

**Association between Pre IPO Earnings Managements  
And Post IPO Institutional Ownership Drifts**

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# **Association between Pre IPO Earnings Managements And Post IPO Institutional Ownership Drifts**

## **ABSTRACT**

The purpose of this study is to investigate how earnings management before IPO affects institutional ownership changes after IPO. It is hypothesized that there is a negative association between the pre IPO earnings managements and post IPO institutional ownership drifts. Using a sample of 302 IPO's over six-year period (1997-2002), we find that the association between pre IPO earnings managements and post IPO institutional ownerships gets weaker over time so that the association becomes statistically insignificant by the end of the first year after IPO's. We also find that the association between pre IPO earnings managements and post IPO institutional ownership changes is significantly negative over the period between the IPO year and 2 years after that. Both results support the hypothesis. These results hold after controlling for other influencing factors such as market performance, initial offer price, underwriter reputation, and offer fraction. The results are robust across different measures of variables and testing methods.

Key words: Earnings managements, IPO, Institutional ownerships

## **1. INTRODUCTION**

IPO's may be one of few opportunities where stock issuing firms have significant information asymmetry over general investment public and hence can take advantage of this superior information for their own benefits. Some of those benefits stock issuing firms can entertain through IPO's could be benefits from attracting more institutional owners in the firms because institutional investors usually provide diverse benefits to their investee firms ranging from monitoring/consulting services, better performances, higher spending on R & D, to saving transaction costs. One way for IPO firms to make themselves attractive to institutional investors could be window dressing their financials through aggressive earnings managements, which would be working under information asymmetry between IPO firms and general investors including institutional investors. Sun et. al. (forthcoming) addressed this issue and found supporting empirical evidence: i.e., IPO firms with more aggressive earnings managements tend to have stronger presence of institutional ownerships immediately after IPO's than IPO firms with less earnings managements. Given this result, a natural extension of this issue would be how this strong presence of institutional investors inflated by aggressive earnings managements will change after IPO's as the information asymmetry between IPO firms and investors fade away.

The purpose of this study is to investigate this issue of institutional ownership changes after IPO's in conjunction with earnings managements before IPO's. It is hypothesized that there is a negative association between the pre IPO earnings managements and post IPO institutional ownership drifts. Two testing methods are used to investigate the hypothesis in this study. The first method is testing on changes in the association between earnings managements and institutional ownerships over time. If the association gets weaker over time after IPO's, the effect of earnings managements on institutional ownerships diminish over time, supporting the hypothesis. The second method is testing on associations between earnings managements and

changes in institutional ownerships. If the association turns out to be significantly negative after IPO's, earnings managements have negative impacts on institutional ownership changes. It may indicate that aggressive earnings managements before IPO's that increase institutional ownerships at IPO's induce bigger drops in institutional ownerships after IPO's.

The remainder of this paper is organized as follows. First, a hypothesis is developed through a review of previous literatures and logical reasoning. Then, sample selection and measurement of variables are described. The empirical tests and their results are followed. In the final section, conclusions are addressed

## **2. HYPOTHESIS DEVELOPMENT**

It is well documented firms in previous studies that institutional investors tend to make diverse value adding contributions to their investee firms. For examples, Clyde (1997) finds that institutional ownership is directly related to the benefits of policing firms. Stoughton et al. (1998) & Sun et al. (2008) suggest that institutional investors provide monitoring functions to improve their performances. Field et al. (forthcoming) find that IPO firms with greater institutional ownerships outperform those with smaller institutional ownerships. Baysinger et al. (1991) find that the institutional ownership has a positive impact on corporate R & D spending. Fernando et al. (2004) suggest that IPO firms with greater institutional ownerships have lower mortality rates than others with smaller institutional ownerships. Therefore, there seems to be strong incentives for IPO firms to attract institutional investors at IPO.

