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# Financial constraints and corporate investment in Asian countries

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#### 1. Introduction

The information imperfections in equity and credit markets lead to a divergence between costs of external and internal funds or, at the extreme, to rationing of external finance (Jaramillo, Schiantarelli, & Weiss, 1996; Stiglitz & Weiss, 1981). Most firms in the Asian economies face external financial constraints due to closed capital markets and capital market imperfections (Cho, 1983). The negative impact of capital market imperfections on private investments and the effect of severity of the external financial constraints on corporate investment for US firms has been the subject of much research in the corporate finance literature. In this paper, we focus on the investment ratios of non-financial listed firms in the six Asian countries – India, Indonesia, Malaysia, Pakistan, Thailand, and South Korea over the period of 1991–2004. In contrast with the financially developed Asian economies such as Japan, Hong Kong, Taiwan, and Singapore, these countries have governments which have heavily regulated their domestic financial sectors by restricting the allocation of credit through their control of prices and quantities. These governments have also imposed several constraints on cross-country capital movements, including restrictions on the foreign exchange transactions, lending and borrowing activities of banks and corporations, and the participation of foreign investors in local financial systems.

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This study overcomes the analytic shortcomings of the linear investment models and applies a Panel Smooth Transition Regression model to examine the investment ratios of 519 non-financial listed firms in six Asian countries over the period of 1991–2004. We find that investment-cash flow sensitivities vary across firms in the sample countries. Additionally, our findings also show that investment-cash flow sensitivity has also been affected by the business cycle in these countries. Furthermore, we find new evidence that *tangible* assets play a significant role in explaining the increase (decrease) in the investment-cash flow sensitivities for South and East Asian countries. These results imply that possession of the tangible assets increases debt capacity, which in turn reduces under-investment. These new findings have significant implications for financing and investment choices of the firms in the sample countries.

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In the past two decades, financial sector reforms and capital market liberalization have increased the private capital flows to these economies; as a result, these economies have developed their stock and bond markets as well as some of their local financial service industries. These financial reforms have been implemented in different sequences in these six countries (Ameer, 2007; Bekaert & Harvey, 2000; Bekaert, Harvey, & Lundblad, 2005; Schmukler & Vesperoni, 2002). Some Asian countries opted for deregulation of their banking sectors first, whilst others focused on their stock markets as their initial move. For example, the governments in Malaysia and Thailand allowed foreign investors to access their capital markets for portfolio investments earlier than the governments in Indonesia, Pakistan, India, and South Korea. It is plausible that the combination of good corporate governance, adoption of international accounting standards and transparent disclosure of financial information, might have reduced the agency costs related to external debt and equity finance, thereby increasing the growth opportunities and investment of the firms in these two countries viz.-a-viz. in the other sample countries. Indeed, Francis, Hasan, Song, and Walsman (2013) report that better corporate governance lowers the dependence of emerging markets firms on internally generated cash flows, and reduces the financing constraints that would otherwise affect the allocation of investment in these countries. This contrasts sharply with the experiences of the South American region, where countries such as Brazil, Chile, and Mexico overwhelmingly adopted liberalization of their domestic banking sectors first. Another crucial difference is related to the difference in the timing of financial reforms across regions. For instance, financial reforms were implemented much earlier in Asia than in Africa but later than in South America, and therefore, research findings may potentially provide a middle way benchmark to compare performance with early reformers (South America) and later reformers (Africa).

The main argument in this paper is that the number of economic mechanisms through which economic activities were guided in Asia have been replaced or modernized during the course of financial reforms, which varied across Asian countries, and that these mechanisms have heterogeneous effects on investment, and implications for the economic agents. We use the Panel Smooth Transition Regression (PSTR) model that provides a mechanism to analyze the heterogeneous influences on firms' investment ratios. Besides the study by González, Teräsvirta, and Dijk (2005) that used the PSTR model for analyzing investment ratios of US firms, our study is the only other one to use the PSTR model for a sample of non-financial listed firms in Asia. The PSTR has an intuitive appeal. The traditional linear regression model implies that the relationship between investment ratios and other stylized factors remains constant over a set time. This seems unrealistic because the effect of the financial reforms on the firms' investment ratios at the start of the reforms would be different from their effects on the firms' investment ratios at the end of reforms and due to their reversal in East Asia, particularly during the Asian financial crisis. Secondly, the economic theory suggests a non-linear relationship between finance and growth, and predicts several equilibriums or regimes (see Galindo et al., 2005). These regimes appear because of a reciprocal externality between the finance and real sector. The sensitivity of investment ratios to stylized factors become time-varying because the exogenous shocks of the financial reforms in a country gradually change the wedge between the cost of internal funds and external funds. As a result, we predict that the firms' investment ratios will also be time-varying.

Our findings are as follows. First, the PSTR results show that there are significant differences in investment-cash flow sensitivity (ICF) across the sample countries, which can be attributed to differences in capital market liberalization and banking sector reforms. Although the sample countries have implemented financial reforms, it appears that in some countries, investment ratios did not increase, perhaps due the limited scope and duration of the financial reforms (and abrupt reversals). Secondly, we show that business cycle variables such as the interest rate, only cause spreads associated with a reduction in ICF in a few countries. This result indicates the presence of the accelerator *effect*. Our findings also support the hypothesis by Almeida and Campello (2007) that the ICF is driven by the *tangibility* of firms' assets, referred to as the *multiplier effect*. The remaining sections of this study are as follows. Section 2 provides a brief review of the literature, Section 3 describes our research methodology, Section 4 presents the main empirical results, and Section 5 presents a summary of the results and our conclusions.

#### 2. Literature review

In a world of perfect capital markets, the operating decisions need not be affected by financing decisions or the financial status of a firm (Modigliani & Miller, 1958). However, in the absence of such perfect capital markets, many firms face uncertain future prospectus due to their inability to issue financial securities and, hence, take advantage of growth opportunities. The difference between the cost of external funds and internal funds is very high in incomplete capital markets, because of information asymmetry, and higher agency costs of equity and debt. Consequently, the investment decisions of firms operating in such environments are sensitive to the availability of internal funds because they possess a cost advantage over external funds (Cleary, 1999; Harris, Schiantarelli, & Siregar, 1994; Hubbard, 1998). Higher investment sensitivity to cash flows signifies the presence of financial constraints.

In the agency theory framework of Jensen and Meckling (1976), which ignores capital market imperfections, it is hypothesized that managers will over-invest to maximize their own private benefits. Jensen (1986) relates the agency problem directly to the ability of the firm to produce free cash flow (cash flow in excess of that needed to fund positive NPV projects). The tendency to overinvest free cash flow is one potential explanation for the positive relation between investment and cash flow. In this regard, there is growing empirical evidence (Huang, Jiang, Liu, & Zhang, 2011) of the usefulness of executive compensation in reducing agency costs, and of the influence of managerial incentives on the severity of financial

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