Mb*	0.002	0.001	0.006*	0.006*	0.002	0.001	0.003	0.002
	(0.40)	(0.70)	(1.66)	(1.65)	(0.53)	(1.02)	(1.03)	(0.68)
Δ*Depre*	-0.216	0.066	-0.049	-0.930*	-0.115	0.147	-0.343	0.280
	(-0.46)	(0.34)	(-0.21)	(-1.70)	(-0.28)	(1.06)	(-1.05)	(0.75)
Δ*Tangibility*	0.005	0.061**	0.023	-0.018	0.112***	0.129***	-0.067**	0.010
	(0.12)	(2.58)	(0.99)	(-0.61)	(2.86)	(4.52)	(-2.44)	(0.28)
Δ*Rd*	-8.224***	1.083	0.087	-1.454	-3.220	0.673	2.048	0.236
	(-3.33)	(0.36)	(0.10)	(-1.09)	(-1.12)	(0.69)	(0.95)	(0.10)
Δ*Stockreturns*	0.003	0.001	-0.000	-0.005	-0.003	0.001	0.000	-0.001
	(0.50)	(0.53)	(-0.13)	(-1.55)	(-0.59)	(0.40)	(0.00)	(-0.15)
Δ*Returnvolatility*	-0.221	-0.293*	-0.102	-0.320	0.605	-0.315	-0.407	-0.160
	(-0.61)	(-1.67)	(-0.56)	(-1.15)	(1.61)	(-1.51)	(-1.47)	(-0.54)
Δ*Loss*	0.014	0.002	-0.001	0.007	0.026***	-0.004	0.004	0.004
	(1.52)	(0.49)	(-0.16)	(1.18)	(3.15)	(-0.96)	(0.71)	(0.47)
Observations	1,433	1,433	1,433	1,433	1,433	1,433	1,433	1,433

Adjusted R^2	0.077	0.126	0.045	0.076	0.123	0.077	0.114	0.088

First four columns and the next four columns in each panel of this table report the test results of the changes in private debt and public debt issuance after asset revaluation for financially constrained firms and unconstrained firms, respectively.

$$\Delta Private\ (\Delta Stprivate\ , \Delta Ltprivate, \Delta Public, \Delta Stpublic, \Delta ltpublic) = \alpha + \beta_1 Revalfirm + \beta_2\ Revalfirm * \Delta Def + \beta_3\ \Delta Def + \beta_4 \Delta Controls + \varepsilon$$

t-statistics are presented beneath the coefficient within parenthesis. Standard errors are clustered by firm level. Coefficient and t-statistics colored directly related to our hypothesis. See Appendix for the definition of all variables. *, **, *** indicates the significance at 10, 5 and 1% level, respectively.

Table 7
Propensity Score Matching and Re-estimation of Table 4 and 5.

	Re-estimate of Table 4				*Re-estimate of Table 5*			
	Δ*Debt*	Δ*Equity*	Δ*Sd*	Δ*Ld*	Δ*Stprivate*	Δ*Ltprivate*	Δ*Stpublic*	Δ*Ltpublic*
Constant	-0.189	0.016	-0.057	-0.123	-0.071	-0.083	0.015	-0.045
	(-1.08)	(1.54)	(-0.74)	(-1.20)	(-1.62)	(-1.22)	(0.40)	(-1.22)
Revalfirm	-0.031**	-0.007	-0.023**	-0.014	-0.027**	-0.011*	0.000	0.001
	(-2.12)	(-0.98)	(-2.02)	(-1.55)	(-2.53)	(-1.93)	(0.01)	(0.16)
Revalfirm_ΔDef	0.036	-0.021	-0.030	0.076**	-0.011	0.043*	0.005	0.034
	(0.51)	(-0.58)	(-0.54)	(1.99)	(-0.24)	(1.74)	(0.23)	(1.14)
Δ*Def*	0.049	0.123***	-0.113***	0.147***	-0.050*	0.060***	-0.073***	0.076***
	(1.11)	(4.95)	(-3.61)	(6.30)	(-1.75)	(3.93)	(-4.13)	(3.45)
Δ*Size*	0.172***	0.017	0.127***	0.044***	0.084***	0.029***	0.040***	0.020
	(7.06)	(1.03)	(6.87)	(2.87)	(5.12)	(3.21)	(4.28)	(1.60)
Δ*Mb*	0.006	0.004	-0.003	0.006	-0.005	0.003	0.003	0.004
	(0.74)	(0.72)	(-0.48)	(1.27)	(-0.96)	(1.17)	(0.91)	(0.86)
Δ*Depre*	-1.865	-0.642	-1.792*	-0.012	-2.125***	0.175	0.472	-0.826
	(-1.33)	(-0.71)	(-1.82)	(-0.01)	(-2.80)	(0.41)	(0.77)	(-0.97)
Δ*Tangibility*	0.018	-0.064	-0.031	0.086*	0.025	0.095***	-0.019	-0.025
	(0.25)	(-1.58)	(-0.62)	(1.83)	(0.55)	(2.98)	(-0.74)	(-0.70)
Δ*Rd*	-11.317***	5.033	-9.054***	-2.981	-10.046***	-0.719	0.036	-2.386
	(-2.94)	(1.42)	(-2.69)	(-1.29)	(-3.25)	(-0.44)	(0.03)	(-1.17)
Δ*Stockreturns*	0.003	-0.017***	0.002	0.000	0.004	0.005	-0.000	-0.005
	(0.39)	(-3.37)	(0.33)	(0.02)	(0.55)	(1.58)	(-0.01)	(-1.14)
Δ*Returnvolatility*	-0.210	1.992***	0.481	-0.828**	0.842*	-0.635**	-0.509**	-0.162
	(-0.30)	(4.91)	(0.92)	(-2.05)	(1.77)	(-2.50)	(-2.07)	(-0.49)
Δ*Loss*	0.027*	0.014*	0.017	0.005	0.020*	-0.003	-0.002	0.008
	(1.88)	(1.91)	(1.48)	(0.56)	(1.86)	(-0.55)	(-0.41)	(1.16)
Observations	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066