Earnings managements can be an effective means of attracting institutional investors at IPO's where there are significant information asymmetries between IPO firms and investors. It is because even intelligent and sophisticate investors like institutional investors could be fooled by artificially inflated earnings through aggressive earnings managements by IPO firms when market-determined price information is not available and most financial information about IPO firms is provided by IPO firms themselves.<sup>1</sup> Since inflated earnings by aggressive earnings managements may increase the initial offer price and be perceived as better performances by investors at IPO's, institutional investors who prefer high price stocks and better performers would buy more of IPO stocks. (See Gompers and Metrick (2001), and Fernando et al. (2004))

However, the increased presence of institutional ownerships by aggressive earnings managements may disappears as the true earnings become available with diminishing information asymmetry after IPO's. Prior studies have shown that pre-IPO aggressive earnings managements increase initial firm value at IPO's but decrease subsequent returns to investors after IPO's. For example, Ducharme et al. (2001) find a positive relation between pre-IPO discretionary accruals (a measure of aggressive earnings management) and initial firm value but a negative relation between initial discretionary accruals and subsequent firm performance. Similarly, Teoh et al. (1998) report a significant negative relation between discretionary accruals in the IPO offer year and stock returns over a three-year post-IPO period. Teoh et al. (1998a) find evidence that IPO firms, on average, have high positive issue-year earnings and discretionary accruals, followed by poor long-run earnings and negative discretionary accruals.

This reversal of institutional ownerships could take long because of transaction costs and various value adding contributions of institutional investors to IPO firms after IPO's. Therefore, a testable hypothesis derived here from would be

**Hypothesis:** There is a negative association between the pre IPO earnings managements and post IPO institutional ownership drifts.

### 3. SAMPLE SELECTION AND DATA

Our initial sample of IPO issuers are obtained from the IPO database of Hoovers Incorporated. The sample period extends from April 1997 to December 2002. Several selection criteria are applied sequentially. First, financial institutions and utility firms are excluded because they are in regulated industries and hence usually have different behaviors than unregulated firms do. Also, the sample excludes ADRs because ADRs are subject not only to US regulations but also to regulations of foreign country where their base stocks are listed and traded. Firms with offer price less than one dollar (penny stocks) and firms with offer size less than one million dollars are excluded. It is because institutional investors, in general, do not invest in penny stocks and small offers. Finally, relevant data availability in COMPUSTAT data files over the period of six years surrounding each IPO (i.e.,  $t = [-2, 0, .3]$ ) is required. These selection criteria yield the initial sample of 302 IPO issuers. Distribution of sample firms across the testing period is presented in Table 1.

### 4. MEASUREMENTS OF VARIABLES

The earnings management is measured by discretionary accruals which are differences between total accruals and the expected benchmark accruals (nondiscretionary accruals). The nondiscretionary accruals are industry wide accruals, varying across firm and industry characteristics, while discretionary accruals are firm specific accruals. Cross-sectional modified Jones model was used to estimate discretionary accruals of each IPO firm (Jones, 1991; Dechow et al., 1995; Teoh et al., 1998a).<sup>ii</sup>

The institutional ownership data are obtained from the 13F filings reported in the database of Thomson One Banker. We measure institutional ownership by 'the percentage of shares owned by all institutional investors' and by 'the number of institutional owners' at the end of first quarter after IPO.

Other variables that are proven to affect institutional ownerships include market performance, offer price, offer fraction, and underwriter reputation (see Fernando et. al. (2004), Field & Lowry (forthcoming), and Lee et. al (forthcoming)). These variables are used in sample description and regression analyses as control variables. These variables are measured as follows:

*Offer price (OPRC):* initial price at which shares were offered at IPO.

*Market Performance (MPFM):* stock returns as measured by the buy-and-hold strategy

from IPO date to Year1 or Year2. Abnormal returns adjusted by market returns (equally- or value-weighted) were also used.

*Offer fraction (OFRC)*: the number of shares offered as a fraction of total number of shares outstanding.

*Underwriter Reputation (UWRP)*: underwriter reputation based on the rankings of Carter and Manaster (1990), and updated according to the information in Jay Ritter's website.

Descriptive statistics of the above variables are presented in Table 1. On average, the IPO firms in the sample have about \$879 million in market value after IPO's. Mean (median) value of offer price is \$14.77 (\$14.00), while mean (median) value of institutional ownerships after IPO's is 25.60% (21.00%). Mean (median) of offer fraction is 29.82% (median of 24.35%). The sample firms appear to choose highly reputed underwriters with mean (median) rank of 8.15 (9.10) out of 10 point scale.

