

INSIDERS' RESPONSE TO MARKET VALUATION, AND THE TIMING OF EQUITY-DEBT DUAL ISSUES BY JAPANESE FIRMS

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Abstract

This paper examines the mutual effects of market valuation and firm's internal performance on insiders' response to stock valuation, and on their financing decision. Estimates of logit equations explaining the financing decisions of JASDAQ firms 1999-2010 reveal some interesting patterns. Consistent with the pecking-order theory, when insiders perceive the stock is overvalued, they are more likely to issue dual or debt only, after fully utilize internal funds. Further, when insiders think that the stock is correctly valued concomitantly with outstanding internal performance, they are more likely to issue debt or dual rather than equity only. Conversely, consistent with the market-timing theory, insiders focus mainly on equity issues when they believe the stock is correctly valued but firm performance is relatively low. Moreover, firm size and tangibility of assets are decisive characteristics for dual issuers.

Keywords: Capital structure, Market Valuation, Dual Issue, Insiders' Judgment, Corporate Performance

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1. Introduction

Corporate financing decisions are the exclusive provenance of inside stakeholders. One of the most important roles of financial executives is to balance the benefits and costs of issuing securities (external financing) and using the internal resources (internal financing). External financing process need not be a simple choice between equity and debt; rather the proportional combination of debt and equity are also feasible. Hovakimian, Hovakimian and Tehranian (2004) are the first authors to study the empirical determinants of synchronized issuing of both equity and debt. Connecting with that, market valuation is considered amongst the key determinants of firm's capital structure, which impliedly means insiders' judgment of market valuations together with other factors becomes a trigger for their financing decisions. However, measuring such judgment empirically is not accessible easily, as it requires controlling for the effects of some related factors, such as informational asymmetry, corporate governance, firm size, and other market-related factors.

I examine the effect on financing decisions of insiders' response that their corporation's stock is either correctly valued or misvalued. This effect becomes more noticeable through non-target capital structure theories than in trade-off theories that rely on balancing marginal benefits and marginal costs of leverage. For instance, Baker and Wurgler (2002) highlight the role of insiders in determining precisely the time of issuing securities by stating "*managers admit to market timing in anonymous surveys*". The "market timing" of equity issues seems entailing somehow the effect of some market factors and firm-specific factors, which at the end generate managers' judgments of market valuation as company insiders. Managers definitely would consider at market level some factors such as previous stock pricing, benchmarking with rivals and other industry-related factors, whilst at corporate level they would focus on firm characteristics. The mutual effects of such factors could eventually affect the managers' financing decision.

Contemplating this issue necessitates summarizing some empirical evidence on the determinants of capital structure in Japanese firms.

Prowse (1990) finds a weaker relationship between financial leverage and proxies for agency costs in Japan than in the United States, and argues that Japanese banks' holding of stock in clients attenuates the agency costs of debt. Furthermore, Hirota (1999) finds an effect on leverage of no-debt tax shields, profitability, asset tangibility, and some Japanese regulatory features, but finds no effect of stock price (or any market valuation measures). Rajan and Zingales (1995) argued that financial leverage differs little across G-7 countries and suggest that the effect of institutional differences among them, previously thought important, may actually not be, which emphasizing the prominence of firm characteristics as main capital determinants, and therefore become a source of leverage divergences, if any.

Nonetheless, stock price remains an important trigger of financing decisions. Graham and Harvey 2001, find two-thirds of CFOs agree that "*the amount by which our stock is undervalued or overvalued was a very important consideration*" in issuing equity. Moreover, they find share prices are regarded as more important than other factors considered in the decision to issue common stock or convertible debt. Hovakimian et al., (2004) examine whether market and operating performance affecting corporate financing behavior. They find market performance together with profitability and firm size as common characteristics between equity issuers and dual issuers, while pre-issue and post-issue financial leverage, tangible assets and industry leverage seem to be similar between debt and dual issuers. These factors are less similar when comparing equity issuers and debt issuers directly.

Some commentators argue that the rationality of investors and managers is unguaranteed. For instance, Baker and Wurgler (2002) explore market timing under two separate scenarios based on stakeholders' rationality. In the first one rational managers and investors confront adverse selection costs as in (Myers and Majluf, 1984) that vary across firms or across time. In the second scenario, irrational investors and managers exhibit time-varying misperceptions. The latter embodies an effect of insiders' understanding of market valuation on firm's financing behavior. In the issuing process, real factors and institutional characteristics are dormant factors waiting for insiders' role, especially when relaxing some theoretical assumptions, like those of trade-off theory. In other words, the company insiders are influenced concurrently by external factors at the market level and by internal factors at the firm level, which lead to their perceiving that the stock is either correctly valued or misvalued, and in that way affecting the financing decision. To explore these arguments, I estimate regressions that explain post-issue financial leverage, of equity issuers, debt issuers and dual issuers, in relation to the insiders' judgment of market valuation.

I find the common characteristics between "debt issuers and dual issuers" are pre-issue and post-issue financial leverage and tangibility of assets with some exception, it is crucial for debt issuers under "non-trade-off" hypotheses; non-target debt ratio. On the other side, market-to-book ratio, profitability, investment, selling expenses as well as tangibility of assets when assuming targeted capital structure, are the common characteristics between "equity issuers and dual issuers". Furthermore, firm size and tangibility of assets are found apparently to be the most important characteristics for a firm to issue equity and debt simultaneously.

2. Insiders' response and hypotheses development

2.1. Why addressing the insiders' judgments towards market valuation is important?

Most literature on capital structure polarizes around whether there is target leverage. Those who claim that there is such a target, focus on the private benefits and costs of substituting equity for debt. For example increased reliance of managers on debt can shield earnings from corporate taxes, but raises the costs of financial distress (Modigliani and Miller, 1963), or contributes to agency costs (Jensen and Meckling, 1976; Myers, 1977; Stulz, 1990). Those who deny the existence of capital structure targeting have argued that insiders consider other factors when issuing securities, as in the pecking order theory of Myers and Majluf (1984), the free cash flow theory of (Jensen and Meckling, 1976) and the market timing model of (Baker and Wurgler 2002). Factors such as the accumulation of earnings, the severity of asymmetric information and the volatility of market valuation all contribute to explaining corporate leverage with no particular optimal ratio.

Previous studies have relied on models that ignore the effects of insiders' judgments of market valuation because of the difficulty in measuring them. "Non-trade-off" theories concentrate on under-control factors such as accumulated earnings and cash surplus as main variables in firm's financing equation. But using such factors in financial decisions is subject to degree of informational asymmetric between shareholders and insiders, which mutes the effect of internal factors on financing decisions. For instance, the market-timing theory focuses on stock price level as driving the response of current and potential investors, which leaves almost no role for insiders' judgment to influence the timing of an IPO, SEO or bond issue. And yet, evidence does exist that insiders' judgments matter. Graham and Harvey (2001) find that most of financial executives in the United States believe that stock pricing amongst the most important factors to be considered when issuing common stock. So, considering insiders' responses to market

valuation, ipso facto, is important for illuminating the effect of market valuation on financing decisions.

Hence, the novelty in this paper is: *Firstly*, it explains the impact of insiders' pre-issue judgments of market valuation on capital structure. *Secondly*, it focuses on separable and coincidental market valuation and firm internal performance (profitability, managerial and operational efficiency), whilst controlling for other firm's traits. These factors together will extrude the insiders' judgment that affects issuing the securities; specifically prioritizing equity issue over debt issue and vice versa. *Thirdly*, it measures and contrasts all possible external financing alternatives simultaneously prior and after considering the insiders' role. *Fourthly*, in addition to the conventional market overvaluation and undervaluation, it proposes two more states of insiders' judgment towards market fair valuation, which are fair-high and fair-low, each has different consequences.

2.2. Hypotheses:

I advance several hypotheses, as follows:

H1: When insiders judge that the market valuation of the firm is correct, that is it matches their own assessment of the firm's internal performance, then the higher the market valuation is, the more likely they are to choose i) debt over dual, and ii) dual over equity.

There are two possible situations of insiders' judgment that the market valuation is correct: "fair-high" where high market valuation coincides with outstanding internal performance and "fair-low" where low market valuation concurs with relatively poor internal performance.

H2: When insiders think that their company's stock is overvalued, they are more likely to choose dual issue of equity and debt. Conversely, they are more likely to fully utilize internal funds, if any, over issuing securities.

The two possible states of market misvaluation in hypothesis 2 are overvaluation where high market valuation coincides with relatively poor corporate performance, and the opposite for undervaluation.

