Intended use of IPO proceeds and firm performance: A quantile regression approach

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Abstract

This paper investigates the link between intended use of proceeds and the decline in post-issue operating performance of IPO firms. It distinguishes between capital and strategic motives and employs quantile regressions to examine the Indonesian equity market over the period of 2000-2010. The overall evidence shows that post-issue performance can be explained by firm motivation to IPO issue with the capital motive being the critical driver of good performance in Indonesia. Investment in fixed assets and in stock market shares lead to better performance while other usages lead to poor performance. The results are robust to accounting for ownership structure and to alternative classifications of IPO intent. These results have policy implications for the management of IPO proceeds.

Keywords: IPO intentions; firm performance; compositional data; quantile regressions; Indonesia.

JEL Classification: C51, G14, G31, G32

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USE OF IPO PROCEEDS AND FIRM PERFORMANCE: A quantile regression approach

1. Introduction

Jain and Kini (1994) first reported evidence of a post-issue operating performance decline in Initial Public Offering (IPO) firms in the U.S.A. markets. Since, numerous empirical studies have confirmed this phenomenon in other markets such as Italy (Pagano *et al.* 1996, 1998; Carpenter & Rondi 2006), Australia (Balatbat *et al.* 2004), China (Wang *et al.* 2004; Wang 2005), Japan (Cai & Wei 1997) and Thailand (Kim *et al.* 2004). Three mainstream explanations have been advanced in this regard: namely, agency theory, window-dressing behaviour theory, and market-timing theory (Jain & Kini 1994; Loughran & Ritter 1997; Mikkelson *et al.* 1997; Jenkinson & Ljungqvist 2001; Draho 2004).[1] Agency theory maintains that the reduced initial entrepreneur's ownership dampens managerial incentives which then lead to overinvestment. Window-dressing behaviour theory postulates that pre-IPO performance is overstated. Meanwhile, market-timing theory states that firms go public coincidently in times of good but unsustainable performance or when the IPO market is overvalued or "hot". None of these explanations, however, relate to firm motivation in going public.

This paper explores the possibility that IPO motivation may be critical to post-IPO firm performance. For instance, financial motives aimed to raise capital for growth may lead to better performance than strategic non-capital motives. In this context, this paper seeks to utilise information on intended use of proceeds to examine the role of motivation in post-issue operating performance. Attention is paid to the distinction between capital and strategic motives.

Pagano *et al*. (1998) and Carpenter and Rondi (2006) provide insights into different motivations for firms going public. The former suggests that independent firms go public in order to exploit a window of opportunity to recover their balance sheet after a high growth period, while carve-out firms go public to maximize the

[1] These theoretical explanations are basically also similar to those for the other well-known IPO or seasonal equity offering (SEO) phenomena (e.g. initial under-pricing, long-run underperformance and IPO cycles).

IPO proceeds for the benefit of previous owners. The latter study further shows that "new-style" firms (independent and small firms), utilize the proceeds to de-leverage and re-balance their capital structure, whereas the "old-style" firms (affiliated and large firms) seek to exploit a hot primary market.

IPO motivations, however, are interrelated and may be tacit. Three main approaches have been adopted to identify motivation in the IPO literature. The first is by surveying managers of issuing firms (Brau & Fawcett 2006; Brau 2012). The second entails the utilisation of explicit statements of motivations in prospectus (Rydqvist & Hoghlom 1995). Last is the Kim and Weisbach (2008) approach relying on accounting measures of IPO firms. In theory, the survey approach seems the best as it reveals ex-ante motivation but surveys are conducted with considerable lag and are costly. On the other hand, prospectus do not always disclose motivation while the indirect approach conflates motivation and the financial accounting of proceeds spread over several periods after the IPO year.

This paper seeks to overcome these limitations by utilizing prospectus information on the intended use of proceeds. Such information has been utilised in the context of the IPO under-pricing (Leone *et al.* 2007; Wyatt 2014), and performance of SEO firms (Jeanneret 2005; Autore *et al.* 2009). Yet, the information has not been exploited in the context of post-issue performance of IPO firms. This study builds on Chemmanur and Fulghieri (1999) and Subrahmanyam and Titman (1999) who highlight the role of capital motives (i.e., working capital financing and fixed asset investment), as compared to strategic, non-capital motives.

The most interesting feature of intended use of proceeds data is that it is compositional data. The use of such data as in regression analysis may lead to either perfect multicollinearity or misleading interpretations (Hron *et al.* 2012). In the current IPO literature, the compositional nature of intended use of proceeds data is generally ignored (Fry 2011). Here, we adopt the zero replacement technique of Fry *et al.* (2000) and the repeating isometric log ratio transformation of Hron *et al.* (2012) to avoid these shortcomings. These techniques allow us to employ quantile regressions to examine the role of IPO intention along the distribution of post-issue operating performance.

This study also distinguishes between capital motives and strategic motives as drivers of IPOs to examine the relationship between the post-issue operating performance and the intended use of IPO proceeds in Indonesia. As an emerging economy, Indonesia has seen the number of IPOs grow in the period 1977-2010, during which 522 companies went public raising Indonesian Rupiah (IDR) 495.61 trillion (i.e., approximately USD 52 billion). Compared to its neighbours in South-East Asia, the number of Indonesian IPOs in 2010 (23) were lower than Singapore (31) and Malaysia (29) but higher than Thailand (11) and Philippines (3).[2]

Intended use of proceeds data was collected manually from prospectus to ensure accuracy and easy access to prospectus.[3] By regulation, all firms must stipulate how they intend to use IPO proceeds. This study extends Bapepam-LK (2009)[4] in several ways. First, it only focuses on equity public offerings, while Bapepam-LK (2009) also examines rights issues, corporate bonds, and sukuk (Islamic bonds). Second, it expands the sample into a panel of 140 non-finance listed firms over the period 2000-2010 and Bapepam-LK (2009) only examines 16 IPO firms for one year. Third, it only utilises data on intended use of proceeds[5] while Bapepam-LK (2009) compares intended use of proceeds data with actual use of proceeds interim data. Last but not least, in contrast to Bapepam-LK (2009) that only uses a simple descriptive analysis, this study employs formal econometric techniques to assess the impact of different uses of the proceeds on a variety of operating performance indicators.

This study is structured as follows. Section 2 describes the data and the classification of intended use of proceeds. Section 3 outlines the empirical methodology dealing with compositional data with zero in quantile regressions. Section 4 presents and discusses the results. Finally, section 5 summarizes and concludes.

[2] This is on the basis of World Federation of Exchanges data.
[3] Autore *et al.* (2009) also highlight the importance of manual data collection on the intended use of proceeds. SDC Platinum, the well-known new issue database, for example, classifies almost all cases as "general corporate purpose".
[4] The first author was the leader of the research team conducting the study.
[5] Note, the intended use of proceeds may not match the actual use of proceeds in a particular year, given that the use of proceeds may take place over several years. Yet, a change from intended to actual requires approval by shareholders at an annual general meeting. In Indonesia, disclosure on actual use of proceeds can be found in the Report on the Use of Fund Received from a Public Offering (Rule X.K.4) which must be submitted to the securities authority on quarterly basis until all the proceeds have been fully used.

2. Data

The sample includes public firms that have obtained the securities authority's[6] approval to go public over the period of 2000-2010. This period is chosen on the basis that 1999 was loosely the end of the Asian Financial Crises (Hill & Cham 2012) and data availability given that only 42 of 321 firms going public in the period 1977-1999 had prospectus available at *Bloomberg Terminal*. Of 201 public firms with effective statements in the period under investigation, the following were excluded: 5 due to unavailable prospectus; 2 that did not undertake an IPO; 1 which undertook limited offering to its existing shareholders; 13 due to lack of financial data from *Thomson Reuters* fundamentals collected from *Datastream Professional*, and 40 due to incomparability with those of industrial firms. Our final sample consists of 140 firms listed on the Indonesia Stock Exchange (IDX).

INSERT TABLE I ABOUT HERE

Panel A of Table I shows the distribution of the sample by the year of issuance. In the last four years of the sample period, there were 69 firms undertaking an IPO which account for 49.28% of the total sample. The largest sample with 23 firms is from 2001; while the smallest sample with 4 firms is from 2003 and 2005 respectively. Panel B exhibits summarises the sample by industry. The trade and services industry constitutes the largest share of the sample, accounting for 30% of firms. The miscellaneous and consumer goods sectors are the least representative in IPOs. Panel C of Table I sheds light on the composition of the sample by type of offering. It shows that 92.14% of the IPOs considered offered primary shares only. The rest of the sample combined the offerings by selling secondary shares as well.[7]

[6] The principal regulator is the Financial Services Authority of Indonesia (OJK in Indonesian abbreviation), previously known as Capital Market and Financial Institutions Supervisory Agency (Bapepam-LK).

[7] Huyghebaert and Van Hulle (2006) highlight the fact that established firms tend to issue secondary shares while young firms prefer to issue primary shares.

The intended use of proceeds is classified into five categories as follows:[8]

(1) Fixed assets investment;

(2) Working capital financing;

(3) Investment in shares of stock;

(4) Debt repayments;

(5) Secondary shares.

In our empirical study, we define *fixed assets investment* and *working capital financing* as the percentage shares of total proceeds intended for investment in non-current assets and current assets, respectively. *Investment in shares of stock* is the percentage share of total proceeds intended as a capital contribution to the firm's subsidiaries and other firms which includes share incremental of subsidiaries. *Debt repayment* is the percentage share of total proceeds intended for the repayment of debt. Finally, *secondary shares* stands for the percentage share of total proceeds from secondary shares that was intended to be sold by initial owners. Note, these definitions of intended use do not necessarily represent the actual allocation of proceeds but rather the *a priori* intentions.