<Insert Table 1>

## 5. EMPIRICAL TESTS AND RESULTS

### 5.1 Tests on changes in association between earnings managements and institutional ownerships.

In order to examine the change in association between institutional ownerships and earnings managements over time, the following simple regression is estimated at four different points in time: i.e., at the end of the first quarter after IPO (Quarter 1), at the end of year of IPO (Year 0), at the end of the first year after IPO (year 1), and at the end of the second year after IPO (Year 2).

$$\text{INOS}_i = \beta_0 + \beta_1 \text{EMGT}_i + \varepsilon \quad (1)$$

Where

$\text{INOS}_i$  = institutional ownership, defined as the percentage of shares owned by all institutions,

$\text{EMGT}_i$  = discretionary accruals in year t-1 (one year before IPO).

Table 2 presents the results from regression model (1) for four different points in time.<sup>iii</sup> The regression coefficients of EMGT for Quarter 1, Year 0, Year 1, and Year 2 are 0.085, 0.068, 0.070, and 0.020, respectively. The regression coefficient of EMGT for Quarter 1 of 0.085 is statistically significant at 1% significant level, while that for Year 0 of 0.068 is statistically significant at 5% significant level. The other two regression coefficients are not significant at any meaningful level of significance. These results show that the effect of earnings managements on institutional ownerships diminishes from very significant (Quarter 1), significant (Year 0), to insignificant (after Year 0). In other words, the association between earnings managements and

institutional ownerships gets weaker over time, which supports the hypothesis stating a negative association between pre IPO earnings managements and post IPO institutional ownership drifts.

<Insert Table 2>

As an attempt to investigate if this result holds after controlling for the other influencing variables mentioned above, the following multiple regression model is estimated:

$$INOS_i = \beta_0 + \beta_1 EMGT_i + \beta_2 OPRC_i + \beta_3 UWRP_i + \beta_4 OFRC_i + \varepsilon \quad (2)$$

Where

$EMGT_i$  = discretionary accruals in year t-1 (one year before IPO),

$OPRC_i$  = initial offer price,

$UWRP_i$  = underwriter reputation for  $i^{th}$  firm, measured by the rankings of Carter and Manaster (1990), and updated according to the information in Jay Ritter's website,

$OFRC_i$  = offer fraction, defined as the number of shares offered divided by total number of shares outstanding after IPO.

Results from the regression model (2) are presented in Table 3. Results from the multiple regression model (2) are essentially the same as those from the regression model (1). The regression coefficient of  $EMGT$  for Quarter 1 of 0.087 is statistically significant at 1% significant level, while that for Year 0 of 0.068 is statistically significant at 5% significant level. The other two regression coefficients for Year 1 and Year 2 (0.070 and 0.025, respectively) are not significant. Even after controlling for the other influencing variables, we still have weakening associations between pre IPO earnings managements and post IPO institutional ownerships over time, which is consistent with the hypothesis.

<Insert Table 3>

## **5.2 Tests on association between earnings managements and changes in institutional ownerships.**

As a more direct attempt to examine the hypothetical relationship between pre IPO earnings managements and post IPO institutional ownership drifts, the following simple regression model is estimated.

$$\Delta INOS_i = \beta_0 + \beta_1 EMGT_i + \beta_2 MPFM_i + \varepsilon \quad (3)$$

Where

$\Delta INOS_i$  = changes in institutional ownerships.

$EMGT_i$  = discretionary accruals in year t-1 (one year before IPO).

$MPFM_i$  = stock returns as measured by the buy-and-hold strategy from IPO dates to Year 1 or Year 2.

MPFM, a market performance measure, is included in the regression model for a control purpose because the market performance of stocks is supposed to be very important determinant of investment decisions. Results from regression model (3) are presented in Table 4.  $\Delta\text{INOS}_i$  are measured over two different time periods using two different methods. Changes in institutional ownerships between Year 0 and Year 1 and those between Year 0 and Year 2 are used. Over the two time periods mentioned, changes in institutional ownerships are measured by the changes in number of institutional ownerships or by the changes in the percentage of institutional ownerships in total shares outstanding. The regression coefficients of EMGT for the period between Year 0 and Year 1 are statistically insignificant across the different measures of  $\Delta\text{INOS}_i$ , which means no meaningful association between pre IPO earnings managements and institutional ownership changes over one year period between Year 0 and year 1.