Table 1. The impact of insiders' judgment of market valuation on the corporate external financing

| Model | Performance Indicator | Fair valuation | | Misvaluation | | | |
|-----------------|-----------------------|----------------|----------|----------------|-----------------|--------|---------------|
| | | Fair-high | Fair-low | Over-valuation | Under-valuation | | |
| | | Prioritize | | Prioritize | | | |
| Equity vs. Dual | Market valuation | positive | dual | equity | positive | dual | no prediction |
| | Internal performance | positive | | | positive | | |
| Debt vs. Dual | Market valuation | positive | debt | dual | negative | dual | debt |
| | Internal performance | negative | | | negative | | |
| Debt vs. Equity | Market valuation | negative | debt | equity | negative | equity | debt |
| | Internal performance | negative | | | negative | | |

3. Assessing the insiders' judgment of market valuation

Referring to the foregoing anonymous surveys of Baker and Wurgler (2002), the insiders are influenced to some extent by internal performance in forming their judgments of the market valuation. So, the insiders' perception is a conjunction of internal and external factors. But market valuation still remains amid the most decisive factor to raise capital. Graham and Harvey (2001), find approximately 68% of CFOs identify "magnitude of equity undervaluation/overvaluation" and "if recent price increase, selling price "high"" amongst the top three

highest factors affecting the decision to issue common stock. The essence is how market values the firm and how it reflects the response of investors toward stock price volatility. Many researchers grip this issue from an investor's perspective. Hirshleifer and Jiang (2010) suggest the investor misperceptions and market mispricing are correlated across firms; they limit their focus on the commonality in misvaluation. Beside the past stock price volatility, the firm's market valuation could be observed through stock-related measures that contrast the firm's market value with the accounting value of total assets, such as market-to-book ratio, Tobin's Q ...etc. Internally, profitability and managerial efficiency are the closest pillars that

interrelated with external factors to influence both the firm's insiders and outsiders, concurrently. It mirrors how profitable the firm is and how efficiently it uses resources, which could be gauged through some conventional extracts from financial statements, i.e. ROE, ROA and various measures of earnings.

The upshot is that the insiders' judgments could be quantified by merging the effects of these internal and external metrics, which yield, consequently, four possible psychological states of managers' attitude towards market valuation, high or low market valuation with either relatively outstanding or poor corporate performance. Each of them impacts the managers' financing behavior differently.

4. Data and sample

4.1. Data

I use financial data of 871 JASDAQ firms from the Nikkei Economic Electronic Databank System (NEEDS), for the period 1999 to 2010. JASDAQ firms exhibit two features suitable for this study. First, they are free from the practice of interlocking stock ownership (*keiretsu*), as approximately 50% of market transactions are attributed to individuals. So, outsiders and insiders of non-keiretsu firms are presumably more sensitive to market valuation volatility. Second, JASDAQ is the largest stock market for venture businesses and small and medium enterprises (SMEs) in Japan. In their field study, Graham and Harvey (2001) find 55% of the United States' large firms have at least somehow strict target capital ratios compared to 36% of small firms; SMEs are notably less expected to have preset leverage. Non-keiretsu firms like JASDAQ, have comparatively lower financial leverage than keiretsu firms (Hirota 1999). Furthermore, any expected excessive industry effect is alleviated by the vast diversity of industries, with exclusion of the financial firms due to their incomparable financial statements.

4.2. Definition of dual issuer, equity issuer and debt issuer

Following Mackie-Mason (1990) and Hovakimian et al., (2001), dual issuer is defined as a firm that issues annual net equity and debt each equivalent in value to at least 5% of its pre-issue total assets. The issuer of equity or debt is a firm that issues annual net equity or debt equivalent in value to at least 5% of its pre-issue total assets. For the 8,223 fiscal-year sample-firms, 25% (2,030) are dual issues, 28% (2,279) are equity issues and 47% (3,914) are debt issues. The lack of data for a longer period dictates fixing 1999 as the base year; from then on the changes of capital have been decomposed. Further, I exclude the observations where the firm passively kept the preceding mixture of capital or suffered from capital shrinking or asset substitution.

Next, the application of the abovementioned definitions empirically, for equity changes 30% of 8,665 fiscal-year sample-firms are net equity shrinking ($-\Delta e/\text{pre-issue equity}$) against 70% with positive value, accentuating the growing propensity of JASDAQ firms. The latter percentile is the base of equity issuers, with 46% out of which are observations exceeding 5% when scaled by total assets. Similarly for debt changes ($\Delta d/\text{pre-issue debt}$), 79% of 7,192 fiscal-year sample-firms is positive change, from which debt issuers are extracted when Δd by total assets exceeds 5%. Missing observations are excluded. Accordingly, dual issuer is determined by refining a parallel occurrence of Δd and Δe scaled by total assets exceeding 5% each.

4.3. Sample distribution and summary statistics

Tables (2) and (3) present the sample distribution and the summary statistics of the dependent and independent variables used; including those used in robust test. The comparison of the contents of table (2) with securities issues sampling of the United States firms from 1982 to 2000 (A. Hovakimian 2004)¹, reveals that Japanese firms somewhat replicate the securities issuing distribution of the United States. In percentile, it shows that the sub-sample of debt issues is the largest in both countries with 53% in Japan and 73% in the U.S. The second largest is the equity issues sub-sample with 31% in Japan against 15% in the United States, and then dual issues with 16% in Japanese firms comparing to 12%. Further details see the appendix.

¹ Data of the United States firms including the graphical illustration in the appendix are extracted from: Armen Hovakimian, Gayane Hovakimian, Hassan Tehranian. 2004. Determinants of target capital structure: The case of dual debt and equity issues. *Journal of Financial Economics* 71, 517–540

Table 2. The distribution of fiscal-year sample-firms of security issues from 2000 to 2010

It includes the observations of the net issues of equity or debt scaled by total assets equal to at least 5%, and a concurrent net equity issues and net debt issues scaled by total assets at least 5% each. * 1999 is the base year.

| Year * | Dual issues | | | Equity issues | | | Debt issues | | | Total issues |
|----------------------|---------------|---------|--------|---------------|---------|---------|---------------|---------|--------|--------------|
| | No. of issues | % | Δ % | No. of issues | % | Δ % | No. of issues | % | Δ % | |
| 2000 | 84 | 12.69 | - | 283 | 42.75 | - | 295 | 44.56 | - | 662 |
| 2001 | 79 | 11.72 | -0.97 | 250 | 37.09 | -5.66 | 345 | 51.19 | 6.63 | 674 |
| 2002 | 110 | 15.58 | 3.86 | 209 | 29.60 | -7.49 | 387 | 54.82 | 3.63 | 706 |
| 2003 | 113 | 16.01 | 0.42 | 205 | 29.04 | -0.57 | 388 | 54.96 | 0.14 | 706 |
| 2004 | 99 | 13.79 | -2.22 | 247 | 34.40 | 5.36 | 372 | 51.81 | -3.15 | 718 |
| 2005 | 99 | 13.62 | -0.17 | 277 | 38.10 | 3.70 | 351 | 48.28 | -3.53 | 727 |
| 2006 | 94 | 13.17 | -0.45 | 300 | 42.02 | 3.92 | 320 | 44.82 | -3.46 | 714 |
| 2007 | 134 | 19.17 | 6.00 | 196 | 28.04 | -13.98 | 369 | 52.79 | 7.97 | 699 |
| 2008 | 129 | 19.20 | 0.03 | 158 | 23.51 | -4.53 | 385 | 57.29 | 4.50 | 672 |
| 2009 | 132 | 20.63 | 1.43 | 82 | 12.81 | -10.70 | 426 | 66.56 | 9.27 | 640 |
| 2010 | 96 | 21.62 | 1.00 | 72 | 16.22 | 3.40 | 276 | 62.16 | -4.40 | 444 |
| Total (Average %) | 1169 | (15.88) | (0.89) | 2279 | (30.96) | (-2.65) | 3914 | (53.16) | (1.76) | 7362 |

Table 3. Summary statistics of raw and standardized variables

Financing method is a discrete trichotomous variable with values 1: dual issue, 2: equity issue and 3: debt issue. Pre-issue financial leverage is defined as (pre-issue long debt + net debt issued)/ pre-issue asset + net debt + net equity. Market-to-book ratio is as item: STOCK'MCPBR). ROE is defined as (income for the term (items: FC058)) scaled by total shareholders' equity "average of 2 Terms" (item: FB125)). ROA is defined as [(operating profit (item: FC006) + interest revenue (item: FC008) + dividend revenue (item: FC009)/ liabilities and net assets, "average of 2 Terms") (item: FB144). EBIT is defined as recurring profit (FC029) + interest expense and discount charge (FC016) scaled by net sales and operating revenue (FC001). Total asset is defined as (total fixed assets + current assets + deferred assets (item: FB067)). Sales and revenues is defined as sales of products and commodities + operating revenues from services (item: FC001). Tangible asset is defined as (depreciable tangible asset + intangible fixed assets + investment and others (item: FB032)). Investment is calculated as (tangible fixed asset)_t - (tangible fixed asset)_{t-1} + (depreciation & amortization)_t (item: FD002)). Selling expenses is defined as selling, general and administrative expenses (item: FC005) scaled by (net) sales and operating revenue (item: FC001). FrVal_1, FrVal_2, MisVal_1 and MisVal_2 are dichotomous variables measuring insiders' different perceptions of market valuation. I standardize the variables to unify their dissimilar scales. *, ** Sum up of each gives 8,643 and 7,584 observations, respectively.

