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EARNINGS MANAGEMENT IN INITIAL PUBLIC OFFERINGS**

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Incentives and Opportunities for Earnings Management in Initial Public Offerings.

Abstract

This paper examines accounting earnings and the associated accrual and cash flow components in the years surrounding an initial public offering (IPO) to study the incentives and opportunities for firms to manage earnings when going public. We identify firm and offering characteristics that may be related to the amount of earnings management in IPO firms. We find that age and ownership retention by original entrepreneurs are significantly negatively related to industry-adjusted discretionary accruals. We find that net income and cash flow from operations increase in the fiscal year prior to the IPO, and decline significantly in the year of the IPO. Net income continues to decline subsequently but not cash flows. Discretionary working capital and total accruals in the year of the IPO are *negatively* related to future cash flows and the change in net income between the pre-and post-IPO period. Taken together, the evidence is consistent with a scenario where firms either time an IPO immediately after a year of unusually high cash flow or boost cash flows right before the IPO, and then use accounting accruals to sustain reported net income in the year of the IPO. Thus, the evidence is consistent with the IPO firm attempting to manage investor perceptions with discretionary accruals.



1 Introduction

This paper examines accounting earnings and the associated accrual and cash flow components in the years around an initial public offering (IPO) to study the incentives and opportunities for firms to manage earnings when going public. For two reasons, initial public offerings of common stock (hereafter IPOs) provide an exceptional opportunity to study earnings management. First, IPOs are associated with high information asymmetries between entrepreneurs and potential investors. Second, they are associated with heavy reliance on financial statements for valuation relative to established firms with alternative sources of information.

Understanding the sources of earnings management in IPOs is important for regulation of financial reporting. Accounting rule-setters must balance the advantages of flexibility to the firm, which can permit close attunement of financial statements to the firm's circumstances, with the advantages of rigidity, which can limit misrepresentation. Evidence that firms increase net asset accruals during the capital acquisition process, and do so the most when the benefit to the firm of misrepresentation is highest, as at the time of an offering, suggests that firms manage earnings to benefit at the expense of investors. Thus, discretion provided by accrual accounting under generally accepted accounting principles (GAAP) may be costly to investors of an IPO.

One way to manage earnings in the IPO process is to boost accruals to report higher earnings. Recent evidence on whether accruals are unusually high before the IPO is conflicting.¹ Our study extends past studies in several ways. First, we examine the

¹Aharony, Lin, and Loeb (1993) do not find evidence of high discretionary accruals prior to the IPO whereas Friedlan (1992) does. Degeorge and Zeckhauser (1993) study the behavior of net income from operations for a sample of reverse leveraged buyouts. Net income includes

relation between discretionary accruals at the time of an IPO and subsequent cash flows and net income to evaluate whether these accruals are an appropriate reflection of the firm's future economic prospects. An absence of high future cash flows, or worse, a decline in net income following high accruals at the time of the IPO would suggest that accruals may have been manipulated in order to mislead investors about the growth prospects of the firm.

Second, we present empirical evidence relating the profiles of earnings, accruals, and cash flows of IPOs with proxies for the incentives and opportunities for earnings management. These proxies include the size of the offering, age, riskiness of the offering, auditor and investment banker size, the fraction of ownership retained by the owner/entrepreneur, and the volume of issues in the IPO markets.

It is well-documented that IPOs cluster at different times in particular industries. This can potentially lead to patterns of accruals that are due to random industry factors and unrelated to the IPO process. A third contribution of our paper is the choice of a measure of discretionary accounting accruals that is estimated relative to a cross-sectional industry-adjusted benchmark. This has the advantage that an industry benchmark of publicly traded firms filters out changes in accruals driven by industry economic conditions.

Finally, we examine both pre- and post-IPO discretionary accruals. We expect that the incentives to manage earnings may persist post-IPO. For example, entrepreneurs may wish to maintain a high stock price until they sell their holdings, and managers both cash flows and accruals, and therefore their study does not address the question of whether the behavior of net income is due to changes in operating cash flows or changes in accounting accruals.

compensated in part through stock options may also wish to keep the stock prices high until the permitted sale date.

We find that net income and cash flow from operations improve significantly in the fiscal year prior to the IPO and then decline significantly in the year of the IPO. Net income continues to decline in the subsequent three years before stabilizing. Cash flow improves somewhat in year 1, and then remains flat. It does not return to its pre-IPO level even after the sixth fiscal year of the IPO. Industry-adjusted discretionary accruals are high during the fiscal year of the IPO but not in the preceding fiscal year. Most interestingly, we find that discretionary accruals in the year of the IPO are negatively related to future cash flows and positively related to the decline in net income between the pre- and post-IPO period. This suggests that the discretionary accruals reported by the issuer in the year of the IPO are not justified either by subsequent cash flows nor earnings growth.

Taking the pattern of earnings, cash flow, and accruals together, the evidence is consistent with a scenario where firms either time the offering for right after an unusually high cash flow year or boost cash flows right before the IPO, and then use accounting accruals to sustain reported earnings in the year of the IPO. Thus, the evidence is consistent with the IPO firm attempting to manage investor perceptions with discretionary accruals.

A composite score derived from an equally-weighted average of the ranks of the firm and offering characteristics, as a measure of earnings management, is significantly correlated with the discretionary accruals in the year of the IPO. A closer examination of the individual characteristics indicate that younger firms (which have been incorporated for a relatively short time) and IPOs with a larger fraction of ownership retained by

issuers have higher discretionary accruals in the year of the IPO. The evidence weakly supports the hypothesis that discretionary total accruals are also higher in hot issue markets and lower for IPOs using high quality auditors and investment bankers.

The rest of the paper is organized as follows. Section 2 analyzes the IPO process to suggest where incentives and opportunities for earnings management might arise. Section 3 hypothesizes how firm and offering characteristics might be related to these incentives and opportunities. The empirical proxies for the characteristics considered are also discussed. Section 4 describes the sample selection and data. Section 5 reports the results of the empirical relation between the measures of discretionary accruals and the earnings management factors, and section 6 concludes the paper.

2 The IPO process

The IPO process typically begins with an entrepreneur approaching an underwriter about floating a new issue. The underwriter, in conjunction with the issuing firm, prepares an offering prospectus that presents externally-audited financial statements for the most recent three years, along with information about the firm, its business, future prospects, competitors and products. Other relevant financial information such as ownership structure is also included. The prospectus is used as a marketing document by the underwriter in road shows to solicit demand, usually from institutional investors.

There are some noteworthy features of the IPO process which offer opportunities and incentives to manage earnings. There is relatively little information available to investors from public sources about private firms so investors have to rely primarily on the financial statements reported in the prospectus. Rao (1993) reports that there is

almost no news media coverage of firms in the years before going public. Underwriters commonly use the price-earnings multiple of a publicly-traded firm in the same industry as the prospective IPO to set the offer price.² Thus, the issuer and the underwriter may have an incentive to report favorable accounting information in the prospectuses to increase the chance of having the issue fully subscribed.

The lack of other sources of information to corroborate the financial statements makes it hard for investors to judge the appropriateness of the reported accounting numbers. This is particularly so since current accounting regulation (APB 20) allows a company undertaking an IPO to change any and all accounting principles via retroactive restatement for all the financial statements presented in the offering prospectus. This gives an exceptional opportunity for the issuer to doctor the profile of accounting earnings in the pre-issue fiscal years.

Limits on the opportunities and incentives for earnings management do exist. One regulatory limit on discretion is the requirement that accounting reports presented in the offering prospectuses be audited by an external accounting firm to verify compliance with GAAP. Furthermore, investment bankers, auditors, and entrepreneurs are subject to lawsuits for misrepresentation of accounting reports.

However, the constraints upon earnings management are imperfect. A GAAP accrual accounting system permits discretion in recognizing the timing and amounts of revenues and expenses. There may be sufficient flexibility permitted within GAAP to allow for inventive earnings management to influence investor perceptions of firm value. Moreover,

²This generalization is based on discussions with the head of the equity syndicate at a large New York underwriter. Also consistent with this generalization, Klein (1992) finds that the offer price is positively related to reported earnings per share.

based on discussions with investment bankers, it appears that the underwriters' due diligence process generally does not include auditing the firm's financial statements. The underwriters, in general, rely upon the auditor's opinion regarding the accuracy of the reported accounting numbers. Especially during hot issue markets, investment bankers, analysts, and auditors are unable to keep up with demand, and the quality of the due diligence performed on the prospectuses may suffer as a result.

Previous empirical studies have reported the presence of earnings management in some contexts but not others. Earnings management was found to be used to affect bonuses (Healy 1985, and McNichols and Wilson 1988), to strengthen claims of harm from foreign imports (Jones 1991), to reduce regulatory costs imposed by capital ratio requirements on banks (Moyer 1990), and to loosen debt covenant constraints (DeFond and Jiambalvo 1994). DeAngelo (1986), however, finds no evidence that managers understate earnings prior to a management buyout (MBO). Liberty and Zimmerman (1986) examine manipulation of earnings by managers facing upcoming union negotiations. Like DeAngelo (1986), they find no evidence of systematic accounting choice to lower reported earnings.