On the other hand, the regression coefficients of EMGT for the period between Year 0 and Year 2 are -1.235 and -0.096 for changes in number of institutional owners and changes in percentage of institutional ownerships, respectively. Both regression coefficients are statistically significant at 1% significance level, which means a negative association between pre IPO earnings managements and post IPO institutional ownership changes over the 2 year period between Year 0 and year 2. This is supporting the hypothesis.

< Insert Table 4 >

In order to investigate if the above results presented in Table 4 hold even after controlling the other influencing variables such as initial offer price, underwriter reputation, offer fraction, the following multiple regression model is estimated, again.

$$\Delta\text{INOS}_i = \beta_0 + \beta_1\text{EMGT}_i + \beta_2\text{OPRC}_i + \beta_3\text{UWRP}_i + \beta_4\text{OFRC}_i + \beta_5\text{MPFM}_i + \varepsilon \quad (4)$$

Where

$\text{EMGT}_i$  = discretionary accruals in year t-1 (one year before IPO),

$\text{OPRC}_i$  = initial offer price,

$\text{UWRP}_i$  = underwriter reputation for  $i^{\text{th}}$  firm, measured by the rankings of Carter and Manaster (1990), and updated according to the information in Jay Ritter's website,

$\text{OFRC}_i$  = offer fraction, defined as the number of shares offered divided by total number of shares outstanding after IPO.

Results from the multiple regression model (4) presented in Table 5 are consistent with those in Table 4. The regression coefficients of EMGT for the period between Year 0 and Year 1 are statistically insignificant for both measures of institutional ownership changes, indicating no meaningful relationship between pre IPO earnings managements and post IPO institutional ownership changes during one year period between Year 0 and year 1.

On the other hand, the regression coefficients of EMGT for the period between Year 0 and year 2 are -1.235 and -0.096 for changes in number of institutional owners and changes in percentage of institutional ownerships, respectively. Both regression coefficients are statistically significant at 1% significance level, which means a negative association between pre IPO earnings managements and post IPO institutional ownership changes over the 2 year period

between Year 0 and year 2. This supports the hypothesis that there is a negative association between pre IPO earnings managements and post IPO institutional ownership drifts.

Another interesting observation presented in Tables 4 and 5 is the regression coefficient of the market performance measure, MPFM. The regression coefficient of MPFM is statistically significantly positive across all time periods and different institutional ownership change measures, which confirms a common belief that investors in general including institutional investors invest more in the better performing stocks.

<Insert Table 5>

In sum, the results from tests on changes in associations between pre IPO earnings managements and post IPO institutional ownership presented in Tables 2 and 3 suggest that the association between pre IPO earnings managements and post IPO institutional ownerships gets weaker over time so that the association becomes statistically insignificant by the end of the first year after IPO's. The results from tests on associations between pre IPO earnings managements and changes in post IPO institutional ownerships presented in Tables 4 and 5 suggest that the association is a statistically significantly negative over the 2 year period between the IPO year and 2 year after that. Thus, all empirical results support the hypothesis stating a negative association between pre IPO earnings managements and post IPO institutional ownership drifts.

## **6. CONCLUSIONS**

The purpose of this study is to investigate how aggressive earnings management before IPO affects institutional ownership changes after IPO. It is hypothesized that there is a negative association between the aggressiveness of earnings management before IPO's and institutional ownership drifts after IPO's.

Using a sample of 302 IPO firms between 1997 and 2002, we find empirical results supporting our hypothesis. The results show that the association between pre IPO earnings managements and post IPO institutional ownerships gets weaker over time so that the association becomes statistically insignificant by the end of the first year after IPO's. The results also show that the association between pre IPO earnings managements and post IPO institutional ownership changes is a statistically significantly negative over the 2 year period between the IPO year and 2 years after that. Thus, all empirical results support the hypothesis stating a negative association between pre IPO earnings managements and post IPO institutional ownership drifts. Inflated presence of institutional investors surrounding IPO's due to information asymmetry and aggressive earnings managements gradually fades away after IPO's.

These results hold even after controlling for the other influencing variables on post-IPO institutional ownership changes such as market performance, initial offer price, underwriter reputation, and offer fraction. These results are robust across different measures of variables and testing methods.

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**<Table 1> Descriptive Statistics for Selected Variables**

| Variables                   | Mean   | Standard Deviation | Quartiles |        |       |
|-----------------------------|--------|--------------------|-----------|--------|-------|
|                             |        |                    | 25%       | 50%    | 75%   |
| Discretionary accruals      | -0.128 | 0.321              | -0.251    | -0.057 | 0.056 |
| Offer price (\$)            | 14.77  | 7.37               | 11.00     | 14.00  | 17.50 |
| Offer fraction (%)          | 29.82  | 20.49              | 17.62     | 24.35  | 33.33 |
| Underwriter Reputation      | 8.15   | 1.51               | 8.10      | 9.10   | 9.10  |
| Institutional Ownership (%) | 25.60  | 18.50              | 13.00     | 21.00  | 32.00 |

Discretionary accruals (DAC): differences between total accruals and industry wide accruals.

Offer price (OPRC): initial price at which shares were offered at IPO.

Offer fraction (OFRC): the number of shares offered as a fraction of total number of shares outstanding.

Underwriter Reputation (UWRP): underwriter reputation based on the rankings of Carter and Manaster (1990), and updated according to the information in Jay Ritter's website.

Institutional ownership (INOS) = percentage of shares owned by all institutional investors after IPO.

**<Table 2> Effect of Pre-IPO Earnings Management on Post-IPO Institutional Ownership: Simple Regression Analysis <sup>1</sup>**

$$INOS_i = \beta_0 + \beta_1 EMGT_i + \varepsilon$$

| Independent Variables   | Expected Signs | Quarter 1              | Year0                  | Year1                  | Year2                  |
|-------------------------|----------------|------------------------|------------------------|------------------------|------------------------|
|                         |                | Coefficients (t-value) | Coefficients (t-value) | Coefficients (t-value) | Coefficients (t-value) |
| Intercepts              |                | 0.267<br>(23.50)***    | 0.330<br>(25.64)***    | 0.395<br>(24.70)***    | 0.436<br>(25.47)***    |
| EMGT                    | +              | 0.085<br>(2.57)**      | 0.068<br>(1.84)*       | 0.070<br>(1.51)        | 0.024<br>(0.49)        |
| Adj. R <sup>2</sup> (%) |                | 1.84                   | 0.78                   | 0.42                   | 0.00                   |
| F-value (p-value)       |                | 6.63<br>(0.011)**      | 3.37<br>(0.067)*       | 2.27<br>(0.133)        | 0.24<br>(0.627)        |

INOS (Institutional ownership): percentage of shares owned by all institutional investors after IPO.

EMGT (Earnings Management): Degree of aggressive earnings management measured by discretionary accruals (DAC).

\*\*\*: Significant at  $\alpha < 0.01$ ; \*\*: significant at  $\alpha < 0.05$ ; \*: significant at  $\alpha < 0.10$ ;

**<Table 3> Effect of Pre-IPO Earnings Management on Post-IPO Institutional Ownership: Multiple Regression Analysis <sup>1</sup>**

$$INOS_i = \beta_0 + \beta_1 EMGT_i + \beta_2 OPRC_i + \beta_3 UWRP_i + \beta_4 OFRC_i + \varepsilon$$

