



The relation between asset growth and the cross-section of stock returns: Evidence from the Chinese stock market



Yifeng Wang^a, Cheyuan Liu^a, Jen-Sin Lee^{b,*}, Yanming Wang^c

^a School of Economics and Management, Guangxi Normal University, Guilin, Guangxi, China

^b Department of Finance, I-Shou University, Kaohsiung, Taiwan

^c Lingnan College, Sun Yat-sen University, Guangzhou, Guangdong, China

ARTICLE INFO

Article history:

Accepted 19 September 2014

Available online 25 October 2014

Keyword:

Company investment

Stock returns

Chinese stock market

Asset pricing

ABSTRACT

This study examines the effect of firm investment on stock returns by using data on the Chinese stock market. We find that stocks with higher investment experience lower future returns and there is an obvious investment effect in the Chinese stock market. The investment effect is stronger for firms that have higher cash flows, lower debt or for state-owned firms. We further explore the relation between investment and returns over the 3 years around portfolio formation. The results show that the high investment firms earn higher returns than low investment firms before portfolio formation; however the high investment firms earn lower returns than low investment firms after portfolio formation, such evidence is supportive of investor's overreaction explanation. Additionally, the stock returns don't necessarily decrease after investment, and the stock returns don't significantly positively correlate with firm profitability or book-to-market, so the result don't support risk-based explanation. Overall, both our portfolio sort and two-stage cross-sectional regression analysis show that behavioral finance theories are better than risk-based theories in explaining the investment anomaly. Evidence from the Chinese stock market provides a useful perspective to understand the debate on the investment anomaly.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

As a pillar of modern finance theory, the capital asset pricing model (CAPM) has been supported by early empirical studies (see, for example, Fama and MacBeth, 1973). But later researchers find that the CAPM has difficulty explaining some of the patterns of the cross-section of asset returns, these findings being referred to as anomalies. The most prominent anomalies are size effect, book-market effect, reverse effect and momentum effect (Fama and French, 1992; DeBondt and Thaler, 1985; Jegadeesh and Titman, 1993). Academics and practitioners are very concerned about these studies. Academics are concerned with the anomalies' causes, i.e., whether the anomalies arise from risk or mispricing; practitioners can construct the portfolio based on these empirical studies to obtain excess returns. Recent literature documents that there is investment effect or asset growth effect in the international stock markets. For instance, Cooper et al. (2008), Liu et al. (2009), Cooper and Priestley (2011) among others, have found that companies that invest more or grow more tend to earn lower subsequent risk-adjusted returns in the American stock market, and vice versa; Gray and Johnson (2011) find a similar pattern in Australian equity market; Titman et al. (2010), Watanabe et al. (2013) study the investment effect in international stock markets. They find that the

negative relation between asset growth and stock return is stronger in developed markets than in emerging markets.

In order to explain the investment effect, there are two different explanations for this anomaly: one is rational and the other is behavioral. A series of theoretical models based on real option theory, q-theory of investment and behavioral finance theory are proposed, and extensive empirical studies are carried out. The rational camp includes q-theory of investment (Liu et al., 2009; Li and Zhang, 2010; Watanabe et al., 2013) and real option theory (Berk et al., 1999; Carlson et al., 2006); The behavioral camp includes overreaction to past growth by investors as they value firms (e.g. Cooper et al., 2008) and market under-reaction to the over-investment tendency of corporate managers (Titman et al., 2004; Titman et al., 2010).

There are a few researches on the investment effect of the Chinese stock market, Titman et al. (2010) and Watanabe et al. (2013) take the Chinese stock market as one of the sample of emerging markets, and preliminarily study the investment effect of the Chinese stock market from the perspective of cross-country comparisons. They find that investment effect exists internationally. Titman et al. (2010) allocate stocks into quintile based on annual investment indicator according to 1994–2005 data of the Chinese stock market, and find that investment negatively correlates with stock returns. Watanabe et al. (2013) document that there is a significant investment effect on individual stock levels in China according to data of 1996–2006. For the period from 1994 to 2007, Yao et al. (2011) also find an obvious negative relation

* Corresponding author. Tel.: +886 7 6577711# 5721; fax: +886 7 6577056.
E-mail address: jensinlee01@gmail.com (J.-S. Lee).

between asset growth and subsequent stock returns. Because of different research purposes, these papers don't specially study the Chinese stock market in depth and they don't disentangle the cause of the investment anomaly.

This paper examines the association between investment and the cross-section of Chinese stock returns on the basis of the two camps. As an emerging and transitional capital market, the Chinese stock market has a unique ownership structure, market structure and investor structure relative to developed markets. So the empirical result and theoretical explanation of international stock markets may not apply to China. In this paper, the 1996–2011 data are adopted to discuss the following issues: is there the investment effect in the Chinese stock market? If there is the investment effect, whether risk factors or behavioral factors lead to it? To ensure the robustness of the results, we equally divide the entire sample period into two sub-periods and test respectively.