| Variable | Scale | Obs | Mean | | Standard Dev. | | Minimum | | Maximum | |
|--------------------|-------|------|-------|--------------|---------------|--------------|---------|--------------|---------|--------------|
| | | | Raw | Standardized | Raw | Standardized | Raw | Standardized | Raw | Standardized |
| Financing method | Dum | 8223 | 2.23 | 2.23 | 0.82 | 0.82 | 1 | 1 | 3 | 3 |
| Financial leverage | Time | 7270 | 0.11 | 0 | 1.09 | 1 | -88.71 | -81.39 | 17.19 | 15.66 |
| Market-to-book | Time | 7840 | 1.93 | 0 | 6.32 | 1 | 0.59 | 0.39 | 259.32 | 40.75 |
| Tobin's Q | Time | 9532 | 1.13 | 0 | 1.82 | 1 | 0.01 | 0.620 | 105.12 | 57.158 |
| ROE | % | 8800 | -1.93 | 0 | 269.19 | 1 | -2433 | -90.02 | 760 | 2.83 |
| ROA | % | 9441 | -2.03 | 0 | 27.34 | 1 | -1225 | -78.26 | 410 | 1.98 |
| EBIT | % | 9523 | 2.21 | 0 | 63.55 | 1 | -3080 | -48.50 | 72.5 | 1.11 |
| Total assets | MM¥ | 9528 | 7096 | 0 | 14294 | 1 | -45184 | -3.66 | 389591 | 26.76 |
| Sales & revenues | MM¥ | 9523 | 5019 | 0 | 10268 | 1 | -11238 | -1.58 | 247211 | 23.59 |
| Tangible assets | MM¥ | 9512 | 4877 | 0 | 11897 | 1 | 1 | -0.41 | 383734 | 31.84 |
| Investment | MM¥ | 8733 | 1642 | 0 | 8435 | 1 | -54756 | -6.69 | 342454 | 40.40 |
| Selling expenses | % | 9523 | 28.37 | 0 | 71.36 | 1 | 0 | -0.40 | 3080 | 42.77 |

| | | | | | | | | | | |
|------------|-----|------|------|------|------|------|---|---|---|---|
| FrVal_1* | Dum | 4719 | 1.49 | 1.49 | 0.50 | 0.50 | 1 | 1 | 2 | 2 |
| MisVal_1* | Dum | 3924 | 1.81 | 1.81 | 0.49 | 0.49 | 1 | 1 | 2 | 2 |
| FrVal_2** | Dum | 4873 | 1.62 | 1.62 | 0.49 | 0.49 | 1 | 1 | 2 | 2 |
| MisVal_2** | Dum | 2711 | 1.52 | 1.52 | 0.50 | 0.50 | 1 | 1 | 2 | 2 |

5. The empirical analysis

To explore the questions raised, three regressions are estimated as follows, the first one to examine the determinants of post-issue financial leverage, and the other two estimates to determine the common characteristics between securities issuers prior to and after considering the insiders' judgment of market valuation.

$$(Post - issue Leverage)_t = \beta(X)_{i(t-1)} + \mu_{it} \quad (I)$$

where X denotes for the pre-issue explanatory variables, which are market-to-book ratio (M/B), return on equity (ROE) and EBIT scaled by net sales, and controlling variables are pre-issue book leverage, firm size, tangibility of asset, investment, selling expenses.

To avoid getting biased and misleading estimates, some prerequisite tests are used to detect a possible multicollinearity among independent variables and serial autocorrelation, if any. For multicollinearity, both the variance inflation factor (VIF = 2.1 < 5), with a tolerance (1/VIF > 0.1) for each predictor, and centering all predictors indicate that multicollinearity is not a serious problem, particularly among assets-based variables. Also, such large sample enhances the chance of detecting autocorrelation, but Durbin-Watson test statistic proves the opposite of 1.71 (> 1.3).

The general estimates are consistent with earlier studies, except for the firm size which shows an inverse association with post-issue leverage, contradicting the conventional argument of the larger size allows the firm to raise debt. But using another proxy for size (sales and revenues) proves that this

5.1. Determinants of post-issue financial leverage

To examine the determinants of post-issue financial leverage, I apply the seemingly unrelated regression (SUR) to manipulate the individual effects, as mentioned in table (4). The Hausman test suggests to accept the null hypothesis [$H_0: E(\alpha_i | X_{it}) = 0$], meaning that the estimators of both random and fixed effects specifications are unbiased, with slight power of the first one.

inverse relationship is not a mere spurious estimate (coefficient -0.11 and t-stat -10.71). Rajan and Zingales (1995), find that such inverse relationship is usual in countries with easier liquidation procedures, such as Germany in 1990s. They argue that firm size could be employed as a proxy for default probability; larger size lowers default probability and, therefore, lowers chance of bankruptcy and liquidation. Alternatively, information asymmetry between insiders and the market could hold such an inverse relationship with leverage. Fortunately, the coefficients of tangible assets prove this negativity (-0.019 and -0.022), confirming that the higher tangible assets the less informational asymmetry, which lessens the leverage as managers would optimize the internal funds in a promising projects. Other regressors hold positive association with post-issue financial leverage, more details in subsequent parts.

Table 4. Determinants of post-issue financial leverage

Market valuation measured by market-to-book ratio. Seemingly unrelated regression estimates (SUR) is applied. The standardized variables of total assets and sales & revenues have been used interchangeably for firm size, to validate the negative association with post-issue financial leverage. The definition of other variables (see table (3)). *, **, *** mean significant at 1%, 5% and 10%.

| Independent variables | 1 | | | 2 | | |
|-----------------------|--------|--------------|----------|--------|--------------|---------|
| | Coef. | t-statistics | P-value | Coef. | t-statistics | P-value |
| Pre- leverage | 0.127 | 13.27 | 0.000* | 0.137 | 14.37 | 0.000* |
| Market-to-book | 0.100 | 7.64 | 0.000* | 0.102 | 7.82 | 0.000* |
| ROE | 0.610 | 23.29 | 0.000* | 0.598 | 23 | 0.000* |
| EBIT | 0.099 | 3.05 | 0.002* | 0.167 | 5.07 | 0.000* |
| Total assets | -0.069 | -5.68 | 0.000* | | | |
| Sales & revenues | | | | -0.11 | -10.71 | 0.000* |
| Tangible assets | -0.019 | -1.84 | 0.065*** | -0.022 | -2.42 | 0.015** |

| | | | | | | |
|------------------|------------------------------|-------|--------|-------|-------|--------|
| Investment | 0.347 | 26.82 | 0.000* | 0.374 | 29.83 | 0.000* |
| Selling expenses | 0.041 | 1.28 | 0.200 | 0.115 | 3.54 | 0.000* |
| R ² | 0.33 | | | 0.34 | | |
| Observations | 5181 | | | | | |
| VIF (1/VIF) | 2.1 (>0.1 for all variables) | | | | | |
| Durbin-Watson | 1.71 | | | | | |

5.2. Determinants of financing methods prior to considering insiders’ response to market valuation

Next stage is to examine the external financing methods prior to and after considering the insiders’ judgment of market valuation to end up in identifying the common characteristics between debt issuers and dual issuers, and between equity issuers and dual issuers. I estimate the following two estimates of the

multinomial logistic specification: (i) to identify the divergences in firm characteristics between equity issuers, debt issuers and dual issuers prior considering insiders’ response to market valuation (table 5), and (ii) to determine the impact of insiders’ judgment on the firms’ external financing decision (table 6), as follows:

$$\ln(y_{ij} = \frac{1}{y_{ij}} = (y_{ij} = 1) = \frac{e^{(\alpha_{ij} + \beta X_{ij} + \mu_{ij})t-1}}{\sum_{j=1}^3 e^{(\alpha_{ij} + \beta X_{ij} + \mu_{ij})t-1}} \quad (II)$$

where y is the trichotomous dependent variable describing the external financing method, having the values of the subscript j = 1 dual issuer, j = 2 equity issuer and j = 3 debt issuer.