| Independent Variables   | Expected Signs | Quarter 1              | Year0                  | Year1                  | Year2                  |
|-------------------------|----------------|------------------------|------------------------|------------------------|------------------------|
|                         |                | Coefficients (t-value) | Coefficients (t-value) | Coefficients (t-value) | Coefficients (t-value) |
| Intercepts              |                | -0.089<br>(1.14)       | -0.113<br>(1.28)       | -0.156<br>(1.43)       | -0.198<br>(1.70)*      |
| EMGT                    | +              | 0.087<br>(2.70)***     | 0.068<br>(1.87)*       | 0.070<br>(1.54)        | 0.025<br>(0.52)        |
| OPRC                    | +              | 0.056<br>(1.91)*       | 0.089<br>(2.66)***     | 0.111<br>(2.70)***     | 0.125<br>(2.85)***     |
| UWRP                    | +              | 0.019<br>(2.49)**      | 0.021<br>(2.40)**      | 0.028<br>(2.54)**      | 0.034<br>(2.94)***     |
| OFRC                    | +              | 0.173<br>(3.44)***     | 0.134<br>(2.34)**      | 0.115<br>(1.61)        | 0.101<br>(1.34)        |
| Adj. R <sup>2</sup> (%) |                | 8.82                   | 8.00                   | 7.61                   | 8.44                   |
| F-value (p-value)       |                | 8.28<br>(0.000)***     | 7.54<br>(0.000)***     | 7.20<br>(0.000)***     | 7.94<br>(0.000)***     |

OPRC (Offer Price): initial price at which shares were offered at IPO.

OFRC (Offer Fraction): the number of shares offered as a fraction of total number of shares outstanding.

UWRP (Underwriter Reputation): underwriter reputation based on the rankings of Carter and Manaster (1990), and updated according to the information in Jay Ritter's website.

INOS (Institutional ownership): percentage of shares owned by all institutional investors after IPO.

EMGT (Earnings Management): Degree of aggressive earnings management measured by discretionary accruals.

\*\*\*: Significant at  $\alpha < 0.01$ ; \*\*: significant at  $\alpha < 0.05$ ; \*: significant at  $\alpha < 0.10$ ;

**<Table 4> Effect of Pre-IPO Earnings Management on the Changes in Post-IPO**

**Institutional Ownership: After Controlling for Market Performance <sup>1</sup>**

$$\Delta \text{INOS}_i = \beta_0 + \beta_1 \text{MPFM}_i + \beta_2 \text{EMGT}_i + \varepsilon$$

| Independent Variables   | Expected Signs | Number of Institutional Owners |                        | Percentage of Shares Owned by All Institutions |                        |
|-------------------------|----------------|--------------------------------|------------------------|--|------------------------|
|                         |                | Year1 - Year0                  | Year2 - Year0          | Year1 - Year0                                  | Year2 - Year0          |
|                         |                | Coefficients (t-value)         | Coefficients (t-value) | Coefficients (t-value)                         | Coefficients (t-value) |
| Intercepts              |                | 0.324<br>(6.08)***             | 0.606<br>(4.39)***     | 0.062<br>(6.52)***                             | 0.085<br>(6.75)***     |
| MPFM                    | +              | 0.337<br>(9.12)***             | 0.648<br>(9.68)***     | 0.024<br>(3.66)***                             | 0.036<br>(5.88)***     |
| EMGT                    | -              | 0.013<br>(0.08)                | -1.235<br>(3.10)***    | -0.013<br>(0.47)                               | -0.096<br>(2.66)***    |
| Adj. R <sup>2</sup> (%) |                | 21.46                          | 28.06                  | 3.71   | 12.96                  |
| F-value (p-value)       |                | 47.71<br>(0.0001)***           | 49.17<br>(0.001)***    | 6.76<br>(0.0013)***                            | 19.46<br>(0.0001)***   |

$\Delta \text{INOS}$  (Change in Institutional ownership): percent change (the number of institutional owners) or simple difference (percentage of shares owned by all institutional investors) between IPO year (Year0) and one year (Year1) or two year (Year2) after IPO.

MPFM (Market Performance): stock returns as measured by the buy-and-hold strategy from IPO date to Year1 or Year2. Abnormal returns adjusted by market returns (equally- or value-weighted) were also used.

EMGT (Earnings Management): Degree of aggressive earnings management measured by discretionary accruals in the year prior to IPO.