The empirical approaches adopted in this paper are consistent with much of the prior literature that explores the relation between stock characteristics and returns. There are two approaches commonly used in this field: one is portfolio analysis and the other is cross-section regression analysis. Portfolio analysis means that stocks are sorted into portfolios annually by the stock characteristics, raw returns or risk-adjusted returns of each portfolio are examined for evidence of anomaly; cross-section regression analysis moves from portfolio level to individual stock level and applies Fama and MacBeth (1973) cross-sectional regressions to examine the relationship between characteristic and returns. Each approach has advantages and disadvantages. Portfolio analysis intuitively, clearly reflects the picture of how returns vary with the characteristic variable, and can calculate the zero-investment portfolio (short low-return portfolio, long high-return portfolio) return; however, with this method it is difficult to conduct multivariate tests and difficult to test the functional form. In regression analysis it is easy to conduct multivariate tests, but the technique is susceptible to the influence of extreme outliers, and there may be bias because this method limits the functional form to be linear. To ensure the results are robust, this paper will take two approaches to empirical analysis.

Using a series of empirical studies, we show that there is significant investment effect in the Chinese stock market. In the cross-section, firms that invest more have lower stock returns than firms that invest less. The negative relation between investment and returns is shown to be stronger for firms with overinvestment tendency; this shows that over-investment is an important reason leading to investment effect. In the time-series, firms that invest more (less) have lower (higher) return than before, and vice versa. The relation between investment and returns is in the opposite direction between pre-formation period and post-formation period. In pre-formation period, firms with high investment have higher returns, but in post-formation period, firms with high investment have lower returns, this result shows that investors overreact to firm investment. Stock returns do not necessarily decline after assets expansion. In addition, stock returns don't significantly positively correlate with book-to-market or profitability, controlling for the investment indicator. The results don't support the risk-based theory. Our evidences suggest that investment is an important influencing factor of stock returns, and the behavioral finance theory has better explanation to the investment effect.

Relative to existing papers, our incremental contribution to the literature is trying to disentangle the competing explanations for the investment effect of the Chinese stock market. Our findings provide a useful perspective to understand the debate on the relation between firm investment activities and stock returns.

The remainder of this paper proceeds as follows. Section 2 reviews the relevant literature and develops testable hypotheses. Section 3 describes the data and variable construction. Section 4 presents the results of the portfolio analysis. Section 5 presents the results of the cross-section regression analysis. Section 6 is for the robustness

analysis. Section 7 concludes the paper and discusses implications for the Chinese stock market.

2. Literature review and hypothesis development

There are two rival explanations for the investment effect. Behavioral finance theory provides cognitive bias-based explanations; real option and q theory provide risk-based explanations (see, for example, Cooper and Priestley, 2011; Lam and Wei, 2011; Li and Zhang, 2010). Based on these explanations, we outline hypotheses that can be tested using the Chinese data.

2.1. Behavioral finance theory

Behavioral finance theory suggests that investors have limited attention and cognitive processing power. When investors face vast and complex information, investor decision-making does not fully comply with the rational assumption of expected utility maximization and Bayesian learning rule, but often use a rule of thumb. The rule of thumb is a cognitive shortcut and helps in making decisions using part of the information available. When the decision-making is subject to the time limit, information overload, or lack of sufficient information, the rule of thumb can help investors make the second-best option. So the rule of thumb may lead to systematic errors of asset prices (Lakonishok et al., 1994; Cooper et al., 2008).

In addition to the impact of individual behavior, limited rational investors are subject to the influence of group behavior in the complex environment. Due to group psychology, social pressures, information uncertainty, public opinion and so on, investors may give up their decision-making criteria and show herd behavior, which leads to systematic bias of asset prices. Because of risk and cost constraints, arbitrageurs have difficulty eliminating price bias, and the efficient market hypothesis doesn't hold (Lakonishok et al., 1994; Cooper et al., 2008).

High investment might contain two aspects of information. The positive aspect is that the high investment represents better investment opportunities and development prospects; the negative aspect is that high investment relates to manager's overinvestment, which isn't conducive to firm's long term development. Therefore, the mis-pricing may be caused by investor's overreaction to positive information or under-reaction to negative information (Titman et al., 2009; Cooper et al., 2008; Titman et al. 2004).

Much psychological evidence indicates that individuals form their predictions of the future without consideration of mean reversion. The investment is subject to mean reversion like other things, investors don't take this into account. When the investors forecast the firm's growth based on the rule of thumb, they overestimate the sustainability of investment, which leads to overestimation of (underestimate) high (low) investment firm's equity price (i.e. extrapolation bias). In the long run, as investors gradually understand the relevant information, the mis-pricing will be corrected, so the returns of high investment firm will be below the low investment firm. Cooper et al. (2008) show that investors overreact to the positive information of firm investment.

On the other hand, the managers who are empire builders have a tendency to over-invest; however investors fail to appreciate the negative information of investment, which leads to mis-pricing. As investors don't fully understand the agency problem of over-investment, they may over-value a firm with large investments by over-valuing its potential future earnings. In the subsequent period, when investors are aware of adverse effects of overinvestment, the returns of high investment firm will be below the low investment firm. Titman et al. (2004) and Titman et al. (2010) suggest that investment effect is caused by investor's under-reaction to negative information of investment.

As an emerging and transitional market, the Chinese stock market is greatly influenced by institutional factors and policy changes. There is much noise in the stock market, so it is difficult for investors, especially to non-information investors, to obtain timely, truthful, comprehensive

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات