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Capital structure in an emerging stock market: The case of India

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ABSTRACT

This paper applies two alternative methods of estimation, viz., fully modified OLS (FMOLS) and generalized method of moments (GMM), to analyse the determinants of the capital structure of Indian firms using a panel of 1169 non-financial firms listed in either the Bombay Stock Exchange or the National Stock Exchange over the period 1995–2008. The results thus obtained are robust across the estimation methods. Among the three alternative theories of capital structure, the pecking order theory and the static trade-off theory both seem to explain Indian firms' decisions. However, there is little evidence to support the agency cost theory.

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1. Introduction

Studies on capital structures of corporations have a long history, dating back to the nineteen fifties with the appearance of the works of Lintner (1956), Hirshleifer (1958) and Modigliani and Miller (1958). Theoretical and empirical studies that followed subsequently form an extremely large body of literature.¹ Modigliani and Miller (1958) showed that in the perfect financial market, under certain assumptions, the value of a company is independent of its financing choice. The well-known Modigliani–Miller Theorem is based on several assumptions: in a perfect capital market insiders and outsiders have symmetric information; no transaction cost or bankruptcy cost exists; equity and debt choice becomes irrelevant; and internal and external funds can be perfectly substituted. These assumptions later came under scrutiny and alternative theories emerged which suggested that capital

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¹ For an extensive review of literature on capital structure, see Harris and Raviv (1991).

structure might be relevant to the firm's value. The three main theories that came up subsequently are the static trade-off theory, the pecking order theory and the agency cost theory.

In the static trade-off theory (also referred to as the tax based theory) a firm is viewed as setting a target debt to equity ratio and gradually moving towards it (Myers, 1984). In other words, this theory assumes that some form of optimal capital structure exists that can maximize the firm value while simultaneously minimize external claims to the cash flow stream. Such claims include bankruptcy cost, agency costs between shareholders and bondholders, and taxes. Thus a firm's target leverage is determined by the trade-off between interest tax shields of debt and the cost of financial distress. The pecking order theory (also referred to as the information asymmetry theory), developed by Myers and Majluf (1984) and Myers (1984), argues that firms choose to finance new investment, first by internal retained earnings, then by debt, and finally by equity. There is no concept of target capital structure for a firm in the pecking order theory. The explanation provided by Myers for the pecking order theory is based on the assumption that firm insiders have more information than outsiders. The agency cost theory (Jensen and Meckling, 1976) proposes that the optimal capital structure is determined by agency costs, which include the costs for both debt and equity issue. The costs related to equity issue may include: (a) the monitoring expenses of the shareholders (b) the bonding expenses of the managers and (c) 'residual loss' due to the divergence of managers' decision from those of the shareholder's (Jensen and Meckling, 1976). On the other hand, debt issue increases the shareholders' and managers' incentives to invest in high-risk projects that yield high returns to the shareholders but increase the likelihood of failure that the bond holders have to share if it is realized. If debt-holders anticipate this, a high premium would be charged, which in turn would increase the cost of debt. Thus both equity and debt incur agency costs, and hence the optimal capital structure involves a trade-off between the two types of costs.

The empirical studies on the capital structure choices of firms that started appearing in the eighties (Marsh, 1982; Jalilvand and Harris, 1984; Titman and Wessels, 1988) and continued later are mostly based on data from developed countries. For example, Rajan and Zingales (1995) use data from G-7 countries, Bevan and Danbolt (2002) use data from the U.K. and Gaud et al. (2005) analysed data from Swiss companies. There have been a few studies that focus on developing countries as well. For example, Booth et al. (2001) considered data from ten developing countries (Brazil, Mexico, India, South Korea, Jordan, Malaysia, Pakistan, Thailand, Turkey and Zimbabwe), Chen (2004) uses data from China, Pandey (2001) analysed the data from Malaysia, and Wiwattanakantang (1999) uses data from Thailand, and so on. It may be noted here that the institutional structures of corporate firms of these developing countries are significantly different from that of the developed countries.

Some methodological issues could be raised in this context. Most of these studies are based on panel data, and they use either a static model or a dynamic model, which simultaneously take care of the heterogeneity of firms and control for time effects. The models have been estimated by some of the following methods: fixed effects, random effects, pooled OLS and generalized method of moments (GMM). These methods correct for simultaneity bias using instrumental variables and control for unobserved firm-specific effects. However, they ignore the integration properties of the data. Therefore, it is not clear from these studies whether they estimate a long-run equilibrium relationship between leverage and its determinants or a spurious relationship which may lead to wrong conclusions.

In this paper we apply some recently developed econometric techniques, viz., panel cointegration and panel estimation by fully modified OLS method, which correct for the shortcomings mentioned above, to provide better insights into the capital structure of non-financial firms in India in the post-liberalization period. The issue of capital structure has become very important in India, especially following the gradual initiation of the reform measures in the financial sector of India since July 1991. Financing choices of firms in India remained quite constrained till 1992. Access to the equity market was controlled by the Controller of Capital Issues which imposed severe restrictions on firms (Bhaduri, 2000). In May 1992, the Controller of Capital Issues was abolished and firms were allowed more freedom of access to the equity market. In 1994 the National Stock Exchange (NSE) was set up with nationwide stock trading and electronic display and clearing and settlement facilities. Due to the competitive pressure from the NSE, the Bombay Stock Exchange (BSE), the oldest stock exchange in India, also introduced electronic trading in 1995. Certain reform measures were initiated in the banking sector at the same time which enhanced the choice of financing by firms through debt too.

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