\*\*\*: Significant at  $\alpha < 0.01$ ; \*\*: significant at  $\alpha < 0.05$ ; \*: significant at  $\alpha < 0.10$ ;

**<Table 5> Effect of Pre-IPO Earnings Management on the Changes in Post-IPO Institutional Ownership: After Controlling for Market Performance and Other IPO-related Variables <sup>1</sup>**

$$\Delta \text{INOS}_i = \beta_0 + \beta_1 \text{MPFM}_i + \beta_2 \text{EMGT}_i + \beta_3 \text{OPRC}_i + \beta_4 \text{UWRP}_i + \beta_5 \text{OFRC}_i + \varepsilon$$

| Independent Variables   | Expected Signs | Number of Institutional Owners |                        | Percentage of Shares Owned by All Institutions |                        |
|-------------------------|----------------|--------------------------------|------------------------|--|------------------------|
|                         |                | Year1 - Year0                  | Year2 - Year0          | Year1 - Year0                                  | Year2 - Year0          |
|                         |                | Coefficients (t-value)         | Coefficients (t-value) | Coefficients (t-value)                         | Coefficients (t-value) |
| Intercepts              |                | 0.324<br>(6.08)***             | 0.606<br>(4.39)***     | 0.062<br>(6.52)***                             | 0.085<br>(6.75)***     |
| MPFM                    | +              | 0.337<br>(9.12)***             | 0.648<br>(9.68)***     | 0.024<br>(3.66)***                             | 0.036<br>(5.88)***     |
| EMGT                    | -              | 0.013<br>(0.08)                | -1.235<br>(3.10)***    | -0.013<br>(0.47)                               | -0.096<br>(2.66)***    |
| OPRC                    | ?              | -0.007<br>(1.03)               | -0.005<br>(0.26)       | -0.000<br>(0.07)                               | 0.002<br>(1.23)        |
| UWRP                    | ?              | -0.008<br>(0.24)               | 0.025<br>(0.28)        | 0.007<br>(1.18)                                | 0.012<br>(1.50)        |
| OFRC                    | ?              | 0.024<br>(0.10)                | -1.093<br>(1.70)*      | -0.015<br>(0.35)                               | -0.106<br>(1.83)*      |
| Adj. R <sup>2</sup> (%) |                | 21.05                          | 28.12                  | 3.32   | 15.58                  |
| F-value (p-value)       |                | 16.89<br>(0.0001)***           | 20.33<br>(0.001)***    | 3.05<br>(0.0106)**                             | 10.15<br>(0.0001)***   |

$\Delta \text{INOS}$  (Change in Institutional ownership): percent change (the number of institutional owners) or simple difference (percentage of shares owned by all institutional investors) between IPO year (Year0) and one year (Year1) or two year (Year2) after IPO.

MPFM (Market Performance): stock returns as measured by the buy-and-hold strategy from IPO date to Year1 or Year2. Abnormal returns adjusted by market returns (equally- or value-weighted) were also used.

EMGT (Earnings Management): Degree of aggressive earnings management measured by discretionary accruals in the year prior to IPO.

OPRC (Offer Price): initial price at which shares were offered at IPO.

OFRC (Offer Fraction): the number of shares offered as a fraction of total number of shares outstanding.

UWRP (Underwriter Reputation): underwriter reputation based on the rankings of Carter and Manaster (1990), and updated according to the information in Jay Ritter's website.

\*\*\*: Significant at  $\alpha < 0.01$ ; \*\*: significant at  $\alpha < 0.05$ ; \*: significant at  $\alpha < 0.10$ ;

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<sup>i</sup> Previous studies on IPO's show that IPO firms do engage in aggressive earnings managements to take advantage of severe information asymmetries at IPO's for their economic benefits. For examples, Chaney & Lewis (1995) find that earnings managements affect firm values with an information asymmetry. Friedlan (1994) also shows that IPO firms make income increasing discretionary accruals in financial statements released before IPO's to increase offer prices.

<sup>ii</sup> Cross-sectional method is used because a time series approach is not possible for IPO's. The cross-sectional approach has an additional advantage in that it incorporates changes in accruals resulting from changes in economic conditions for the industry as a whole.

<sup>iii</sup> We also used 'the number of institutional owners' as an additional measure of institutional ownership. The results are basically the same.