Knowing the main feature of the regressand in multinomial logistic specification could have more than two discrete and unordered values. Earlier studies use a dichotomous variable to model the choice between equity and debt issues. Hovakimian et al, (2004) as well use a similar method to mine for modeling the securities issues choices. One of the core contributions of this study becomes clear by considering the simultaneous interaction of the three alternative external financing methods from insiders’ prospective. In addition to the main and control variables of equation I, equation (II) adds two extra dichotomous variables to quantify the pre-issue insiders’ judgment of market valuation.

For contrast’s sake with table (6), table (5) reports the determinants of post-issue financing methods and the effects of the market valuation and internal performance prior to contemplating the insiders’ response to that valuation. It is imperative for analysis purpose to retrieve the structure of the regressand. Statistically, the positive coefficient signifies that if a regressor increases by one unit, the multinomial log-odds for the regressand to be in “a category over the base outcome” would be expected to increase by the “coefficient” unit, ceteris paribus. This statement will assist to identify the common firm characteristics between dual issuers and either equity issuers or debt issuers.

Table 5. Determinants of post-issue financing method *prior* to considering insiders’ judgment of market valuation, using multinomial logistic estimates

Market valuation is measured by market-to-book ratio (M/B), whereas corporate internal performance is gauged by ROE and EBIT. The definition of all variables (see table (3)). The reference in equations (1) and (2) is dual issuer, whereas in equation (3) is equity issuer. *, **, *** mean significant at 1%, 5% and 10%, respectively.

| | 1 | | | 2 | | | 3 | | |
|-----------------------|-----------------|-------|---------|---------------|--------|----------|-----------------|--------|---------|
| | Equity vs. Dual | | | Debt vs. Dual | | | Debt vs. Equity | | |
| | coef | z | p.value | coef | z | p.value | coef | z | p.value |
| Leverage | 0.296 | 3.43 | 0.001* | 0.483 | 4.93 | 0.000* | 0.187 | 2.43 | 0.015* |
| M/B | 2.306 | 8.59 | 0.000* | 0.424 | 1.74 | 0.082*** | -1.882 | -10.23 | 0.000* |
| ROE | 23.720 | 15.87 | 0.000* | -1.272 | -2.70 | 0.007* | -24.992 | -17.18 | 0.000* |
| EBIT | 1.259 | 5.86 | 0.000* | 0.557 | 3.35 | 0.001* | -0.701 | -3.93 | 0.000* |
| Firm size | -0.852 | -8.56 | 0.000* | -1.682 | -15.64 | 0.000* | -0.830 | -8.34 | 0.000* |
| Tangible assets | 1.167 | 8.27 | 0.000* | 1.892 | 13.96 | 0.000* | 0.725 | 7.63 | 0.000* |
| Investment | 0.866 | 4.98 | 0.000* | 0.802 | 4.49 | 0.000* | -0.064 | -0.47 | 0.637 |
| Selling expenses | 1.671 | 7.91 | 0.000* | 0.568 | 3.34 | 0.001* | -1.103 | -6.49 | 0.000* |
| Constant | -0.575 | -6.44 | 0.000* | 1.362 | 24.61 | 0.000* | 1.936 | 24.92 | 0.000* |
| Pseudo R ² | 0.21 | | | 0.21 | | | 0.21 | | |
| Observation | 5037 | | | 5037 | | | 5037 | | |

5.2.1. Market valuation

The coefficients of market-to-book ratio in dual-based equations in table (5) propose the log-odds for issuing either equity or debt over dual issues for high market performing firms relative to low performing firms is 2.31 compared to 0.424. As market outperformers always have the flexibility to issue both stock due to the expected high demand, and debt by exploiting their under-leverage situation. However, the reference choice, debt vs. equity, is inversely related with the base outcome. The coefficient -1.882 weighs up equity issues over debt issues, which represents the exact difference of the dual-based coefficients; $(0.424 - 2.306 = -1.882)$. To summarize, market valuation is an important characteristic in issuing equity over issuing debt, and therefore, it could be classified as a common characteristic between equity issuers and dual issuers.

5.2.2. Internal corporate performance

Profitability and efficiency are the pillars that the insiders rely onto judge the market valuation. So, return on equity and EBIT presume to be verified to spot their mutual impact on insiders' external financing decision. Clearly in table (5), ROE and EBIT are quite higher in equity issuers compared to debt issuers. For instance, equation (1) proposes that if the log-odds of ROE increase by one point, the multinomial estimate for issuing equity over dual would be expected to increase by 23.72, while other variables remain unchanged. Similarly, if EBIT increases by one point the ability to issue either equity or debt relative to dual would be expected to increase by 1.259 or 0.557, which seems incoherent. The remedy is given by a reference equation, if the log-odds that a firm is profitable were to increase by one point, then the chance for it to issue debt over equity decrease by -0.701 units. It corresponds partly the intuition of the pecking-order hypothesis of Myers and Majluf (1984). With adverse selection, managers ordinarily favor internal financing, but they opt for debt issues when pursuing the alternative options of external financing. Yet, the result remains incomplete to be matched with the previous informational asymmetry argument. Fortunately, the first two models verify tangible assets as a decisive factor for a firm to issue solely either equity or debt. To summarize, profitability and managerial efficiency are common characteristics between equity issuers and dual issuers.

5.2.3 The impact of pre-issue leverage on financing decision

Principally the observed financial leverage is the most influential factor affecting the firm's financing decision, as always top executives consider it when

altering capital. The dual-based equations predict that when the log-odds for pre-issue leverage increase by one point, the likelihood of a firm issuing equity or debt relative to dual would be expected to increase by 0.296 (0.483) units, denying the firm's decision to issue dual anyway, which disagrees with the preceding analysis. It implies that equity issuers are under-levered and hence they are able to issue both stocks and bonds. Probabilistically, the chance of highly-levered firms to raise either equity or debt over dual is quite higher comparing to low-levered firms, as both dual-based equations propose that pre-issue leverage is more significant in issuing either equity or debt. The previous gap could be bridged through the dynamic trade-off hypothesis of (Fischer et al., 1989), which argues that under-levered firms tend to continually raising debt to adjust the observed debt ratio with the target. Also, Hovakimian et al., (2004) find that firms which passively accumulate earnings over time become under-levered; (observed < target). So, the chance of raising debt over equity becomes higher for adjustment as mentioned earlier. Conversely, firms which passively accumulate losses over time become over-levered, and consequently come to be financially distressed. This would diminish their long term borrowing capacity, and therefore, they tend to issue equity over debt. The reference model distinguishes and affirms debt issue by 0.187 units to have closer link with pre-issue leverage. To summarize, financial leverage seems to impact a firm's financing behavior by promoting debt issue and dual issue over equity issue.

5.2.4. The effect of firm size and tangible assets on dual choice

Briefly, firm size and tangibility of assets are the major features of dual issuers. There is an inverse relation between firm size and a sole financing method. The larger size the more likely the firm to issue stocks alongside bonds. Statistically, when firm size increases by one unit, the chance for issuing only equity (debt) over dual would be expected to decrease by -0.85 (-1.68) units. Intuitively, larger firms usually tend to have high target leverage due to their proportionally large non-current assets, and comparatively low cash-and-cash-equivalents volatility (Rajan and Zingales, 1995). The foregoing reasoning is supported by equation 3 in table (5), the chance of larger firms to issue debt only over equity declines by -0.83. Accordingly, firm size equally weighs up issuing either equity or debt, with z-scores 8.56 and 8.34 against a highly significant (15.64) for dual issuers. However, it could be interpreted differently in terms of growth inclination; the possibility of a firm to adopt an expansion investment strategy by issuing equity is inversely associated with the firm size.

Further, the positive association between tangible assets and issuing either equity or debt in dual-based equations is expected. The mlogit estimate of issuing either equity or debt exclusively would be expected to increase by 1.167 (1.892) units. Equation 1 implies that solvent firms tend to have proportionately large tangible assets to total assets, which appears to repudiate Hovakimian et al., (2004), who classify tangible assets as an important characteristic for debt issuing firms. The acceptable inference here is that equity issuers usually are market outperformers, more profitable and under-levered, which entail relatively low bankruptcy costs. So, these attributes let those firms to become over-levered by overusing debt to adjust their low observed debt ratio. From the non-target standpoint, equations (1) and (2) prove the severity of asymmetric information is nullified by the positive relationship between tangibility of assets and a sole financing. However, the reference model resembles the finding of

Hovakimian et al., (2004), the log-odds for debt issue relative to equity issues are expected to increase by 0.725 units.

To summarize, firm size and tangibility of assets neutrally show unbiased influence in favoring dual issues, but the latter is vital for equity issuers when assuming the existence of target leverage, and for debt issuers when it is not.

