The Effects of Related Party Transactions on Market Returns of IPO firms in China

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A B S T R A C T

In this study, we investigate the effects of related party transactions of IPO firms on their market returns around their IPOs. We separately study them in various types of related party transactions: sales and purchases of goods and services between affiliated firms, related party funding – lending and borrowing of funds between affiliated firms, and the provision of credits, collaterals and mortgages between affiliated firms on initial and long-term market returns of IPO firms, using an extensive sample of 1,609 Chinese firms that went public by now. The sales to related party has a significant U-shaped effect on initial returns of both high-return and low-return IPOs, while the asset trading between related parties has a significant reverse U-shaped effect on initial returns of low-return IPOs. In addition, lending to related party has a significant U-shaped effect on initial returns of both high-return and low-return IPOs while debt financing from related party has a significant U-shaped effect on initial returns of high-return IPOs. Lastly, the guarantee provided for related party has a significant U-shaped effect on initial returns of high-return IPOs, while high-return firms get guaranteed from related party have higher initial returns of IPOs than not.

Keywords: Related Party Transaction, Market Returns, IPO firm, China, Affiliated Firms, Panel Regressions

Ⅰ. Introduction

Transactions within a group of affiliated firms, defined as "related party transactions hereinafter",[1] have become an increasingly important issue in China. There have been many examples of study regarding such transactions by managers or controlling shareholders as a means of looting firms and thus outsiders, since the emerging markets crisis of 1997 through 1998. However, studies in related party transactions are not limited to firms in emerging markets. Johnson et al. (2000) report that firms in Europe also use various ways of "tunneling" or related party transactions for the benefit of those who control them.

It is very certain that managers and controlling shareholders of initial public offering (IPO) firms have incentives before their IPOs to transfer assets and profits out of their affiliated firms into the IPO firms and vice versa after the IPOs. This type of transactions has been spotlighted since the famous Enron scandal, etc. in recent years. Despite a very high attention, there has been no remarkable research on the effects of related party transactions on the returns of IPO firms, not to mention in

[1] Jian and Wong (2003) use the term to describe this type of transactions within a group of affiliated firms in China.

China, where the corporate structure, economic entities and weak legal system have played an important role in this kind of transactions. Through related party transactions, cash and profits can be diverted away from other group affiliate members to a poorly performing IPO firm in a group around the time of IPO. In order to regulate these related party transactions, the governing authority, Ministry of Finance and China Securities Regulatory Commission (CSRC) have issued accounting rules and regulations on related party transactions since 1997.

In a well-known extreme Sanjiu Medicine Inc. case, the firm reported that its controlling shareholder (Sanjiu Group) and other related parties owed 2.5 billion yuan, or about 96% of the firm's total assets as of August, 2001, to the IPO firm.[2] The case might shed light on the claim that the corporate governance system in China fails to constrain mangers and controlling shareholders from manipulating earnings and expropriating minority shareholders through related party transactions. Jian and Wong (2003) investigated the effects of these transactions in China on the returns of IPOs in their initial returns and post-IPO performances. They claimed that corporate structure, financial institutions and weak legal system in China are conducive to the related party dealings to inflate sales, earnings, or credits to manipulate earnings and/or diverting resources through transactions with affiliated firms in their group. They evidenced that IPO firms in China controlled by a corporate group engage in more related party transactions than those not, and that they engaged in abnormally high levels of related party sales, mainly to their controlling shareholders and other member firms in the group, when they have incentives to inflate earnings to avoid being delisted or bankrupt prior to IPO.

Many of previous studies on the related party transactions by IPO firms were related to accounting practices. Thus, they focus mostly on earnings management by managers and controlling shareholders in financial reporting. They have devoted their efforts in investigating ways of earnings management and the magnitude and effects of earnings management, especially through managing accounting accruals (Jones, 1991; Teoh, Wong and Rao, 1998). Quite recently, Chiraz and Anis (2013) suggest that generally accepted accounting principles provide managers and controlling shareholders' latitude to engage in aggressive and opportunistic earnings management, especially in a context rich in information asymmetry.

IPO firms that manage their earnings through income-increasing accruals in order to increase proceeds from the IPO are however reportedly face poor post-IPO stock market performance in the long run (Teoh et al., 1998a; DuCharme et al., 2001, 2004; Roosenboom et al., 2003; Pastor-Llorca and Poveda-Fuentes, 2006; Ahmad-Zaluki et al., 2011; Chiraz and Anis, 2013). Accordingly, such firms are more likely to fail and be delisted due to poor post-IPO performance (Li et al., 2006; Chiraz and Anis, 2013). In addition, IPO firms that manage their earnings aggressively may put too high offer price on the new issues, thereby leading to a decrease in the degree of underpricing (Kim and Park, 2005; Kimbro, 2005; Lin and Tian (2012). Thus, earnings management could be a cause of poor post-IPO underperformance both in the initial return and long term market performance and eventual involuntary delisting.

Recently, Miloud et al. (2014) reported that IPO firms in France with the highest discretionary current accruals significantly underperformed, compared to equivalent companies in the third year following the IPOs. They claim that managers are to maximize the value of their firms. When they aim to increase the value of the shares, they might be in need of transactions with those related. While they might manage their earnings, their behaviors are hard to prove since it is very difficult to detect from their financial statements. Healy (1999) stated that outside investors would benefit from other information that might be related to true value with respect to earnings, credit and market power.

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[2] http://www.csrc.gov.cn/CSRCSite/default.htm

Therefore, as long as insiders of firms have incentives to manipulate or manage not only earnings but also all other factors affecting their misinformed outsiders, they will make use of earnings management given their discretion in financial reporting and in structuring transactions to either mislead corporate outsiders about the underlying financial performance of the firm or influence contractual outcomes that depend on reported earnings.

Thus, this study focuses on the effects of related party transactions on the beliefs that it is extremely difficult to prove earnings management based only on accounting values from the limited information from their financial statements, without paying attention to accruals like most other studies in this topic to investigate the existence and severity of earnings management, on the eventual stock market performances. In the context of information asymmetry, we focus only on related party transactions as in Jian and Wong (2003) and Chiraz and Anis (2013). Most of the past studies on Chinese listed firms use accounting data in order to study the existence and effects of earnings management on their IPO returns, and introduce accounting accruals, non-operating earnings, etc. to simply examine the cross-sectional distribution of earnings and returns on equity, to detect earnings manipulations (Chen et al., 2000; Chen and Yuan, 2001; Aharony, Lee, and Wong, 2000). Few studies on the Chinese market have investigated related party transactions as a means to earnings management (Jian and Wong 2003; Premti, 2013). Unfortunately, Jian and Wong (2003) used very limited samples in their study, for example 131 Chinese listed firms in the basic materials industries such as mining, lumber, chemicals and building materials. Chiraz and Anis (2013) used a sample of 139 French IPO firms over the period 1999 to 2007.

The objective of this study is not to examine whether and how controlling shareholders use related party transactions in earnings management as in Jian and Wong (2003) and Premti (2013) but to study the effects of various tunneling on their market returns of IPO firms. Specifically, in this study, we first introduce various types of related party transactions: related party transactions – sales and purchases of goods and services between affiliated firms, related party funding – lending and borrowing of funds between affiliated firms, and the provision of credits, collaterals and mortgages between affiliated firms. In addition, we use an extensive sample of 1,609 Chinese firms that went public on the Shenzhen Stock Exchange relative to the Shanghai Stock Exchange time from 2004 till 2015 in the full sample, except for a few firms in banking and finance industry and some without basic information used in the study. Then, following Kwark and Jun (2015) that studied the negative effect of IPO underpricing by examining the stock price behavior of IPO shares after listing in Korea and that reported firms with excessive initial returns are more likely to suffer from price declines in a month after listing, we separate our samples into two sets based on their initial returns using the median: high return firms and low return firms.

This study documents several new findings: The sales of goods and services, lending and borrowing of funds or provision of credits, collaterals and mortgages between affiliated firms before list have significant but nonlinear impact on initial returns of IPOs, and this impact has different patterns in high initial return stocks and low initial return stocks. These results are partly consistent with Jian and Wong (2003) and Bae, Kang and Kim (2002). Additionally, we also study the effects of the related party transactions on the long-term performance of IPOs using cumulative abnormal returns (CAR) and buy-and-hold abnormal returns (BHA) and found: First, the sales to related party has a significant U-shaped effect on long term post-IPO performance but the patterns are different in high initial return stocks and low initial return stocks and the purchases among affiliated firms in a group have a negative effect on long term post-IPO performance. Second, the related party funding has significant impact on long term post-IPO performance but the patterns are different in high initial return stocks and low initial return stocks. Third, the provision of credits, collaterals and mortgages

between related party have significant impact on long term post-IPO performance but the patterns are also different in high initial return stocks and low initial return stocks. These results are partly consistent with Teoh et al. (1998a) and Miloud et al. (2014)

This study is one of the first studies to estimate the effects of IPO firm's related party transactions, for example, related party transactions – sales and purchases of goods and services between affiliated firms, related party funding – lending and borrowing of funds between affiliated firms, and the provision of credits, collaterals and mortgages between affiliated firms, on initial returns. From the study, we can infer that various types of related party transactions impact the IPO stock returns may through convey internal corporate governance information to investors.

The remainder of this part is organized as follows. Chapter II discusses related literature and Chapter III outlines the hypotheses and research models. Chapter IV describes the selected sample and data, and basic relations between the stock returns and related party transactions. Chapter V investigates the effects of related party transactions and other factors on the stock market performances of IPO firms with regression analyses. Finally, Chapter VI presents the results of empirical study and summarizes the conclusion.

Ⅱ. Literature Review

2.1. Earnings Management and IPOs

Healy (1999) asserts that, by definition, insiders of firms have incentives to manage or manipulate all other factors including earnings to mislead outsiders on purpose or inadvertently. Mulford and Comiskey (2005) claim that earnings management is considered as the most critical in accounting; in this sense, most of accounting practices are related with earnings manipulations. Aggressive accounting, big bath accounting, creative accounting, the street earnings or window dressing refer to earnings management. However, the definitions, goals and effects of earnings management differ significantly across those terms. While Dechow and Skinner (2000) and Scott (2011) argue that earnings management is a means for managers and controlling shareholders to share private information on the future prospects of the firm for the benefit of investors, Schrand and Zechman (2012) suggest that earnings management is like a "slippery slope to fraud." Tirole (2006) admits that earnings management is a means used by managers and controlling shareholders to modify the external assessment of the firm's financial status and performance. According to some researchers, such as Beneish (2001), the earnings management is often difficult to detect.

Many prior researches on earnings management use accounting values in their research: aggregate accruals, distribution of earnings, etc. Teoh et al. (1998a) report that IPO firms managing their earnings to increase proceeds from the IPO face poor post IPO market performance. DuCharme, Malatesta and Sefcik (2001) find that pre-IPO abnormal accruals result in a significantly higher initial firm value. Some succeeding studies report basically same results (Pastor-Llorca and Poveda-Fuentes, 2006; Ahmad-Zaluki et al., 2011; Chiraz and Anis, 2013).

In addition, Kim and Park (2005) report that IPO firms that manage their earnings offer a higher IPO price, resulting in less severe underpricing. Miloud et al. (2014) report that IPO firms in France with the highest discretionary current accruals significantly underperformed equivalent firms in the third year following the IPOs. Thus, earnings management could be a cause of poor post-IPO underperformance both in the initial return and long term market performance and eventual involuntary delisting. Other researches focus on some other factors such as cash flows, types of

expenses, etc. than earnings (Fudenberg and Tirole 1995; Dechow and Skinner, 2000; Healy and Wahlen, 1999).

Similarly, Li et al. (2006) and Chiraz and Anis (2013) report that firms poorly performing after IPOs are more likely to fail and be delisted in the long run. As documented by Premti (2013), managers have the incentive to present better financial performances in order to offer a higher IPO price and the ability to do so, especially when the accounting practices are not so clear for still private firms. Alti (2006), and Brau and Fawcett (2006), Chemmanur and He (2011), and Schaub (2011) support the hypothesis of market timing and information asymmetry by showing evidence which are consistent with market timing, and by presenting evidence to prove that insiders may use inside information to take advantage of such phenomena: IPO underpricing in the short run and underperformance in the long run. In addition to timing the market, insiders can also inflate the price of the firm's equity by inflating the firm's earnings prior to the IPO. Higher earnings have a positive effect on equity prices. Premti (2013) claims that managers use their discretion to boost earnings before the IPO, receive an inflated IPO price, and benefit at the expense of the new shareholders.

Although accounting standards guide the way firms report, managers have some discretion when reporting earnings. This discretion includes the choice of accounting method, its application, and the timing of revenue or cost recognition. In this sense, we suppose that managers or controlling shareholders inside firms might try to maximize proceedings from IPOs by managing their earnings and managing/manipulating other critical factors in the process of IPOs in the market far from perfect such as China.