One potential benefit from managing earnings is obvious: increasing the offer price. In addition, firms have an incentive to boost earnings *after* the IPO. The original entrepreneurs may wish to sell some of their personal holdings in the secondary market at the end of a lockup period which commonly lasts 180 days or longer when entrepreneurs commit not to sell their personal holdings. The high post-IPO earnings help maintain a high market price for the secondary offerings by the entrepreneurs. To capture post-IPO manipulation of earnings as well as pre-IPO manipulation, we also examine discretionary accruals in the fiscal year of the IPO which generally can include months both pre- and

post-IPO.

Furthermore, verbal earnings projections are commonly made to investors during road shows when the marketing of the new issue begins.³ After trading begins, the security analysts initiating coverage of the firm will generally disseminate the earnings projections widely. To support the initial offer price, analysts at the underwriting investment banking firms are under pressure to make the most favorable earnings projections possible. In turn, the issuing firm is under pressure to meet those projections in the aftermarket to safeguard its reputation for reliability, to maintain the goodwill of investors, investment bankers, and analysts who made the initial earnings projections, and to avoid lawsuits by disgruntled shareholders.

In addition, the investment banker practices what is commonly referred to as "price stabilization," which is permitted under Rule 10b-7 by the SEC. The investment banker sometimes steps in to buy or sell the stocks of the firm in order to prop up the offer price in the after market.⁴ Thus, the firm may be under pressure from the investment bankers to continue to manipulate earnings after the IPO to help support the stock price.

Finally, it is common for IPO firms to provide stock rights and stock options to encourage management to remain after the firm goes public. These management compensation instruments carry restrictions on when the stocks can be sold, and when the

³The boilerplate in the prospectus of U.S. IPOs does not include earnings projections, possibly out of the investment banker's fear of lawsuits. In the U.K., written earnings projections are mandatory.

⁴The S.E.C. acknowledges that stabilization is a form of price manipulation but permits it in the belief that the success of firm commitment underwritings depends on the ability of the underwriter to sell securities at or near the offer price. See Hanley, Kumar, and Seguin (1993) for a description of the regulation of price stabilization in the IPO market.

options can be exercised, which is usually several months or years after the IPO date. Thus, managers compensated through these plans have an additional incentive to manage earnings to maintain stock prices until the restrictions expire.

Our hypothesis that IPO firms manage earnings does not require that investors be irrational. Managers may increase accruals at the time of IPO even if, on average, investors correctly discount for the amount of earnings management. The models of Narayanan (1985) and Stein (1989) of boosting short-term cash flows provide useful insights for why this can occur. In these models, firms attempt to improve short-term cash flows even though investors fully discount for the fact that results are not as good as they seem.

In the context of accruals management, the reasoning is somewhat different. Suppose that investors do not know what level of accruals is appropriate. If investors believed no earnings management would occur, then there would be an incentive to manage earnings. By increasing accruals, a firm would seem in the short run to be doing well. Thus, under appropriate assumptions, no earnings management is not a viable equilibrium. Instead, investors will correctly conjecture the positive amount of earnings management that takes place. If the entrepreneur were to make the mistake of failing to inflate earnings, the offering would be undervalued by investors. Of course, if investors fail to rationally discount for management of accruals, this adds to the incentive to inflate earnings at the time of IPO in order to mislead investors.

3 Earnings Management Factors

This section examines firm and offering characteristics which may proxy for the incentives and opportunities for earnings management. A number of studies have examined the relation of IPO offering characteristics with initial and long-run market valuations.⁵ These market values may be affected by any earnings management that takes place. Here, we study the direct relation between IPO firm and offering characteristics, which we refer to as earnings management factors (or EM factors hereafter) and the amount of earnings management as measured by discretionary accruals. We discuss below how the EM factors may be related to discretionary accruals.⁶

All other things equal, an auditor and/or investment banker with lower reputation capital may be more acquiescent to the issuer's management of earnings. Thus, we hypothesize that IPOs offering prospectuses audited by smaller auditors and taken public by smaller investment bankers report higher discretionary accruals.⁷

The issuer of an IPO generally reports the number of risk factors associated with the issue, with more risky issues having more risk factors. This number acts as a flag to potential investors regarding the riskiness of the issue and is disclosed to protect the

⁵See Ritter (1980), Beatty and Ritter (1986), Klein (1992), and Teoh, Wong and Rao (1994).

⁶In a pilot study, we also considered the relation between IPO characteristics and the accounting method chosen. In the sample of about 30 IPOs, there was virtually no variation in the choice of methods used, and consequently we do not pursue differences in accounting methods.

⁷Whether investors perceive differences in credibility of reports among classes of auditors, and whether auditor size and credibility are related are much debated issues in the accounting literature. For evidence supporting a lower credibility of earnings reports of firms audited by non-big eight auditors, see Teoh and Wong (1993).

underwriter and issuer from lawsuits. For example, the underwriter will note in the prospectus that the research and development activities of the issuer may not result in successful products for the firm in the future. Risky issues are more likely to have volatile underlying cash flows, and therefore the appropriate amount of accruals given the underlying economic conditions may be more difficult to ascertain. Thus, more risky issues may provide greater opportunities for issuers to mask managed earnings with accounting adjustments. Therefore, we hypothesize that discretionary accruals at the time of the IPO will be positively related to the number of risk factors reported in the prospectuses.

Similarly, industries differ in cash flow volatility, and therefore we expect the opportunities for managing earnings to vary across industries. We control for possible industry effects by measuring unexpected (discretionary) accruals of an IPO using an industry benchmark for expected accruals.

Potential investors are likely to have more independent sources of information about issuing firms that have been in existence longer. Such benchmark information presumably makes it easier for potential investors to detect earnings management. Consequently, we expect earnings management to be greater for younger firms.

We expect that the incentive to manage earnings increases with the amount of equity capital raised. Thus, we hypothesize a positive relation between discretionary accruals and the size of the offering. Alternatively, a positive relation between discretionary accruals in the year of IPO and offering size may also obtain if the new equity capital permits more working capital accruals. For example, cash infusion from the new issue may be used to reduce account payables or to increase account receivables and inventory.

The size of the entrepreneur's share ownership in the firm can affect his incentive to

manage earnings during an IPO. An entrepreneur retaining a large stake in the firm long-term has greater reputation capital to protect, and hence will be less inclined to engage in income-increasing earnings management during the IPO. If he undertakes substantial earnings management which becomes apparent after the IPO in the long-run, the share price may suffer, reducing his wealth. On the other hand, an entrepreneur with a large stake that he intends to sell immediately after the lock-up period would have an incentive to manage earnings until after the expiration of the lock-up period. Thus, the relation between discretionary accruals and share ownership of the issuer is ambiguous.

In addition, issuers' share ownership has a second effect on discretionary accruals, which works through its relation with risk. In a theoretical model on IPOs, Grinblatt and Hwang (1989) show that, *ceteris paribus*, insiders retain a smaller fraction of shares when the issue is risky. Thus, the previously discussed positive relation between risk and the amount of discretionary accruals suggests a further reason for the hypothesized negative relation between ownership retention and discretionary accruals. This is true even after normalizing for the number of risk factors since our measure of risk is imperfect.

Finally, the opportunities for earnings management may vary depending on the rate of activity of the issue market. As mentioned previously, the due diligence efforts suffer from excess demand on the services of investment bankers, auditors, and analysts. The saturation of issues at a given period to dilute the due diligence efforts is akin to dilution effects observed in biological systems to preserve survival of certain prey species. Monarch butterflies and locusts migrate together in large numbers, and the 17 year cicadas emerge in huge numbers only once every 17 years to saturate the facilities of predators (see Kreds and Davies 1987). Similar dilution effects to exhaust due diligence efforts may also explain industry clumping of issues since underwriters, auditors, and

analysts have limited capacities and specialize in specific industries. Thus, we expect greater earnings management in hot issue years.

To summarize, we hypothesize that the amount of discretionary accruals prior to the IPO will be higher for issuers who are high-risk, have larger size of offerings, are taken public by low-quality investment bankers and audited by low-quality auditors, are younger firms, and are floated during hot issue periods. The relation with ownership retained by issuer is ambiguous. These earnings management factors are measured as follows. *Age* is the logarithm of 1 plus the number of years the firm has been in existence since the date of incorporation. *OffSz* is the logarithm of number of shares offered multiplied by the offer price, and deflated by previous year total assets. The riskiness of the offering is measured as the logarithm of one plus the number of risk factors reported in the prospectuses. The variable *Qual* is used to proxy for auditor and investment banker quality, and it can take on three values; 2, 1, and 0. The value is 2 if the IPO prospectus is audited by a Big Six auditor and taken public by a prestigious investment banker,⁸ 1 if either a Big Six auditor is used or a prestigious investment banker but not both, and 0 if neither a Big Six auditor nor a prestigious investment banker were used. The ownership retention, *ShrHld*, is the fraction of shareholdings retained by the issuer to the total shares outstanding. The rate of activity of the issue market, *Vol*, is obtained from Ritter (1991) and is the annual volume of IPOs in the issuance year.