Adjusted R^2	0.142	0.162	0.154	0.177	0.100	0.113	0.111	0.065

This table reports the replication results of Table 4 and 5 after matching non-revaluation firms with revaluation firms using the propensity score matching method. T-statistics are presented beneath the coefficient within parenthesis. Standard errors are clustered by firm level. Coefficient and t-statistics colored directly related to our hypothesis. See Appendix for the definition of all variables. *, **, *** indicates the significance at 10, 5 and 1% level, respectively.

Table 8
The System of Equations and Re-estimation of Table 4 and 5.

	Re-estimate of Table 4				*Re-estimate of Table 5*					
	Δ*Cash*	Δ*Sd*	Δ*Ld*	Δ*Equity*	Δ*Cash*	Δ*Stpublic*	Δ*Ltpublic*	Δ*Stprivate*	Δ*Ltprivate*	Δ*Equity*
Constant	-0.040	0.008	-0.060	0.012	-0.040	0.006	-0.023	0.001	-0.036	0.012
	(-0.68)	(0.15)	(-1.43)	(0.23)	(-0.66)	(0.18)	(-0.60)	(0.03)	(-1.40)	(0.23)
Revalfirm	-0.022***	-0.034***	-0.010*	0.022***	-0.019**	0.003	0.004	-0.037***	-0.008**	0.019***
	(-2.60)	(-4.69)	(-1.72)	(3.09)	(-2.19)	(0.62)	(0.74)	(-5.71)	(-2.24)	(2.61)
Revalfirm_*Δ*Def	**-0.029**	**-0.025**	**0.076*** **	**-0.079*** **	**-0.032**	**-0.008**	**0.017**	**-0.016**	**0.052*** **	**-0.076*** **
	(-1.02)	**(-1.04)**	**(3.83)**	**(-3.33)**	**(-1.10)**	**(-0.52)**	**(0.95)**	**(-0.77)**	**(4.22)**	**(-3.14)**
Δ*Def*	0.037***	0.140***	0.379***	0.518***	0.103***	0.076***	0.253***	0.130***	0.193***	0.452***
	(3.78)	(16.81)	(55.42)	(62.76)	(10.29)	(14.81)	(41.17)	(17.67)	(45.43)	(53.59)
Δ*Size*	0.169***	0.106***	0.040***	0.023***	0.166***	0.023***	0.023***	0.079***	0.015***	0.025***
	(18.37)	(13.49)	(6.30)	(2.92)	(17.66)	(4.75)	(3.99)	(11.50)	(3.87)	(3.21)
Δ*Mb*	0.009***	0.003	0.003*	0.002	0.009***	0.003**	0.003*	0.000	0.000	0.003
	(3.56)	(1.52)	(1.88)	(1.13)	(3.37)	(1.99)	(1.87)	(0.18)	(0.05)	(1.25)
Δ*Depre*	-0.400	-0.786***	-0.344	0.730***	-0.469	-0.408***	-0.401**	-0.397*	-0.061	0.800***
	(-1.31)	(-3.03)	(-1.62)	(2.85)	(-1.51)	(-2.58)	(-2.10)	(-1.74)	(-0.46)	(3.05)
Δ*Tangibility*	-0.242***	-0.066***	0.017	-0.193***	-0.261***	-0.080***	-0.068***	0.011	0.050***	-0.174***
	(-8.04)	(-2.58)	(0.81)	(-7.59)	(-8.46)	(-5.10)	(-3.58)	(0.47)	(3.85)	(-6.70)
Δ*Rd*	1.616	-4.019*	-0.111	5.746**	1.519	1.245	-0.308	-5.621***	0.363	5.840**
	(0.57)	(-1.65)	(-0.06)	(2.38)	(0.52)	(0.84)	(-0.17)	(-2.62)	(0.29)	(2.37)
Δ*Stockreturns*	0.013***	0.006*	0.006**	0.002	0.015***	0.004**	0.001	0.004	0.006***	-0.000
	(3.51)	(1.78)	(2.19)	(0.54)	(3.91)	(2.11)	(0.55)	(1.49)	(3.41)	(-0.04)
Δ*Returnvolatility*	1.210***	-0.214	-0.912***	2.335***	1.149***	-0.419***	-0.428**	0.069	-0.469***	2.396***
	(4.09)	(-0.85)	(-4.42)	(9.37)	(3.80)	(-2.72)	(-2.31)	(0.31)	(-3.65)	(9.41)
Δ*Loss*	-0.004	0.003	-0.017***	0.011*	-0.010	-0.009***	-0.009**	0.006	-0.014***	0.016***
	(-0.58)	(0.48)	(-3.78)	(1.96)	(-1.43)	(-2.64)	(-2.20)	(1.23)	(-4.97)	(2.93)
Observations	2,866	2,866	2,866	2,866	2,866	2,866	2,866	2,866	2,866	2,866

This table reports results for estimating the system of equations. Panels A and B examines the result in Table 4 and Table 5, respectively. In Panel A, we use the annual change of following variables as the dependent variables in the syetem of equations: the change in cash (Δ*Cash*), net short-term debt financing (Δ*Sd*), net long-term debt financing (Δ*Ld*), and net equity financing (Δ*Equity*).

$$\begin{bmatrix} \Delta Cash \\ \Delta Sd \\ \Delta Ld \\ \Delta Equity \end{bmatrix} = A + B_1 Revalfirm + B_2 Revalfirm * \Delta Def + B_3 \Delta Def + B_4 \Delta Controls + E$$

A is the 4x1 matrix of intercept. $B_{1\sim3}$ are the 4x1 matrix of coefficients. B_4 is the 4x8 matrix of coefficients. We impose the restrictions as following: $i'A = 0_{1x1}$, $i'B_1 = 0_{1x1}$, $i'B_2 = 0_{1x1}$, $i'B_3 = 1_{1x1}$, and $i'B_4 = 0_{1x8}$, where $i = (-1, 1, 1, 1)$.
In Panel B, we use the annual change of following variables as the dependent variables of the system of equations: the change in cash (Δ*Cash*), net short-term public debt financing (Δ*Stpublic*), net long-term public debt financing (Δ*Ltpublic*), net short-term private debt financing (Δ*Stprivate*), net long-term private debt financing (Δ*Ltprivate*), and net equity financing (Δ*Equity*).

$$\begin{bmatrix} \Delta Cash \\ \Delta Stpublic \\ \Delta Ltpublic \\ \Delta Stprivate \\ \Delta Ltprivate \\ \Delta Equity \end{bmatrix} = A + B_1 Revalfirm + B_2 Revalfirm * \Delta Def + B_3 \Delta Def + B_4 \Delta Controls + E$$

A is the 6x1 matrix of intercept. B1~3 are the 6x1 matrix of coefficients. B4 is the 6x8 matrix of coefficients. We impose the restrictions as following: i'A = 01x1, i'B1 = 01x1, i'B2 = 01x1, i'B3 = 11x1, and i'B4 = 01x8, where i = (-1, 1, 1, 1, 1, 1). Z-statistics are presented beneath the coefficient within parenthesis. Coefficient and t-statistics colored directly related to our hypothesis. *, **, *** indicates the significance at 10, 5 and 1% level, respectively.

Table 9
Information Asymmetry and the Relation between Asset Revaluation and External Financing

Panel A. Partition by the Number of Analysts

	High IA (Number of analysts < Median)				*Low IA (Number of analysts < Median)*			
	Δ*Debt*	Δ*Equity*	Δ*Sd*	Δ*Ld*	Δ*Debt*	Δ*Equity*	Δ*Sd*	Δ*Ld*
Constant	-0.406*	0.027	-0.166***	-0.227	-0.199	-0.004	-0.090**	-0.098
	(-1.87)	(1.34)	(-2.77)	(-1.41)	(-1.31)	(-0.23)	(-2.03)	(-0.93)
Revalfirm	-0.060***	-0.001	-0.034**	-0.021*	-0.059***	0.019**	-0.037**	-0.018
	(-3.14)	(-0.08)	(-2.11)	(-1.83)	(-3.08)	(2.20)	(-2.52)	(-1.59)
Revalfirm_*Δ*Def	0.194**	0.041	-0.020	0.156***	0.037	-0.147**	-0.053	0.075
	(2.23)	(0.44)	(-0.31)	(2.71)	(0.30)	(-2.43)	(-0.56)	(1.02)
Δ*Def*	-0.025	0.170***	-0.150***	0.129***	0.029	0.166***	-0.092***	0.132***
	(-0.60)	(4.78)	(-5.64)	(4.93)	(0.57)	(3.69)	(-2.95)	(5.08)
Controls	Yes	yes	Yes	yes	yes	yes	yes	yes
Observations	849	849	849	849	718	718	718	718
Adjusted R2	0.128	0.180	0.164	0.189	0.090	0.209	0.087	0.143

Panel B. Partition by the Return Volatility

	High IA (Returnvolatility > Median)				*Low IA (Returnvolatility < Median)*			
	Δ*Debt*	Δ*Equity*	Δ*Sd*	Δ*Ld*	Δ*Debt*	Δ*Equity*	Δ*Sd*	Δ*Ld*
Constant	-0.116	0.030**	0.011	-0.120	-0.016	0.007	-0.012	-0.001
	(-0.62)	(1.96)	(0.12)	(-1.25)	(-0.50)	(0.52)	(-0.42)	(-0.10)
Revalfirm	-0.091***	0.019	-0.064***	-0.030***	-0.045***	-0.006	-0.032***	-0.015*
	(-4.99)	(1.54)	(-4.71)	(-2.84)	(-3.67)	(-1.04)	(-2.99)	(-1.86)
Revalfirm_*Δ*Def	0.056	-0.038	-0.048	0.100***	0.116	-0.076*	0.053	0.053
	(0.91)	(-0.63)	(-1.08)	(2.66)	(1.31)	(-1.76)	(0.66)	(1.03)
Δ*Def*	0.005	0.236***	-0.124***	0.120***	0.056	0.136***	-0.085***	0.144***
	(0.20)	(9.46)	(-7.06)	(8.38)	(1.59)	(4.95)	(-3.74)	(6.44)
Controls	yes	yes	yes	yes	yes	yes	yes	yes
Observations	1,434	1,434	1,434	1,434	1,432	1,432	1,432	1,432
Adjusted R2	0.108	0.224	0.173	0.141	0.148	0.227	0.117	0.162

Panel C. Partition by Size

	High IA (Size < Median)				*Low IA (Size < Median)*			
	Δ*Debt*	Δ*Equity*	Δ*Sd*	Δ*Ld*	Δ*Debt*	Δ*Equity*	Δ*Sd*	Δ*Ld*
Constant	-0.183	0.001	-0.085**	-0.098	0.116***	0.013	0.139***	-0.008
	(-1.40)	(0.13)	(-1.97)	(-1.09)	(7.81)	(0.93)	(14.13)	(-0.85)
Revalfirm	-0.048***	0.010	-0.037***	-0.011	-0.094***	0.007	-0.053***	-0.043***
	(-3.98)	(1.58)	(-3.64)	(-1.45)	(-4.66)	(0.46)	(-3.60)	(-3.95)
Revalfirm_*Δ*Def	0.147**	-0.040	0.050	0.097**	0.015	-0.049	-0.084*	0.081*
	(2.06)	(-0.70)	(0.84)	(2.11)	(0.19)	(-0.75)	(-1.71)	(1.93)
Δ*Def*	0.055*	0.147***	-0.092***	0.141***	-0.002	0.236***	-0.128***	0.120***
	(1.76)	(4.65)	(-4.05)	(6.58)	(-0.08)	(8.98)	(-7.45)	(7.91)
Controls	Yes	yes	Yes	yes	yes	yes	yes	yes
Observations	1,433	1,433	1,433	1,433	1,433	1,433	1,433	1,433
Adjusted R2	0.181	0.168	0.182	0.157	0.099	0.235	0.160	0.155

This table reports the estimation results of the relation between external financing and asset revaluation after partitioning the sample into groups of firms with high and low information asymmetry. Panel A, B, and C use the number of analysts, return volatility, and size (natural logarithm of total asset) to gauge information asymmetry, respectively. The coefficients on control variables are omitted for the brevity. T-statistics are presented beneath the coefficient within parenthesis. Standard errors are clustered by firm level. See Appendix for the definition of all variables. *, **, *** indicates the significance at 10, 5 and 1% level, respectively.