2.2. Related Party Transactions and Corporate Performance

In this section, we review prior studies on related party transactions and corporate performance. There are two contrasting hypotheses of related party transactions: conflicts of interest and efficient transactions. The conflict of interest hypothesis is demonstrated in a widely known case of Enron. The alternative view to the conflict of interest hypothesis is that related party transactions are efficient transactions that rationally fulfill economically rational activities. Claessens and Fan (2003) claim that compared with non-affiliated firms, group affiliated members are more likely to be involved in related party transactions. On the one hand, these transactions are justified for all member firms within the group economically. On the other hand, such transactions are not justified for non-member firms outside the group when the ownership and control structure of group may lead agency problems or asymmetric information with outsiders. How related party transactions can benefit the group as a whole or be used by its controlling owner to expropriate the outsiders is not a matter of concern in this study.

Many studies argue that the group structure and the related party transactions among member firms can help them to reduce transaction costs and overcome the difficulties in enforcing property rights and contracts that are essential for productions (Coase, 1937; Khanna and Palepu, 1997; Fisman and Khanna, 1998; Shin and Park, 1999; Fan and Goyal, 2002; Kim, 2003). However, the opportunistic controlling shareholders can take advantage of related party transactions within the group structure. Chang (2002) finds that Korean firms use related party purchases and sales to manipulate earnings. Ye, Ke and Li (2002) investigate the effects of several corporate governance measures on related party transactions in Taiwan. The related party transactions might be critically important since they are prevalent among group firms in China, Korea and Japan. According to Claessens, Fan, and Lang (2002), about 70 percent of listed firms in 9 East Asian countries reported related party transactions. Historically, while blamed for their inefficiencies and inappropriate or

unfair in corporate governance, many conglomerates are well known for their success stories as driving force conglomerates such as group, also known as chaebol, affiliated firms in Korea and Keiretsu firms in Japan during high-speed expansion era of their economies in the latter part of the 20th century.

However, Khanna and Palepu (2000) find nonlinear, U shaped wealth effect of group affiliation in India, but this wealth effect is not attributable to internal financial markets. The greater agency problems associated with the related party transactions and their governance system within groups among their affiliated firms have been documented. Bae, Kang and Kim (2002) report significantly negative stock returns for chaebol firms that acquired poorly performing target firms into the group or had increased their equity ownership by owner managers in Korea. However, such mergers they claim made a significantly positive effect on the market value of other firms in the same group. They regard this as an evidence of tunneling that firms belonging to the same group are less likely to maximize individual firm value, but more likely to make takeover decisions beneficial only to their controlling shareholders.

Theoretically, Wolfenzon (1999), Bebchuk, Kraakman and Triantis (2000), and Shleifer and Wolfenzon (2002) prove the existence of expropriation of minority shareholder through related party transactions or group affiliations. Claessens et al. (2000) using samples in the above mentioned region report that there is a negative relationship between the separation of ownership and control, and the market values of listed firms. They suggest that their findings are due to the potential risk of expropriation for listed firms on the exchanges in East Asia. Bertrand, Mehta and Mullainathan (2002) find that group affiliated members in India are more influenced by the profitability level of other members within the same group, and less sensitive to the industry profitability shocks. The level of sensitivity differs as to the different level within the pyramid, interpreted as an evidence of diversion of profits flowing from firms at the bottom to those on top of the pyramids, following the lines of ownership.

Further, by examining the business groups in nine East Asian economies, Claessens, Fan and Lang (2002) find that some types of firms, more mature, slower-growing and more financially constrained ones, benefit more from their group affiliation with the group, especially for those with more agency problems, as measured by the difference between stakes of the controlling ultimate owner and her ownership. The result suggests that agency problems associated with groups will deteriorate any potential beneficial effects of related party transactions. Several other papers investigate the effects of agency problem, especially between controlling and minority shareholders, on the gains and losses from group-affiliation and related party transactions. Claessens and Fan (2003) claim that the effect of related party transactions to date on their benefits and costs within the group is still in debate.

In this regard, we suppose that managers or controlling shareholders inside firms try to maximize proceedings from IPOs through related party transactions plausibly at the cost of outsiders for the benefit of insiders, such as incumbent owners and managers.

2.3. Related Party Transactions and IPOs

This study mainly attempts to investigate the effects of these transactions in China on the returns of IPOs in their initial returns and post-IPO performances as evidenced in Jian and Wong (2003). They claim that, since accounting scandals in the United States to the emerging market crisis in 1997-1998, there have been allegedly many cases of earnings manipulation by managers or controlling shareholders using related party transactions or of diversion of financial resources from their firms,

and that corporate structure, financial institutions and weak legal system in China are conducive to the related party dealings to inflate sales, earnings, or credits by manipulating earnings and/or diverting resources through transactions with affiliated firms in their group. They evidence that IPO firms in China controlled by a corporate group engage in more related party transactions than those not, and that they engage in abnormally high levels of related party sales, mainly to their controlling shareholders and other member firms in the group, when they have incentives to inflate earnings to avoid being delisted or prior to IPO.

Jian and Wong (2003) show that those group-controlled listed firms that have generated more free cash flows from related party transactions tried to divert resources back to the controlling group through other member firms in their group by providing generous trade credits. As a result, their stock market returns outperform non-group affiliated firms. They conjecture that at least some part of the related party transactions is perceived by the market as opportunistic, that investors view the related party sales figures to be less credible than those from non-related party transactions, when they are generated from related party transactions through arm's length contracts, and that related party lending is negatively correlated with firm value, as measured by Tobin's Q and market-to-book equity ratio. Unfortunately, they use only 131 Chinese listed firms industry that went on public between 1997 and 2000 during the financial crisis period in East Asia, when the stock markets were in crisis in the neighboring countries and plausibly severely affected by such outside shocks.[3]

Chiraz and Anis (2013) first report that income-increasing earnings management, based on a study using a sample of 139 French IPO firms over the period 1999 to 2007, including 38 failures, exists in the first year as a firm on the exchange and not in the year before the IPO after studying the impact of discretionary current accruals on the stock market performance of French IPO firms. However, few studies ever have investigated the role of related party transactions in earnings management, not even other financial management other than earnings management, although quite a lot of anecdotal evidence suggests that the problem might be serious in transitional and relatively new emerging economies like China.

Ⅲ. Hypotheses and Test Models

In this study, we focus on the effects of related party transactions, without focusing on accruals to study the existence and severity of earnings management as in Jian and Wong (2003) and Chiraz and Anis (2013), on the eventual stock market performances, initial returns and post-IPO abnormal long-run returns for holding some years after their initial issuance of shares. We basically suppose that managers and controlling shareholders of IPO firms have underlying motives to manage or manipulate their financial statements, even though related party transactions within their affiliated group. Since it might be almost impossible to prove the effects on earnings, based only on data garnered from financial statements, we focus on the effects of related party transactions before and after their IPOs on the stock market performances in the short run and long run. Unlike Jian and Wong (2003) and Chiraz and Anis (2013), we focus on related party transactions within the context of information asymmetry. We basically introduce the additional factors representing various types of related party transactions, in addition to the baseline models of Loughran and Ritter (1995) and Lowry and Schwert (2002) in the U.S. market to set and test the following hypotheses.

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[3] The regulation for disclosure of related party transaction was not in effect until January 1, 1997 and hence corresponding data are not available prior to that date (Jian and Wong, 2003).

3.1. Hypotheses

We have seen no conclusive result on the effects of related party transactions. First, Khanna and Palepu (2000) find nonlinear, U-shaped wealth effect of group affiliation in India, but this wealth effect is not attributable to internal financial markets. Jian and Wong (2003) show that those group-controlled listed firms that have generated more free cash flows from related party transactions try to divert resources back to the controlling group through other member firms in their group by providing generous trade credits. As a result, their stock market returns outperform non-group affiliated firms. Basically, related party transactions can affect positively the offer price and/or the opening price at the same time. Jian and Wong (2003) report a positive effect of related party sales to other member firms on the initial market returns. However, Kim and Park (2005) report that IPO firms that manage their earnings offer a higher IPO price, resulting in less severe underpricing. Thus, earnings management could be a cause of poor post-IPO underperformance both in the initial return and long term market performance and eventual involuntary delisting. On the contrary, Teoh et al. (1998a) report that IPO firms managing their earnings to increase proceeds from the IPO face poor post IPO market performance. Miloud et al. (2014) report that IPO firms in France with the highest discretionary current accruals significantly underperformed equivalent firms in the third year following the IPOs. Thus we hypothesize regarding the effect of related party sales to affiliated firms differently positively following Jian and Wong (2003) on the short-run performances, and negatively following Miloud et al. (2014) on long-run stock market performances of IPO firms as follows.

Hypothesis 1: More related party sales to affiliated firms in a group have a positive effect on initial returns.

Hypothesis 1-1: More related party sales to affiliated firms in a group have a negative effect on long-term post-IPO returns.

Jian and Wong (2003) do not use related party purchases in their empirical models. Li et al. (2006) and Chiraz and Anis (2013) report that firms poorly performing after IPOs are more likely to fail and be delisted in the long run. Teoh et al. (1998a) report that IPO firms managing their earnings to increase proceeds from the IPO face poor post-IPO market performance. Bae, Kang and Kim (2002) report significantly negative stock returns for chaebol firms that acquired poorly performing target firms into the group or had increased their equity ownership by owner managers in Korea. However, such mergers made a significantly positive effect on the market value of other firms in the same group. They regard this as tunneling evidence that firms belonging to the same group are less likely to maximize individual firm value, but more likely to make takeover decisions beneficial only to controlling shareholders. Thus we hypothesize regarding the effect of related party purchases from affiliated firms both negatively on short-run performances following Bae, Kang and Kim (2002), and for long-run stock market performances following Teoh et al. (1998a) of IPO firms as follows.

Hypothesis 2: More related party purchases from affiliated firms in a group have a negative effect on initial returns.

Hypothesis 2-1: More related party purchases from affiliated firms in a group have a negative effect on long-term post-IPO returns.

Jian and Wong (2003) show that related party lending is negatively correlated with firm value, as measured by Tobin’s Q and market-to-book equity ratio, and that those group-controlled listed firms

that have generated more free cash flows from related party transactions divert their earnings to the controlling shareholders or firms by providing generous trade credits. They conjecture that the related party lending or credit provision is perceived negatively by the market as opportunistic. Thus, following Jian and Wong (2003), we hypothesize a negative effect of related party lending to affiliated firms on both short-run and long-run stock market performances of IPO firms as follows.

Hypothesis 3: More related party lending to affiliated firms in a group has a negative effect on initial returns.

Hypothesis 3-1: More related party lending to affiliated firms in a group has a negative effect on long-term post-IPO returns.

Jian and Wong (2003) do not use related party borrowing in their empirical models. Jian and Wong (2003) show that related party lending is negatively correlated with firm value, as measured by Tobin's Q and market-to-book equity ratio, and that those group-controlled listed firms that have generated more free cash flows from related party transactions divert their earnings to the controlling shareholders or firms by providing generous trade credits. Therefore, we may infer the conflicting effects of related party borrowing: borrowing firms may be provided with more generous credit. Thus, we hypothesize a positive effect of related party borrowing from affiliated firms positive for both short-run and long-run stock market performances of IPO firms as follows.

Hypothesis 4: More related party borrowing from affiliated firms in a group has a positive effect on initial returns.

Hypothesis 4-1: More related party borrowing from affiliated firms in a group has a positive effect on long-term post-IPO returns.

Jian and Wong (2003) do not use related party guarantee provision specifically in their empirical models. We can infer from Jian and Wong (2003) that related party credit provision is negatively correlated with firm value, as measured by Tobin's Q and market-to-book equity ratio. Thus, we hypothesize regarding the effect of related party guarantee provision to affiliated firms both negatively on short-run and long-run stock market performances of IPO firms as follows.

Hypothesis 5: More related party guarantee provision to affiliated firms in a group has a negative effect on initial returns.

Hypothesis 5-1: More related party guarantee provision to affiliated firms in a group has a negative effect on long-term post-IPO returns.

Jian and Wong (2003) do not use related party guarantee provided by other member firms specifically in their empirical models. We can infer from Jian and Wong (2003) that related party credit taking is positively correlated with firm value, as measured by Tobin's Q and market-to-book equity ratio. Thus, we hypothesize regarding the effect of related party guarantee taking among affiliated firms both positively on the short-run and long-run stock market performances of IPO firms as follows.

Hypothesis 6: More related party guarantee taking from affiliated firms in a group has a positive effect on initial returns.

Hypothesis 6-1: Related party guarantee taking from affiliated firms in a group has a positive effect on long-term post-IPO returns.

Considering non-linear relationship proposed by Khanna and Palepu (2000), we introduce additionally a quadratic term for each factor of related party transactions. We skip revisions of related hypotheses for simplicity. Depending on the sign of quadratic terms, the effect of each factor can be either U-shaped when the sign is positive or reverse U-shaped when it is negative.

3.2. Empirical Models

Out study is focused on three issues: 1) whether the related party trading before listing impacts the stock returns of IPOs; 2) whether the related party funding before listing impacts the stock returns of IPOs; 3) whether the related party collateral provision before listing impacts the stock returns of IPOs.