This classification is a simplified version of Bapepam-LK (2009) and Leone *et al.* (2007) that use seven classes (i.e., debt repayment, expansion and acquisitions, R&D, distribution to pre-IPO shareholders, marketing and promotion, working capital, and other uses) but an expansion of the three categories of Autore *et al.* (2009) (i.e., investment, debt repayment, and general corporate purpose) and that of Wyatt (2014) (i.e., growth investment, production investment, and financial transactions, respectively). We seek to employ the most disaggregated classification but, in the Indonesian context, it is not possible to identify whether the proceeds will be used for R&D, marketing and promotion (Leone *et al.* 2007) or exploration (Wyatt 2014). While Autore *et al.* (2009) ignore the category of *secondary shares*, our classification scheme keeps this important category. The term secondary shares used in this study means about the same thing as distribution to pre-IPO shareholders used in Leone *et al.* (2007) or cash out used in Wyatt (2014). Thus, due to data limitations, the five-category classification adopted in this study is therefore a

[8] Following Leone *et al.* (2007), Appendix A provides examples of intended use of proceeds statements in prospectus together with the associated definitions of the intended use of proceeds variables adopted here.

compromise between the very broad classification of Autore *et al.* (2009) and the more disaggregated classification of Leone *et al.* (2007). Compared to the Wyatt (2014) classification, the first two categories are part of production investment, while the others are part of financial transactions.

Note, as in Subrahmanyam and Titman (1999), allocation to fixed assets, in contrast to working capital financing, is essentially growth financing. Autore *et al.* (2009) find that IPO firms that choose this kind of investment, experience no decline in operating performance, in contrast to firms choosing either debt financing or working capital financing. Autore *et al.* (2009) argue that when cash proceeds are used for refinancing purposes, they act as a signal that the issuer is timing the market. The expected long-run performance of such an opportunistic firm is not as good as that of firms that disclose that proceeds will be used for non-refinancing purpose, e.g. investment purposes. The first two classes are thus treated as capital motives and the rest as strategic, non-capital motives.

Information on the type and number of shares offered, offer prices, ownership structures, and the intended use of proceeds was extracted manually from the prospectus. These were also the source of data for sales or revenue, operating profit, net income, debts, capital expenditures, total assets, and firm employment. For comparison with previous literature, as in Jain and Kini (1994), Loughran and Ritter (1997), and Autore *et al.* (2009), five measures of operating performance are used: operating profit per total assets (*EBIT/ TA*) and net income per total assets (*NI/TA*), net sales as a share of total assets (*Sales/TA*), operating profit per net sales (*EBIT/Sales*) and net income per net sales or profit margin (*NI/Sales*). The last two measures are in order to avoid the dampening effect of total assets on the first three measures of operating performance, for it is often the case that assets increase in the post-IPO period.[9]

In view of our focus on post-IPO performance, operating performance measures of an IPO firm would ideally need to be benchmarked to a comparable private firm, as in Pagano *et al.* (1998). In this context, an issuing firm experiences a decline in operating performance after IPO, relative to its private firm counterpart

[9] We owe this note and the rationale for the measures of (*EBIT/Sales*) and (*NI/Sales*) to an anonymous reviewer who also suggested that these may not fully control for the inflow of capital effect. Although not ideal, these measures provide comparisons with previous literature.

which was able to go public but chose not to. Unfortunately, this study cannot adopt this approach due to limited available data on private firms in Indonesia. Further, it was not possible to match firms with a similar public firm by firm size and industry given the size of the Indonesian stock market and its rapid change; i.e., there were only 287 and 420 listed companies in Indonesia in 2000 and 2010 respectively with substantial variation in the number of new listings and delistings.[10] Thus, the size of the Indonesian stock market is far too small to enable matching of IPO firms.

Still, this paper does facilitate industry benchmarking as a second-best option. It utilises industry-adjusted performance measures which are calculated as the difference between a firm's operating measure and its industry median performance where the latter is based on all public firms by year and industry, as per the Jakarta Stock Industrial Classification (JASICA) set by IDX. Note, our industry median approach to benchmarking[11] adopted here is consistent with the approach in Jain and Kini (1994), Kim *et al.* (2004), Wang (2005), and Autore *et al.* (2009).

INSERT TABLE II ABOUT HERE

3. Methodology

3.1 Data

Fry (2011) argues that the most common treatment of compositional data is the log-ratio transformation from unit simplex to real Euclidian space. There are three types of log-ratio transformation introduced by Aitchison (1986): namely, the additive log-ratio (alr), the centred log-ratio (clr), and the isometric log-ratio transformations (ilr).

For compositions with D observations $\mathbf{x} = (x_1, \dots, x_D)'$, where $x_i > 0$ and $\sum_{i=1}^{D} x_i = 100\ (or\ 1)$, each transformation is defined as follows:

$$\mathbf{y}_{alr} = (y_1, \dots, y_{D-1})' = \left(ln\frac{x_1}{x_D}, \dots, ln\frac{x_{D-1}}{x_D}\right)' \quad (1)$$

[10] IDX Fact Book of the Indonesia Stock Exchange.
[11] We owe the rationale for the measures of *EBIT/Sales* and *NI/Sales* to an anonymous reviewer who also suggested that these measures may not fully control for the inflow of capital effect but they provide comparisons with previous literature.

$$\mathbf{y}_{clr} = (y_1, \dots, y_D)' = \left(ln \frac{x_1}{\sqrt[D]{\prod_{j=1}^{D} x_j}}, \dots, ln \frac{x_D}{\sqrt[D]{\prod_{j=1}^{D} x_j}} \right)' \quad (2)$$

$$\mathbf{y}_{ilr} = (y_1, \dots, y_{D-1})' =$$

$$\left(\sqrt{\frac{D-1}{D}} ln \frac{x_1}{\sqrt[D-1]{\prod_{k=2}^{D} x_i}}, \sqrt{\frac{D-j}{D-j+1}} ln \frac{x_j}{\sqrt[D-j]{\prod_{k=j+1}^{D} x_i}}, \dots, \sqrt{\frac{1}{2}} ln \frac{x_{D-1}}{x_D} \right)'$$

$$\text{for } j = 2, \dots, D-2 \quad (3)$$

From *D*-part simplex, the alr and ilr transformations reduce the number of dimensions to *(D-1)*-dimensional real sector, while the clr transformation keeps the same number of *D*-dimensions.

The main problem with all the transformations is that they require $x_i > 0$, which is inapplicable for the intended use of proceeds data that may contain zero observations. Aitchison (1986) introduces four possible approaches to handle data with zeros: namely, amalgamation, zero replacement, outlier investigation, and sensitivity analysis. Fry *et al.* (2000), however, argue that zero replacement may be the most appropriate technique for microeconomic data as in this study.

A zero replacement technique is mainly designed to replace the zeros with very small values.[12] Let *C* be the number of zero values, $D - C$ is therefore the number of non-zero components. Aitchison (1986) proposes to replace the zero with $z_0 = \delta(C+1)(D-C)/D^2$ and to subtract $z_{N0} = \delta C(C+1)/D^2$ from the non-zero, where δ is the maximum rounding-off error. However, Fry *et al.* (2000) argue that the non-zero subtraction needs to be modified to preserve the share ratio feature by replacing the non-zero with $x_i(1 - z_{N0})$ instead of $x_i - z_{N0}$.[13] Furthermore, they recommend some adjustments to be made for the value z_0 in order to investigate the robustness of the results, i.e. either $\frac{z_0}{\max_{(1 \le i \le N)}(total\ proceeds_i)}$, $\frac{z_0}{\min_{(1 \le i \le N)}(total\ proceeds_i)}$, or $\frac{z_0}{\text{median}_{(1 \le i \le N)}(total\ proceeds_i)}$, where max (.), min (.), and median (.) symbols represent the maximum, minimum, and median of total proceeds received by firm *i*,

[12] We acknowledge a concern by an anonymous reviewer that the zero replacement technique may implicitly assume a linear relationship between the independent variable being examined and the dependent variable. However, data limitations make zero replacement unavoidable and the state-of-the-art technique used here is an improvement to simply adding a fixed number to all observations.

[13] The replacement for the zeros is still the same i.e. $\delta(C+1)(D-C)/D^2$.

respectively. This paper uses the median and calculates δ and z_{N0} using the adjusted-z_0.

The next step is to employ the repeating isometric log-ratio transformation (ilr) proposed by Hron *et al.* (2012) due to its simplicity in interpreting parameter estimates. Hence, the approach adopted here is as follows:

Step 1 Implement the zero and non-zero replacement procedure described above. Therefore, for $x_i = 0$ the x_i is replaced by z_0 and for $x_i > 0$ the x_i is replaced by $x_i(1 - z_{N0})$;

Step 2 Choose an arbitrary order of $\mathbf{x} = (x_1, \dots, x_D)'$. This also means that x_D is chosen as a base;

Step 3 Conduct the ilr transformation for $\mathbf{x}$, resulting $\mathbf{y}_{ilr} = (y_1, \dots, y_{D-1})'$ and keep the y_1 as the proxy for x_1;[14]

Step 4 Run a regression of the dependent variables on the ilr transformed variables and other independent variables;

Step 5 Keep the estimate and standard errors for y_1 and ignore those for other transformed variables $(y_2, \dots, y_{D-1})'$;

Step 6 Repeat Step 2 by rearranging the order of $\mathbf{x} = (x_2, x_1, \dots, x_D)'$;

Step 7 Repeat Step 3 to Step 5, but this time keep the y_2 as the proxy for x_2;

Step 8 Repeat Step 6 and 7 until all variables are placed at the first order in the $\mathbf{x}$ and all estimates and standard errors for all transformed variables $\mathbf{y} = (y_1, y_2, \dots, y_D)'$ are constructed;

Step 9 Keep the estimates and standard errors for the constant and other independent variables from any run in Step 4. All estimates and standard errors for these variables are the same for each run in as shown by Hron *et al.* (2012).[15]

Hron *et al.* (2012) show that the simplicity of this approach is based on the fact that the relation between x_1 and y_1 in each step 3 can be given by

[14] The *robCompositions* R-package was used to arrive at the isometric log ratio transformation (see Templ *et al.* (2011)). If independent variables only contain compositional data, the function *lmCoDaX* of the package was directly used.