5.3. Determinants of financing methods post insiders' judgment

Next, by reprising the preceding estimate to describe the response of insiders to stock being either fairly valued or misvalued as reported in table (6) with three panels, each encompasses two models, for market fair valuation and misvaluation. Insiders' judgment of correct market valuation is measured by (FrVal_1), and of market misvaluation is measured by (MisVal_1).

Table 6. Determinants of post-issue financing method *post* insiders' judgment of market valuation

The dependent variable is a financing method, which is a discrete trichotomous variable with values 1: dual issue, 2: equity issue and 3: debt issue. The insiders' judgment of market valuation measured by quantifying the mutual effects of pre-issue market-to-book ratio for market valuation, and pre-issue return on equity for profitability and managerial efficiency. The dichotomous variable FrVal_1 measures when insiders having neutral judgment of market valuation. It is set at "one" if the market-to-book ratio exceeds the traditional cutoff 1.0 (market outperformers) and ROE is positive (profitable) concurrently, and set to "two" otherwise. MisVal_1 for stock misvaluation, is set to "one" if the M/B ratio exceeds the traditional cutoff 1.0 and ROE is negative (overvaluation), and is set to "two" otherwise (undervaluation). The definitions of other variables (see table (3)). The reference in equations (1) and (2) is dual issuer, whereas in equation (3) is equity issuer *, **, *** mean significant at 1%, 5% and 10%, respectively.

| | Panel A: Equity vs. Dual | | | | | | Panel B: Debt vs. Dual | | | | | | Panel C: Debt vs. Equity | | | | | |
|----------------|--------------------------|------|-------|--------------|------|-------|------------------------|-------|--------|--------------|-------|-------|--------------------------|------|-------|--------------|------|-------|
| | Fair | | | Misvaluation | | | Fair | | | Misvaluation | | | Fair | | | Misvaluation | | |
| | Eq. (1) | | | Eq. (2) | | | Eq. (3) | | | Eq. (4) | | | Eq. (5) | | | Eq. (6) | | |
| | coef | z | p.val | coef | z | p.val | coef | z | p.val | coef | z | p.val | coef | z | p.val | coef | z | p.val |
| Leverage | 0.194 | 1.95 | 0.05* | 0.629 | 2.87 | 0.00* | 0.535 | 4.16 | 0.00* | 0.792 | 4.31 | 0.00* | 0.341 | 2.81 | 0.01* | 0.163 | 0.89 | 0.37 |
| M/B | 4.753 | 6.91 | 0.00* | 0.713 | 5.78 | 0.00* | 3.604 | 5.29 | 0.00* | 0.260 | 1.95 | 0.05* | 1.149 | 6.36 | 0.00* | 0.972 | 5.65 | 0.00* |
| ROE | 12.579 | 5.90 | 0.00* | 22.749 | 7.44 | 0.00* | - | - | 0.00* | 3.838 | 4.04 | 0.00* | - | - | 0.00* | 16.416 | 8.23 | 0.00* |
| EBIT | 5.295 | 7.46 | 0.00* | 0.838 | 2.36 | 0.02* | 1.053 | 3.04 | 0.00* | 0.469 | 1.60 | 0.11 | 4.242 | 6.48 | 0.00* | - | - | 0.16 |
| Firm size | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Tangibility | 1.384 | 7.69 | 0.00* | 1.203 | 4.55 | 0.00* | 1.799 | 10.08 | 0.00* | 2.519 | 10.69 | 0.00* | 0.415 | 4.05 | 0.00* | 1.316 | 6.07 | 0.00* |
| Investment | 0.417 | 2.17 | 0.03* | 1.481 | 5.08 | 0.00* | 0.517 | 2.70 | 0.01* | 1.195 | 3.42 | 0.00* | 0.101 | 0.71 | 0.47 | - | - | 0.40 |
| Selling exp. | 0.937 | 3.13 | 0.00* | 1.482 | 4.34 | 0.00* | 0.346 | 1.63 | 0.10** | 0.675 | 2.42 | 0.02* | 0.591 | 2.40 | 0.02* | 0.807 | 2.90 | 0.00* |
| FrVal_1 | - | - | - | - | - | - | 0.283 | 1.60 | 0.10** | - | - | - | 1.894 | 7.81 | 0.00* | - | - | - |
| MisVal_1 | - | - | - | 0.834 | 3.26 | 0.00* | - | - | - | 0.331 | 1.95 | 0.05* | - | - | - | 0.503 | 2.26 | 0.02* |
| Const | 1.805 | 4.76 | 0.00 | 0.753 | 1.73 | 0.08 | 1.419 | 5.95 | 0.01 | 1.856 | 6.08 | 0.00* | 0.386 | 1.16 | 0.24 | 1.102 | 2.99 | 0.01 |
| R ² | 0.29 | | | 0.14 | | | 0.29 | | | 0.14 | | | 0.29 | | | 0.14 | | |
| Obs. | 3263 | | | 1993 | | | 3263 | | | 1993 | | | 3263 | | | 1993 | | |

5.3.1. Insiders' response to market fair valuation

If the insiders' judgment towards fair-high market valuation increases by one point, the likelihood of issuing equity would be expected to decrease by -1.611 units, meaning that it is 1.611 unit higher in issuing dual over equity, while equation (3) predicts issuing debt over dual with 0.283 difference in log odds. It confirms that when insiders of market outperformers satisfy with market valuation they tend to issue debt as well as dual, which is consistent with (Stulz, 1990), market outperformers usually have low debt ratio, and vice versa. However, the reference model moderates the preceding confusion of insiders receiving signals from market in line with their internal performance judgment. The logit estimate is 1.894 units higher for issuing debt over equity, which emphasizes the chance of debt issuing in fair-high valuation and equity issuing in fair-low valuation.

To summarize, market outperforming and profitable firms usually prioritize issuing debt, dual and then equity as per their insiders' judgment of market fair valuation, otherwise they prioritize issuing equity, dual and lastly debt. In other words, when managers face the choice of either debt or equity only with no flexibility for dual pattern, their perceptions of fair valuation become indifferent, and they always go for debt issues.

5.3.2. Insiders' response to market misvaluation

The judgment of market misvaluation could be undervaluation or overvaluation, both for insiders are subjective. Dual-based choices suggest that when insiders' judgment of market overvaluation increases by one point, the estimate of issuing equity or debt relative to dual decrease by -0.834 (-0.331). By recalling the meaning of the inverse association in multinomial logistic estimate, the coefficients strongly agree that overvalued share allows insiders to raise both equity and debt. For undervalued stock, the chance is -0.834 (-0.331) units lower, which increases the likelihood that managers issue either equity or debt compared to the reverse case. Alternatively, to enhance the price of seemingly undervalued stock insiders might choose to wait passively for market mechanisms, or react instantaneously by repurchasing stocks. The latter route, of course, depends largely on how profitable and solvent the firm is. Accordingly, a one unit increase in EBIT has a log-odds 0.838 unit higher chance of equity issue over dual issue, and similarly in equation (4) panel B, with a coefficient 0.469 unit (p-value 11%) higher of debt issue. In other words, when insiders perceive stock to be overvalued, the firm starts raising debt and then equity. Also, z-scores in misvaluation models weigh up the dual issue and debt issue over equity issue (-3.26 and 2.26).

Myers and Majluf (1984) argue that when information is asymmetric, managers prefer issuing corporate bond over stock exploiting its low cost. Overvaluation thus weighs unvaryingly on issuing debt or equity and induces dual issue. Yet, equations (2) and (4) contradict each other. Equation (6) in panel C explains how profitability affects managers' perception of market mispricing. Although it is statistically insignificant, EBIT has a coefficient -0.369 with tiny z-score (-1.39) lower in debt issuers than equity issuers, but this negativity marginally favors equity issue. Meaning that, profitable firms tend to either capitalize their accumulated earnings or repurchase stocks.

To summarize, whenever insiders judge that the stock is overvalued, while other related factors remain constant, they adopt dual, debt and then equity issues, especially profitable firms. Surprisingly, unprofitable firms follow the same pattern with slight emphasis on issuing stocks. In undervaluation case, insiders of profitable firms always enjoy the alternative of using their accumulated earnings either to be capitalized or to be spent for calling back stocks to boost the price, whereas unprofitable firms either wait passively as in the dynamic trade-off theory of (Fischer et al, 1989), or raise equity to adjust their undesirable deviated observed leverage (Fischer et al, 1989) and (Hovakimian et al, 2004).

Now, let us contrast briefly the two pictures. There are significant variations in firms' financing behavior when insiders hold different attitudes towards market valuation. Both fair-high market valuation and overvaluation favor dual issue and issue debt over equity issue. Conversely, there is no such relation between fair-low valuation and undervaluation.