Since these measures have extreme values, we use their rank scores, which are likely to have less measurement error, as instrumental variables. Variables predicted to have a negative relation with discretionary accruals (i.e. *Age*, and *Qual*) are ranked in descend-

⁸See Beatty and Ritter (1986) for a description of the rankings of investment banker quality.

ing order, and variables predicted to have a positive relation (*Risk*, *OffSz*, and *Vol*) are ranked in ascending order. We find that the empirical simple correlation between discretionary accruals and *ShrHld* is negative, so we rank *ShrHld* in descending order. Thus generally, high ranks are hypothesized to lead to high earnings management. In addition to the individual characteristics, we also calculate an aggregate score for earnings management, *EMscore*, from the sum ranks of all the individual factors. Thus, equal weights are given to the individual factors in the aggregate score. reported

4 Sample Selection and Data

The initial sample consists of 130 IPOs issued between 1980 and 1984 for which we have prospectuses.⁹ We eliminated firms if Compustat financial data were unavailable, and if the issue was not solely common equity. For the final sample of 121 firms, we collected pre-IPO financial data from the prospectuses and post-IPO financial data from Compustat. The sample sizes vary depending on the accruals measure used and the length of time since the IPO. Three firms were delisted by the end of the third fiscal year of the IPO: one merged 7 months after the first fiscal year end, the second firm was delisted 17 months after the first fiscal year end and the third firm was delisted 30 months after the first fiscal year end.

Tables 1 and 2 provide some descriptive statistics of the sample. A large number of industries are represented in the sample, with a total of 31 2-digit SIC codes represented. Industry membership is concentrated in machinery (SIC 35) and high-technology firms (SIC 36, 38, and 73). There is also a concentration of IPOs in 1983 reflecting the

⁹We thank Chris James and Jay Ritter for the prospectuses.

availability of IPO prospectuses to us for that year. The general offering and firm characteristics are similar to Ritter's sample of IPOs made during 1975-1984. The median size of offering is \$13m which is about the median sales revenue size. The median offer price is \$12, and the median market value of the IPO is \$47m, which is about twelve times the book value before the offering.

4.1 Discretionary Accrual Measures

Discretionary accruals are used to measure the extent of earnings management. They are calculated as the difference between accruals and expected accruals estimated from a cross-sectional adaptation of the Jones (1991) model described below.¹⁰ We consider both discretionary working capital accruals and discretionary total accruals. The former is generally considered to be more susceptible to manipulation; see e.g. Kreutzfeldt and Wallace (1986), and Guenther (1994).

Working capital accrual (*WKA*) is calculated as the change in current assets (Compustat item 4) net of cash and marketable securities (item 1) minus the change in current liabilities (item 5) net of the current maturity of long-term debt (item 44). Total accrual (*TAC*) is net income (item 172) minus operating cash flow. Operating cash flow (*OCF*) is calculated as working capital from operations (item 110) minus working capital accruals.¹¹ The pre-IPO financial items are obtained from the financial reports of the prospectuses either from the balance sheet or the statement of changes in financial position, and the post-IPO data are obtained from Compustat using the item numbers

¹⁰See DeFond and Jiambalvo (1994) for a similar cross-sectional adaptation.

¹¹The operating cash flow definition has been used by Bowen, Burgstahler and Daley (1986), and DeFond and Jiambalvo (1994) among others.

noted.

The expected accrual for an IPO firm in a given year is estimated from a cross-sectional regression of accruals on the change in sales using an estimation sample obtained by matching all Compustat-available firms with the same 2-digit SIC code and for the same fiscal year as the IPO firm. (Note that the IPO firm is not included in the regression.) Consistent with Jones (1991), and DeFond and Jiambalvo (1994), all variables in the cross-sectional regression are deflated by lagged total assets to reduce heteroscedasticity. When total assets in year -2 relative to the IPO year are not available, total assets in year -1 are used as deflators.

To estimate expected working capital accrual, we ran the following cross-sectional regression for all firms in the estimation sample:

$$\frac{WKA_{jt}}{TA_{j,t-1}} = a_0 \frac{1}{TA_{j,t-1}} + a_1 \frac{\Delta SALES_{jt}}{TA_{j,t-1}} + \epsilon_{jt}, \quad j \in \text{estimation sample}, \quad (1)$$

where $\Delta SALES$ is the change in sales, and TA is total assets. The expected working capital accrual for i at t is calculated using the estimated regression coefficients \hat{a}_0 for the intercept and \hat{a}_1 for the slope. The discretionary working capital accrual, $DWKA_{it}$, for IPO firm i for year t is then calculated as:

$$DWKA_{it} = \frac{WKA_{it}}{TA_{i,t-1}} - \hat{a}_0 \frac{1}{TA_{i,t-1}} - \hat{a}_1 \frac{\Delta SALES_{it}}{TA_{i,t-1}}, \quad (2)$$

The discretionary total accrual, $DTAC_{it}$, for IPO firm i for year t is calculated in a similar manner except that now total accrual is used and the regression includes gross property, plant and equipment as an additional explanatory variable.

$$\frac{TAC_{jt}}{TA_{j,t-1}} = b_0 \frac{1}{TA_{j,t-1}} + b_1 \frac{\Delta SALES_{jt}}{TA_{j,t-1}} + b_2 \frac{PPE_{jt}}{TA_{j,t-1}} + \epsilon_{jt}, \quad j \in \text{estimation sample} \quad (3)$$

$$DTAC_{it} = \frac{TAC_{it}}{TA_{i,t-1}} - \hat{b}_0 \frac{1}{TA_{i,t-1}} - \hat{b}_1 \frac{\Delta SALES_{it}}{TA_{i,t-1}} - \hat{b}_2 \frac{PPE_{it}}{TA_{i,t-1}}, \quad (4)$$

where PPE is the gross property, plant and equipment, \hat{b}_0 is the estimated intercept, and \hat{b}_1 and \hat{b}_2 are the estimated slope coefficients for IPO firm i in year t .

The cross-sectional approach for estimating expected accruals has the advantage that it adjusts for the effects of changing industry-wide economic conditions on accruals. An IPO is generally associated with major changes in the firm's investment opportunity set, and these economic changes will influence accruals independent of any manipulation. The common practice of underwriters pricing equity issues of comparing market prices and accounting variables of similar firms in setting the offer price (see DeAngelo 1990) suggests the importance of using an industry benchmark for measuring discretionary accruals.

We note two limitations of the cross-sectional model for expected accruals. First, expected accruals may depend on the stage in the life-cycle of the firm, so using seasoned firms to measure expected accruals for IPO firms may result in measurement error. We do not currently have a life cycle theory of accruals, nor are there reasons to expect that these measurement errors are related systematically to the firm and offering characteristics we analyze. Thus, we assume that these measurement errors are white noise. As noted above, we use the rank scores as instrumental variables to reduce measurement error.

Second, the Jones' accruals estimation procedure assume that sales and fixed assets are not manipulated, and they substantially determine the non-discretionary portion of accruals. For example, to the extent that management accelerates sales revenue recognition, we will be overestimating expected accruals, and underestimating discretionary accruals. However, a wide variety of manipulations remain detectable with the cross-sectional procedure, such as a decrease in the provision of bad debts relative to increased

volume of sales, and under-depreciating assets (see Appendix for examples of manipulations).

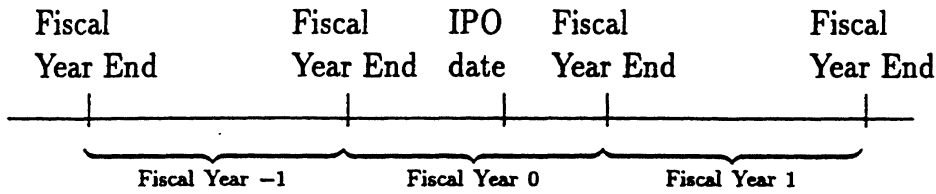
Aharony, Lin and Loeb (1993) and Friedlan (1993) use an alternative approach focusing on year-to-year *changes* in a firm's accrual as a measure of discretionary accruals. Prior period accrual proxies for expected accrual in the current period, so the discretionary accrual is the differenced accrual. There are several problems with this differenced approach for IPOs. If accruals are independent, and identically distributed with constant mean and variance, differencing will induce a serial correlation of -0.5 .¹²

In addition, the differenced measure can be perverse if earnings management occurs in the earlier periods, which is probable, with variation over time in incentives to adjust accruals. To illustrate, suppose a firm boosts upwards its accruals by \$2 million at date 1 and \$1 million at date 2 in order to manage investor perceptions at both dates. The measured *change* in accruals from date 1 to date 2 is $-\$1$ million even though the firm is actually managing earnings *positively* at date 2 relative to the case of no discretionary accruals. The differenced measure is particularly suspect for examining immediate post-IPO accruals, because the benchmark period (just prior to the IPO) is likely to be biased by earnings management.

For these reasons, treating the change of accruals at a point in time as a measure of earnings management can lead to confusion about the sign, magnitude and timing of earnings management. Consequently, we rely on the industry-adjusted discretionary method for our tests, but report some results based on the differenced method only for

¹²Dechow (1992) and Choi, Gramlich, and Thomas (1993) report a negative serial correlation of about .5 Choi, Gramlich, and Thomas reports that first differences adequately capture discretionary non-current accruals (e.g. depreciation) but first differences in working capital accruals exhibit a constant mean and variance i.i.d. distribution.

Time Line



consistency with previous studies.

The timing convention is illustrated below. The fiscal year of the IPO is year 0 with all other fiscal years coded relative to year 0. Thus, fiscal year -1 ends before the date of the IPO. For some IPOs, the latest available financial data in the prospectuses are for fiscal year -1. For others, partial year (interim) data may also be reported in the prospectuses if the IPO occurred before annual results are available for the current fiscal year of the IPO. Generally, interim data is available for the months up to 90 days before the IPO date. For example, an IPO in the 9th fiscal month may report financial results of the first 6 months of fiscal year 0 along with the financial results of the full fiscal year -1 in the prospectus. Fiscal year 0, therefore, may include both pre- and post-IPO information.

We consider both year -1 and year 0 discretionary accruals in the empirical tests. As discussed earlier, year 0 discretionary accruals, which capture post-IPO earnings management, are interesting to consider because of managers' incentives to manage earnings in the period immediately following the IPO. Since our focus is on identifying the factors influencing the incentives and opportunities for earnings management whether pre- or post-IPO, the inability to distinguish pre- and post-offering months in the fiscal year of the offering is not relevant.

5 Empirical Results

The time profile of accruals, changes in net income, and changes in operating cash flows in the period two years before through 6 years after the IPO are provided in Table 3 and illustrated in Figure 1. The discretionary accruals, net income and cash flow measures are deflated by total assets. Table 4 reports the rank correlation between accruals and accounting performance. For a more detailed description of the relation between accruals and accounting performance, we segment IPO firms into quintile groups based on the accrual measures, and report the distribution of accounting performance pre- and post-IPO in Tables 5 and 6. Figures 2 and 3 illustrate the distributions. In Table 7, we report the simple correlations between discretionary accruals and the EM factors and composite EM score. Ordinary least squares regressions of discretionary accruals on the ranks of the EM factors are provided in Table 8. To evaluate further the relation between discretionary accruals and the EM factors, we segment IPO firms into quintile groups based on the EM score, and report the distribution of the accruals and accounting performance variables for each quintile in Table 9. This might reveal possible non-monotonicity in the relation between accruals and the EM scores not picked up by the regression model.

5.1 Time Profile of Accounting Performance of IPOs

A pattern of positive discretionary accruals before or at the IPO and negative discretionary accruals some time after the IPO would suggest the presence of earnings management. For both discretionary working capital and total accruals in Table 3, the largest accruals occurred in year 0. The median discretionary working capital accrual is highly

statistically significant and the mean is also significant at the 5% level (one-tailed). The median discretionary total accrual is significant at the 5% level (one-tailed) but the mean is not significant at conventional levels. Given non-normality of the discretionary accruals, the median test is more reliable. Both year -1 discretionary working capital and total accruals are not significant at conventional levels. Post-IPO, the reversal in discretionary working capital accrual does not occur until year 3 but the reversal in discretionary total accrual occurs beginning in year 1.

As a diagnostic check, we also profile differenced discretionary accruals. As for discretionary accruals above, the peak in accruals occurs in year 0 though the significance level is low. The differenced accruals are unremarkable in year -1. Both year 1 and 2 accruals are negative, with the medians achieving statistical significance at conventional levels. These findings are consistent with Aharony, Lin, and Loeb (1993).

Considering the profile for net income, Table 3 indicates that net income and cash flow from operations grew in the year before the IPO. Both the mean and median changes are highly significantly positive. As for discretionary accruals, mean changes in net income and cash flow are not as reliable, so we focus on median changes. Net income begins to decline beginning in the year of the IPO, and continues to decline until year 6. The median drop in net income in year 0 is statistically significant at 1% level. Cash flow also drops significantly in year 0 with a 2% p-value, and then remains flat thereafter.

To summarize, the evidence suggests that firms go public in the year after an unusually high earnings which is supported by an unusually high cash flow from operations. There is little evidence of accrual manipulation in the year before the IPO. However, in the IPO year, when cash flows plummet, discretionary accruals are used to prop up

earnings. Subsequently, discretionary accruals are paid back in the post-IPO period, and with flat cash flows, earnings also decline.

Table 4 provides evidence that accruals in the IPO fiscal year are related to the profile of net income and cash flow measures of performance in the period surrounding the IPO. The discretionary working capital and total accruals in year 0 are high when reported net income is high in the previous year (-1), and cash flow in the same year (0) is low. The correlations between discretionary accruals in year 0 with net income in year -1 are positive and significant, and with cash flow in year 0 are negative and highly significant. The higher is net income in year -1 and lower is cash flow in year 0, the greater is the need for the IPO firm to use discretionary accruals in year 0 to boost earnings. Thus, the evidence further corroborates the view that firms time IPOs for after they receive abnormally high cash flows, and then use accruals to maintain earnings in the year the firm is taken public.

The discretionary accruals are unrelated to future net income as most of the correlations do not achieve statistical significance at conventional levels. If earnings were artificially inflated during the year of the IPO with high discretionary accruals, we expect that future cash flows would be low. Since the accruals have to be repaid in the future, we also expect a negative relation between current discretionary accruals and the change in net income in a future period. Table 4 contains two key results that are consistent with these hypotheses.

In Table 4, we find that year 0 discretionary accruals can forecast the decline in net income between pre and post-IPO periods and the low level of post-IPO cash flows. The correlations of discretionary accruals in year 0 with the difference between mean net income in year -1 and 0 and mean net income in year 1 through 3 are statistically

significantly negative at less than 5% level. Similarly, the discretionary accruals in year 0 are also negatively correlated with the level of cash flows in most of the post-IPO years. The correlation between discretionary accruals in year 0 and the mean cash flows in years 1 through 3 are statistically significantly negative at less than 5% level. The evidence implies that the more IPO firms manage earnings by using discretionary accruals to boost earnings in the year of the IPO, the greater will be the decline in net income and the lower the cash flows subsequent to the IPO. Thus, the more earnings in year 0 are supported by discretionary accruals rather than cash flows, the more investors are misled about the earnings growth potential of the firm.¹³

Table 5 and 6 report the detailed distribution of net income and cash flows for each quintile group of IPO firms sorted by the discretionary accruals. Quintile 1 has the highest discretionary accruals and quintile 5 the lowest. The results confirm that the correlations reported in Table 4 are not driven solely by a few firms. For example, mean cash flows in year 1 through 3 increase monotonically from quintile 1 to quintile 5 in Table 5.

¹³There is interesting evidence suggesting that IPO aftermarket prices are inefficiently high, based on the subsequent poor long-term market performance of IPO firms (Ritter 1991, Loughran and Ritter 1994). Our finding of the predictability of discretionary accruals for future earnings growth and for future cash flow suggests the possibility of a relation between earnings management and after-market pricing of IPOs. As mentioned earlier, there can be an incentive for issuers to manage accruals even if investors rationally foresee earnings management and adequately discount for it. The evidence in Teoh, Wong, and Rao (1994) indicates a strong negative relation between discretionary accruals at the time of the IPO and the long-run after-market equity performance of IPO firms. This suggests that investors in their pricing of the security of IPO firms may be misled by high discretionary accruals at the time of the IPO.

5.2 Relation between Discretionary Accruals and EM Factors

The rank correlation matrix for the EM factors and the discretionary accrual measures for year -1 and year 0 are reported in Table 4. High scores for EM factors are hypothesized to predict high discretionary accruals. The results are generally robust with respect to the whether values or ranks are used and whether the discretionary accruals are standardized or not standardized.

The discretionary accruals for year -1 and year 0 do not appear to be correlated. The discretionary working capital accruals are highly correlated with the discretionary total accruals at 1% level. The correlation of interest in this paper between discretionary accruals and the EM score (= sumrank of all the EM factor ranks) is positive as predicted. The discretionary accruals in year 0 are indeed higher when the opportunities and incentives are hypothesized to be favorable for earnings management. The correlation of EM score with discretionary working capital accrual of year 0 is 21% and significant at the 2% level, and with discretionary total accrual is 12% and significant only at the 10% level (one-tailed). The low simple correlation between EM score and discretionary total accruals might be partly the result of cross-correlation among the EM factors. Thus, we consider the correlation of discretionary accruals with the individual EM factors next.

The main contributors to the significant correlation between EM score and discretionary accruals in year 0 appear to be firm age and the fraction of shareholdings retained; the correlations have the predicted signs and are significant at the 5% level (one-tailed). In addition, the size of the offering is marginally positively correlated with discretionary working capital accruals and the rate of activity in the year of issuance is marginally positively correlated with discretionary total accruals. The quality class of the auditor and investment banker is marginally significant with discretionary to-

tal accruals. Thus, the evidence suggest that discretionary accruals are high when the IPO firms are younger and the issuers retain a smaller shareholding in the after-market. There is also weak evidence that discretionary accruals are high when the size of offering is large, the firms use low quality auditors and investment bankers, and are issued during hot issue years.

The discretionary accrual in year -1 is not correlated with the composite EM score, nor with any of the individual EM factors at the conventional significance levels. Either the EM factors do not represent economic conditions suitable for earnings management so long before the IPO, or else there is little manipulation going on in year -1. The latter is consistent with the weak findings in Table 3 that the discretionary accruals in year -1 are not significantly different from 0.

Univariate evidence for the importance of the individual EM factors is not conclusive because there is considerable cross-correlation among the EM factors. IPO firms with larger offerings have lower fraction of shareholdings retained by the original entrepreneur. Younger firms, firms with larger size offerings, and firms using low quality auditors and investment bankers report more risk factors reported in the prospectuses. Finally, larger offerings are made during hot issue years.

To disentangle the relative importance of the EM factors, we perform a regression of discretionary accruals on the rank scores of EM factors. The regression results are reported in Table 8. Ranks are used to reduce measurement error in the factors and the Belsley, Kuh, and Welsch [1980] DFFITS procedure in SAS is used to remove potential influential points as a diagnostic check on the regression. The level of significance for the test-statistics are marginally higher using cardinal values and without removing outliers, but the qualitative results are similar. The regressions appear to be better specified using

ranks and the DFFITS rule in that the residuals are normal.

The EM factors together explain 6% of the variation in the discretionary working capital accruals of year 0; the F -statistic is significant at the 4% level. Consistent with the correlation results, age and fraction of shareholdings retained contribute most of the explanatory power. The coefficient for the fraction of shareholdings retained by the issuer has a t statistic of 1.991 and the t statistic for age is 2.238, both of which are significant at the 5% level. Thus, there is greater earnings management by younger firms and those with fewer shareholdings retained by the issuer. The other explanatory variables are not statistically significant at conventional levels.

The regression results are similar for discretionary total accruals. with somewhat higher level of significance. The regression fit appears adequate. The F -statistic is statistically significant and the \bar{R}^2 is 11% and is higher than for discretionary working capital accruals. As for discretionary working capital accruals, the two main variables explaining most of the variation in discretionary total accruals are Age and ShrHld. In addition, the auditor and investment banker quality variable is now marginally significant (at about 6% level, one-tailed.)

Also consistent with the correlation results, the EM factors do not explain the variation in the discretionary accruals for year -1. The regression fits are poor and none of the coefficients are significant at conventional levels for both discretionary working capital and total accruals in year -1.

Considering the distribution of accruals, net income, and cash flow from operations over EM score rankings in more detail, we sorted IPO firms in descending order of the EM scores. Thus, an EM score of 5 represents the lowest ranking on the combined factors, while a score of 1 represents the maximum incentives or potential for earnings

management. Table 9 reports the means of the accounting variables for each quintile group in the first panel, and the medians in the second panel. The means are rather different from the medians suggesting the presence of some extreme observations. We therefore focus on the medians.

There is no apparent relation between EM score rankings and discretionary working capital accruals at year -1, and discretionary total accruals in year -1 and 0. For discretionary working capital accrual in year 0, there is a monotonically negative relation with EM score except for quintile 5. Thus, the EM score appear to capture adequately the degree of earnings management in working capital accruals but not total accruals. In addition, Table 9 also reports that IPO firms with high earnings and good cash flows in the year of IPO have less incentives to manage earnings. The high EM score firms with low incentives and/or poor opportunities to manage earnings have high net income and cash flows in the IPO year.

6 Conclusion

Since the IPO market relies on financial statements for valuation, and there are severe information asymmetries between entrepreneurs and potential investors in IPO firms, we expect managers of IPO firms to have both good opportunities and strong incentives to manage earnings. We examine whether IPO firms manage earnings using discretionary accruals.

First, we examine the level of discretionary accruals at the time of the IPO, normalizing for industry accrual levels. It is important to normalize for industry economic conditions affecting accruals because IPOs cluster at different times in particular indus-

tries. The industry adjustment filters out accruals which are taking place for similar public firms in the industry and hence are unrelated to the IPO process. We find that industry-adjusted discretionary accruals are high during the fiscal year of the IPO. This is consistent with earnings management either just prior to or soon after the IPO. There is no evidence, however, of significant discretionary accruals in the fiscal year preceding the IPO, so IPO firms do not appear to manage earnings well in advance of the issue.

Even after industry-adjustment, however, mean levels of discretionary accruals do not allow us to distinguish whether accruals are increased to help the IPO or whether IPOs are planned when high legitimate accruals are foreseen. To examine this in greater detail, we relate discretionary working capital and total accruals with the time profile of net income and cash flow from operations before and after the IPO. We find that high discretionary accruals in the year of the IPO are followed by *low* cash flows and a *greater drop* in net income in subsequent years. The evidence is consistent with a scenario where firms time the IPO for right after an unusually high cash flow year, and use accounting accruals to sustain earnings in the year of the IPO.

For purposes of monitoring and designing regulations, it may be useful for auditors, investors, and regulators to be aware of the circumstances we identify as being conducive to earnings management. We identify firm and offering characteristics which may represent good incentives and strong opportunities to manage earnings. These include offering size, age, riskiness of the offering, quality of the auditor and investment banker, the fraction of shareholdings retained by the issuer, and the rate of activity of the issue market. We find that discretionary accruals are significantly negatively related to the age of the firm and the fraction of shareholdings retained by the issuer. There is weak evidence that discretionary total accrual is also higher in hot issue markets and when

audited by low quality auditor or taken public by non-national investment bankers.

In summary, we find evidence that is consistent with earnings management in IPOs. We find that discretionary accruals peak in the year of the IPO, and the magnitude of these discretionary accruals forecasts both the drops in future net income and the (negative) future levels of cash flow from operations. Finally, we identify some firm and offering characteristics that predict the amount of discretionary accruals in IPO firms.

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TABLE 1: Industry Distribution and Time Distribution of IPO Sample

Panel A: Industry Distribution of Sample

Industry Name	SIC Codes	Frequency	%	Cumulative Frequency	Cumulative %
Oil & Gas	13	4	3.3	4	3.3
Chemical Products	28	10	8.3	14	11.6
Manufacturing Machinery (oil&gas, computer)	30, 31, 32, 33, 34	7	5.8	21	17.4
Electronic Equipment	35	27	22.3	48	39.7
Scientific Instruments	36	14	11.6	62	51.3
Apparel	38	6	5.0	68	56.3
Computer Services	56	4	3.3	72	59.6
Health Services	73	13	10.8	85	70.3
All other ^a	80	4	3.3	89	73.6
	16, 20, 22, 25, 37, 39, 45, 48, 49, 50, 51, 52, 54, 55, 58, 59, 78, 80	32	26.4	121	100.0

Panel B: Time Distribution of Sample

IPO Year	Frequency	%	Cumulative Frequency	Cumulative %
80	20	16.5	20	16.5
81	17	14.0	37	30.6
82	3	2.5	40	33.1
83	72	59.5	112	92.6
84	9	7.4	121	100.0

^d Each of the 2-digit SIC codes listed in the all other group contains 3 or fewer IPOs, which is less than 3% of the sample.

TABLE 2: Initial Public Offering Sample Characteristics

	Offer Price \$	Size of Offering \$m	Market Value \$m	Book Value \$m	Sales Revenue \$m	% Δ Sales Revenue \$m
Mean	12.202	23.743	90.948	7.048	55.537	1.021
Median	12.000	13.000	47.251	3.809	13.785	0.656
	DWKA ₋₁	DWKA ₀	DTAC ₋₁	DTAC ₀		
Mean	0.011	0.099	-0.064	0.034		
Median	0.023	0.067	0.001	0.028		
	ShrHld	Risk	Qual	Age	OffSz	Vol
Mean	0.716	3.876	0.397	11.397	7.585	6.597
Median	0.724	0.000	0.000	9.000	1.251	8.650

Market Value = number of shares outstanding x stock price on day of IPO

Book Value = shareholder equity value in the fiscal year before the IPO

% Δ Sales = the change in sales in the fiscal year before the IPO deflated by sales in year -2.

DWKA_i = discretionary working capital accruals in year i relative to fiscal year of IPO deflated by total assets in year i - 1

DTAC_i = discretionary total accruals in year i relative to fiscal year of IPO deflated by total assets in year i - 1

ShrHld = fraction of ownership retained by the original entrepreneurs after the offering

Risk = number of risk factors for the offering listed in the prospectus

Qual = dummy variable for combined quality of auditor and investment banker; has value 2 if audited by big 6 and listed with national investment banker, 1 if audited by big 6 or listed with national investment banker, and 0 otherwise

Age = number of years from date of incorporation to the year of the IPO)

OffSz = (number of shares sold at offering x offer price)/total assets in year -1

Vol = annual volume of issues in the year of issue/100.

TABLE 3: Time Series Profile of Discretionary Working Capital and Total Accruals, Differenced Working Capital and Total Accruals, Changes in Net Income, and Changes in Cash Flow from Operations from year -2 to year 6 relative to the fiscal year of IPO.

Fiscal Year	-1	0	1	2	3	4	5	6
Discretionary Working Capital Accruals								
Mean	0.011	0.099	0.022	0.017	-0.009	-0.000	-0.018	0.009
T - test p - value	0.717	0.079	0.311	0.198	0.522	0.994	0.094	0.583
Median	0.023	0.067	0.018	0.014	-0.020	-0.014	-0.013	-0.017
Wilcoxon p - value	0.372	0.000	0.024	0.175	0.482	0.253	0.119	0.413
Number	115	121	116	114	114	110	108	84
Discretionary Total Accruals								
Mean	-0.064	0.034	0.008	0.000	-0.037	-0.024	-0.056	-0.038
T - test p - value	0.115	0.333	0.706	0.991	0.034	0.114	0.000	0.044
Median	0.001	0.028	-0.012	-0.028	-0.025	-0.035	-0.027	-0.037
Wilcoxon p - value	0.685	0.095	0.842	0.140	0.009	0.008	0.000	0.007
Number	111	119	115	114	114	111	108	83
Differenced Working Capital Accruals								
Mean	-0.028	0.025	-0.052	-0.018	-0.022	-0.012	-0.035	-0.002
T - test p - value	0.396	0.213	0.011	0.398	0.204	0.482	0.215	0.930
Median	0.002	0.003	-0.010	-0.021	-0.016	-0.016	-0.000	0.005
Wilcoxon p - value	0.780	0.464	0.037	0.059	0.139	0.350	0.457	0.679
Differenced Total Accruals								
Mean	-0.077	0.056	-0.044	-0.024	-0.039	-0.026	-0.193	0.022
T - test p - value	0.023	0.027	0.008	0.305	0.048	0.198	0.279	0.376
Median	-0.011	0.013	-0.012	-0.020	-0.011	-0.018	0.002	0.003
Wilcoxon p - value	0.129	0.143	0.020	0.007	0.038	0.133	0.521	0.971
Changes in Net Income								
Mean	0.091	0.008	-0.005	-0.022	-0.036	-0.030	-0.206	-0.028
T - test p - value	0.000	0.732	0.783	0.134	0.076	0.179	0.263	0.318
Median	0.024	-0.016	-0.003	-0.018	-0.010	-0.003	-0.001	0.005
Wilcoxon p - value	0.000	0.009	0.331	0.000	0.066	0.121	0.515	0.726
Changes in Cash Flow from Operations								
Mean	0.178	-0.048	0.040	0.002	0.002	-0.005	-0.014	-0.006
T - test p - value	0.001	0.113	0.057	0.911	0.868	0.748	0.467	0.767
Median	0.057	-0.039	0.013	-0.005	-0.005	0.002	0.006	-0.004
Wilcoxon p - value	0.001	0.023	0.129	0.872	0.859	0.760	0.849	0.523

TABLE 4: Spearman Correlation Coefficients for Discretionary Working Capital and Total Accruals in the fiscal year of IPO with Net Income and Cash Flow from Operations from Year -2 through 6, and Pre- and Post-IPO Changes in Net Income.

	NI ₋₂	NI ₋₁	NI ₀	NI ₁	NI ₂	NI ₃	NI ₄	NI ₅	NI ₆	NI _(1 to 3)	NI _(4 to 6)
DWKA ₀	-0.002 0.984	0.165 0.071	-0.069 0.452	-0.082 0.376	-0.040 0.672	-0.002 0.982	0.162 0.086	0.052 0.587	-0.087 0.395	-0.046 0.616	0.021 0.826
DTAC ₀	0.036 0.735	0.261 0.004	0.063 0.494	-0.011 0.907	-0.002 0.980	-0.053 0.572	0.126 0.189	0.173 0.074	-0.062 0.547	-0.036 0.699	0.085 0.376
	CF ₋₂	CF ₋₁	CF ₀	CF ₁	CF ₂	CF ₃	CF ₄	CF ₅	CF ₆	CF _(1 to 3)	CF _(4 to 6)
DWKA ₀	-0.059 0.596	-0.097 0.302	-0.625 0.000	-0.146 0.115	-0.152 0.103	-0.131 0.162	-0.024 0.797	-0.129 0.180	-0.227 0.025	-0.195 0.035	-0.182 0.053
DTAC ₀	0.014 0.901	-0.057 0.551	-0.630 0.000	-0.192 0.039	-0.177 0.060	-0.224 0.017	0.012 0.900	0.023 0.815	-0.158 0.125	-0.263 0.004	-0.075 0.434
	(NI _(1 to 3) - NI _(-1 to 0)) (NI _(4 to 6) - NI _(-1 to 0)) (NI _(1 to 6) - NI _(-1 to 0))										
DWKA ₀	-0.194 -0.388 -0.091										
DTAC ₀	-0.247 0.007 -0.083 0.386										

Two-tailed *p*-values under zero null are reported beneath the correlation coefficients. DWKA_{*t*} is discretionary working capital accruals at time *t*, DTAC_{*t*} is discretionary total accruals at time *t*, NI_{*t*} is net income at time *t*, and CF_{*t*} is cash flow from operations at time *t*, all deflated by total assets.

TABLE 5: Summary Statistics for Net Income and Cash Flow from Operations by Quintile Groups sorted on Discretionary Working Capital Accruals in the fiscal year of the IPO.

Quintile	DWKA ₀	Net Income											Cash Flow From Operations																							
		NI ₋₂	NI ₋₁	NI ₀	NI ₁	NI ₂	NI ₃	NI ₄	NI ₅	NI ₆	NI _(1 to 3)	NI _(4 to 6)	CF ₋₂	CF ₋₁	CF ₀	CF ₁	CF ₂	CF ₃	CF ₄	CF ₅	CF ₆	CF _(1 to 3)	CF _(4 to 6)													
		Mean						Median					Mean						Median																	
1	0.687	-0.162	0.041	0.040	-0.058	-0.057	-0.101	0.006	-0.050	-0.012	-0.087	-0.037	0.043	0.112	0.057	0.037	0.039	0.027	0.056	0.051	0.024	0.037	0.064	0.027	0.444	0.043	0.043	0.037	0.039	0.027	0.056	0.051	0.024	0.037	0.064	0.027
2	0.213	-0.039	-0.047	-0.060	0.035	0.050	-0.051	-0.055	-1.064	-0.056	0.011	-0.531	0.063	0.115	0.091	0.078	0.053	0.047	0.025	0.020	0.044	0.064	0.027	0.214	0.063	0.063	0.047	0.091	0.078	0.053	0.047	0.025	0.020	0.044	0.064	0.027
3	0.061	-0.013	0.056	0.030	0.005	-0.019	-0.028	-0.117	-0.098	-0.200	-0.014	-0.139	0.039	0.067	0.060	0.042	0.022	0.009	0.021	0.007	0.010	0.015	0.031	0.067	0.049	0.094	0.069	0.052	0.017	0.010	0.026	0.008	0.008	0.018	0.031	0.015
4	-0.052	-0.120	0.087	0.041	0.035	0.035	0.008	-0.020	0.009	-0.006	0.019	-0.010	0.094	0.069	0.064	0.052	0.029	0.017	0.010	0.026	0.008	0.031	0.031	-0.049	0.049	0.094	0.069	0.052	0.017	0.010	0.026	0.008	0.008	0.018	0.031	0.015
5	-0.413	-0.141	-0.063	0.065	0.070	0.002	0.006	-0.071	-0.026	-0.063	0.026	-0.052	0.037	0.046	0.070	0.090	0.046	0.042	0.009	0.006	0.029	0.061	0.061	-0.163	0.037	0.046	0.042	0.009	0.006	0.029	0.061	0.061	0.061	0.061	0.061	0.061

Quintile groups are formed by sorting IPO firms by their discretionary working capital accruals, DWKA₀, in descending order. The test hypothesis is that the top quintile groups are more likely to manage earnings and so have higher discretionary accruals. NI_t is net income and CF_t is cash flow from operations in year *t*, deflated by total assets. NI_(t,t+i) is mean net income over years *t* through *t* + *i*. CF_(t,t+i) is similarly defined.

TABLE 7: Spearman Correlation Matrix for Firm and Offering Characteristics And Discretionary Accrual Measures for Years -1 and 0 Relative to the IPO.

	DWKA ₋₁	DWKA ₀	DTAC ₋₁	DTAC ₀	ShrHld	Risk	Qual	Age	OffSz	Vol	EM Score
DWKA ₋₁	1.000 0.000										
DWKA ₀	0.013 0.894	1.000 0.000									
DTAC ₋₁	0.733 0.000	-0.015 0.879	1.000 0.000								
DTAC ₀	-0.001 0.991	0.716 0.000	-0.002 0.981	1.000 0.000							
ShrHld	0.130 0.165	-0.150 0.100	-0.021 0.828	-0.173 0.060	1.000 0.000						
Risk	0.051 0.592	0.124 0.174	0.034 0.721	0.076 0.410	-0.105 0.252	1.000 0.000					
Qual	-0.013 0.887	-0.038 0.675	0.107 0.265	-0.120 0.192	0.148 0.106	-0.313 0.001	1.000 0.000				
Age	0.022 0.815	-0.210 0.021	0.126 0.187	-0.151 0.101	-0.125 0.172	-0.260 0.004	0.092 0.314	1.000 0.000			
OffSz	-0.055 0.559	0.147 0.109	-0.144 0.132	0.018 0.842	-0.214 0.018	0.168 0.065	0.006 0.950	-0.326 0.000	1.000 0.000		
Vol	-0.022 0.813	-0.075 0.412	-0.044 0.648	-0.152 0.099	-0.070 0.443	-0.125 0.173	0.155 0.090	0.035 0.705	0.245 0.007	1.000 0.000	
EM Score	-0.060 0.521	0.208 0.022	-0.135 0.157	0.119 0.199	-0.471 0.000	0.569 0.000	-0.431 0.000	-0.508 0.000	0.669 0.000	0.301 0.001	1.000 0.000

The EM score is calculated as follows. IPOs are first ranked on age, shareholdings retained by original entrepreneurs, and quality class of auditors and investment bankers in descending order, and on number of risk factors listed in IPO prospectus, volume of issues in calendar year of IPO, and offering size in ascending order. The rank scores for each of these characteristics are then summed to form an EM score for each IPO firm. See Table 1 for other variable definitions.

TABLE 8: OLS Regression of Fiscal Year 0 Discretionary Accruals on EM Factors.

Panel A: Regression of Discretionary Working Capital Accruals on Earnings Management Factors

$DWKA_0$	=	a_0	$+a_1RShrHld$	$+a_2RRisk$	$+a_3RQual$	$+a_4RAge$	$+a_5RVol$	$+a_6ROffSz$
ParameterEstimates		-0.0585	0.0016	0.0002	-0.0008	0.0019	-0.0009	0.0007
TforH0 : Parameter = 0		-0.574	1.991	0.194	-0.871	2.238	-1.093	0.784
Prob > T		0.568	0.049	0.846	0.385	0.027	0.277	0.437
Regression Statistics	N	\bar{R}^2	F - value	Prob > F	χ^2 - value	Prob > χ^2	W : Normal	Prob < W
	118	0.063	2.308	0.039	21.894	0.695	0.976	0.265

Panel B: Regression of Discretionary Total Accruals on Earnings Management Factors.

$DTAC_0$	=	b_0	$+b_1RShrHld$	$+b_2RRisk$	$+b_3RQual$	$+b_4RAge$	$+b_5RVol$	$+b_6ROffSz$
ParameterEstimates		-0.1554	0.0023	-0.0006	0.0012	0.0019	-0.0006	-0.0009
TforH0 : Parameter = 0		-1.745	3.352	-0.736	1.530	2.540	-0.823	-1.295
Prob > T		0.839	0.001	0.464	0.129	0.013	0.412	0.198
Regression Statistics	N	\bar{R}^2	F - value	Prob > F	χ^2 - value	Prob > χ^2	W : Normal	Prob < W
	109	0.110	3.218	0.006	25.120	0.512	0.972	0.176

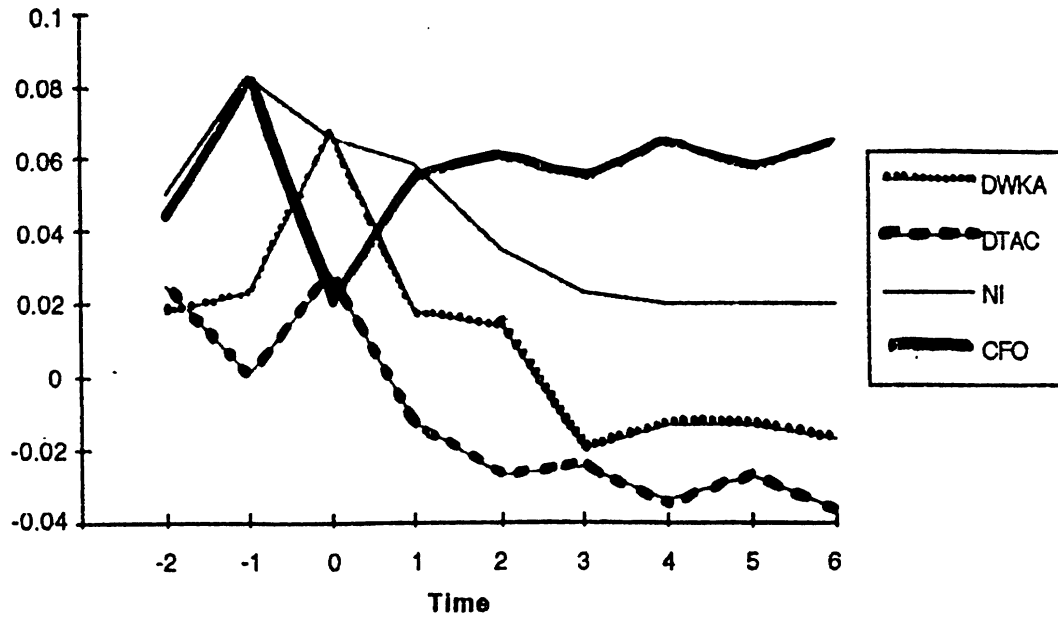
$DWKA_0$ discretionary working capital accruals for fiscal year of IPO
 $DTAC_0$ discretionary total accruals for fiscal year of IPO
 $RShrHld$ rank of fraction of ownership retained by the original entrepreneurs after the offering in descending order
 $RRisk$ rank of the number of risk factors for the offering listed in the prospectus
 $RQual$ descending order rank of the Qual dummy variable for combined quality of auditor and investment banker as defined in Table 1
 $RAge$ rank of number of years from date of incorporation to the year of the IPO in descending order
 $RVol$ rank of (annual volume of issues in the year of issue/100)
 $ROffSz$ rank of ((number of shares sold at offering x offer price)/total assets in year -1).

TABLE 9: Summary Statistics for Discretionary Accruals, Net Income and Cash Flow from Operations by Quintile
Groups sorted on EM Scores for IPO firms.

Quintile	DWKA ₋₁	DWKA ₀	DTAC ₋₁	DTAC ₀	NI ₋₁	NI ₀	CF ₋₁	CF ₀
1	-0.172	0.402	-0.304	0.103	-0.182	-0.117	0.004	-0.181
2	0.079	0.093	-0.085	0.083	0.096	0.036	0.085	-0.009
3	0.104	0.071	0.100	0.027	-0.040	0.029	-0.131	0.008
4	-0.023	-0.115	-0.089	-0.074	0.106	0.080	0.138	0.050
5	0.038	0.044	0.045	0.034	0.097	0.088	0.047	0.047
				Median				
1	-0.041	0.166	-0.126	0.135	0.066	0.018	0.170	-0.022
2	0.050	0.071	-0.023	-0.015	0.094	0.062	0.097	0.006
3	0.018	0.015	-0.057	-0.026	0.069	0.066	-0.037	0.024
4	0.029	-0.012	-0.045	-0.010	0.088	0.073	0.120	0.090
5	0.027	0.030	0.018	0.024	0.084	0.078	0.067	0.043

Quintile groups are formed in the following manner. IPOs are first ranked on age, ownership retention by original entrepreneurs, quality class of auditors and investment bankers in descending order, and the number of risk factors listed in the IPO prospectus, volume of issue in the calendar year of IPO, and offering size in ascending order. The rank scores for each of these characteristics are then summed to form an EM score for each IPO firm. The firms are then ranked by their EM scores into five quintiles with quintile 1 containing the largest rank scores and quintile 5 the smallest scores. The test hypothesis is that the top quintiles are more likely to manage earnings and so have higher discretionary accruals. DWKA_t, DTAC_t, NI_t, and CF_t are as defined previously in Table 4.

Figure 1: Time Series Profile of Discretionary Working Capital Accruals, Discretionary Total Accruals, Net Income, and Cash Flow From Operations for IPO Sample From Year -2 Through Year 6 Relative to Fiscal Year of IPO



DWKA = Discretionary Working Capital Accrual.

DTAC = Discretionary Total Accrual.

NI = Net Income.

CFO = Cash Flow From Operations.