[15] Although Hron *et al*. (2012) focuses solely on independent variables in compositional data, the approach can be extended to non-compositional variables.

$$x_1 = exp\left(\frac{\sqrt{D-1}}{\sqrt{D}}\right) y_1 \quad (4)$$

Therefore, the interpretation of the transformed variable is as straightforward as a usual interpretation in a linear regression.

3.2 The Model

The relationship between firm performance and intended use of proceeds can be specified as follows:

$$\begin{aligned} Performance_i = \\ & \beta_0 + \beta_1 Fixed\ asset\ investmet_i + \\ & \beta_2 Working\ capital\ financing_i + \\ & \beta_3 Investment\ in\ shares\ of\ stock_i + \beta_4 Debt\ repayment_i + \\ & \beta_5 Primary\ Shares_i + control\ variables + \varepsilon_i \end{aligned} \quad (5)$$

The dependent variable *Performance*$_i$ is the cumulative change in industry-adjusted operating performance measure (i.e., *EBIT/TA, NI/TA, Sales/TA, EBIT/Sales* and *NI/Sales* net of the equivalent time-varying, industry-specific median) from a year before IPO to two years after IPO (-1 to +2). The variables of interest represent the proportion of total (actual) proceeds that firm *i* intended to allocate to five types of usages: fixed-asset investment, working capital financing, investment in stock shares, debt repayment, and secondary shares. Here the transformed variables described in previous section are used. The control variables are total proceeds scaled by total assets, firm size measured by the total assets, leverage measured by the debts scaled by total equities, and firm age measured by the number of years from its establishment date to its effective statement date. All control variables are measured at the year prior to IPO, except total proceeds that are measured at the IPO year. These control variables are also used in Rajan and Zingales (1995), Mikkelson *et al.*

(1997), Wang (2005), Carpenter and Rondi (2006), and Autore *et al.* (2009).[16] We also control for initial conditions measured by the cumulative change in operating performance measures from a year before IPO to the IPO year. In addition, industry dummies and year dummies are also included.[17]

3.3 Estimation

The use of median is a common practice in IPO and SEO literature (Jain & Kini 1994; Kim *et al.* 2004; Autore *et al.* 2009) or in general studies that use operating performance measures (Barber & Lyon 1996) due to its insensitivity to outliers. As will be shown in the next section, operating performance data in this study contain outlier observations with a skewed distribution. This study employs estimation methods that are more robust to outliers than standard ordinary least square (OLS) regressions: that is, quantile regressions as used in Autore *et al.* (2009). In addition to the 50th percentile of the conditional distribution (or the median), this study also uses two more quantiles (the 25th percentile and the 75th percentile). The lower (higher) quantile represents low (high) performing firms where the cumulative change is lower (higher) than the median of conditional distributions.

Following the notation by Hao and Naiman (2007), a quantile regression model introduced by Koenker and Bassett Jr (1978) and Koenker (2005), with $0 < p < 1$, is generally specified as follows:

$$y_i = x_i'\beta^{(p)} + \varepsilon_i^{(p)} \qquad (6)$$

where y_i is the dependent variable, x_i is $k \times 1$ vector of independent variables, $\beta^{(p)}$ is an unknown $k \times 1$ vector of parameters associated with the p^{th} quantile and $\varepsilon_i^{(p)}$ is an unknown p^{th} quantile of the error term which is required to be zero. Note that model (6) assumes that x_i is not correlated with the error term.

[16] Other control variables that have also been used by others are log of the market value of equity (Autore *et al.* 2009), relative offer size (Autore *et al.* 2009), growth (Short & Keasey 1999), and secondary sales (Mikkelson *et al.* 1997).

[17] In an earlier draft, we also used the cumulative changes from a year before to three years after IPO (-1 to +3). This, however, substantially reduced the number of observations. Note, we have also experimented by dropping the initial conditions variable. The estimation results, which are available upon request, generally show similar patterns

The p^{th} quantile regression estimators $\beta^{(p)}$ can be obtained by minimizing the average weighted distance from y_i to a given $\hat{y}_i$ as follows:

$$\hat{\beta}^{(p)} = \arg\min \left(p \sum_{y_i \geq x_i' \beta^{(p)}} \left| y_i - x_i' \beta^{(p)} \right| + (1-p) \sum_{y_i < x_i' \beta^{(p)}} \left| y_i - x_i' \beta^{(p)} \right| \right) \quad (7)$$

For estimating standard errors in the nonparametric quantile regressions, we need to specify a kernel and a bandwidth for density estimation when residuals are independent and identically distributed; Greene (2012) highlights that the bandwidth is more crucial than the kernel. Here, the Epanechnikov kernel function and the Chamberlain's bandwidth are chosen. The former is preferable due to its efficiency in minimizing the mean integrated squared error (Pagan & Aman 1999), and the latter due to its simplicity compared to other alternative bandwidths.

Bootstrap standard errors in quantile regressions are usually employed to account for heteroskedastic errors. The quantile regression tests of Machado and Santos Silva (2000),[18] however, show that heteroskedasticity is not presented in our dataset (Panel B of Table II). Again, our dependent variable is the cumulative change of *EBIT/TA, NI/TA, Sales/TA, EBIT/Sales or NI/Sales* over the period *t* to *t+3* where *t* is IPO year. The tests are also run by using the specification in equation (5) for three different quantiles (p = 0.25, 0.5, and 0.75). The total tests run are therefore 240 times (4 dependent variables × 4 periods of cumulative change × 3 quantiles × 5 repeating regressions using isometric log ratio transformation approach). The number of cases where the tests cannot reject the null hypothesis of the constant variance is presented in Panel B in Table II. The test results with 76% non-rejection frequencies at 10% level generally support the use of the standard nonparametric method rather than bootstrapping.

4. Results and Discussion

4.1 Characteristics and Descriptive Statistics of IPO Firm

Table III presents descriptive statistics of firm characteristics (Panel A) and offering measures (Panel B) at the IPO year. On average, a firm goes public after 15 years from its establishment date. The number of employees varies greatly across

[18] These tests utilise the fitted values of the dependent variable in quadratic form.

firms, with the mean (median) of 1,159 (431) employees per firm. Similar large variations are also prevalent in terms of assets, sales, and debts. The spread for the middle 50% of the sample between the first quantile and the third quantile, as a measure of dispersion for total assets range from IDR 127 billion to IDR 2,153 billion, with the mean (median) of IDR 2,218 billion (IDR 438 billion). The spread for sales and debts is also high relative to other variables such as profitability. Among the measures of profitability, however, operating profit has the greatest variation.

INSERT TABLE III ABOUT HERE

Panel B of Table III shows that the mean (median) offer price in an IPO is about IDR 665 (IDR 268). Total proceeds that a firm received from an IPO also vary greatly, spreading from IDR 31 billion to IDR 368 billion. These cash proceeds are received by selling 38% of the total issued shares on average. The cost of issuing is about 4% of the total proceeds. In terms of under-pricing, this study shows that over the period of 2000-2010, the share price increased by 35% relative to the offer price on the first day of trading. This percentage is somewhat different from that of Darmadi and Gunawan (2013), who documented 22% of under-pricing over the period of 2003-2011. It is also quite common in Indonesia that an issuer will sweeten its IPO by providing a free number of warrants for a share bought by an investor. There are 54 firms offering these sweeteners, accounting for 39% of the total sample.

The firm characteristics and offering measures are comparable to the current world standards observed by Jenkinson and Ljungqvist (2001). Due to fierce competition across stock exchanges around the world, the characteristics of new public firms have been converging in terms of age, industry and IPO purpose. These firms are now younger, from new industries, and more likely to participate in an IPO as a means of raising new capital. In Europe, for instance, before 1995 the IPO markets were dominated by established firms aged 50 years on average, from traditional industries such as machine tools manufacturers, and used public offerings as the ways for initial owners to cash out their stakes in the firms. Huyghebaert and Van Hulle (2006) highlight that in contrast to the U.S.A IPO market that is

dominated by primary shares, an offering in the European market now is more likely to consist of both primary and secondary shares. In addition, secondary shares are often issued by established firms with large internal funds, while young firms with less internal cash generation capability prefer to issue primary shares

Panel C of Table III provides insights into the ownership structure of IPO firms at times *t*-1, *t*, and *t*+3 with t being the IPO year. Obviously, initial shareholders hold all stakes of the firm before the IPO, and there are no outside public stakes. After the IPO, however, dilution of initial ownerships begins. At the IPO year, initial owners had 71.56% of the total ownerships. The reduction of ownership continues over three years after the IPO. This is quite similar to the USA market where the mean ownership retention rate is 71% (Jain & Kini 1994). However, compared to a similar emerging market, this retention rate in Indonesia is much higher than the retention rate of 38% in Thailand (Kim *et al.* 2004). A year after IPO, initial owners still maintain 64% of the ownership but two years later their stake reduces to 54%. Panel C also confirms that the dilution of ownership structure measured by the mean or median difference is statistically significant and different from zero.

Table IV reports on the distribution of intended use of proceeds by type of offer (Panel A), by year (Panel B), and by industry (Panel C). In the case of primary offers where issuers only sell unissued shares to public, initial owners do not receive any proceeds. Thus, secondary shares would be zero in primary offerings. If issuers sell both primary and secondary shares, in which there are 11 cases in the sample, a portion of secondary shares sold, on average, is 47.73%. Generally, the two biggest portions of the IPO proceeds are allocated for fixed asset investment and working capital financing; the mean (median) value of fixed asset investment is 44.21% (45.61%) while that of working capital financing is 24.34% (19.90%). Investment in shares of stock and debt payments, on the other hand, shared lower but fairly similar proportions: 15.75% and 11.95% respectively.