5.4. The impact of firm characteristics on insiders' response

The outlining of the changes in the explanatory power of firm characteristics of tables (5) and (6) could hold some meaningful signals. For instance, the coefficients of financial leverage post-inserting insiders' response is higher by +0.333 units (0.629-0.296) in misvaluation, and lower by -0.102 units in correct valuation. It proposes fair-high has less impact on managers favoring dual issue over equity issue, which somehow denies some preceding findings of table (6). But the +0.333 reports the judgment of market overvaluation weighs down equity issues. But the question here is how leverage may augment insiders' anxiety at the stock undervaluation or otherwise heighten their pleasure? High leverage implies high financial distress, which in turn increases managers' sensitivity towards any slight price volatility compared to an under-levered situation. Unexpectedly, the likelihood of the firm to issue debt relative to dual is higher by +0.052 when stock is

correctly valued and +0.309 when it is not. This dissimilarity underlines that the pre-issue leverage is the launching pad of insiders' response to market valuation. They verify dual and debt are prioritized in overvaluation, and the opposite in fair-high, but still it remains indecisive. The reference model assures the result of prior-insertion with +0.154 units, and weakens the leverage to be a common characteristic between equity and dual issuers.

Nevertheless, market-to-book ratio changes seem completely incompatible in all models. For example in correct valuation, they are significantly increased by +2.447 (+3.179) units asserting to prioritize dual issues over either equity or debt. But the reference model holds tiny decrease that weakens the power of prioritizing equity over debt issues by -0.733. By comparing the two differences, I can confidently bolster the hypothesis of the judgment of a correct valuation constantly favoring dual issue. Whilst the explanatory power of misvaluation is weakened in equity by -1.594 favoring dual. But the incongruity with debt could be justified by the -0.909 decrease in the reference model, mitigating the avenue of selecting equity issues firstly over debt. This finding abates the argument of high stock price encouraging insiders to issue equity instantaneously considering no further options. That is to say, high stock price with some internal weaknesses let insiders to believe the stock is overvalued, which favors dual issue. From outsiders' perspective, high stock price may tempt some shareholders to sell out, which dampens the enthusiasm of potential investors to buy, waiting for further declines.

As previously mentioned, insiders' judgment of the firm's internal performance is impacted mostly by profitability, which is indispensable in directing firm's financing decision. All EBIT coefficients are increased significantly to 5.295, 1.053 and -4.242 for fair valuation models, respectively. It aligns effectively the intuition of adverse selection and asymmetric information with when insiders perceive the stock is fairly valued. In misvaluation, coefficients are decreased by -0.421, -0.088 and increased in the reference choice by +0.332, ensuring that high profitability leads to neutralize insiders' perception towards the stock as being misvalued.

The dominance of assets tangibility for equity issuers is proved in dual-based models by +0.217 (1.384 - 1.167) and -0.093. Although they comply with the reference model, but it appears that they are

diverging partially from the result of tangible assets as a common characteristic between debt issuers and dual issuers. The foregoing explanation tortuously accentuates that asset tangibility as a common trait between dual issuers and equity issuers under trade-off hypotheses, whereas between dual issuers and debt issuers under pecking order and market timing hypotheses. The positive coefficients responses reaffirm that dual issue is always prioritized over either equity or debt issues when stock is overvalued

Surprisingly, firm size's coefficients consistently responded inversely. As in fair valuation the declines in explanatory power by -0.046 and -0.266 units stress that firm size is an imperative characteristic in adopting dual issues. Correspondingly, the decrease (-0.219) of debt over equity indicates that firm size impacts insiders' perception indifferently. However for misvaluation, the explanatory power is augmented notably by +0.33 (+0.433) units for dual-based, ensuring that larger firms response to market overvaluation by favoring dual issue.

6. Robustness Test

On the assumption that the insiders' response is affected mostly by market valuation concurrently with their judgment of corporate performance, the robustness test could be built by suggesting other alternatives to assess insiders' response to market valuation empirically. For market valuation, all market-based metrics have similar connotations of contrasting firm's market value with the book total assets; therefore, market-to-book ratio could be replaced by Q-ratio. Since Tobin (1969) the use of Q-ratio has emerged to expose some of invisible firm characteristics, such as firm's management efficiency (Lang et al., 1995), and firm's investment and growth propensity (Lang et al., 1989). In addition to that, using Q-ratio for misvaluation is not unusual, Rhodes-Kropf et al., 2005) apply Q-ratio to measure misvaluation as a key factor in merger activity. Internally, in addition to the managerial aspect of Q ratio, the corporate internal performance could be measured by substituting return-on-equity (ROE) by return-on-assets (ROA). Afterward the insiders' judgment have been quantified by merging Tobin's Q and ROA, while maintaining the other financial characteristics as control variables as shown in table (7).

Table 7. Robustness test: Determinants of post-issue financial leverage. Tobin's Q ratio is used for market valuation, and ROA is used for corporate performance

Standardized total assets and standardized sales and revenues are used interchangeably for firm size. *, ** mean significant at 1% and 10%.

| Independent variables | 1 | | | 2 | | |
|------------------------------|--------|--------------|---------|--------|--------------|---------|
| | Coef. | t-statistics | P-value | Coef. | t-statistics | P-value |
| Financial leverage | 0.081 | 10.3 | 0.000* | 0.090 | 11.47 | 0.000* |
| Tobin's Q | 0.092 | 5.3 | 0.000* | 0.103 | 5.95 | 0.000* |
| ROA | 0.489 | 21.17 | 0.000* | 0.480 | 20.96 | 0.000* |
| EBIT | 0.073 | 2.52 | 0.012* | 0.135 | 4.59 | 0.000* |
| Firm size (total assets) | -0.053 | -4.54 | 0.000* | | | |
| Firm size (sales & revenues) | | | | -0.104 | -10.4 | 0.000* |
| Tangible assets | -0.042 | -4.37 | 0.000* | -0.039 | -4.57 | 0.000* |
| Investment | 0.365 | 28.95 | 0.000* | 0.398 | 32.72 | 0.000* |
| Selling expenses | 0.049 | 1.68 | 0.094** | 0.116 | 3.84 | 0.000* |
| Constant | -0.022 | -2.96 | 0.003 | -0.017 | -2.19 | 0.028* |
| R ² | 0.30 | | | 0.31 | | |
| Observations | 5632 | | | 5632 | | |

Table (8) resembles the findings of table (6). As before, market correct valuation is measured by (FrVal_2), and misvaluation by (MisVal_2). When insiders think that the stock is fairly valued, the logit estimate of issuing equity relative to dual is expected to decrease by -1.165 units, while other factors remain unchanged. It means that when the market highly values the stock with an outstanding internal performance, the likely of insiders to judge stock is correctly valued becomes higher than in the opposite way. Consequently the chance to issue dual would increase by 1.165 units compared to issuing equity only. Nevertheless, equation (3) contradicts that by suggesting such a situation would allow insiders to issue debt as well as dual, which could be resolved by equation (5). When insiders receive signals from the market consistent with internal performance metrics, the possibility is 1.583 units higher for issuing debt over equity. It emphasizes that debt issue is more

likely in case of fair-high, and equity issue is in the opposite way. To summarize, when there is a consistency between market performance and internal performance, insiders always consider dual issues when their judgment of market valuation is neutral.

In contrast, there is strong relationship between market undervaluation and internal financing as insiders always prioritize it over external alternatives, increasingly with informational asymmetry. In such a case of low share price firms have two options to boost it either waiting passively for market mechanisms or repurchasing stocks. Equation (2) shows that any increase in profitability by 0.942 units would enhance issuing debt compared to issuing dual. Thus, insiders' judgment of stock being overvalued makes issuing debt and equity indifferent. To summarize, whenever the stock is overvalued firms are more likely to adopt dual pattern, which is more visible in profitable firms.