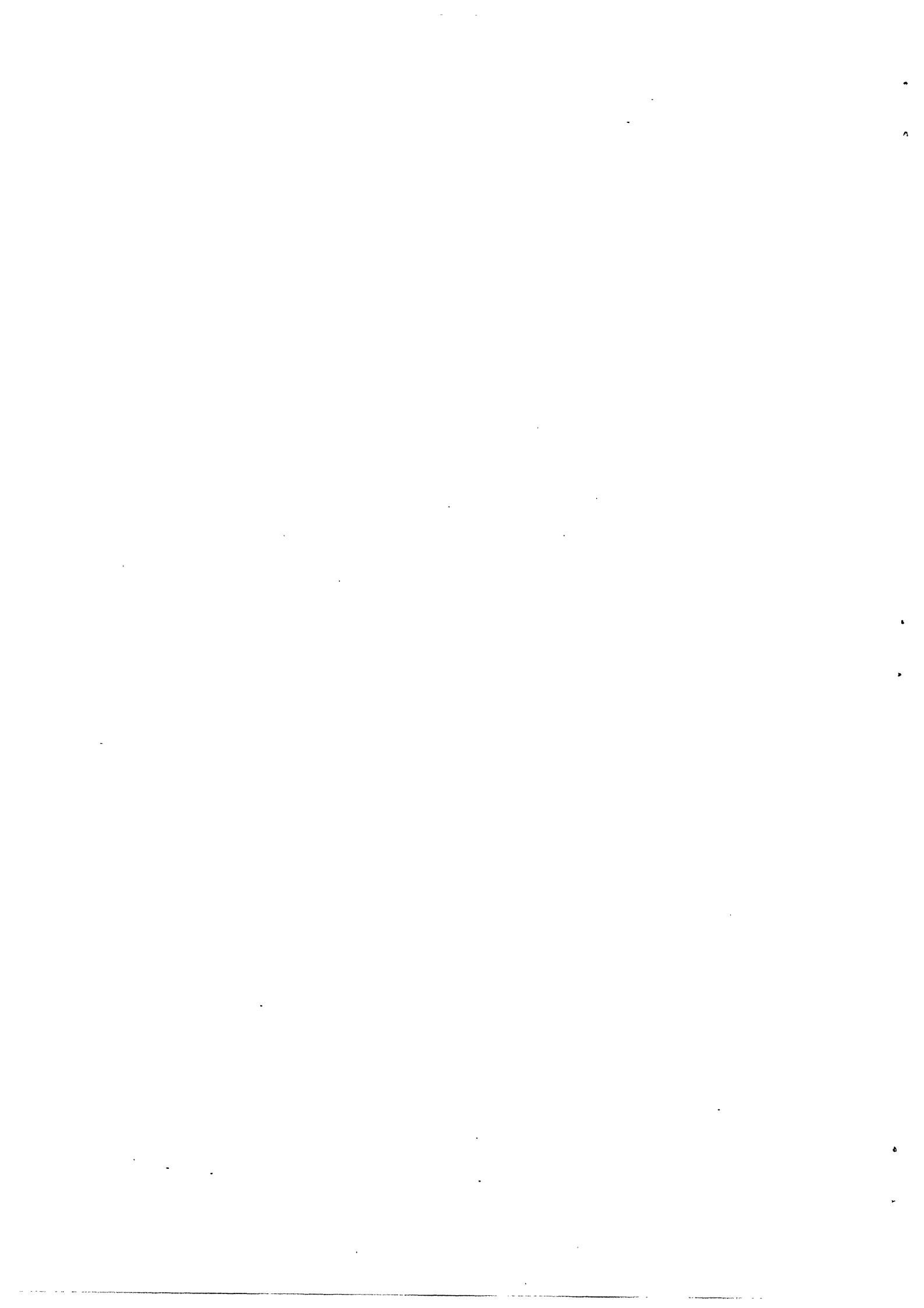
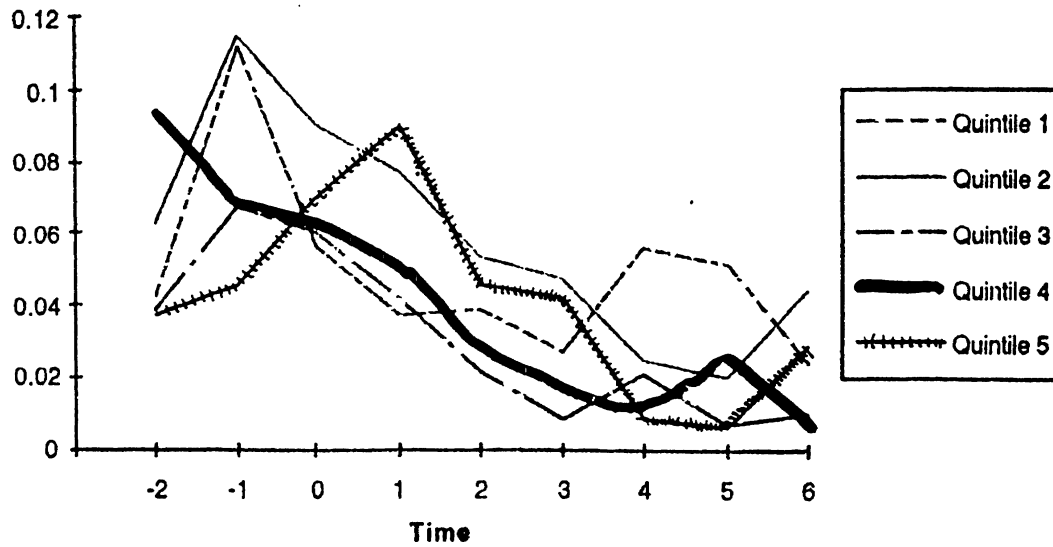


Figure 2: Median Net Income and Cash Flow From Operations From Year -2 Through Year 6 Relative to Fiscal Year of IPO for Quintile Groups Sorted by Discretionary Working Capital Accruals

Panel A Median Net Income



Panel B Median Cash Flow

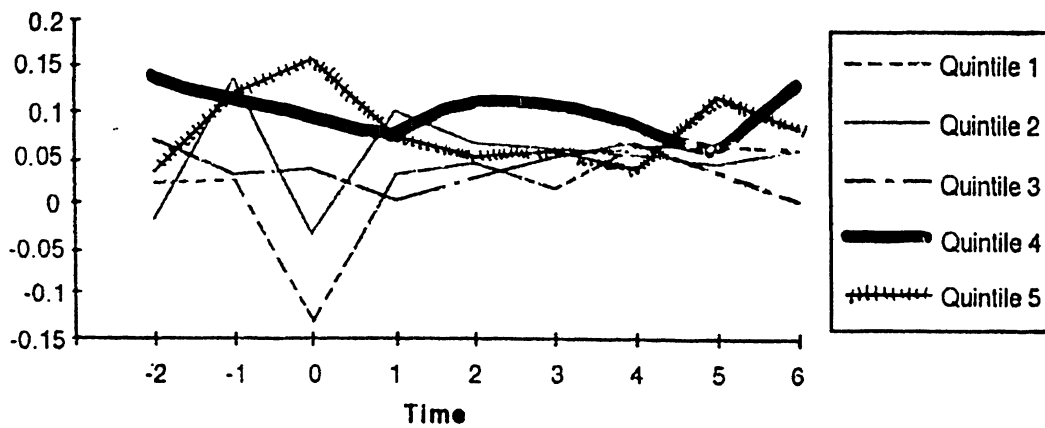
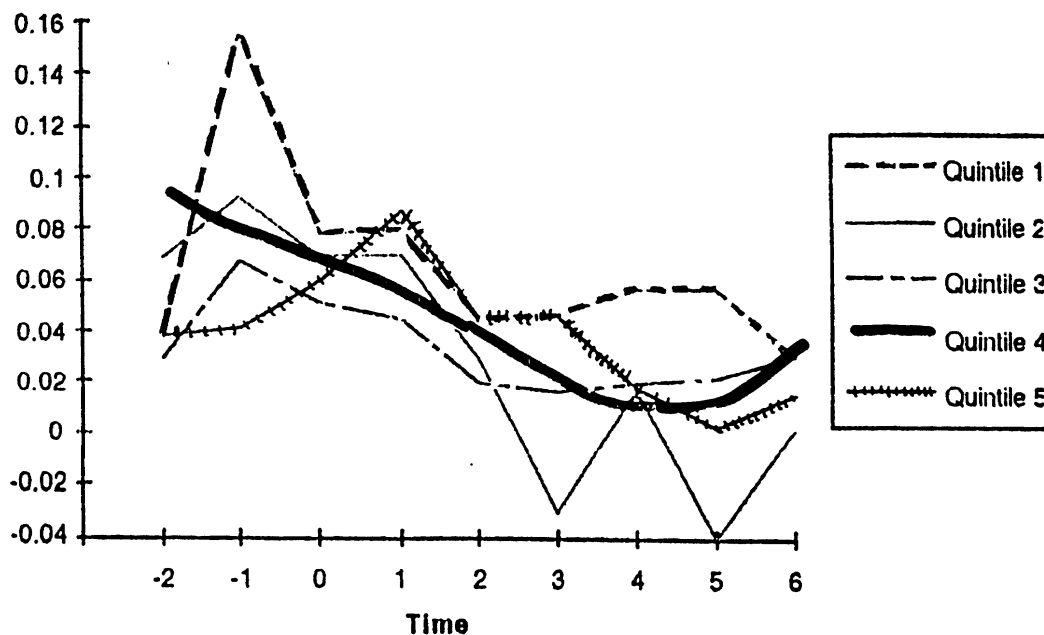




Figure 3: Median Net Income and Cash Flow From Operations From Year -2 Through Year 6 Relative to Fiscal Year of IPO for Quintile Groups Sorted by Discretionary Total Accruals

Panel A Median Net Income



Panel B Median Cash Flow