INSERT TABLE IV ABOUT HERE

The distribution of total proceeds into several uses is relatively similar over time. Two distinct differences may be noticed in 2003 and 2004. In 2003, the share

of the proceeds allocated to primary shares was higher than working capital financing, even though 85% of the proceeds were mainly allocated to fixed asset investment. Also, working capital financing received about 3% higher a portion than fixed asset investment in 2004. It is fair to say that the distribution is also similar across industry. Agriculture and consumer goods, however, tended to allocate more proceeds to debt repayment rather than to current assets. Firms from agriculture industry, for instance, allocated 23% of the capital raised through IPOs to pay off their debts, while the allocation to working capital financing was only half of it, about 16.46%.

4.2 Pre- and Post-issue Operating Performance

Table V compares and contrasts the five measures of operating performance three years before and three years after IPO, either in terms of unadjusted or industry-adjusted figures. A comparison between unadjusted and industry-adjusted ratios suggests a pervasive decline in performance since a year prior to IPO which seems to support the timing of IPOs hypothesis. However, the industry-adjusted ratios provide substantial evidence of a decrease in operating performance over the period of three years after IPO. In particular, a decrease in operating performance measures is discernible in mean difference and median difference tests (i.e., differences use the year prior to IPO as the point of comparison). Since the pattern of unadjusted figures is similar to that of industry-adjusted ones, the following discussion is confined to industry-adjusted figures.

INSERT TABLE V ABOUT HERE

In terms of *EBIT*/*TA* (Panel A), three years before and at the IPO year, average operating profit was about 0.5% to 2.5% of the total assets. However, in the post IPO period, both the mean and median ratios decreased to negative values (i.e., lower than the industry ratios). Panel B illustrates a similar but less pervasive pattern for *NI*/*TA*. Panel C indicates a similar pattern of decreasing operating performance as in Panel A. For instance, the median *Sales/TA* was 7% the year before the IPO but decreased to 2% and 1% in the first and second year after the IPO, respectively.

Panels D and E of Table V also indicate a similar pattern with an important difference. In contrast to the first three indicators based on total assets, *EBIT/Sales* and *NI/Sales* showed an improvement up to the IPO year but then they both began to follow the familiar downward trend in the post IPO period, although the changes are not as statistically significant as before.

Quantile plots in Appendix B illustrate a large variation in operating performance and the presence of some outliers at the lower and higher end of the distribution. In order to account for such outliers and heterogeneity in performance, econometric analysis below proceeds with quantile regressions.

4.3 Intended Use of Proceeds and Operating Performance

Autore *et al*. (2009) find that intended use of proceeds is an important factor in explaining the decline in the operating performance of SEO firms. They document that the allocation of proceeds to recapitalization and general corporate purposes are responsible for the decline, while investment is not. Leone *et al.* (2007) show that the use of IPO proceeds for the purpose of debt repayment leads to a more negative effect on operating performance than that for non-debt repayment purposes. More recently, Wyatt (2014) also finds that intended use of proceeds matters for post-issue operating performance, particularly in the case of growth financing.

This paper also provides similar evidence in that variation in the intended use of proceeds explains post-issue operating performance. In particular, the intention to allocate IPO proceeds to fixed asset investment and investment in shares in stock leads to better outcomes, while others usages lead to a decline in operating performance. The advantage of fixed asset investment and investment in shares in stock, however, is more notable for average and high performing firms. This finding is consistent with in Autore *et al.* (2009) who find that fixed assets investment does not adversely affect high performing firms. On the other hand, low performing firms might benefit from allocation to working capital financing, debt repayment and secondary shares. The adverse effect on low performing firms may relate to the lack of capacity by these firms to manage investment projects effectively. Alternatively, the two or three years of IPO period adopted here may not be long enough to observe the profit stream generated from such projects.

Quantile regression estimates of Equation (5) for three quantiles, p = (0.25, 0.50, 0.75), are presented in Tables VI-VII. In estimating Equation (5), this study uses the cumulative change in the industry-adjusted operating performance. Therefore, all five ratios discussed below refer to those of industry-adjusted figures.

INSERT TABLE VI ABOUT HERE
INSERT TABLE VII ABOUT HERE

Table VI presents estimation results for the three performance indicators based on total assets. It shows that the impact of working capital financing on *EBIT/TA* and *Sales/TA* is negative for average and low performing firms respectively but has a positive effect on *NI/TA* in the lowest quartile of firms. Fixed asset investment associates with higher performance for average and high performing firms with respect to *EBIT/TA* and *NI/TA* and for the lowest quantile for *Sales/TA.* However, it seems that low performing firms exhibit weaker *EBIT/TA* performance as a result of an intention to use proceeds for fixed asset investment. The positive effect of fixed asset investment on performance by average and above average firms is also confirmed in Table VII that uses *EBIT/Sales* and *NI/Sales* as proxies for operating performance. The positive effect of working capital financing on *EBIT/Sales* is also observed here.

The intention to invest proceeds in shares of stock seems to have a positive impact on *EBIT/TA* and *NI/TA* performance for average and high performing firms (Table VI). This is also the case with *EBIT/Sales* in Table VII. Interestingly, Table VII also suggests that investment in shares of stock is responsible for the decline in *EBIT/Sales* and *NI*/*Sales* for low performing firms. Note, the *secondary shares* intent also inversely relates to performance for the median and the high quantile groups in all performance indicators except *Sales/TA*. Debt repayment has a less pervasive but still adverse effect on performance as measured by *EBIT/TA*, *NI/TA* and *EBIT/Sales*. The power of secondary shares to explain the decline in *NI/Sales* is also confirmed.

As expected, most control variables in Tables VI and VII had significant explanatory power in most measures of operating performance. Total proceeds and firm age tend to adversely impact on performance. This may be due to the capital

inflow effect, overinvestment or problems in change management for growing firms. Note, these adverse effects are not present when performance indicators that are less contaminated by the capital inflow effect are utilised; i.e., *Sales/TA, EBIT/Sales* and *NI*/*Sales.* Meanwhile, leverage seems to only impact adversely on sales or operating profit. Younger firms are relatively more profitable, especially for average and high performing firms, which seems to suggest new firms tend to manage change better or they are more innovative. Last but not least, the positive effect of initial conditions indicates persistence and may again associate with capital flows or firm size.

Thus, the evidence so far broadly suggests that the post-issue performance can be explained by different types of intended use of proceeds. In particular, the intention to allocate more IPO proceeds to fixed asset investment and investment in shares of stock leads to better outcomes while other usages lead to a decline in operating performance. In relation to IPO proceeds, this study emphasises the importance of distinguishing between the mere transfer of ownership and the funding of new investment. Andriansyah and Messinis (2014) provide evidence which shows that, in the absence of such differentiation, the positive role of the primary market in economic growth cannot be detected and the primary market appears to have only an indirect effect via the secondary market.

4.4 Robustness Tests

For robustness purposes, several further analyses were undertaken: namely, controlling for ownership structure and using alternative classifications of intended use of proceeds.

Inclusion of ownership structure

This section explores the robustness of earlier results to a nonlinear relationship between ownership structure (i.e., the original owner's retention rate) and post-IPO performance, as in Kutsuna *et al.* (2002), Kim *et al.* (2004) and Wang (2005). Empirically, the relationship between ownership structure and the post-IPO operating performance remains inconclusive. Jain and Kini (1994) and Kutsuna *et al.* (2002) find evidence of poor performance related to managerial ownership retention, while Mikkelson *et al.* (1997), Cai and Wei (1997), and Goergen (1998) fail to

confirm such finding. Kutsuna *et al.* (2002) and Wang (2005) show that the relationship between retention and performance may be curvilinear.

Table VIII presents the estimation results for the median quantile when we control for ownership structure. It shows that the above evidence of an intended use of proceeds effect on operating performance still holds for the average firm when we account for quadratic ownership structure (i.e., 'Initial owners' stands for the share of initial shareholders in year t-1, as for all control variables but total proceeds). Here, it seems that ownership structure can predict operating performance.[19]

INSERT TABLE VIII ABOUT HERE

Different classifications of intended use of proceeds

Autore et al. (2009) use two dummy variables for their three broad classes. Recapitalization is assigned the value of 1 if IPO firms state that they will use IPO proceeds "prominently" for debt repayment and do not state any plans for investment, and 0 otherwise. General corporate purpose is assigned the value of 1 if IPO proceeds are intended for general corporate purposes without any plans for investment or debt repayment, and 0 otherwise. Therefore, investment is used as the benchmark for comparison relative to recapitalization and general corporate purpose. In order to avoid vagueness, they exclude from their sample IPO firms that report both investment and debt repayment. This study cannot replicate this classification scheme. The majority of firms in our sample use the proceeds for mixed allocations. In our sample, the average allocation for debt repayment is about only 12%, and there is no single firm allocating 100% of the proceeds for debt repayment. However, there are 87 cases in our sample that do not allocate any proceeds for debt repayment. Meanwhile, there are only 10 firms that use 100% of IPO proceeds for fixed asset investments. In this case, our study tends to follow a binary classification, as in Leone *et al.* (2007); that is, debt repayment and non-debt repayment. However, we will pursue the idea of dummy variables and adopt the following classification scheme:

[19] In an earlier draft we included linear and cubic relationships. The estimates for all forms of relationships are available on request.

$$Debt\ Mix\ = \begin{cases} 1\ if\ \text{debt repayment} > 0\ and \begin{cases} Debt\_FAI = \begin{cases} 1\ if\ FAI \geq 50\% \\ 0\ if\ \text{otherwise} \end{cases} \\ Mixed = \begin{cases} 1\ if\ FAI < 50\% \\ 0\ if\ \text{otherwise} \end{cases} \end{cases} \\ 0\ if\ \text{otherwise (i.e. debt repayment} = 0) \end{cases} \quad (8)$$

where *FAI* stands for *Fixed Asset Investment*. That is, *Debt Mix* identifies mixed intended allocations that must include some debt repayment and some fixed asset investment. *Debt Mix* can be either a *Debt_FAI* allocation when more that 50% of proceeds are intended for FAI or a *Mixed* allocation if FAI is less than 50%.