Jian and Wong (2003) show that those group-controlled listed firms that have generated more free cash flows from related party transactions tried to divert resources back to the controlling group through other member firms in their group by providing generous trade credits. As a result, their stock market returns outperform non-group affiliated firms. They conjecture that at least some part of the related party transactions is perceived by the market as opportunistic, that investors view the related party sales figures to be less credible than those from non-related party transactions, when they are generated from related party transactions through arm's length contracts, and that related party lending is negatively correlated with firm value, as measured by Tobin's Q and market-to-book equity ratio. Bae, Kang and Kim (2002) report significantly negative stock returns for chaebol firms that acquired poorly performing target firms into the group or had increased their equity ownership by owner managers in Korea. However, such mergers made a significantly positive effect on the market value of other firms in the same group. They regard this as tunneling evidence that firms belonging to the same group are less likely to maximize individual firm value, but more likely to make takeover decisions beneficial only to controlling shareholders.

Following Jian and Wong (2003) and Bae, Kang and Kim (2002), we introduce the sales to related party (RP_Sale), purchase amount from related party (RP_Purch) and the asset trading amount (RP_Asset) between related parties to test the effect of related party trading on initial returns of IPOs, the loan to related party (RP_Loan) and the debt from related party (RP_Debt) to test the effect of related party funding on initial returns of IPOs and also introduce the guarantee provided for related party (RP_Guar) and a guarantee provide from related party dummy variable (RPGuard_D) to test the effect of collateral provision on initial returns of IPOs.

Following Lowry and Schwert (2002), we introduce the value weighted return R_m to 30 IPOs prior to the offer date to reflect the overall market performances of IPOs before an IPO and the number of IPOs in the same month to test the effect of spillover information which were introduced in the first section of this part to control IPO market information factors.

It is well mentioned by Loughran and Ritter (2002) that the returns on stock markets, before the IPOs, have a positive impact on the initial returns. The behavioral arguments were developed to find the reason of this impact. Miller (1977) shows that, since the optimism of investors, the prices of the shares can deviate from their intrinsic values. The dynamism of the market which considered as an indicator of the behavior of the investor can cause the overvaluation after IPOs. Generally, the stock market return represents the return on the market during a period before the date of IPOs (Gao, 2010).

Following Loughran and Ritter (2002), we introduce the stock market return (Rm) to test if the general behavior of the market leads to an overvaluation in the secondary market.

According to Derrien (2005), the new issues which are the object of a raised demand on behalf of individual investors have high initial returns. In China, IPO shares are allocated through a lottery mechanism which investors need to pay a full subscription deposit to bid for fixed quantities. Therefore, the odds of winning the lottery depend on how much money joins the lottery. Gao (2010) finds that the odds is negatively correlated with the initial returns of IPOs and shows that high demand of individual investors increases the initial returns of IPOs. Following Derrien (2005), we introduce the subscription ratio (Sub_R) to test the effect of demand of individual investors on initial returns of IPOs.

Booth and Smith (1986), Titman and Trueman (1986), Balvers, McDonald and Miller (1988), Carter and Manaster (1990), and Carter, Dark and Singh (1998) suggest that the quality of advising agents (e.g. investment bankers, accountants and auditors) is negatively related to IPO underpricing levels. It is argued that more prestigious underwriters or advising agents can reduce the information asymmetry and thereby cut the underpricing cost. Accordingly, following Loughran and Ritter (2004), we introduce the big-6 of Chinese investment banker dummy variable (Big6_D) to test the effect of the quality of advising agents on initial returns of IPOs.

Younger firms present a bigger uncertainty prospect, which is due to the fact that older firms have enough published historical financial data. The availability of the information about firm operating for several years contributes to reducing the asymmetry of information during the listing period (Ritter, 1991; Hensler et al, 1997). The uncertainty prospect of younger firms will be translated by an increase of the underpricing (Bilson et al, 2003). Following Loughran and Ritter (2004), we introduce the age (Age) of IPO firms to test the effect of firm age on initial returns of IPOs.

Relating capital structure signaling models to IPO initial returns, James and Wier (1990), Habib and Ljungqvist (2001), and Schenone (2004) point out that issuing private debt claims before issuing stock signals to the market that the firm is of high value since only high-value firms apply for, and are granted, inside debt. The use of debt financing by IPO firms is frequently seen as a signal of high firm quality. Following Loughran and Ritter (2004), we introduce the debt ratio (Debt_R) of IPO firms to test the effect of firm capital structure on initial returns of IPOs.

Melnik and Thomas (2004) examined IPOs that were listed on NASDAQ during the year 2000, and argued that financial information as well as non-financial information about any IPO firm have similar importance. Kimbro (2005) shows that in China pre-IPO non-discretionary accruals as well as discretionary accruals are important explanatory variables of first day returns as well as first year returns. The study revealed that accounting income and accruals are related to valuation, which leads to underpricing. Leal (2008) analyzed the role of accounting information in investments in IPOs in the Brazilian market and found that accounting information revealed through prospectus helps in gaining insights into initial returns of IPOs. Hasan et al. (2013) studied the Indonesian IPO market and found that when IPO of a firm which has higher past profitability and has a large issue size enters the market, initial returns on such public issues remains low due to low level of ex ante uncertainty. Lin and Tian (2012) conducted a study on the Chinese capital market and found that accounting conservatism lowers the information asymmetry at the time of public issue and found a negative relationship between return on assets (ROA) and initial returns. Accordingly, we introduce the return on assets (ROA) to test the effect of financial information on initial returns of IPOs.

Following Kwark and Jun (2015) that studied the negative effect of IPO underpricing by examining the stock price behavior of IPO shares after listing in Korea and that reported firms with excessive initial returns are more likely to suffer from price declines in a month after listing, we

separate our samples into two sets based on their initial returns using the median: high return firms and low return firms, and introduce the IPO performance dummy variable (High_D) to compare the effects of factors between two groups. Additionally, in order to test the effect of lock-up contract on initial returns of IPOs, we introduce the lock-up contract dummy variable (Lock_D). Following Loughran and Ritter (2004), Kim, Le and Thomas (2007) and Dongwei Su (2000), we also introduce firm assets to control firm-specific factor as follows.

$$\begin{aligned} IR_i = {} & \beta_0 + \beta_1 RP\_Sale_i + \beta_2 RP\_Sale2_i + \beta_3 RP\_Purch_i + \beta_4 RP\_Puch2_i + \beta_5 RP\_Asset_i + \\ & \beta_6 RP\_Asset2_i + \beta_7 RP\_Loan_i + \beta_8 RP\_Loan2_i + \beta_9 RP\_Debt_i + \beta_{10} RP\_Debt2_i + \\ & \beta_{11} RP\_Guar_i + \beta_{12} RP\_Guar2_i + \beta_{13} RPGuard\_D_i + \beta_{14} High\_D_i + \beta_{15} Lock\_D_i + \\ & \beta_{16} Rm_i + \beta_{17} Rm\_IPO_i + \beta_{18} NIPO_i + \beta_{19} Sub\_R_i + \beta_{20} Big6\_D_i + \beta_{21} Age_i + \\ & \beta_{22} Debt\_R_i + \beta_{23} ROA_i + \beta_{24} Asset_i + e_i \end{aligned} \quad (1)$$

where IR_i is the initial returns for IPO firm i, defined as the difference between the first-day market opening price minus the IPO offer price, divided by the IPO offer price; RP_Sale_i is the sales to related party divided by the asset of the year before listed year, "2" of RP_Sale2_i denotes the quadratic term of RP_Sale_i; RP_Purch_i is the purchase amount form related party divided by the asset of the year before listed year, "2" of RP_Purch2_i denotes the quadratic term of RP_Purch_i; RP_Asset_i is the asset trading amount between related parties divided by the asset of the year before listed year, "2" of RP_Asset2_i denotes the term of RP_Asset_i; RP_Loan_i is the loan to related party divided by the asset of the year before listed year, "2" of RP_Loan2_i denotes the quadratic term of RP_Loan_i; RP_Debt_i is the debt from related party divided by the asset of the year before listed year, "2" of RP_Debt2_i denotes the quadratic term of RP_Debt_i; RP_Guar_i is the guarantee provided for related party divided by the asset of the year before listed year, "2" of RP_Guar2_i denotes the quadratic term of RP_Guar_i; $RPGuard\_D_i$ is the dummy variable for firm, 1 if an IPO firm get guarantee provided from related party before listing and 0 otherwise; $High\_D_i$ is the dummy variable for firm, 1 if an IPO firm's initial returns higher than 50% of the sample IPO firms' and 0 otherwise; $Lock\_D_i$ is the dummy variable for firm, 1 if an IPO firm use the lock-up mechanism and 0 otherwise; Rm_IPO_i is the IPO market returns calculated as value-weighted initial returns of 30 IPO firms listed before firm i; $NIPO_i$ is the number of IPOs in the same month, Rm_i is the average daily returns on the Shanghai or Shenzhen security exchange 21 trading days before IPO of firm i, an indicator for the market conditions surrounding a new issue, Sub_R_i is the subscription ratio, measure the oversubscription of IPO shares; $Big6\_D_i$ is the underwriter dummy for a stock, 1 if the leading underwriter has a rank of 6 or more and 0 otherwise; Age_i is the natural logarithm of (1+IPO firm's age); $Debt\_R_i$ is the debt ratio for firm i, ROA_i is the return of asset ratio for firm i, $Asset_i$ is the natural logarithm of asset for firm i. Now, we simplify the notations in (1) to use basic regression models, the ordinary least squares (OLS) multiple regression models in order to test the effect of the related party trading on initial returns, we set model 1 as follows.

$$\begin{aligned} IR_i = {} & \beta_0 + \beta_1 RP\_Sale_i + \beta_2 RP\_Sale2_i + \beta_3 RP\_Purch_i + \beta_4 RP\_Purch2_i + \beta_5 RP\_Asset_i + \\ & \beta_6 RP\_Asset2_i + \beta_7 Lock\_D_i + \beta_8 Rm_i + \beta_9 Rm\_IPO_i + \beta_{10} NIPO_i + \beta_{11} Sub\_R_i + \\ & \beta_{12} Big6\_D_i + \beta_{13} Age_i + \beta_{14} Debt\_R_i + \beta_{15} ROA_i + \beta_{16} Asset_i + e_i \end{aligned} \quad (2)$$

In order to test the effect of the related party funding on initial returns, we set model 2 as follows.

$$IR_i = \beta_0 + \beta_1 RP\_Loan_i + \beta_2 RP\_Loan2_i + \beta_3 RP\_Debt_i + \beta_4 RP\_Debt2_i + \beta_{15} Lock\_D_i + \beta_{16} Rm_i + \beta_{17} Rm\_IPO_i + \beta_{18} NIPO_i + \beta_{19} Sub\_R_i + \beta_{20} Big6\_D_i + \beta_{21} Age_i + \beta_{22} Debt\_R_i + \beta_{23} ROA_i + \beta_{24} Asset_i + e_i \quad (3)$$

In order to test the effect of the related party collateral provision on initial returns, we set model 3 as follows.

$$IR_i = \beta_0 + \beta_1 RP\_Guar_i + \beta_2 RP\_Guar2_i + \beta_3 RPGuard\_D_i + \beta_4 Lock\_D_i + \beta_5 Rm_i + \beta_6 Rm\_IPO_i + \beta_7 NIPO_i + \beta_8 Sub\_R_i + \beta_9 Big6\_D_i + \beta_{10} Age_i + \beta_{11} Debt\_R_i + \beta_{12} ROA_i + \beta_{13} Asset_i + e_i \quad (4)$$

In order to test the effect of various types of related party transactions on initial returns and long-term performance, we set model 4 as follows.

$$R_i = \beta_0 + \beta_1 High\_D_i + \beta_2 RP\_Sale_i + \beta_3 RP\_Sale2_i + \beta_4 RP\_Purch_i + \beta_5 RP\_Puch2_i + \beta_6 RP\_Asset_i + \beta_7 RP\_Asset2_i + \beta_8 RP\_Loan_i + \beta_9 RP\_Loan2_i + \beta_{10} RP\_Debt_i + \beta_{11} RP\_Debt2_i + \beta_{12} RP\_Guar_i + \beta_{13} RP\_Guar2_i + \beta_{14} RPGuard\_D_i + \beta_{15} Lock\_D_i + \beta_{16} Rm_i + \beta_{17} Rm\_IPO_i + \beta_{18} NIPO_i + \beta_{19} Sub\_R_i + \beta_{20} Big6\_D_i + \beta_{21} Age_i + \beta_{22} Debt\_R_i + \beta_{23} ROA_i + \beta_{24} Asset_i + e_i \quad (5)$$

where R_i is the initial returns (IR), cumulative abnormal returns (CAR) and buy-and-hold abnormal returns (BHA) for IPO firm i. To measure the long-term post-IPO stock performance, the cumulative abnormal return (CAR) and buy-and-hold abnormal returns (BHA) method was used. The abnormal return is calculated by adjusting the raw return with the return of the market. It is calculated as follows.

$$AR_{i,t} = r_{i,t} - r_{m,t} \quad (6)$$

where $AR_{i,t}$ is the market-adjusted return for firm i on day t, $r_{m,t}$ is the weighted average return on the market, calculated for the same trading day. The cumulative abnormal returns (CAR) are calculated as follows.

$$CAR_{i,t} = \sum_{t=1}^{n} AR_{i,t} \quad (7)$$

where $CAR_{i,t}$ is the cumulative abnormal returns for firm i. The buy-and-hold abnormal returns (BHA) are calculated as follows.

$$BHA_{i,t} = \prod_{t=1}^{n}(1 + r_{i,t}) - \prod_{t=1}^{n}(1 + r_{m,t}) \quad (8)$$

In this study, we use one-year, three-year and five-year cumulative abnormal returns (CAR) and buy-and-hold abnormal returns (BHA).

Ⅳ. Data and Descriptive Statistics

4.1. Data

The data used in this study is a merged dataset obtained from two sources: the RESSET database from RESSET Technology Co., Ltd., a Chinese firm specializing in financial databases, and the GTA database from GTA Information Technology Co., Ltd., a nationwide high-tech company providing solutions to the education and investment sectors in China. The statistical traits of the data used in this study are described below. Later sections of our study utilize firm-level initial returns, and this data will be described at that point.

Table 1 shows the yearly number of IPO firms and average yearly initial returns by related party transaction type. The number of IPO firms which had related party trading before list are decrease from 2004, low in 2009, increase in 2010 and then become more or less steady. The number of IPO firms which had related party funding are stay in low level except in 2010 and 2011, for example, 27 in both 2010 and 2011. The number of IPO firms which had related party collateral provision show the same pattern but much more than the IPO firms which had related party funding, for example, 35 in 2010 and 41 in 2011. Obviously, relative to the number of IPO firms which did not have related party transactions before list, the number of IPO firms which had related party transactions are decreasing.

Table 1. Number of IPOs and Initial Returns by Related Party Transaction Type

Year	Related Party Trading		Related Party Funding		Related Party Collateral Provision		Non Related Party Transactions	
	IPO Firms	Initial Returns	IPO Firms	Initial Returns	IPO Firms	Initial Returns	IPO Firms	Initial Returns
2003	34	0.717	0		4	1.242	32	0.719
2004	52	0.624	6	0.995	18	0.997	37	0.723
2005	7	0.184	1	0.028	2	0.461	7	0.721
2006	27	0.831	6	0.920	14	0.831	29	0.885
2007	14	1.864	7	2.046	10	1.930	105	1.967
2008	10	1.541	3	2.175	13	2.068	60	0.974
2009	0		0		0		99	0.741
2010	27	0.337	14	0.190	35	0.308	302	0.439
2011	27	0.122	12	0.173	41	0.117	232	0.230
2012	6	0.160	6	0.263	14	0.194	139	0.267
2013	0		0		0		2	0.369
2014	11	0.402	5	0.351	23	0.415	96	0.441
2015	16	0.440	7	0.440	22	0.440	183	0.474
Total	231	0.657	67	0.758	196	0.818	1323	0.689

The average yearly initial returns of IPO firms which had related party trading before list are high from 2003 to 2008, decrease from 2010 rapidly, and then become more or less steady. The average yearly initial returns of IPO firms which had related party funding show the same pattern. The average yearly initial returns of IPO firms which had related party collateral provision also show the same pattern but much higher than the IPO firms which had related party trading, for example,

124.2% in 2003, 99.7% in 2004, 46.1% in 2005 and 206.8% in 2008. Similarly, the average yearly initial returns of IPO firms which did not have related party transactions before list show the same pattern but also much higher than the IPO firms which had related party trading before list.

Figure 1 shows the monthly IPO initial returns by related party transaction between 2003 and 2015 for firms going public on both the Shanghai and Shenzhen Stock Exchange in China. There are many periods with monthly average initial returns higher than 100%, plus hot periods and cool periods, and even some periods without any IPOs for some months after hot periods with enormous initial returns. Obviously, most IPO firms with related party transactions listed before 2009, and in this period, related party transactions seem like lead high initial returns of IPO firms.

Figure 1. Average Initial Returns from IPOs per Month by Related Party Transaction

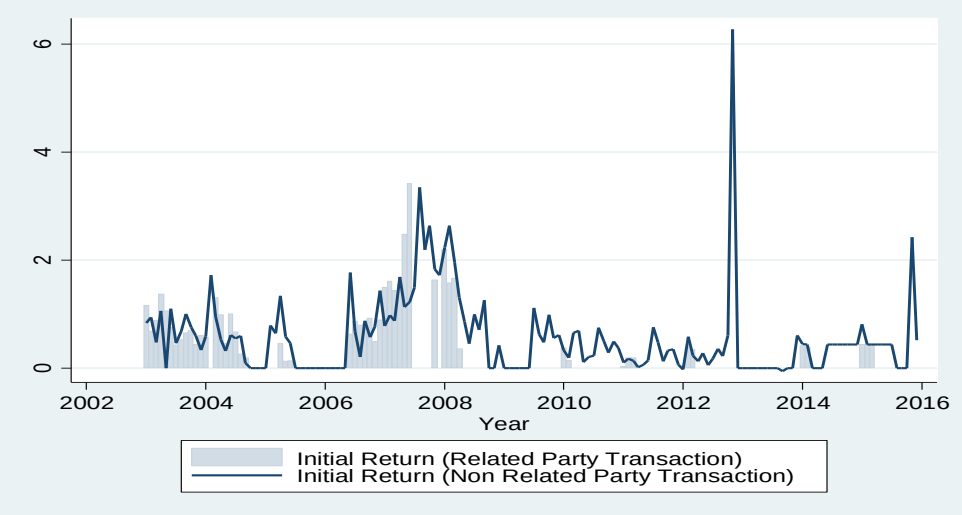

Table 2 presents the mean, median, standard deviation, minimum, and maximum of the various variables used in this study. The total number of IPOs listed from 2003 to 2015 used in this table is 1,604. Some IPO firms are excluded from the full sample due to outlier problems and lack of useful information, mostly in total assets. Notwithstanding the exclusion of exorbitant outliers, some extreme values are still included.

Here, we focus on certain variables of interest, such as the initial returns (*IR*), the sales to related party (*RP_Sale*), the amount of purchases form related party (*RP_Purch*), the asset trading amount between related parties (*RP_Asset*), the loan to related party (*RP_Loan*), the debt from related party (*RP_Debt*), the guarantee provided for related party (*RP_Guar*), and the guaranteed from related party dummy (*RPGuard_D*). The initial return (IR) is 54.4% on average for the selected sample of 1,604 IPOs, the median 44.0%, the minimum -23.2%, and the maximum 345.7%.

The sales to related party (*RP_Sale*) is 0.5% on average, the median 0.0%, the minimum 0.0% and the maximum 48.0%, the amount of purchase form related party (*RP_Purch*) is 0.3% on average, the median 0.0%, the minimum 0% and the maximum 37.2%. The asset trading amount between related parties (*RP_Asset*) is 0.0% on average, the median 0.0%, the minimum 0%, and the maximum 22.1%. The loan to related party (*RP_Loan*) is 0.0% on average, the median 0.0%, the minimum 0% and the maximum 1.6%. The debt from related party (*RP_Debt*) is 0.0% on average, the median 0.0%, the minimum 0% and the maximum 4.9%. The guarantee provided for related party (*RP_Guar*) is 0.0% on average, the median 0.0%, the minimum 0% and the maximum 4.9%. The guaranteed from

related party dummy (*RPGuard_D*) is 0.1 on average, the median 0, the minimum 0, and the maximum 1. All other explanations are skipped for simplicity.

Table 2: Descriptive Statistics

Variable	Obs.	Average	Std. Dev	Min	Max	Median
IR	1,604	0.544	0.550	-0.232	3.457	0.440
RP_Sale	1,604	0.005	0.032	0	0.480	0.000
RP_Purch	1,604	0.003	0.021	0	0.372	0.000
RP_Asset	1,604	0.000	0.007	0	0.221	0.000
RP_Loan	1,604	0.000	0.001	0	0.016	0.000
RP_Debt	1,604	0.000	0.002	0	0.049	0.000
RP_Guar	1,604	0.000	0.003	0	0.049	0.000
RPGuard_D	1,604	0.098	0.298	0	1	0.000
Lock_D	1,604	0.658	0.475	0	1	1
Rm	1,604	0.001	0.005	-0.014	0.015	0.001
Rm_IPO	1,604	0.888	0.975	-0.050	7.661	0.583
NIPO	1,604	22.651	11.204	1	48	23
Sub_R	1,604	0.010	0.024	0.000	0.655	0.005
Big6_D	1,604	0.219	0.414	0	1	0
Age	1,604	2.112	0.602	0.000	3.584	2.197
Debt_R	1,604	0.478	0.174	0.048	0.982	0.481
ROA	1,604	0.156	0.118	0.000	1.398	0.131
Asset	1,604	20.379	1.382	18.043	29.815	20.084

Table 3 presents the Pearson correlations between the variables used in this study. Basically, we focus on the correlation between a dependent variable and other major independent variables of concern. The correlation between the initial returns *(IR)*, the dependent variable, and the sales to related party (*RP_Sale*) is -5.5% negative but not statistically significant at a level of 10%. The correlation between the dependent variable and the amount of purchase form related party (*RP_Purch*) is -5.0%, negative but not statistically significant at a level of 10%. The correlation between the dependent variable and the asset trading amount between related parties (*RP_Asset*) is -4.75.1%, negative but not statistically significant at a level of 10%. The correlation between the dependent variable and the loan to related party (*RP_Loan*) is -5.5%, negative but not statistically significant at a level of 10%. The correlation between the dependent variable and the debt from related party (*RP_Debt*) is -4.4%, negative but not statistically significant at a level of 10%. The correlation between the dependent variable and the guarantee provided for related party (*RP_Guar*) is 2.9%, positive but not statistically significant at a level of 10%. The correlation between the dependent variable and the guaranteed from related party dummy (*RPGuard_D*) is -4.9%, negative but not statistically significant at a level of 10%.

Table 3. Pearson Correlation Coefficient between Variables

Variables	IR	RP_ Sale	RP_ Purch	RP_ Asset	RP_ Loan	RP_ Debt	RP_ Guar	RP Guard_D	Lock_D	Rm	Rm_IPO	NIPO	Sub_R	Big6_D	Age	Debt_R	ROA
RP_Sale	-0.055																
RP_Purch	-0.050	0.226***															
RP_Asset	-0.047	0.055	-0.003														
RP_Loan	-0.055	0.003	-0.005	-0.002													
RP_Debt	-0.044	-0.003	-0.010	-0.003	0.297***												
RP_Guar	0.029	-0.010	-0.013	-0.004	-0.003	-0.006											
RPGuard_D	-0.049	0.201***	0.102***	0.113***	-0.009	0.176***	0.060*										
Lock_D	-0.330***	-0.047	-0.074**	0.024	0.023	0.044	-0.034	0.087**									
Rm	0.377***	-0.063*	-0.063*	-0.025	-0.020	-0.021	0.004	-0.110***	-0.259***								
Rm_IPO	0.311***	0.035	0.056	-0.002	-0.018	-0.030	0.069**	-0.054	-0.240***	0.144***							
NIPO	0.023	-0.017	-0.046	0.038	0.039	0.000	-0.064*	0.138***	0.139***	0.220***	-0.111***						
Sub_R	-0.304***	-0.001	-0.030	-0.001	0.048	0.043	-0.013	-0.013	0.104***	-0.149***	-0.165***	0.016					
Big6_D	-0.007	-0.020	0.011	0.059*	0.064*	-0.012	-0.009	0.043	0.021	0.051	0.026	0.014	0.075**				
Age	0.078**	-0.089**	-0.085**	-0.013	-0.033	-0.011	0.028	0.034	-0.172***	0.165***	-0.042	0.081**	-0.030	-0.033			
Debt_R	-0.083**	0.067*	0.093***	-0.025	0.009	0.006	-0.014	0.066*	0.051	-0.067*	0.035	-0.133***	0.125***	-0.002	-0.094***		
ROA	-0.147***	-0.103***	-0.076**	0.015	-0.016	-0.058*	-0.055	-0.234***	0.154***	-0.078**	-0.043	0.009	0.117***	-0.018	-0.095***	-0.446***	
Asset	-0.016	0.106***	0.003	-0.028	0.000	-0.022	-0.005	-0.009	-0.015	0.078**	0.106***	-0.079**	0.197***	0.126***	-0.074**	0.593***	-0.337***

Notes: *, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

The correlation between the dependent variable and the lock-up mechanism dummy (*Lock_D*) is -33.0%, negative at a significance level of 1%. The correlation between the dependent variable and the market returns before IPO (*Rm*) is 37.7%, positive at a significance level of 1%. The correlation between the dependent variable and the IPO market returns (Rm_IPO) is 31.1%, positive at a significance level of 1%. The correlation between the dependent variable and the number of IPOs in the same month (*NIPO*) is 2.3%, positive but not statistically significant at a level of 10%. The correlation between the dependent variable and the subscription ratio (*Sub_R*) is -30.4%, negative at a significance level of 1%.

The correlation between the dependent variable and the leading underwriter dummy (*Big6_D*) is -0.7%, negative but not statistically significant at a level of 10%. The correlation between the dependent variable and the natural logarithm of (1+IPO firm's age) (*Age*) is 7.8%, positive at a significance level of 5%. The correlation between the dependent variable and the debt ratio (*Debt_R*) is -8.3%, negative at a significance level of 5%. The correlation between the dependent variable and the return of asset ratio (*ROA*) is -14.7%, negative at a significance level of 1%. The correlation between the dependent variable and the natural logarithm of asset (*Asset*) is -1.6%, negative but not statistically significant at a level of 10%. Thus, other than the IPO market returns (Rm_IPO), the market returns before IPO (*Rm*) and the natural logarithm of (1+IPO firm's age) (*Age*), the independent variables show some negative relations with the initial returns on IPO investments, although some are not statistically significant. Notwithstanding, the significantly negative or positive correlation among other variables affects our conclusion with paired correlations with the initial returns (*IR*), since a multi-lateral correlation can cause multi-collinearity in the formal regression analyses.

Table 4 presents the results of group mean tests for differences between the means of two groups, high initial returns stocks and low initial returns stocks, for each variable used in this study. Each statistic shows the average value for each variable, difference in the group means between the two groups, and its statistical significance. The mean tests are performed assuming the variances of the two groups are not equal. Obviously, the two groups show significantly different traits judging based on certain critical financial ratios.

The initial returns (*IR*) from IPOs are lower by 69.3% on average at a significance level of 1% for the low initial returns stocks when compared with the high initial returns stocks. There is no statistical significant difference of the sales to related party (*RP_Sale*), the amount of purchase form related party (*RP_Purch*), the asset trading amount between related parties (*RP_Asset*), the debt from related party (*RP_Debt*), the guarantee provided for related party (*RP_Guar*), the guaranteed from related party dummy (*RPGuard_D*), the leading underwriter dummy (*Big6_D*) and the debt ratio (*Debt_R*) between two groups. The loan to related party (*RP_Loan*) is higher on average at a significance level of 10% for the low initial returns stocks when compared with the high initial returns stocks.The lock-up mechanism dummy (*Lock_D*) is higher by 0.1 on average at a significance level of 1% for the low initial returns stocks, relatively. The market returns before IPO (*Rm*) are lower by 0.2% on average at a significance level of 1% for the low initial returns stocks, relatively. The IPO market returns (Rm_IPO) are also lower by 43.5% on average at a significance level of 1% for the low initial returns stocks when compared with the high initial returns stocks. The number of IPOs in the same month (*NIPO*) is bigger by 3.6 on average at a significance level of 1% for the low initial returns stocks when it is compared with the high initial returns stocks. The subscription ratio (*Sub_R*) is higher by 1.0% on average at a significance level of 1% for the low initial returns stocks when compared with the high initial returns stocks. The natural logarithm of (1+IPO firm's age) (*Age*) is higher by 0.07 on average at a significance level of 1% for the low initial returns stocks when compared with the high initial returns stocks. The return of asset ratio (*ROA*) is higher by 2.2% on average at a significance level of 1% for the low initial returns stocks when compared with the high initial returns stocks. The natural logarithm of asset (*Asset*) is higher by 0.16 on

average at a significance level of 5% for the low initial returns stocks when it is compared with the high initial returns stocks.

Table 4. Group Mean Tests for IPOs of High Return Stock and Low Return Stock

Variable	Low Return Stock (A)	High Return Stock (B)	Difference (A-B)	t-stat
IR	0.201	0.894	-0.693 ***	-32.530
RP_Sale	0.005	0.005	0.000	-0.250
RP_Purch	0.004	0.006	-0.001	-1.086
RP_Asset	0.000	0.000	0.000	-0.163
RP_Loan	0.000	0.000	0.000 *	-1.494
RP_Debt	0.000	0.000	0.000	-0.898
RP_Guar	0.000	0.000	0.000	0.470
RPGuard_D	0.022	0.022	-0.001	-0.122
Lock_D	0.710	0.604	0.105 ***	4.481
Rm	0.000	0.002	-0.002 ***	-8.575
Rm_IPO	0.673	1.108	-0.435 ***	-9.175
NIPO	24.454	20.809	3.645 ***	6.610
Sub_R	0.015	0.005	0.010 ***	8.383
Big6_D	0.230	0.207	0.023	1.102
Age	2.148	2.075	0.073 ***	2.433
Debt_R	0.473	0.484	-0.011	-1.280
ROA	0.167	0.145	0.022 ***	3.729
Asset	20.457	20.299	0.158 **	2.291

Notes: ***, ** and * denote statistical significance at 1% and 10% level, respectively. Tests are performed assuming the variances of the two groups are unequal.

Ⅴ. Regression Analysis

5.1. Effects of Related Party Transactions on Initial Returns

Here, we empirically test whether the related party trading before listing impacts the initial returns of IPOs. Table 5 shows the regression results mainly for the sales to related party (*RP_Sale*), the amount of purchase form related party (*RP_Purch*) and the asset trading amount between related parties (*RP_Asset*). Considering non-linear relationship proposed by Khanna and Palepu (2000), we introduce additionally a quadratic term for each factor of related party transactions. We separate our samples into two groups based on their initial returns: high return firms and low return firms, and test whether there are differences between this two groups. For the t-statistics, we use White's (1980) heteroskedasticity consistent standard error in regressions.

The quadratic term of the sales to related party (*RP_Sale2*) has a positive effect on initial returns (IR) at a significance level of 1% for the full sample and subsamples of high-return stocks. This result shows that the sales to related party has a significant U-shaped effect on initial returns of high-return IPOs. The amount of purchase form related party (*RP_Purch*) and the quadratic term of the amount of purchase form related party (*RP_Purch2*) show no significant effect on initial returns (IR).

The quadratic term of the asset trading amount between related parties (*RP_Asset2*) has a significant negative effect on initial returns (IR) for the full sample and subsamples of low-return stocks and has a

positive effect on initial returns (IR) for the subsamples of high-return stocks. This result shows that the asset trading amount between related party has a significant U-shaped effect on initial returns of high-return IPOs and a significant reverse U-shaped effect on initial returns of low-return IPOs.These results also suggesting that the lock-up contract dummy (*Lock_D*) has a significant positive impact on initial returns (IR) for the full sample and subsamples of high-return stocks and a significant negative impact on initial returns (IR) for the subsamples of low-return stocks.

Table 5. Effects of Related Party Trading on Initial Returns

Variable	Coefficient	Full Sample		High-Return Stock		Low-Return Stock	
		Coeff.	(t-stat)	Coeff.	(t-stat)	Coeff.	(t-stat)
RP_Sale	β_1	-2.728***	(-3.01)	-2.242*	(-1.91)	-0.425	(-1.46)
RP_Sale2	β_2	9.068***	(3.38)	8.942***	(2.90)	0.295	(0.43)
RP_Purch	β_3	-0.038	(-0.03)	0.319	(0.26)	-0.414	(-0.63)
RP_Purch2	β_4	3.037	(0.62)	4.388	(1.18)	-0.476	(-0.18)
RP_Asset	β_5	10.739***	(2.58)	-5.632	(-0.83)	2.603*	(1.86)
RP_Asset2	β_6	-54.567***	(-2.88)	135.204**	(1.96)	-15.607**	(-2.46)
Lock_D	β_7	0.127***	(5.02)	0.324***	(9.21)	-0.073***	(-5.53)
Rm	β_8	31.208***	(9.71)	16.561***	(3.44)	10.276***	(8.03)
Rm_IPO	β_9	0.151***	(9.11)	0.109***	(5.55)	0.045***	(7.45)
NIPO	β_{10}	-0.011***	(-10.45)	-0.008***	(-6.48)	0.0001	(0.32)
Sub_R	β_{11}	-2.305**	(-2.28)	-10.990***	(-3.80)	-1.056**	(-2.31)
Big6_D	β_{12}	-0.013	(-0.49)	-0.004	(-0.09)	-0.003	(-0.24)
Age	β_{13}	-0.089***	(-4.24)	-0.094***	(-2.88)	-0.007	(-0.72)
Debt_R	β_{14}	0.197**	(2.09)	0.159	(1.13)	-0.089**	(-2.20)
ROA	β_{15}	-0.415***	(-3.78)	-0.279	(-1.46)	-0.171***	(-3.36)
Asset	β_{16}	-0.079***	(-6.19)	-0.068***	(-3.45)	-0.001	(-0.15)
Constant	β_0	2.334***	(9.35)	2.307***	(6.14)	0.339***	(3.33)
Observations		1,604		793		811	
F-value		28.71***		34.36***		192.75***	
Adjusted-R^2		0.3081		0.3219		0.3078	
VIF		1.03~1.78		1.03~1.75		1.05~1.79	

Notes: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively. The estimates are the Huber White sandwich estimators.

The market returns before IPO (*Rm*) and the IPO market returns (Rm_IPO) have significant positive impacts on initial returns (IR) for the full sample and both subsamples. The number of IPOs in the same month (*NIPO*) has significant negative impacts on initial returns (IR) for the full sample and subsamples of high-return stocks. The subscription ratio (*Sub_R*) has s significant negative impacts on initial returns

(IR) for the full sample and both subsamples. The leading underwriter dummy (*Big6_D*) does not show any statistically significant impact on the initial returns (*IR*) for the full sample and both subsamples. The natural logarithm of (1+IPO firm's age) (*Age*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of high-return stocks. The debt ratio (*Debt_R*) has a significant positive impact on initial returns (IR) for the full sample and a significant negative impact on initial returns (IR) for the subsamples of low-return stocks. The return of asset ratio (*ROA*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of low-return stocks. The natural logarithm of asset (*Asset*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of high-return stocks.

These results are partially consistent with Lowry and Schwert (2002), Loughran and Ritter (2004), Kim, Le and Thomas (2007), Dongwei Su (2000) and show different patterns between two groups. From the low VIF statistics, we can conclude that there is no statistically significant multicollinearity among independent variables.

In this section, we empirically test whether the related party funding before listing impacts the initial returns of IPOs. Table 6 shows the regression results mainly for the loan to related party (*RP_Loan*) and the debt from related party (*RP_Debt*). Considering non-linear relationship proposed by Khanna and Palepu (2000), we introduce additionally a quadratic term for each factor of related party transactions. We separate our samples into two groups based on their initial returns: high return firms and low return firms and test whether there are differences between this two groups. For the t-statistics, we use White's (1980) heteroskedasticity consistent standard error in regressions.

The quadratic term of the loan to related party (*RP_Loan2*) has a positive effect on initial returns (IR) at a significance level of 1% for the full sample and both subsamples. This result shows that the loan to related party has a significant U-shaped effect on initial returns of both high-return and low-return IPOs. The quadratic term of the debt from related party (*RP_Debt2*) has a positive effect on initial returns (IR) at a significance level of 1% for the full sample and the subsamples of high-return stocks. This result shows that the loan to related party has a significant U-shaped effect on initial returns of high-return IPOs.

These results also suggesting that the lock-up contract dummy (*Lock_D*) has a significant positive impact on initial returns (IR) for the full sample and subsamples of high-return stocks and a significant negative impact on initial returns (IR) for the subsamples of low-return stocks. The market returns before IPO (*Rm*) and the IPO market returns (*Rm_IPO*) have significant positive impacts on initial returns (IR) for the full sample and both subsamples. The number of IPOs in the same month (*NIPO*) has significant negative impacts on initial returns (IR) for the full sample and subsamples of high-return stocks. The subscription ratio (*Sub_R*) has s significant negative impacts on initial returns (IR) for the full sample and both subsamples.

The leading underwriter dummy (*Big6_D*) does not show any statistically significant impact on the initial returns (*IR*) for the full sample and both subsamples. The natural logarithm of (1+IPO firm's age) (*Age*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of high-return stocks. The debt ratio (*Debt_R*) has a significant positive impact on initial returns (IR) for the full sample and a significant negative impact on initial returns (IR) for the subsamples of low-return stocks. The return of asset ratio (*ROA*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of low-return stocks. The natural logarithm of asset (*Asset*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of high-return stocks. These results are partially consistent with Lowry and Schwert (2002), Loughran and Ritter (2004), Kim, Le and Thomas (2007), Dongwei Su (2000) and show different patterns between two groups. From the low VIF statistics, we can conclude that there is no statistically significant multicollinearity among independent variables.

Table 6. Effects of Related Party Funding on Initial Returns

Variable	Coefficient	Full Sample		High-Return Stock		Low-Return Stock	
		Coeff.	(t-stat)	Coeff	(t-stat)	Coeff.	(t-stat)
RP_Loan	β_1	-76.785 ***	(-3.58)	-101.353 ***	(-3.11)	-2880.813 ***	(-12.03)
RP_Loan2	β_2	6673.079 ***	(4.40)	7334.321 ***	(3.40)	728316.4 ***	(12.07)
RP_Debt	β_3	-27.653 ***	(-3.19)	-16.987 *	(-1.89)	-23.983	(-0.56)
RP_Debt2	β_4	696.633 ***	(3.92)	386.34 **	(2.08)	1484.007	(0.55)
Lock_D	β_5	0.132 ***	(5.22)	0.322 ***	(9.28)	-0.069 ***	(-5.26)
Rm	β_6	31.659 ***	(9.81)	16.886 ***	(3.49)	10.679 ***	(8.43)
Rm_IPO	β_7	0.151 ***	(9.08)	0.109 ***	(5.53)	0.044 ***	(7.39)
NIPO	β_8	-0.011 ***	(-10.36)	-0.008 ***	(-6.52)	0.0002	(0.41)
Sub_R	β_9	-2.228 **	(-2.27)	-11.455 ***	(-3.97)	-1.037 **	(-2.30)
Big6_D	β_{10}	-0.017	(-0.61)	-0.005	(-0.12)	-0.004	(-0.34)
Age	β_{11}	-0.088 ***	(-4.27)	-0.094 ***	(-2.90)	-0.005	(-0.57)
Debt_R	β_{12}	0.173 *	(1.85)	0.141	(1.00)	-0.093 **	(-2.29)
ROA	β_{13}	-0.433 ***	(-3.91)	-0.297	(-1.56)	-0.166 ***	(-3.29)
Asset	β_{14}	-0.076 ***	(-6.04)	-0.067 ***	(-3.41)	-0.001	(-0.10)
Constant	β_0	2.279 ***	(9.29)	2.302 ***	(6.22)	0.326 ***	(3.25)
Observations		1,604		793		811	
F-value		130.75***		39.16***		24.71***	
Adjusted-R^2		0.3035		0.3142		0.3078	
VIF		1.03~1.55		1.03~1.73		1.04~1.74	

Notes: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively. The estimates are the Huber White sandwich estimators.

In this section, we empirically test whether the related party collateral provision before listing impacts the initial returns of IPOs. Table 7 shows the regression results mainly for the guarantee provided for related party (*RP_Guar*) and the guaranteed from related party dummy (*RPGuard_D*). Considering non-linear relationship proposed by Khanna and Palepu (2000), we introduce additionally a quadratic term for each factor of related party transactions. We separate our samples into two groups based on their initial returns: high return firms and low return firms and test whether there are differences between this two groups. For the t-statistics, we use White's (1980) heteroskedasticity consistent standard error in regressions.

The quadratic term of the guarantee provided for related party (*RP_Guar2*) has a significant positive effect on initial returns (IR) for the full sample and the subsamples of high-return stocks. This result shows that the guarantee provided for related party has a significant U-shaped effect on initial returns of high-return IPOs. The guaranteed from related party dummy (*RPGuard_D*) has a significant positive effect on initial returns (IR) for the full sample ant the subsamples of high-return stocks. This result

shows that high-return firms get guaranteed from related party have higher initial returns (IR) of IPOs than not.

These results also suggesting that the lock-up contract dummy (*Lock_D*) has a significant positive impact on initial returns (IR) for the full sample and subsamples of high-return stocks and a significant negative impact on initial returns (IR) for the subsamples of low-return stocks. The market returns before IPO (*Rm*) and the IPO market returns (*Rm_IPO*) have significant positive impacts on initial returns (IR) for the full sample and both subsamples. The number of IPOs in the same month (*NIPO*) has significant negative impacts on initial returns (IR) for the full sample and subsamples of high-return stocks. The subscription ratio (*Sub_R*) has s significant negative impacts on initial returns (IR) for the full sample and both subsamples.

Table 7. Effects of Related Party Collateral Provision on Initial Returns

Variable	Coefficient	Full Sample		High-Return Stock		Low-Return Stock	
		Coeff.	(t-stat)	Coeff	(t-stat)	Coeff.	(t-stat)
RP_Guar	β_1	-34.603 ***	(-3.75)	-23.788 *	(-1.81)	-7.326	(-1.26)
RP_Guar2	β_2	910.226 ***	(3.81)	696.17 **	(2.50)	217.429	(1.51)
RPGuard_D	β_3	0.083 *	(1.91)	0.134 **	(2.09)	-0.01	(-0.48)
Lock_D	β_4	0.131 ***	(5.18)	0.328 ***	(9.63)	-0.069 ***	(-5.18)
Rm	β_5	32.037 ***	(9.97)	17.002 ***	(3.53)	10.642 ***	(8.35)
Rm_IPO	β_6	0.151 ***	(9.16)	0.108 ***	(5.50)	0.044 ***	(7.38)
NIPO	β_7	-0.011 ***	(-10.57)	-0.008 ***	(-6.52)	0.0001	(0.30)
Sub_R	β_8	-2.277 **	(-2.29)	-12.875 ***	(-4.21)	-1.041 **	(-2.30)
Big6_D	β_9	-0.019	(-0.67)	-0.007	(-0.15)	-0.003	(-0.28)
Age	β_{10}	-0.089 ***	(-4.31)	-0.097 ***	(-2.99)	-0.004	(-0.39)
Debt_R	β_{11}	0.174 *	(1.87)	0.132	(0.94)	-0.093 **	(-2.31)
ROA	β_{12}	-0.382 ***	(-3.35)	-0.203	(-1.02)	-0.171 ***	(-3.31)
Asset	β_{13}	-0.074 ***	(-5.90)	-0.061 ***	(-3.07)	-0.001	(-0.19)
Constant	β_0	2.23 ***	(9.11)	2.156 ***	(5.78)	0.334 ***	(3.33)
Observations		1,604		793		811	
F-value		33.37***		30.34***		47.97***	
Adjusted-R^2		0.3055		0.3193		0.3011	
VIF		1.03~1.56		1.04~1.74		1.04~1.74	

Notes: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively. The estimates are the Huber White sandwich estimators.

The leading underwriter dummy (*Big6_D*) does not show any statistically significant impact on the initial returns (*IR*) for the full sample and both subsamples. The natural logarithm of (1+IPO firm's age) (*Age*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of high-return stocks. The debt ratio (*Debt_R*) has a significant positive impact on initial returns (IR) for the full sample and a significant negative impact on initial returns (IR) for the subsamples of low-return stocks.

The return of asset ratio (*ROA*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of low-return stocks. The natural logarithm of asset (*Asset*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of high-return stocks. These results are partially consistent with Lowry and Schwert (2002), Loughran and Ritter (2004), Kim, Le and Thomas (2007), Dongwei Su (2000) and show different patterns between two groups. From the low VIF statistics, we can conclude that there is no statistically significant multicollinearity among independent variables.

In this section, we take a robust test for the effects of various types of related party transactions on initial returns of IPOs in the same time. Table 8 shows the regression results mainly for the sales to related party (*RP_Sale*), the asset trading amount between related parties (*RP_Asset*), the loan to related party (*RP_Loan*), the debt from related party (*RP_Debt*), the guarantee provided for related party (*RP_Guar*) and the guaranteed from related party dummy (*RPGuard_D*). Considering non-linear relationship proposed by Khanna and Palepu (2000), we also introduce additionally a quadratic term for each factor of related party transactions. We separate our samples into two groups based on their initial returns: high return firms and low return firms and test whether there are differences between this two groups. For the t-statistics, we use White's (1980) heteroskedasticity consistent standard error in regressions.

The quadratic term of the sales to related party (*RP_Sale2*) has a positive effect on initial returns (IR) at a significance level of 1% for the full sample and both subsamples. This result shows that the sales to related party has a significant U-shaped effect on initial returns of both high-return and low-return IPOs. The quadratic term of the asset trading amount between related parties (*RP_Asset2*) has a significant negative effect on initial returns (IR) for the full sample and subsamples of low-return stocks. This result shows that the asset trading amount between related parties has a significant reverse U-shaped effect on initial returns of low-return IPOs.

The quadratic term of the loan to related party (*RP_Loan2*) has a significant positive effect on initial returns (IR) for the full sample and both subsamples. This result shows that the loan to related party has a significant U-shaped effect on initial returns of both high-return and low-return IPOs. The quadratic term of the debt from related party (*RP_Debt2*) has a positive effect on initial returns (IR) at a significance level of 1% for the full sample and the subsamples of high-return stocks. This result shows that the loan to related party has a significant U-shaped effect on initial returns of high-return IPOs. The quadratic term of the guarantee provided for related party (*RP_Guar2*) has a significant positive effect on initial returns (IR) for the full sample and the subsamples of high-return stocks. This result shows that the guarantee provided for related party has a significant U-shaped effect on initial returns of high-return IPOs. The guaranteed from related party dummy (*RPGuard_D*) has a significant positive effect on initial returns (IR) for the full sample ant the subsamples of high-return stocks. This result shows that high-return firms get guaranteed from related party have higher initial returns (IR) of IPOs than not.

These results also suggesting that the lock-up contract dummy (*Lock_D*) has a significant positive impact on initial returns (IR) for the full sample and subsamples of high-return stocks and a significant negative impact on initial returns (IR) for the subsamples of low-return stocks. The market returns before IPO (*Rm*) and the IPO market returns (*Rm_IPO*) have significant positive impacts on initial returns (IR) for the full sample and both subsamples. The number of IPOs in the same month (*NIPO*) has significant negative impacts on initial returns (IR) for the full sample and subsamples of high-return stocks. The subscription ratio (*Sub_R*) has s significant negative impacts on initial returns (IR) for the full sample and both subsamples. The leading underwriter dummy (*Big6_D*) does not show any statistically significant impact on the initial returns (*IR*) for the full sample and both subsamples. The natural logarithm of (1+IPO firm's age) (*Age*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of high-return stocks. The debt ratio (*Debt_R*) has a significant positive impact on initial

returns (IR) for the full sample and a significant negative impact on initial returns (IR) for the subsamples of low-return stocks. The return of asset ratio (*ROA*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of low-return stocks. The natural logarithm of asset (*Asset*) has a significant negative impact on initial returns (IR) for the full sample and subsamples of high-return stocks. These results are partially consistent with Lowry and Schwert (2002), Loughran and Ritter (2004), Kim, Le and Thomas (2007), Dongwei Su (2000) and show different patterns between two groups. Most of the results are consistent with the early test. From the low VIF statistics, we can conclude that there is no statistically significant multicollinearity among independent variables.

Table 8. Effects of Various Types of Related Party Transactions on Initial Returns

Variable	Coefficient	Full Sample		High-Return Stock		Low-Return Stock	
		Coeff.	(t-stat)	Coeff.	(t-stat)	Coeff.	(t-stat)
RP_Sale	β_1	-2.607***	(-2.94)	-2.001*	(-1.64)	-0.677**	(-2.41)
RP_Sale2	β_2	8.439***	(3.17)	8.052**	(2.52)	1.077*	(1.78)
RP_Asset	β_3	11.736***	(2.92)	-1.601	(-0.17)	2.603**	(2.02)
RP_Asset2	β_4	-60.782***	(-3.3)	88.911	(0.95)	-15.672***	(-2.64)
RP_Loan	β_5	-108.673**	(-2.52)	-99.950	(-1.60)	-1646.32***	(-2.94)
RP_Loan2	β_6	8441.733***	(2.95)	7033.987*	(1.74)	414246.9***	(2.90)
RP_Debt	β_7	-33.161***	(-3.41)	-26.636***	(-2.63)	-25.374	(-0.59)
RP_Debt2	β_8	811.459***	(4.06)	591.961***	(2.84)	1563.931	(0.58)
RP_Guar	β_9	-34.423***	(-3.68)	-22.871*	(-1.68)	-7.862	(-1.35)
RP_Guar2	β_{10}	904.824***	(3.74)	683.58**	(2.39)	228.127	(1.59)
RPGuard_D	β_{11}	0.083*	(1.83)	0.120*	(1.77)	0.003	(0.14)
Lock_D	β_{12}	0.128***	(5.07)	0.323***	(9.30)	-0.07***	(-5.27)
Rm	β_{13}	31.605***	(9.86)	16.961***	(3.51)	10.471***	(8.18)
Rm_IPO	β_{14}	0.151***	(9.13)	0.108***	(5.49)	0.045***	(7.40)
NIPO	β_{15}	-0.011***	(-10.71)	-0.008***	(-6.60)	0.0001	(0.28)
Sub_R	β_{16}	-2.249**	(-2.28)	-12.286***	(-3.99)	-1.040**	(-2.29)
Big6_D	β_{17}	-0.014	(-0.51)	-0.007	(-0.16)	-0.003	(-0.20)
Age	β_{18}	-0.088***	(-4.22)	-0.095***	(-2.88)	-0.007	(-0.70)
Debt_R	β_{19}	0.181*	(1.93)	0.129	(0.91)	-0.092**	(-2.27)
ROA	β_{20}	-0.396***	(-3.44)	-0.230	(-1.14)	-0.175***	(-3.33)
Asset	β_{21}	-0.077***	(-6.06)	-0.062***	(-3.12)	-0.001	(-0.14)
Constant	β_0	2.292***	(9.25)	2.192***	(5.79)	0.338***	(3.30)
Observations		1,604		793		811	
F-value		87.97***		35.26***		162.53***	

Adjusted-R^2	0.3133	0.3255	0.3089
VIF	1.03~1.58	1.03~1.79	1.06~1.80

Notes: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively. The estimates are the Huber White sandwich estimators.

5.2. Effects of Related Party Transactions on Long-term Performance

Here we empirically test the effects of various types of related party transactions on the long-term performance of IPOs using cumulative abnormal return (CAR) and buy-and-hold abnormal returns (BHA) methods. Table 9 shows the regression results mainly for the sales to related party (RP_Sale), the amount of purchase form related party (RP_Purch), the asset trading amount between related parties (RP_Asset), the loan to related party (RP_Loan), the debt from related party (RP_Debt), the guarantee provided for related party (RP_Guar) and the guaranteed from related party dummy (RPGuard_D) on cumulative abnormal returns (CAR) of IPOs.

The quadratic term of the sales to related party (*RP_Sale2*) has a significant positive effect on one-year cumulative abnormal returns (CAR) of high-return IPOs and the sales to related party (*RP_Sale*) has a significant negative effect on three-year cumulative abnormal returns (CAR). This result shows that the sales to related party has a significant U-shaped effect on one-year cumulative abnormal returns (CAR) only for high-return IPOs. The quadratic term of the amount of purchase form related party (*RP_Purch2*) has a significant negative effect on one-year cumulative abnormal returns (CAR) of full sample. The amount of purchase form related party (*RP_Purch*) has a significant negative effect on one-year, three-year and five-year cumulative abnormal returns (CAR) of full sample, one-year cumulative abnormal returns (CAR) of high-return stocks and five-year cumulative abnormal returns (CAR) of low-return stocks. This result supports the hypothesis 2-1: more related party purchases among affiliated firms in a group have a negative effect on long-term post-IPO returns.

The quadratic term of the asset trading amount between related parties (*RP_Asset2*) has a significant negative effect on three-year and five-year cumulative abnormal returns (CAR) of high-return stocks, significant negative effect on one-year and three-year cumulative abnormal returns (CAR) of low-return stocks, has a significant positive effect on five-year cumulative abnormal returns (CAR) of full sample and low-return stocks. This result shows that the effect of the asset trading amount between related parties has a different pattern across two sample groups. The quadratic term of the loan to related party (*RP_Loan2*) has a significant positive effect on one-year cumulative abnormal returns (CAR) of full sample, one-year and three-year cumulative abnormal returns (CAR) of low-return stocks, a significant negative effect on five-year cumulative abnormal returns (CAR) of full sample and low-return stocks. This result also shows that the effect of the loan to related party has a different pattern across two sample groups.

The quadratic term of the debt from related party (*RP_Debt2*) has a significant negative effect on one-year cumulative abnormal returns (CAR) of full sample and high-return stocks, a significant positive effect on one-year cumulative abnormal returns (CAR) of low-return stocks. The quadratic term of the guarantee provided for related party (*RP_Guar2*) has a significant negative effect on three-year cumulative abnormal returns (CAR) of high and low-return stocks. The guaranteed from related party dummy (*RPGuard_D*) has a significant negative effect on one-year and five-year cumulative abnormal returns (CAR) of full sample and five-year cumulative abnormal returns (CAR) of high-return stocks. These results are partially consistent with Lowry and Schwert (2002), Loughran and Ritter (2004), Kim, Le and Thomas (2007), Dongwei Su (2000). Most of related party transactions impact on cumulative

abnormal returns (CAR) and show different patterns between two groups. From the low VIF statistics, we can conclude that there is no statistically significant multicollinearity among independent variables.

Table 9. Effects of Various Types of Related Party Transactions on Long-term Performance (CAR)

Variable	Coef.	Full Sample						High-Return Stock						Low-Return Stock					
		CAR_1		CAR_3		CAR_5		CAR_1		CAR_3		CAR_5		CAR_1		CAR_3		CAR_5	
		Coeff.(t-stat)		Coeff (t-stat)		Coeff. (t-stat)		Coeff. (t-stat)		Coeff. (t-stat)		Coeff.(t-stat)		Coeff.(t-stat)		Coeff.(t-stat)		Coeff.(t-stat)	
High_D	β_1	-0.046	(-1.54)	-0.068*	(-1.85)	-0.116***	(-2.80)												
RP_Sale	β_2	-1.530	(-1.35)	-1.774	(-1.23)	-0.008	(-0.01)	-3.342**	(-1.97)	-3.866*	(-1.75)	-1.535	(-0.76)	-1.096	(-0.86)	-1.325	(-0.71)	0.492	(0.26)
RP_Sale2	β_3	2.808	(0.78)	2.446	(0.62)	-0.320	(-0.09)	8.433*	(1.84)	8.469	(1.32)	3.147	(0.57)	0.110	(0.03)	-0.165	(-0.04)	-0.521	(-0.12)
RP_Purch	β_4	-1.116**	(-2.51)	-1.505**	(-1.98)	-1.343*	(-1.83)	-1.406*	(-1.93)	-1.284	(-1.21)	-0.752	(-0.59)	-0.586	(-1.02)	-1.771	(-1.60)	-2.091**	(-2.55)
RP_Purch2	β_5	-2.758*	(-1.67)	-0.338	(-0.07)	0.334	(0.08)	-2.819	(-1.54)	-3.412	(-0.93)	-2.874	(-0.69)	-3.187	(-0.95)	8.861	(1.53)	8.302	(1.64)
RP_Asset	β_6	-2.146	(-0.34)	-4.390	(-0.48)	-12.33**	(-2.23)	3.112	(0.26)	13.807	(1.09)	8.076	(0.74)	19.164***	(3.00)	27.399***	(3.63)	-20.829**	(-2.19)
RP_Asset2	β_7	11.345	(0.40)	25.467	(0.62)	56.409**	(2.28)	-87.699	(-0.70)	-274.000**	(-2.07)	-215.538*	(-1.81)	-84.364***	(-2.89)	-114.668***	(-3.31)	96.213**	(2.21)
RP_Loan	β_8	-26.21*	(-1.92)	2.429	(0.15)	30.322	(1.40)	-18.909	(-0.69)	13.701	(0.80)	19.505	(0.40)	-55.873***	(-9.32)	-39.559***	(-3.65)	25.666**	(2.18)
RP_Loan2	β_9	321.587**	(2.16)	-89.213	(-0.52)	-458.822*	(-1.74)	292.498	(0.68)	-232.986	(-0.87)	-332.174	(-0.45)	650.979***	(9.04)	392.27***	(3.06)	-417.386***	(-2.93)
RP_Debt	β_{10}	26.799	(1.26)	18.576	(0.70)	23.772	(0.98)	45.340*	(1.88)	31.388	(0.86)	41.405	(0.94)	-70.111*	(-1.86)	-57.147	(-0.83)	-0.854	(-0.01)
RP_Debt2	β_{11}	-922.99**	(-2.11)	-454.530	(-0.84)	-691.350	(-1.40)	-1351.724***	(-2.73)	-775.427	(-1.03)	-1095.941	(-1.21)	5160.672**	(2.10)	4602.995	(1.02)	156.396	(0.03)
RP_Guar	β_{12}	3.380	(0.84)	-0.944	(-0.16)	2.768	(0.55)	-0.279	(-0.11)	-8.772***	(-2.74)	-4.505	(-1.26)	5.903	(0.92)	4.484	(0.45)	9.375	(1.33)
RP_Guar2	β_{13}	-0.010	(-0.48)	-0.043	(-0.93)	-0.007	(-0.15)	-0.307	(-1.16)	-0.542*	(-1.78)	-0.446	(-1.00)	-0.011	(-0.39)	-0.106**	(-2.02)	-0.061	(-1.28)
RPGuard_D	β_{14}	-0.124**	(-2.52)	-0.087	(-1.39)	-0.173***	(-2.75)	-0.103	(-1.20)	-0.034	(-0.34)	-0.174*	(-1.92)	-0.050	(-0.84)	-0.014	(-0.16)	-0.091	(-0.93)
Lock_D	β_{15}	-0.631***	(-18.89)	-0.494***	(-12.26)	-0.392***	(-9.61)	-0.651***	(-13.6)	-0.476***	(-7.91)	-0.423***	(-7.19)	-0.572***	(-11.4)	-0.511***	(-8.49)	-0.329***	(-5.12)
Rm	β_{16}	22.231***	(6.92)	17.757***	(4.66)	9.232**	(2.15)	15.532***	(3.44)	15.703***	(2.93)	4.668	(0.85)	31.553***	(6.98)	21.754***	(3.85)	19.12***	(2.62)
Rm_IPO	β_{17}	0.093***	(6.59)	0.063***	(4.03)	0.021	(1.35)	0.078***	(4.48)	0.087***	(4.29)	0.038**	(1.99)	0.111***	(5.14)	0.008	(0.32)	-0.010	(-0.38)
NIPO	β_{18}	0.016***	(10.81)	0.009***	(5.29)	0.009***	(5.38)	0.02***	(9.72)	0.015***	(6.38)	0.014***	(6.03)	0.012***	(5.14)	0.002	(0.93)	0.003	(1.03)
Sub_R	β_{19}	-0.385	(-0.81)	0.169	(0.32)	-1.179*	(-1.87)	-21.028***	(-4.12)	-12.625**	(-2.11)	-8.843	(-1.57)	0.503	(1.55)	0.524	(0.83)	-0.993	(-1.33)
Big6_D	β_{20}	-0.015	(-0.45)	0.024	(0.58)	0.041	(0.64)	-0.020	(-0.38)	0.025	(0.40)	-0.049	(-0.76)	-0.024	(-0.60)	0.009	(0.17)	0.110	(0.97)
Age	β_{21}	0.141***	(6.31)	0.206***	(7.17)	0.114***	(3.62)	0.191***	(5.36)	0.219***	(4.77)	0.132***	(2.74)	0.087***	(3.14)	0.184***	(5.15)	0.092**	(2.23)
Debt_R	β_{22}	-0.493***	(-4.52)	-0.548***	(-4.10)	-0.139	(-0.91)	-0.455***	(-2.66)	-0.439**	(-2.14)	-0.114	(-0.58)	-0.548***	(-3.84)	-0.707***	(-4.02)	-0.098	(-0.39)
ROA	β_{23}	-0.402***	(-2.70)	-0.545**	(-2.54)	-0.489*	(-1.79)	0.143	(0.51)	-0.172	(-0.48)	0.035	(0.09)	-0.678***	(-4.42)	-0.712***	(-2.71)	-0.772**	(-2.13)
Asset	β_{24}	0.03***	(2.68)	-0.037***	(-2.63)	-0.133***	(-8.84)	0.086***	(4.18)	-0.002	(-0.10)	-0.124***	(-5.61)	0.002	(0.16)	-0.042**	(-2.04)	-0.137***	(-6.22)
Constant	β_0	-0.389*	(-1.69)	1.25***	(4.24)	3.503***	(10.66)	-1.717***	(-4.09)	0.253	(0.52)	3.065***	(6.54)	0.386	(1.34)	1.707***	(4.03)	3.763***	(8.28)
Observations		1,604		1,604		1,604		793		793		793		811		811		811	
F-value		43.34***		26.09***		24.82***		155.35***		44.61***		24.97***		31.82***		39.25***		22.52***	
Adjusted-R^2		0.4200		0.2498		0.1433		0.4377		0.2630		0.2198		0.4429		0.2727		0.1104	
VIF		1.03~1.59		1.03~1.59		1.03~1.59		1.03~1.80		1.03~1.80		1.03~1.80		1.02~1.81		1.02~1.81		1.02~1.81	

Notes: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively. The estimates are the Huber White sandwich estimators.

In this section, we empirically test the effects of various types of related party transactions on long term post-IPO performance. Table 10 shows the regression results mainly for the sales to related party (RP_Sale), the amount of purchase form related party (RP_Purch), the asset trading amount between related parties (RP_Asset), the loan to related party (RP_Loan), the debt from related party (RP_Debt), the guarantee provided for related party (RP_Guar) and the guaranteed from related party dummy (RPGuard_D) on buy-and-hold abnormal returns (BHA) of IPOs.

The quadratic term of the sales to related party (*RP_Sale2*) has a significant positive effect on one-year buy-and-hold abnormal returns (BHA) of high-return IPOs. This result shows that the sales to related party has a significant U-shaped effect on one-year buy-and-hold abnormal returns (BHA) only for high-return IPOs. The quadratic term of the amount of purchase form related party (*RP_Purch2*) has a significant negative effect on one-year buy-and-hold abnormal returns (BHA) of full sample. The amount of purchase form related party (*RP_Purch*) has a significant negative effect on five-year buy-and-hold abnormal returns (BHA) of low-return stocks. This result supports the hypothesis 2-1: more related party purchases among affiliated firms in a group have a negative effect on long-term post-IPO returns.