Table 8. Robust test: Determinants of post-issue financing method post-considering insiders' perception of market valuation

Financing method is a trichotomous dependent variable with values 1: dual issue, 2: equity issue and 3: debt issue. The insiders' perception of market valuation measured by quantifying the interaction between pre-issue Tobin's Q ratio as an external market valuation and pre-issue ROA as an internal corporate efficiency. FrVal_2 measures fair valuation which is set at "one" if Q-ratio exceeds the traditional cutoff 1.0, and ROA is positive, and is set to "two" otherwise. MisVal_2 is a dummy measures misvaluation, which is set at "one" if Tobin's Q exceeds 1.0 and ROA is negative, and is set to "two" otherwise. For the definitions of other variables see table (3). The reference in equations (1) and (2) is dual issuer, whereas in equation (3) is equity issuer. *, **, *** mean significant at 1%, 5% and 10%, respectively.

| | Panel A: Equity vs. Dual | | | | | | Panel B: Debt vs. Dual | | | | | | Panel C: Debt vs. Equity | | | | | |
|------------------|--------------------------|----|--------|--------------|----|--------|------------------------|-----|--------|--------------|-----|--------|--------------------------|----|--------|--------------|----|--------|
| | Fair | | | Misvaluation | | | Fair | | | Misvaluation | | | Fair | | | Misvaluation | | |
| | Eq. (1) | | | Eq. (2) | | | Eq. (3) | | | Eq. (4) | | | Eq. (5) | | | Eq. (6) | | |
| | coef | z | p.v al | coef | z | p.v al | coe f | z | p.va l | coe f | z | p.va l | coe f | z | p.v al | coef | z | p.v al |
| Leverage | 0.17 | 1. | 0.1 | 0.36 | 2. | 0.0 | 0.2 | 1.7 | 0.07 | 0.8 | 6.1 | 0.00 | 0.0 | 0. | 0.3 | 0.49 | 3. | 0.0 |
| | 9 | 35 | 8 | 6 | 52 | 1* | 38 | 9 | ** | 57 | 9 | * | 60 | 95 | 4 | 1 | 09 | 0* |
| Tobin's Q | 5.73 | 6. | 0.0 | 0.52 | 3. | 0.0 | 4.7 | 5.3 | 0.00 | - | - | 0.05 | - | - | 0.0 | - | - | 0.0 |
| | 3 | 44 | 0* | 3 | 14 | 0* | 48 | 9 | * | 0.3 | 1.9 | ** | 0.9 | 4. | 0* | 0.83 | 4. | 0* |
| | | | | | | | 08 | 9 | | 08 | 9 | | 85 | 75 | | 1 | 39 | |
| ROA | 15.5 | 6. | 0.0 | 13.4 | 7. | 0.0 | - | - | 0.00 | - | - | 0.16 | - | - | 0.0 | - | - | 0.0 |
| | 72 | 79 | 0* | 98 | 21 | 0* | 3.8 | 4.3 | * | 1.0 | 1.4 | | 19. | 8. | 0* | 14.5 | 8. | 0* |
| | | | | | | | 18 | 4 | | 90 | 2 | | 39 | 86 | | 87 | 31 | |
| EBIT | 4.07 | 4. | 0.0 | - | - | 0.2 | 0.9 | 2.6 | 0.01 | - | - | 0.39 | - | - | 0.0 | 0.19 | 0. | 0.4 |
| | 6 | 75 | 0* | 0.85 | 1. | 8 | 42 | 1 | * | 0.6 | 0.8 | | 3.1 | 3. | 0* | 6 | 73 | 6 |
| | | | | 4 | 08 | | 59 | 6 | | 59 | 6 | | 34 | 86 | | | | |
| Firm size | - | - | 0.0 | - | - | 0.0 | - | - | 0.00 | - | - | 0.00 | - | - | 0.0 | - | - | 0.0 |
| | 0.92 | 8. | 0* | 1.05 | 5. | 0* | 1.6 | 12. | * | 1.7 | 10. | * | 0.7 | 5. | 0* | 0.70 | 4. | 0* |
| | 7 | 03 | | 7 | 75 | | 34 | 11 | | 60 | 10 | | 07 | 43 | | 3 | 53 | |
| Tangible assets | 1.69 | 8. | 0.0 | 0.61 | 2. | 0.0 | 2.0 | 11. | 0.00 | 2.0 | 8.9 | 0.00 | 0.4 | 4. | 0.0 | 1.38 | 6. | 0.0 |
| | 8 | 79 | 0* | 6 | 49 | 1* | 99 | 05 | * | 04 | 3 | * | 01 | 32 | 0* | 8 | 57 | 0* |
| Investment | 0.45 | 2. | 0.0 | 1.78 | 4. | 0.0 | 0.7 | 4.8 | 0.00 | 0.9 | 2.6 | 0.01 | 0.3 | 3. | 0.0 | - | - | 0.0 |
| | 6 | 77 | 1* | 9 | 81 | 0* | 98 | 3 | * | 61 | 4 | * | 42 | 06 | 0* | 0.82 | 3. | 0* |
| | | | | | | | | | | | | | | | | 9 | 49 | |
| Selling expenses | 0.97 | 3. | 0.0 | 0.89 | 2. | 0.0 | 0.2 | 1.3 | 0.18 | 0.8 | 2.7 | 0.01 | - | - | 0.0 | - | - | 0.8 |
| | 6 | 01 | 0* | 2 | 47 | 1* | 96 | 3 | | 20 | 0 | * | 0.6 | 2. | 1* | 0.07 | 0. | 0 |
| | | | | | | | | | | | | | 80 | 52 | | 2 | 25 | |
| FrVal_2 | - | - | 0.0 | - | - | 0.0 | 0.4 | 2.0 | 0.04 | 0.4 | 2.0 | 0.04 | 1.5 | 8. | 0.0 | | | |
| | 1.16 | 4. | 0* | | | | 18 | 1 | * | 18 | 1 | * | 83 | 13 | 0* | | | |
| | 5 | 45 | | | | | | | | | | | | | | | | |
| MisVal_2 | | | | - | - | 0.0 | - | - | 0.08 | - | - | 0.08 | | | | 0.20 | 1. | 0.1 |
| | | | | 0.50 | 2. | 1* | 0.2 | 1.7 | ** | 0.2 | 1.7 | ** | | | | 3 | 30 | 9 |
| | | | | 0 | 46 | | 97 | 5 | | 97 | 5 | | | | | | | |
| Const | 1.53 | 3. | 0.0 | 0.51 | 1. | 0.1 | 1.4 | 4.9 | 0.00 | 1.8 | 7.1 | 0.00 | - | - | 0.7 | 1.28 | 5. | 0.0 |
| | 6 | 92 | 0 | 4 | 66 | 0 | 15 | 6 | | 03 | 8 | | 0.1 | 0. | 1 | 9 | 32 | 0 |
| | | | | | | | | | | | | | 21 | 37 | | | | |
| R ² | 0.30 | | | 0.13 | | | 0.30 | | | 0.13 | | | 0.30 | | | 0.13 | | |
| Obs. | 3290 | | | 1747 | | | 3290 | | | 1747 | | | 3290 | | | 1747 | | |

Conclusion

Insiders of listed firms are affected largely by the mutual effects of market valuation and the firm's internal efficiency and profitability performance. This leads insiders to germinate certain judgments of stock being fairly valued or misvalued, which consequently affect their financing decisions. Most empirical studies handle the continuous debate of equity-debt choice from different stands with no consensus, concluding that firm and institutional characteristics are important determinants of capital structure. However, the association between these characteristics with "ceteris paribus" factors is still open for further exploration.

The pivotal idea of this paper is to emphasize the role of insiders' response as an active factor against dormant factors suggested by previous empirics, by examining the impact on financing decisions of insiders' pre-issue judgment of market valuation. The

focus on firms raising external funds is important to identify the common characteristics between equity issuers, debt issuers and dual issuers, and to interpret the influence of insiders' role. Further, relaxing the assumption of trade-off theories that there exists target debt ratio allows the highlighting of insider's psychological side. The conjunction effect of market valuation and internal performance is a cornerstone for insiders. That is, how the market values the firm, how profitable and managerially efficient the firm is, are the main parameters that triggering and directing insiders' judgment of market valuation.

The findings are derived from three models. The first model examines the determinants of post-issue financial leverage using market valuation and corporate internal performance as main variables, whilst controlling for firm size, tangible assets, investment and selling expenses. The other two estimates examine the determinants of post-issue financing methods prior and after considering the

insiders' judgment of market valuation, to identify the common characteristics between equity or debt issuers comparing to dual issuers. The insiders' judgment could be seen from two prospects, the first is fair valuation with sub-classifications fair-high and fair-low market valuation, and the second is market misvaluation with sub-classifications overvaluation and undervaluation, on which the insiders' response is described accordingly.

The main results are consistent with the pecking-order hypothesis. When insiders have a pervasive perception of fair-high market valuation, they prioritize debt issue and dual issue over purely equity issues. Further, when they perceive stock to be overvalued, they prioritize dual and debt over equity. In the case of undervaluation, managers prefer internal funds over external finance. On the other hand, consistent with the market timing hypothesis, insiders focus on equity issues when perceiving fair-low market valuation. Moreover, firm size and tangibility of assets are decisive characteristics for a firm to contemplate dual pattern over issuing solely either equity or debt.