To make it comparable with Leone *et al.* (2007) and Autore *et al.* (2009), OLS estimators are used for this new classifications scheme. Furthermore, we also use control variables that are similar to those in Autore *et al.* (2009): firm size as a proxy for market value and floating size as a proxy for relative offer size.

Table IX presents the OLS estimates. Consistent with Leone *et al.* (2007), Panel A of Table IX shows that allocation of IPO proceeds to *Debt Mix* leads to a better operating performance than that to debt repayment, in particular for *EBIT/TA* and *NI/TA*. Panel B of Table IX shows that the intended *Mixed* allocation of proceeds to several uses is better for both operating performance measures than the mere allocation to investment.

However, given the presence of outliers, the OLS estimates in Table IX do not appear to be suitable and, as a result, these estimators produce a low $R^{2,}$ relative to that of quantile regressions. In general, Moussa-Hamouda and Leone (1977) argue that OLS estimators based on trimmed data is more efficient that those based on winsorized sample. For accounting data as in our study, Leone *et al.* (2014) however show that robust regressions with MM-estimators outperform OLS estimators that are based on either trimmed or winsorized sample. Therefore, we also employ this type of robust regressions as an alternative estimation method. Table X shows the MM-robust estimates that reiterate the general similar results observed above.

INSERT TABLE IX ABOUT HERE

INSERT TABLE X ABOUT HERE

Finally, one ought to exercise caution in interpreting the above results since it is possible that the assumption that x_i does not correlate with the error term, in equation (6), may not hold. It is plausible that x_i (i.e., the intended use of proceeds) may be susceptible to a non-random selection bias if firm performance drives IPO motivation. For example, firms with above-average market performance may tend to select fixed assets or stock investment as the main motivate for an IPO. To the extent that this is the case, the evidence presented here should be considered as preliminary.

5. Summary and Conclusion

This study provides evidence of a decline in post-issue operating performance of Indonesian listed firms after IPO. Using a dataset of 140 non-finance firms over the period of 2000-2010, we find that variation in four different measures of operating performance can be explained by the diversity of intended use of IPO proceeds. This ex-ante disclosure can be seen as a signal conveying information on IPO motivations that reflects a firm's future prospects.

The study distinguishes between capital motives and strategic motives of IPOs. It then shows that the intention to allocate IPO proceeds to fixed asset investment and investment in shares lead to an improved operating performance, while other usages lead to a decline in performance. Other usages, such as working capital financing, may relate to the uncertainty of future cash flows, as indicated by Wyatt (2014). Quantile regression estimates indicate that the advantages of investing in fixed assets and shares in stock only apply to average and high performing firms. Thus, this study suggests that it is critical for the IPO literature to distinguish between the intention to transfer of ownership and the intention to fund new investment projects in order to be able to observe the positive role of the primary market in economic growth

The overall evidence suggests that the capital motive is a key driver of IPOs in Indonesia. Debt repayment may be an option exercised while investment in fixed assets seems to be the default decision: note, the leverage ratio in our sample is practically low implying that firms are able to meet their obligations. Also, fixed asset investment has a negative effect on performance for low performing firms.

The new evidence here is robust when we control for ownership structure. In

this context, there is evidence of a non-linear relationship between the retention rate of initial entrepreneurs and operating performance. The results are also robust when a different estimate method and alternative classification schemes are employed.

It is, however, important to note that further research is required to consider the possibility of endogeneity due to selection effects. Furthermore, future research should examine a longer post-IPO period than has been considered here in order to provide more definitive explanations for the negative impact of investment intentions on low performing firms.

Finally, as noted by Carpenter and Rondi (2006), regulators need to formulate policies that not only enable access to equity capital, but also provide incentives for managers to use IPO proceeds for growth. The cost of going public is rather expensive; therefore it is important to make sure that firms and the general public benefit from IPOs. Last but not least, the Indonesian government provides tax deductions to listed firms that sell at least 40% of its shares to the public. Hence, capital markets and policies ought to provide better social value for tax-payer funded IPO firms, as in the case of growth oriented projects.

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Table I. Sample Distribution by Year, Industry, and Type of Shares Offered

Panel A: Sample distribution by year		
Year	**Number of IPOs**	%
2000	11	7.86
2001	23	16.43
2002	13	9.29
2003	4	2.86
2004	7	5.00
2005	4	2.86
2006	9	6.43
2007	21	15.00
2008	15	10.71
2009	11	7.86
2010	22	15.71
Panel B: Sample distribution by industry		
Industry	**Number of IPOs**	%
Agriculture	8	5.71
Basic Industry & Chemicals	14	10.00
Consumer Goods	6	4.29
Infrastructure, Utilities & Transportation	22	15.71
Mining	20	14.29
Miscellaneous	5	3.57
Property, Real Estate & Building Construction	23	16.43
Trade & Service	42	30.00
Panel C: Sample distribution by type of share offered		
Type of share	**Number of IPOs**	%
Primary shares	129	92.14
Mixed offerings	11	7.86
Total number of sample	140	100.00

Notes: An IPO firm, or an issuer, may sell primary shares only, secondary shares only, or both. Primary shares are new shares which are taken from unissued shares of the authorized shares. In contrast, secondary shares are outstanding shares. The proceeds from selling primary shares go to the issuer, while those of secondary shares go to the initial shareholders. Mixed offerings are IPOs with both primary and secondary shares.

Table II. Variable Definitions and Machado-Santos Silva Test for Heteroskedasticity

Panel A: Variable Definitions

Variables	Source	Definition
Assets	ATOT	Total assets
Capital expenditure	SCEX	Purchases of fixed assets, intangibles and software development costs
Debt Mix	Own calculation	An indicator variable equal to one if proceeds are intended for debt repayment and possibly fixed asset investment.
Debt_FAI	Own calculation	An indicator variable equal to one if proceeds are intended for debt repayment and fixed asset investment is ≥ 50% of proceeds.
Debt repayment	Prospectus	The share (%) of total proceeds intended for the repayment of debt
EBIT/TA & EBIT/Sales	SOPI/SREV	Operating profit scaled by total assets and net sales respectively
Employment	METL	Total number of full-time employees
Firm age	Own calculation	The number of years from its establishment date to its effective statement date in year t-1
Firm size	ATOT	Natural logarithm of total assets in year t-1
Fixed asset investment	Prospectus	The share (%) of total proceeds intended for Non-currents assets (e.g., property, plant, equipment, intangible capital), as in the Prospectus.
Floating shares	Prospectus	The proportion of the number of shares offered relative to the total issued shares
Initial conditions	Own calculation	The cumulative change in the operating performance measure in question from a year before IPO to the IPO year
Initial owners	Prospectus	The share of initial owners in year t-1
Investment in shares	Prospectus	The share (%) of total proceeds intended for the purchase of stock shares. See Appendix A for specific examples of variable content.
Issue costs	Prospectus	Total costs incurred in issuing the shares
Leverage	Own calculation	Total debt as a share of Equity in year t-1
Mixed	Own calculation	An indicator variable equal to one if proceeds are intended for debt repayment and fixed asset investment are < 50% of proceeds.
Net income	NINC	Net income before extraordinary items
Nominal price	Prospectus	A par or face value of the share
Offer price	Prospectus	An actual selling price of the share
Operating profit	SOPI	Total revenue minus total operating expenses
Proceeds	Own calculation	The offering price per share times the number of shares offered
NI/TA & NI/Sales	NINC/SREV	Net income scaled by total assets and net sales respectively
Sales/TA	SREV/ATOT	Net sales scaled by total assets
Secondary shares	Prospectus	The share (%) of total proceeds intended for the sale of shares held by initial owners. See Appendix A for examples of variable content.
Working capital financing	Prospectus	The percentage share of total proceeds intended for currents assets (i.e., cash, inventory, accounts receivable and marketable securities)
Warrants	Prospectus	Dummy dichotomous which is 1 if the public offering is accompanied with warrants
Underpricing	Prospectus	Percentage change of the share price at the first day of trading relative to its offer price

Panel B: Machado-Santos Silva Tests for Heteroskedasticity

Variables	Number of cases when the H0 is not rejected	Proportion
EBIT /TA	10	0.167
NI/TA	45	0.750
Sales/TA	39	0.650
EBIT/Sales	43	0.717
NI/Sales (Profit Margin)	56	0.933
Total	240	0.763

Notes: The main sources of data are prospectus and *Thomson Reuters* fundamentals. Data from the latter is used according to the four letters of chart of account and its definition is based on Reuters (2013). In Panel B, the total number of quantile regressions is 240 and the null of constant variance is rejected at the 10% level of significance.