The quadratic term of the asset trading amount between related parties (*RP_Asset2*) has a significant negative effect on three-year and five-year buy-and-hold abnormal returns (BHA) of high-return stocks and one-year buy-and-hold abnormal returns (BHA) of low-return stocks, has a significant positive effect on five-year buy-and-hold abnormal returns (BHA) of full sample and low-return stocks. This result shows that the effect of the asset trading amount between related parties has a different pattern across two sample groups. The quadratic term of the loan to related party (*RP_Loan2*) has a significant positive effect on one-year buy-and-hold abnormal returns (BHA) of full sample, and on one-year and three-year buy-and-hold abnormal returns (BHA) of low-return stocks. This result also shows that the effect of the loan to related party has a different pattern across two sample groups.

The quadratic term of the debt from related party (*RP_Debt2*) has a significant negative effect on one-year and three-year buy-and-hold abnormal returns (BHA) of full sample and high-return stocks, a significant positive effect on three-year buy-and-hold abnormal returns (BHA) of low-return stocks. The quadratic term of the guarantee provided for related party (*RP_Guar2*) has a significant negative effect on three-year buy-and-hold abnormal returns (BHA) of high and low-return stocks. The guaranteed from related party dummy (*RPGuard_D*) has a significant negative effect on one-year and five-year buy-and-hold abnormal returns (BHA) of full sample.

These results are partially consistent with Lowry and Schwert (2002), Loughran and Ritter (2004), Kim, Le and Thomas (2007), Dongwei Su (2000). Most effects of related party transactions on buy-and-hold abnormal returns (BHA) are consistent with on cumulative abnormal returns (CAR) and show different patterns between two groups. From the low VIF statistics, we can conclude that there is no statistically significant multicollinearity among independent variables.

Table 10. Effects of Various Types of Related Party Transactions on Long-term Performance (HPR)

Variable	Coef.	Full Sample						High-Return Stock						Low-Return Stock					
		BHA_1		BHA_3		BHA_5		BHA_1		BHA_3		BHA_5		BHA_1		BHA_3		BHA_5	
		Coeff.(t-stat)		Coeff (t-stat)		Coeff. (t-stat)		Coeff. (t-stat)		Coeff. (t-stat)		Coeff.(t-stat)		Coeff.(t-stat)		Coeff.(t-stat)		Coeff.(t-stat)	
High_D	β_1	-0.085	(-1.31)	-0.131	(-1.33)	-0.144	(-1.30)												
RP_Sale	β_2	-4.020**	(-2.29)	5.449	(0.88)	5.567	(0.87)	-8.588***	(-3.76)	0.059	(0.01)	7.662	(0.66)	-2.186	(-1.13)	7.178	(0.91)	3.170	(0.42)
RP_Sale2	β_3	7.730	(1.38)	-17.623	(-1.11)	-15.944	(-1.00)	21.163***	(3.52)	-4.870	(-0.17)	-24.133	(-0.79)	0.934	(0.16)	-20.468	(-1.12)	-6.396	(-0.37)
RP_Purch	β_4	-1.479**	(-2.14)	-2.329	(-1.36)	-2.645	(-1.40)	-1.544	(-1.37)	-2.198	(-0.91)	-1.883	(-0.56)	-0.729	(-0.83)	-3.629	(-1.57)	-4.431**	(-2.51)
RP_Purch2	β_5	-3.979*	(-1.72)	2.000	(0.16)	-2.508	(-0.28)	-4.111	(-1.16)	-8.426	(-1.29)	-8.453	(-0.88)	-7.316	(-1.47)	34.584**	(1.98)	19.202	(1.35)
RP_Asset	β_6	-7.997	(-0.82)	-26.957	(-1.63)	-29.92**	(-2.10)	-13.878	(-0.55)	13.838	(0.60)	24.501	(0.89)	24.411**	(2.44)	-2.338	(-0.09)	-58.395**	(-2.17)
RP_Asset2	β_7	37.371	(0.82)	117.282	(1.61)	116.969*	(1.82)	98.832	(0.38)	-485.072*	(-1.90)	-617.785**	(-1.99)	-108.785**	(-2.37)	11.375	(0.09)	248.342**	(2.02)
RP_Loan	β_8	-47.011***	(-2.98)	-3.536	(-0.10)	-8.248	(-0.18)	-23.917	(-0.57)	30.529	(0.99)	-66.946	(-0.77)	-84.012***	(-7.82)	-102.496***	(-5.84)	-11.508	(-0.48)
RP_Loan2	β_9	541.092***	(3.05)	-74.737	(-0.20)	-73.455	(-0.14)	287.628	(0.45)	-593.445	(-1.26)	776.353	(0.59)	966.413***	(7.64)	1060.075***	(5.06)	-87.037	(-0.30)
RP_Debt	β_{10}	40.418	(1.18)	56.555	(1.04)	46.122	(0.93)	63.809	(1.24)	85.737	(1.28)	116.698	(1.57)	-44.374	(-0.88)	-133.859	(-1.38)	-28.005	(-0.21)
RP_Debt2	β_{11}	-1323.1*	(-1.89)	-1319.74	(-1.18)	-1722.86*	(-1.69)	-1870.355*	(-1.78)	-2022.506	(-1.46)	-3288.59**	(-2.14)	3489.731	(1.05)	11945.19*	(1.88)	-267.201	(-0.03)
RP_Guar	β_{12}	3.319	(0.37)	1.607	(0.15)	8.596	(0.77)	-6.460	(-0.96)	-12.976	(-1.45)	-5.852	(-0.75)	8.140	(0.52)	11.215	(0.65)	18.663	(1.20)
RP_Guar2	β_{13}	0.025	(0.71)	-0.086	(-0.75)	-0.027	(-0.27)	-0.694	(-1.23)	-1.647**	(-2.39)	-1.076	(-1.24)	0.065	(1.42)	-0.310*	(-1.87)	-0.185	(-1.36)
RPGuard_D	β_{14}	-0.179*	(-1.74)	-0.214	(-1.37)	-0.282*	(-1.80)	-0.105	(-0.53)	-0.049	(-0.19)	-0.292	(-1.15)	-0.121	(-1.12)	-0.122	(-0.53)	-0.032	(-0.14)
Lock_D	β_{15}	-1.041***	(-15.24)	-0.897***	(-6.69)	-0.977***	(-7.09)	-1.101***	(-11.3)	-0.928***	(-4.27)	-1.076***	(-5.01)	-0.886***	(-9.38)	-0.835***	(-4.87)	-0.806***	(-4.63)
Rm	β_{16}	31.894***	(5.35)	17.34*	(1.84)	-0.683	(-0.06)	23.465***	(3.21)	15.748	(1.19)	-3.249	(-0.18)	46.631***	(5.25)	23.841*	(1.75)	9.761	(0.62)
Rm_IPO	β_{17}	0.121***	(3.47)	0.055	(1.35)	0.016	(0.35)	0.09***	(3.31)	0.06	(1.43)	0.003	(0.07)	0.182**	(2.15)	0.043	(0.48)	0.029	(0.33)
NIPO	β_{18}	0.022***	(7.54)	0.012***	(3.03)	0.010**	(2.23)	0.028***	(6.96)	0.022***	(4.00)	0.023***	(3.68)	0.013***	(2.86)	0.001	(0.14)	-0.005	(-0.62)
Sub_R	β_{19}	-0.445	(-0.55)	-0.345	(-0.38)	-2.741**	(-2.53)	-23.908***	(-2.61)	-20.163	(-1.17)	-34.994**	(-2.35)	0.887	(1.49)	0.699	(0.80)	-1.328	(-1.25)
Big6_D	β_{20}	-0.060	(-0.95)	-0.021	(-0.22)	-0.029	(-0.23)	-0.061	(-0.59)	-0.133	(-0.92)	-0.133	(-0.66)	-0.087	(-1.17)	0.038	(0.30)	0.022	(0.15)
Age	β_{21}	0.207***	(5.38)	0.305***	(4.44)	0.065	(0.60)	0.313***	(5.12)	0.314***	(2.80)	0.011	(0.05)	0.097*	(1.96)	0.28***	(3.74)	0.102	(0.97)
Debt_R	β_{22}	-0.706***	(-3.04)	-0.762**	(-1.98)	-0.179	(-0.42)	-0.424	(-1.14)	-0.386	(-0.59)	0.114	(0.16)	-0.968***	(-3.31)	-1.099***	(-2.63)	-0.432	(-0.91)
ROA	β_{23}	-0.659***	(-2.81)	-0.655	(-1.19)	-0.456	(-0.77)	0.140	(0.29)	0.736	(0.59)	1.600	(1.32)	-1.176***	(-4.55)	-1.464***	(-2.85)	-1.614***	(-2.91)
Asset	β_{24}	0.039**	(1.99)	-0.056**	(-2.05)	-0.198***	(-5.64)	0.093***	(3.03)	0.005	(0.10)	-0.11**	(-2.00)	0.009	(0.30)	-0.082*	(-1.90)	-0.226***	(-4.42)
Constant	β_0	-0.305	(-0.77)	1.996***	(3.27)	5.586***	(7.51)	-1.877***	(-2.94)	0.162	(0.14)	3.342***	(2.86)	0.796	(1.42)	3.044***	(3.38)	6.59***	(6.57)
Observations		1,604		1,604		1,604		793		793		793		811		811		811	
F-value		18.41***		11.56***		20.73***		39.34***		10.52***		34.89***		10.24***		13.58***		16.20***	
Adjusted-R^2		0.3094		0.1104		0.0796		0.3270		0.1101		0.0882		0.3229		0.1425		0.0990	
VIF		1.03~1.59		1.03~1.59		1.03~1.59		1.03~1.80		1.03~1.80		1.03~1.80		1.02~1.81		1.02~1.81		1.02~1.81	

Notes: ***, ** and * denote statistical significance at 1%, 5% and 10% level, respectively. The estimates are the Huber White sandwich estimators.

Ⅵ. Conclusion

In this part, we focus on the effects of related party transactions on initial returns and long term post-IPO performance. We first introduce various types of related party transactions: related party transactions – sales and purchases of goods and services between affiliated firms, related party funding – lending and borrowing of funds between affiliated firms, and the provision of credits, collaterals and mortgages between affiliated firms. In addition, we use an extensive sample of 1,609 Chinese firms that went public on the Shenzhen Stock Exchange relative to the Shanghai Stock Exchange time from 2004 till 2015 in the full sample, except for a few firms in banking and finance industry and some without basic information used in the study, and then separated into two groups of IPO firms: high initial return stocks and low initial return stocks of IPO firms. We have the following two parts of result from the study.

First, the effect on initial returns of IPOs: 1) the related party transactions have significant impact on initial returns of IPOs. According to our result, the sales to related party has a significant U-shaped effect on initial returns of both high-return and low-return IPOs. While the asset trading between related parties has a significant reverse U-shaped effect on initial returns of low-return IPOs. 2) the related party funding has significant impact on initial returns of IPOs. The result shows that, the loan to related party has a significant U-shaped effect on initial returns of both high-return and low-return IPOs. The debt to related party has a significant U-shaped effect on initial returns of high-return IPOs. 3) the provision of credits, collaterals and mortgages between related part has significant impact on initial returns of IPOs. The result shows that, the guarantee provided for related party has a significant U-shaped effect on initial returns of high-return IPOs, while high-return firms get guaranteed from related party have higher initial returns (IR) of IPOs than not. These results are partly consistent with Jian and Wong (2003) and Bae, Kang and Kim (2002).

All in all, sales of goods and services, lending and borrowing of funds or provision of credits, collaterals and mortgages between affiliated firms before list have significant but nonlinear impact on initial returns of IPOs, and this impact has different patterns in high initial return stocks and low initial return stocks.

Second, the effect on long term post-IPO performance: 1) For both cumulative abnormal returns and buy-and-hold abnormal returns, the result shows that the sales to related party has a significant U-shaped effect on long term post-IPO performance but the patterns are different in high initial return stocks and low initial return stocks; the purchases among affiliated firms in a group have a negative effect on long term post-IPO performance. 2) For both cumulative abnormal returns and buy-and-hold abnormal returns, the related party funding has significant impact on long term post-IPO performance but the patterns are different in high initial return stocks and low initial return stocks. 3) For both cumulative abnormal returns and buy-and-hold abnormal returns, the provision of credits, collaterals and mortgages between related party have significant impact on long term post-IPO performance but the patterns are also different in high initial return stocks and low initial return stocks. These results are partly consistent with Teoh et al. (1998a) and Miloud et al. (2014)

From the study, we can infer that various types of related party transactions impact the IPO stock returns may through convey internal corporate governance information to investors. Future research will focus on the complex effects of related party transactions between affiliated firms.

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