References

- Baker, M., Wurgler, J., 2002. Market timing and capital structure. *Journal of Finance* 57, 1–32.
- Barclay, M.J., Smith, C., 1995b. The priority structure of corporate liabilities. *Journal of Finance* 50, 899–917.
- Berger, P., Ofek, E., Yermack, D., 1997. Managerial entrenchment and capital structure decisions, *Journal of Finance* 52, 1411–1438.
- Bradley, M., Jarrell, G., Kim, E., 1984. On the existence of an optimal capital structure: theory and evidence. *Journal of Finance* 39, 857–880.
- DeMiguel A., Pindado, J., 2001. Determinants of capital structure: new evidence from Spanish panel data. *Journal of Corporate Finance* 7, 77–99.
- Fama, E., French, K., 2002. Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies* 15, 1–34.
- Fischer, E., Heinkel, R., Zechner, J., 1989. Dynamic capital structure choice: theory and tests. *Journal of Finance* 44, 19–40.
- Flath, D., 1993. Shareholding in the keiretsu, Japan's financial groups, *Review of Economics and Statistics*. 75, 249–257
- Fukuda, A., Hirota, S., 1996. Main bank relationships and capital structure in Japan, *Journal of the Japanese and International Economies*. 10, 250–261.
- Graham, J., Harvey, C., 2001. The theory and practice of corporate finance: evidence from the field. *Journal of Financial Economics* 60, 187–243.
- Harris, M., Raviv, A., 1991. The theory of capital structure, *Journal of Finance* 46, 297–355.
- Hart, O., Moore, J., 1995. Debt and seniority: an analysis of the role of hard claims in constraining management. *American Economic Review* 85, 567–585.
- Hirota, S., 1999. Are Corporate Financing Decisions Different in Japan? An Empirical Study on Capital Structure1, *Journal of the Japanese and International Economies*. 13, 201–229
- Hirshleifer D., Jiang D., 2010. A Financing-Based Misvaluation Factor and the Cross-Section of Expected Returns, *Review of Financial Studies* 23, 3401–3436
- Hovakimian, A., Opler, T., Titman, S., 2001. The debt–equity choice. *Journal of Financial and Quantitative Analysis* 36, 1–24.
- Hovakimian, A., Hovakimian, G., Tehranian, H., 2004. Determinants of target capital structure: The case of dual debt and equity issues. *Journal of Financial Economics* 71 517–540.
- Ikeo, K., Hirota, S. 1992. Kigyo no ShihonKosei to Mein Bankyu [Corporate capital structure and the main bank in Japan], in “Gendai Nihon no Kinyu Bunseki [Structural Analyses of the Japanese Financial System]” (A. Horiuchi and N. Yoshino, Eds.), pp. 39–71, Univ. of Tokyo Press, Tokyo.
- Jalilvand, A., Harris, R., 1984. Corporate behavior in adjusting to capital structure and dividend targets: an econometric study. *Journal of Finance* 39, 127–144.
- Jensen, M., Meckling, W., 1976. Theory of the firm: managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics* 3, 305–360.LE IN PRESS
- Jung, K., Kim, Y.-C., Stulz, R., 1996. Timing, investment opportunities, managerial discretion, and the security issue decision. *Journal of Financial Economics* 42, 157–185.
- MacKie-Mason, J., 1990. Do firms care who provides their financing? In: Hubbard, R.G. (Ed.), *Asymmetric Information, Corporate Finance, and Investment: A National Bureau of Economic Research Project Report*. University of Chicago Press, Chicago and London, pp. 63–104.
- Marsh, P., 1982. The choice between equity and debt: an empirical study. *Journal of Finance* 37, 121–144.
- Modigliani, F., Miller, M., 1963. Corporate income taxes and the cost of capital: a correction. *American Economic Review* 53, 433–443.
- Myers, S., 1977. Determinants of corporate borrowing. *Journal of Financial Economics* 5, 147–175.
- Myers, S., Majluf, N., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13, 187–221.
- Rajan, R., Zingales, L., 1995. What do we know about capital structure? Some evidence from international data. *Journal of Finance* 50, 1421–1460.
- Rhodes-Kropf, M., D. T. Robinson, S. Viswanathan, 2005, Valuation waves and merger activity: The empirical evidence, *Journal of Financial Economics* 77, 561–603.
- Shibata, N., Takada, Y., 1990. Ekuity Fainansu to Kabusikimochiai [Equity finance and interlocking shareholding in Japan], *Kigyo Kaikei [Corporate Accounting.]* 42, 79–85
- Shyam-Sunder, L., Myers, S., 1999. Testing static trade-off against pecking order models of capital structure. *Journal of Financial Economics* 51, 219–244.
- Stulz, R., 1990. Managerial discretion and optimal financing policies. *Journal of Financial Economics* 26, 3–28.
- Titman, S., 1984. The effect of capital structure on a firm's liquidation decision. *Journal of Financial*

- Economics 13, 137–151.
32. Titman, S., Wessels, R., 1988. The determinants of capital structure choice. *Journal of Finance* 43, 1–18
33. Other references:
34. Bruin, J. 2006. Newtest: command to compute new test. UCLA: Academic Technology Services, Statistical Consulting Group. <http://www.ats.ucla.edu/stat/stata/ado/analysis/> [accessed November 29, 2010].
35. Osaka Stock Exchange. JASDAQ. <http://www.ose.or.jp/e/stocks/index.html> [accessed August 21- December 14, 2010].

Appendix

The graphical illustration of the fiscal-year sample-firms distribution of security issues of Japanese firms from 2000 to 2010 reveals some points. The sharp decrease in annual equity issues compared to annual debt issues could be attributed to the freeing of the prolonged interlocking shareholding ownership (figures A and B), and to less dependency on public financing, beside the impact of closer relation with financial institutes (Ikeo and Hirota, 1992) and (Fukuda and Hirota, 1996). Yet, the average of equity issues is twice as of the United States (31% vs. 15%), which might be the result of their different corporate governance systems; mainly the role of financial institutes (Prowse 1990). Rajan and Zingales (1995) find the composition of net debt issuance to net equity issuance as 0.8 to 0.2 in Japan versus 1.02 to -0.02 in the United States. Conversely, figure (C) shows an upward trend in Japanese dual issues compared to the quasi-stable inclination in the United States. More precisely, the ultimate effect of the $-\Delta$ equity issues (average of -2.65 per annum) and the $+\Delta$ debt issues (average of +1.76 per annum) along the sample period. It amplifies the dual issues by 0.89 in average per annum, which emphasizes the importance of investigating dual issuing behavior (see table (1)).

In general, Japanese firms in the 2000s somewhat resemble the financing behavior pattern of the United States firms in the 1980s and the 1990s. Applying the classification of (Rajan and Zingales, 1995), Japan slightly moves from being a banking-oriented country towards being a market-oriented country. Also, the growth and efficiency of Japanese stock markets continue since the 1980s as an inevitable corollary of lessening the strong control of banks over corporate financing (Hoshi et al, 1990a).

Figure A. Annual Debt Issues to Total Securities Issues

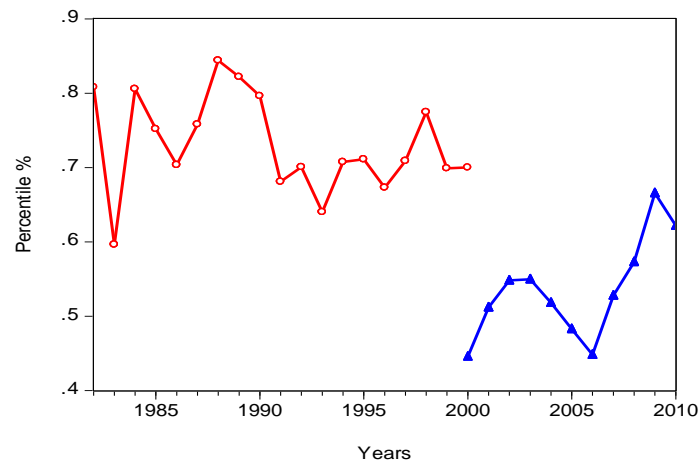


Figure B. Annual Equity Issues to Total Securities Issues

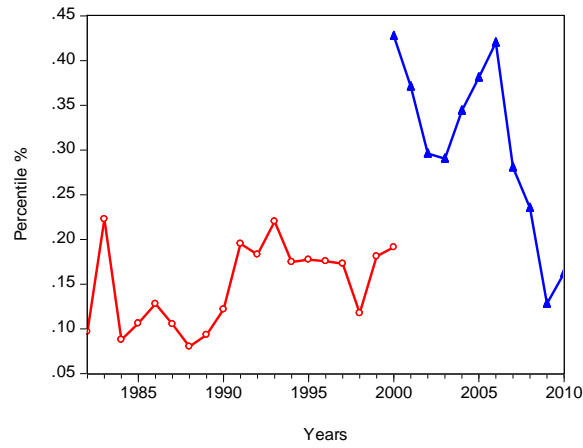


Figure C. Annual Dual Issues to Total Securities Issues