Table III. Firm Characteristics and Offering Measures of the IPO Firms

Panel A: Firm Characteristics					
Variables	N	Mean	Q1	Median	Q3
Age (years)	140	15.40	6.61	12.68	20.19
Employment	138	1,158.83	133.00	431.00	983.00
Assets (IDR billion)	140	2,218.32	126.79	438.60	2,152.57
Sales (IDR billion)	139	1,364.25	51.33	245.60	1,386.11
Operating profit (IDR billion)	139	196.89	3.16	30.72	180.39
Net income (IDR billion)	139	106.95	2.40	20.29	105.24
Debts (IDR billion)	122	699.73	12.31	77.33	526.34
Leverage ratio	122	0.46	0.10	0.25	0.59
Capital expenditure (IDR billion)	136	168.88	3.70	25.64	137.40
Panel B: Offering measures					
Variables	N	Mean	Q1	Median	Q3
Nominal price (IDR)	140	176.54	100.00	100.00	200.00
Offer price (IDR)	140	664.50	160.00	267.50	590.00
Proceeds (IDR billion)	140	592.91	30.75	86.06	367.63
Floating shares (%)	140	38.38	21.52	33.47	50.00
Issue costs (% of proceeds)	67	4.16	3.08	4.00	5.13
Underpricing (%)	140	35.21	4.55	22.77	64.32
Warrant	*54 firms (38.57% of total sample)*				
Panel C: Ownership Structure					
	N	Mean	Q1	Median	Q3
Initial shareholders					
t – 1	140	100.00	100.00	100.00	100.00
t	140	71.56***	65.11	70.00***	80.04
t + 1	138	64.47***	59.92	67.87***	75.30
t + 2	136	58.80***	54.08	64.54***	71.07
t + 3	114	54.44***	41.06	62.43***	71.20

Notes: Data contains zero value as a result of unavailable or undisclosed information is considered as a missing value. This applies for debts and capital expenditure. All series refer to the IPO year, except in Panel C as specified. Mean difference is tested by using a paired t test, while median difference is tested by using a non-parametric Wilcoxon signed-rank test. The null hypothesis is that mean or median difference between the stakes in corresponding year and a year before IPO (Year – 1) is zero. Significance at 1%, 5%, and 10% levels (two-sided) are denoted by ***, **, and *, respectively.

Table IV. Intended Use of Proceeds Structure of the IPO firms

	Fixed asset investment		Working capital financing		Investment in shares of stock		Debt repayment		Secondary shares	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel A: by type of offerings										
All	44.21	45.61	24.34	19.90	15.75	0.00	11.95	0.00	3.75	0.00
Primary shares	46.20	50.00	24.86	20.00	16.19	0.00	12.76	0.00	0.00	0.00
Mixed offerings	20.90	8.86	18.17	9.61	10.66	0.00	2.54	0.00	47.73	50.00
Panel B: by year										
2000	35.20	34.03	32.14	34.00	13.18	0.00	19.48	17.17	0.00	0.00
2001	44.74	50.00	28.16	20.00	14.43	0.00	9.97	0.00	2.70	0.00
2002	44.52	45.00	25.83	29.27	12.54	0.00	10.15	0.00	6.95	0.00
2003	85.21	88.75	5.63	5.50	0.00	0.00	0.00	0.00	9.17	0.00
2004	31.10	0.00	34.24	20.00	18.57	0.00	16.10	0.00	0.00	0.00
2005	60.00	60.00	20.50	21.00	0.00	0.00	19.50	14.00	0.00	0.00
2006	31.89	0.00	32.63	30.00	22.22	0.00	10.69	0.00	2.56	0.00
2007	46.97	40.00	19.09	20.00	18.43	0.00	13.93	0.00	1.59	0.00
2008	51.17	52.00	18.93	15.00	18.74	0.00	6.42	0.00	4.74	0.00
2009	40.72	45.72	32.60	33.33	9.03	0.00	10.84	0.00	6.82	0.00
2010	41.22	35.00	17.6	8.00	21.27	6.50	13.77	0.00	6.06	0.00
Panel C: by industry										
Agriculture	36.58	32.50	16.46	10.82	20.83	0.00	23.00	17.00	3.13	0.00
Basic Industry & Chemicals	49.56	60.00	20.27	19.00	17.94	0.00	12.23	0.00	0.00	0.00
Consumer Goods	48.05	41.50	15.44	18.82	0.00	0.00	26.17	22.50	10.34	0.00
Infra, Utilities & Transportation	62.98	71.15	14.09	10.00	14.01	0.00	3.83	0.00	5.09	0.00
Mining	45.30	48.11	16.37	10.00	18.02	0.00	8.17	0.00	12.14	0.00
Miscellaneous	37.40	37.00	37.25	40.00	4.32	0.00	21.04	0.00	0.00	0.00
Prop, Real Estate & Construction	43.44	40.00	28.29	20.00	17.38	0.00	10.88	0.00	0.00	0.00
Trade & Service	34.20	33.18	33.92	31.67	16.61	0.00	13.28	0.00	1.98	0.00

Notes: Fixed asset investment, working capital financing, investment in shares, debt repayment and primary shares are defined in percentage shares of total proceeds. For mixed offerings that include primary and secondary offerings, the former stands for new shares to the public while the latter is the sale of shares held by initial owners. For economy of space, all variable definitions and sources are in Table II

Table V. Operating Performance Before and After the IPO Year

		Unadjusted		Industry-adjusted	
	N	Mean	Median	Mean	Median
Panel A: *EBIT /TA*					
t – 3	74	0.0678	0.0529	0.0150	0.0044
t – 2	85	0.0834	0.0675	0.0236	0.0099
t – 1	120	0.0824	0.0765	0.0235	0.0263
t	139	0.0725	0.0695	0.0135	0.0163*
t + 1	138	0.0420**	0.0489***	-0.0140**	0.0003***
t + 2	127	0.0493*	0.0430***	-0.0074*	-0.0043***
t + 3	110	0.0314*	0.0455***	-0.0273*	-0.0088***
Panel B: *NI/TA*					
t – 3	74	0.0361	0.0238	0.0116	0.0015
t – 2	85	0.0371	0.0279	0.0105	0.0057
t – 1	121	0.0378	0.0354	0.0097	0.0138
t	139	0.0449	0.0430	0.0175	0.0140
t + 1	138	0.0277	0.0361	-0.0040	0.0081
t + 2	127	0.0217	0.0237***	-0.0137	-0.0059***
t + 3	110	-0.0051	0.0186**	-0.0385	-0.0042***
t – 3	74	0.0361	0.0238	0.0116	0.0015
Panel C: *Sales/TA*					
t – 3	72	1.0002	0.6646	0.3869	0.0598
t – 2	84	1.2128	0.6497	0.5708	0.1083
t – 1	121	1.0117	0.5995	0.3113	0.0665
t	139	0.7763**	0.6077***	0.0909**	0.0029***
t + 1	140	0.8040*	0.5859***	0.1222*	0.0221***
t + 2	126	0.8570***	0.6594***	0.1964**	0.0085***
t + 3	109	0.8627**	0.6179**	0.1977*	0.0006*
Panel D: *EBIT/Sales*					
t – 3	71	-0.0405	0.0740	-0.1298	-0.0030
t – 2	86	0.0040	0.0725	-0.0903	-0.0050
t – 1	122	0.0246	0.1015	-0.0701	0.0125
t	139	0.1132**	0.1060**	0.0157*	0.0150
t + 1	139	0.0371	0.0750	-0.0573	0.0000
t + 2	126	-0.0365	0.0595	-0.1403	-0.0175**
t + 3	109	-0.0433	0.0640*	-0.1439	-0.0220**

Panel E: *NI/Sales*

$t-3$	71	-0.0320	0.0360	-0.0753	-0.0370
$t-2$	86	-0.9894	0.0330	-1.0327	-0.0290
$t-1$	122	-0.0455	0.0445	-0.0900	-0.0310
t	139	0.1947**	0.0670***	0.1588**	-0.0130*
$t+1$	139	0.0169**	0.0570**	-0.0321**	0.0110
$t+2$	126	-0.0328	0.0260	-0.0989	-0.0790*
$t+3$	109	-0.0817	0.0230	-0.1361	-0.0740

Notes: *EBIT/TA, NI/TA, Sales/TA, EBIT/Sales* and *NI/Sales* are EBIT, NI and net sales all three scaled by total assets, and operating profit and net income both scaled by net sales. Industry-adjusted ratios are calculated by subtracting the median of corresponding industry ratios from the original ratio. Only from period t onwards, mean difference is tested by using a paired t test, while median difference is tested by using a non-parametric Wilcoxon signed-rank test. The null hypothesis in the "t+3" tests is that the mean or median performance indicator in the third year after IPO is equal to that of a year before IPO. Significance at the 1%, 5% and 10% levels (two-sided) are denoted by ***, **, and *, respectively. For economy of space, all variable definitions and sources are in Table II.

Table VI. Firm Performance and Intended Use of Proceeds: Quantile Regressions

Variable	*EBIT/TA*			*NI*/TA			*Sales*/*TA*		
	Q25	Q50	Q75	Q25	Q50	Q75	Q25	Q50	Q75
Constant	0.1687*	0.2095***	0.1954	0.0267	0.0454	-0.0469	-1.4176**	-0.3832	0.1907
	(0.0911)	(0.0712)	(0.1188)	(0.1030)	(0.0884)	(0.1195)	(0.5822)	(0.2797)	(0.4448)
Fixed asset investment	-0.0008***	0.0006***	0.0008**	-0.0003	0.0009***	0.0008**	0.0041**	-0.0003	0.0013
	(0.0003)	(0.0002)	(0.0004)	(0.0003)	(0.0003)	(0.0004)	(0.0017)	(0.0008)	(0.0013)
Working capital financing	-0.0000	-0.0006**	-0.0006	0.0008**	0.0002	-0.0005	-0.0044**	-0.0006	-0.0006
	(0.0003)	(0.0003)	(0.0005)	(0.0004)	(0.0003)	(0.0005)	(0.0022)	(0.0011)	(0.0016)
Investment in shares of stock	0.0001	0.0010***	0.0017***	0.0000	0.0007***	0.0015***	-0.0011	0.0002	-0.0000
	(0.0002)	(0.0002)	(0.0003)	(0.0003)	(0.0002)	(0.0003)	(0.0016)	(0.0007)	(0.0012)
Debt repayment	-0.0001	-0.0005***	-0.0005	-0.0000	-0.0007***	-0.0009***	0.0025	0.0008	-0.0014
	(0.0003)	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0017)	(0.0008)	(0.0012)
Secondary shares	0.0009**	-0.0005*	-0.0013***	-0.0005	-0.0011***	-0.0010**	-0.0010	-0.0000	0.0007
	(0.0004)	(0.0003)	(0.0005)	(0.0004)	(0.0004)	(0.0005)	(0.0023)	(0.0011)	(0.0017)
Total proceeds	-0.0146***	-0.0159***	-0.0125**	-0.0025	-0.0037	-0.0007	0.0655**	0.0185	-0.0041
	(0.0042)	(0.0033)	(0.0055)	(0.0048)	(0.0041)	(0.0056)	(0.0273)	(0.0131)	(0.0209)
Firm size	0.0085***	0.0133***	0.0161***	0.0040	0.0079***	0.0130***	0.0269	0.0095	-0.0107
	(0.0027)	(0.0021)	(0.0035)	(0.0031)	(0.0026)	(0.0036)	(0.0175)	(0.0084)	(0.0134)
Leverage	0.0005	0.0004	0.0003	0.0001	0.0007**	0.0006	0.0032	0.0011	0.0001
	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0004)	(0.0021)	(0.0010)	(0.0016)
Firm age	-0.0001	-0.0009***	-0.0015***	0.0001	-0.0004*	-0.0009***	0.0020	0.0020***	0.0009
	(0.0002)	(0.0002)	(0.0003)	(0.0003)	(0.0002)	(0.0003)	(0.0015)	(0.0007)	(0.0011)
Initial conditions	0.9017***	1.0259***	0.9188***	1.1133***	1.2316***	1.2955***	1.3451***	1.0476***	0.8485***
	(0.0308)	(0.0241)	(0.0402)	(0.0323)	(0.0277)	(0.0375)	(0.0647)	(0.0311)	(0.0494)
Observations	100	100	100	100	100	100	98	98	98
Pseudo R-squared	0.415	0.361	0.342	0.417	0.408	0.473	0.492	0.382	0.337

Notes: The dependent variables are the cumulative change in industry-adjusted *EBIT/TA*, *NI/TA* and *Sales*/*TA* a year before IPO to two years after IPO. The estimation is using alternative Epanechnikov kernel function and Chamberlain's bandwidth. Significance at 1%, 5% and 10% levels (two-sided) are denoted by ***, **, and *, respectively. For economy of space, all variable definitions and sources are in Table II.

Table VII. Firm Performance and Intended Use of Proceeds: Quantile Regressions

Variable	***EBIT/Sales***			***NI/Sales***		
	Q25	Q50	Q75	Q25	Q50	Q75
Constant	-0.2376	-0.0090	0.2161	0.1460	0.1288	1.3861***
	(0.2720)	(0.1335)	(0.2071)	(0.1751)	(0.1217)	(0.3670)
Fixed asset investment	-0.0013	0.0003	0.0018***	-0.0000	0.0012***	0.0028**
	(0.0008)	(0.0004)	(0.0006)	(0.0005)	(0.0004)	(0.0011)
Working capital financing	0.0022**	0.0013**	0.0009	0.0007	-0.0000	-0.0015
	(0.0010)	(0.0005)	(0.0008)	(0.0007)	(0.0005)	(0.0014)
Investment in shares of stock	-0.0021***	0.0009**	0.0019***	-0.0010**	0.0002	0.0005
	(0.0007)	(0.0004)	(0.0006)	(0.0005)	(0.0003)	(0.0010)
Debt repayment	0.0003	-0.0011***	-0.0015**	0.0009*	-0.0002	-0.0013
	(0.0008)	(0.0004)	(0.0006)	(0.0005)	(0.0003)	(0.0011)
Secondary shares	0.0008	-0.0014***	-0.0030***	-0.0006	-0.0012**	-0.0005
	(0.0010)	(0.0005)	(0.0008)	(0.0007)	(0.0005)	(0.0014)
Total proceeds	0.0015	-0.0054	-0.0115	-0.0098	-0.0073	-0.0690***
	(0.0126)	(0.0062)	(0.0096)	(0.0081)	(0.0056)	(0.0170)
Firm size	0.0095	0.0150***	0.0125**	-0.0011	-0.0013	0.0166
	(0.0081)	(0.0040)	(0.0062)	(0.0052)	(0.0036)	(0.0108)
Leverage	0.0014	0.0008*	-0.0003	0.0014**	0.0011***	0.0032***
	(0.0009)	(0.0004)	(0.0007)	(0.0006)	(0.0004)	(0.0012)
Firm age	-0.0003	-0.0010***	-0.0014**	0.0006	0.0003	0.0003
	(0.0007)	(0.0003)	(0.0005)	(0.0004)	(0.0003)	(0.0009)
Initial conditions	0.2362***	0.2793***	0.6563***	0.9990***	1.0357***	2.3110***
	(0.0357)	(0.0175)	(0.0272)	(0.0177)	(0.0123)	(0.0370)
Observations	96	96	96	96	96	96
Pseudo R-squared	0.200	0.170	0.300	0.234	0.271	0.410

Notes: The dependent variables are expressed as the industry-adjusted, cumulative change a year before IPO to two years after IPO. The estimation is using alternative Epanechnikov kernel function and Chamberlain's bandwidth. Significance at 1%, 5% and 10% levels (two-sided) are denoted by ***, **, and *, respectively. For economy of space, see Table II for comprehensive variable definitions.

Table VIII. Operating Performance, Intended Use of Proceeds, and Initial Ownersship

Variable	EBIT/TA	NI/TA	Sales/TA	EBIT/Sales	NI/Sales
Constant	0.1434**	0.0727	-0.1262	-0.1667	-0.1802*
	(0.0646)	(0.0546)	(0.3230)	(0.1149)	(0.0962)
Fixed asset investment	0.0005***	0.0010***	0.0007	0.0001	0.0012***
	(0.0002)	(0.0002)	(0.0010)	(0.0003)	(0.0003)
Working capital financing	-0.0006**	0.0001	-0.0026**	0.0011**	0.0001
	(0.0003)	(0.0002)	(0.0012)	(0.0004)	(0.0003)
Investment in shares of stock	0.0010***	0.0009***	0.0010	0.0011***	0.0010***
	(0.0002)	(0.0001)	(0.0009)	(0.0003)	(0.0002)
Debt repayment	-0.0002	-0.0011***	0.0004	-0.0010***	-0.0005*
	(0.0002)	(0.0002)	(0.0009)	(0.0003)	(0.0003)
Secondary shares	-0.0007***	-0.0009***	0.0005	-0.0013***	-0.0018***
	(0.0003)	(0.0002)	(0.0013)	(0.0004)	(0.0004)
Initial owners	-0.0010**	-0.0006*	0.0001	0.0015**	0.0016***
	(0.0004)	(0.0003)	(0.0019)	(0.0007)	(0.0006)
(Initial owners) ^{2}	0.0000***	0.0000***	0.0000	-0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Total proceeds	0.0119***	0.0125***	0.0152	0.0149***	0.0093***
	(0.0019)	(0.0016)	(0.0097)	(0.0034)	(0.0028)
Firm size	0.0003	0.0006***	0.0012	0.0005	0.0009***
	(0.0002)	(0.0002)	(0.0011)	(0.0004)	(0.0003)
Leverage	-0.0009***	-0.0006***	-0.0005	-0.0008**	-0.0008***
	(0.0002)	(0.0002)	(0.0009)	(0.0003)	(0.0003)
Firm age	1.0078***	1.2620***	1.0518***	0.3357***	1.0427***
	(0.0215)	(0.0169)	(0.0355)	(0.0151)	(0.0097)
Initial conditions	0.1434**	0.0727	-0.1262	-0.1667	-0.1802*
	(0.0646)	(0.0546)	(0.3230)	(0.1149)	(0.0962)
Observations	98	98	96	94	94
Pseudo R-squared	0.375	0.445	0.391	0.174	0.276

Notes: The dependent variable is the cumulative change in industry-adjusted operating performance over two years after the IPO year. Results here are only for the 50th quantile (median). The estimation is using alternative Epanechnikov kernel function and Chamberlain's bandwidth. Significance at the one, five, and ten per cent levels (two-sided) are denoted by ***, **, and *, respectively. For economy of space, see Table II for comprehensive variable definitions.

Table IX. Debt and Non-debt Repayment Classes and OLS Regressions

Variables	EBIT/TA	NI/TA	Sales/TA	EBIT/Sales	NI/Sales
Panel A: Debt and Non-debt Repayment Classes					
Constant	0.2905	-0.0102	0.8912	0.4445	-1.1581
	(0.2556)	(0.2218)	(1.2931)	(1.1219)	(1.6636)
Debt Mix	0.0678**	0.0643*	-0.0801	0.2415	0.2334
	(0.0319)	(0.0337)	(0.1237)	(0.1624)	(0.1830)
Total proceeds	-0.0171	-0.0006	-0.0555	-0.0388	0.0727
	(0.0142)	(0.0137)	(0.0680)	(0.0656)	(0.1079)
Firm size	-0.0036	-0.0028	-0.0118	0.0104	-0.0666
	(0.0099)	(0.0115)	(0.0228)	(0.0403)	(0.0707)
Floating rate	0.0004	-0.0000	0.0049***	0.0029	0.0018
	(0.0007)	(0.0008)	(0.0013)	(0.0039)	(0.0048)
Observations	108	108	107	105	105
R^2	0.0523	0.0358	0.0867	0.0340	0.0529
Panel B: Debt, Investment and Mixed Classes					
Constant	0.3042	0.0415	1.3109	0.3258	-0.2813
	(0.2383)	(0.1939)	(1.0373)	(1.0377)	(1.0566)
Debt_FAI	0.0327	0.0328	0.0979	0.1509	0.2979
	(0.0345)	(0.0289)	(0.0821)	(0.1101)	(0.2652)
Mixed	0.0684**	0.0522*	-0.1180	0.1478	0.0372
	(0.0331)	(0.0279)	(0.1308)	(0.1345)	(0.1680)
Total proceeds	-0.0198	-0.0062	-0.0772	-0.0417	0.0122
	(0.0121)	(0.0102)	(0.0543)	(0.0624)	(0.0646)
Firm size	0.0014	0.0045	-0.0117	0.0323	-0.0249
	(0.0067)	(0.0062)	(0.0213)	(0.0296)	(0.0431)
Floating rate	0.0006	0.0004	0.0050***	0.0047*	0.0046
	(0.0005)	(0.0005)	(0.0012)	(0.0026)	(0.0033)
Observations	108	108	107	105	105
R2	0.0695	0.0451	0.1128	0.0771	0.0809

Notes: The dependent variable is the cumulative change in industry-adjusted operating performance over two years after the IPO year. The operating performance is winsorized at 1st and 99th percentile. Robust standard errors are in parentheses. Significance at the one, five, and ten per cent levels (two-sided) are denoted by ***, **, and *, respectively. *Debt Mix* is an indicator variable that equals one if the firm intends to repay debt repayment and invest on fixed assets, and zero otherwise. When Debt Mix equals one, there exists a Debt_FAI allocation if the fixed asset investment (FAI) is >50% of proceeds and a *Mixed* allocation if FAI <50%. For a comprehensive definition of variables, see Table II.

Table X. MM-Robust Regression Estimates

Variables	EBIT/TA	NI/TA	Sales/TA	EBIT/Sales	NI/Sales
Constant	0.2103**	0.3537**	0.0561	-0.0287	-0.0488
	(0.0960)	(0.1359)	(0.4504)	(0.1668)	(0.0831)
Fixed asset investment	0.0006***	0.0013***	0.0005	0.0007*	0.0009*
	(0.0002)	(0.0003)	(0.0014)	(0.0004)	(0.0005)
Working capital financing	-0.0006*	0.0002	0.0015	-0.0003	0.0004
	(0.0003)	(0.0004)	(0.0029)	(0.0005)	(0.0004)
Investment in shares of stock	0.0012***	0.0004	0.0009	0.0017**	0.0012***
	(0.0004)	(0.0006)	(0.0018)	(0.0007)	(0.0004)
Debt repayment	-0.0001	-0.0009**	-0.0027***	0.0003	-0.0004
	(0.0005)	(0.0005)	(0.0012)	(0.0006)	(0.0005)
Secondary shares	-0.0012**	-0.0004	-0.0002	-0.0024***	-0.0022***
	(0.0005)	(0.0013)	(0.0012)	(0.0008)	(0.0003)
Total proceeds	-0.0159***	-0.0209***	-0.0086	-0.0001	0.0005
	(0.0044)	(0.0062)	(0.0213)	(0.0078)	(0.0037)
Firm size	0.0124***	0.0093***	0.0143	0.0046	0.0098***
	(0.0034)	(0.0035)	(0.0089)	(0.0054)	(0.0026)
Leverage	0.0004***	0.0005***	0.0009	-0.0001	0.0009***
	(0.0001)	(0.0002)	(0.0006)	(0.0002)	(0.0001)
Firm age	-0.0006***	-0.0007***	0.0012	-0.0010***	-0.0013***
	(0.0002)	(0.0002)	(0.0008)	(0.0002)	(0.0002)
Initial condition	0.9827***	1.3080***	0.8918***	1.0919***	0.6967***
	(0.0482)	(0.0434)	(0.0752)	(0.0449)	(0.0386)
Observations	100	100	98	96	96

Notes: The dependent variable is the cumulative change in industry-adjusted operating performance over two years after the IPO year. The Gaussian efficiency is set to 85%. Significance at the one, five, and ten per cent levels (two-sided) are denoted by ***, **, and *, respectively. For a comprehensive definition of variables, see Table II.

Appendix A. Examples of Intended Use of Proceeds Variables

Example 1. PT. Pelat Timah Nusantara Tbk[20] (Ticker: NIKL)

The net proceeds from the new share issue would be used to revamp and add new production machines in order to increase the efficiency, quality and production capacity from 130,000 tons to 160,000 tons.

Fixed asset investment=100% and all other intended use variables equal zero.

Example 2. PT Ace hardware Indonesia Tbk (Ticker: ACES)

The cash received from this public offering, netted the cost incurred related to this offering, is going to be allocated to following usages:

- *About 43% to open new galleries and expand the existing galleries;*
- *About 26.81% to add working capital, in particular to add inventories;*
- *About 20.19% to repayment bank debts, either short-term or long-term debts;*
- *About 6% to renovate the existing galleries;*
- *The rest, about 4%, to develop information technology*

Fixed asset investment=43%, working capital financing=36.81%, debt repayment=20.19% and all other intended use variables equal zero.

Example 3. PT Indofarma Tbk (Ticker: INAF)

The public offering sells both 906,250,000 shares owned by the Government of Indonesia and 556,093,750 new shares. The cash received from this public offering where the shares are from unissued shares, netted the cost incurred related to this offering, will be used by the firm for:

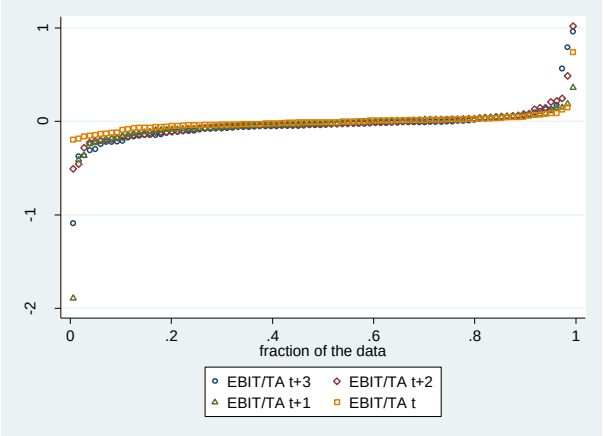
- *About 53% to develop production capacity*
- *About 47% to add working capital*

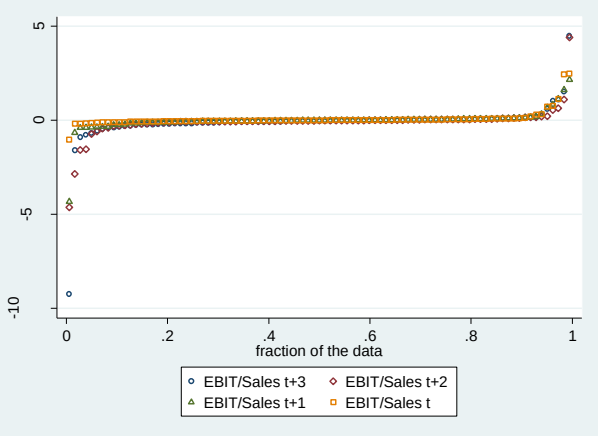
The cash received from this public offering where the shares originally owned by the Government of Indonesia fully belongs to the Government of Indonesia.

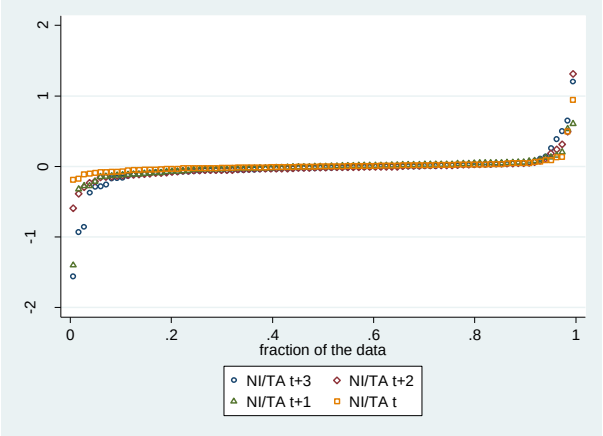
Fixed asset investment=20.13%, working capital financing=17.85%, secondary shares=62.02% and all other intended use variables equal zero.

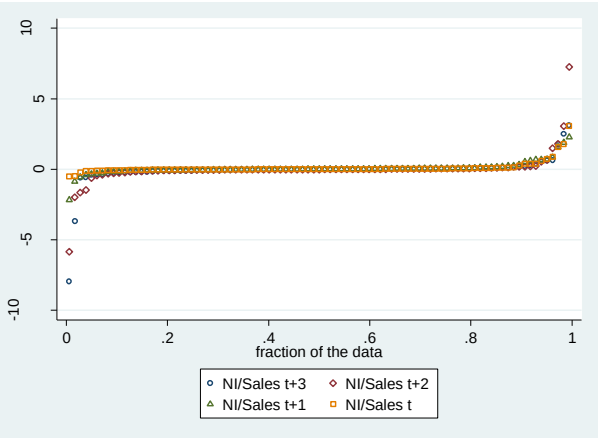
[20] *Tbk* is an abbreviation in Indonesian language for a public company.

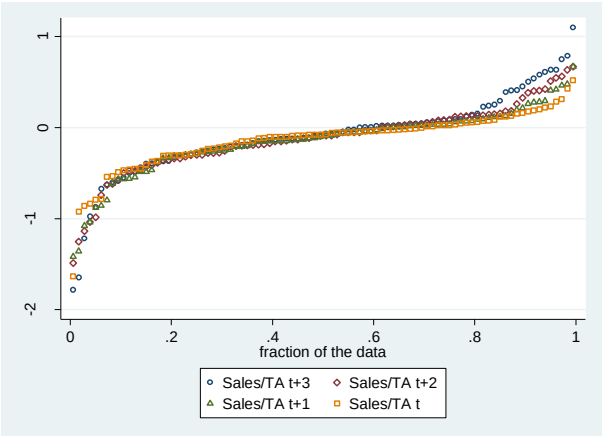
Appendix B. Quantile Plots and Change in Industry-adjusted Operating Performance











Notes. Here, changes in performance use the year prior to the IPO (t-1) as the base year.