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Relationship between the pecking order theory and firm's age: Empirical evidences from India

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Abstract The present work examines the impact of age on the pecking order of deficit and surplus firms. Using empirical evidences, the results indicate that age does not have any significant impact on the pecking order of firms when they have deficits, and firms (across all groups) continue to issue large amount of debt to fill up deficit gaps. While in surplus conditions, old firms followed by middle age firms appear to redeem comparatively more debt vis-a-vis young firms. Being at growing stage, young firms prefer to retain funds more for future financing needs.

Introduction

Age is a significant factor of a firm's life cycle (Bulan & Yan, 2010). The stages in a firm's life cycle are distinct, and the evolution path of a firm is affected by internal and external factors (Dickinson, 2008). This paper complements the work of Berger and Udell (1998), and Bulan and Yan (2010) to investigate whether firms' financing decisions (to issue/redeem debt and equity) are affected by a firms' age.

In this paper, we study three major stages of age, namely, young, middle age and old. To track the financing hierarchy of firms, the pecking order theory has been tested across different age groups. The pecking order theory states that there is no optimal debt ratio (Myers, 1984). Firms prefer internal to external funds (Myers & Majluf, 1984). If deficiency arises, firms seek debt funding first, and when debt limits are exhausted, equity is issued to bridge the deficiency gaps. In surplus conditions, the theory suggests that debt be redeemed due to information asymmetry issues (Myers, 2001).

Using Shyam-Sunder and Myers' (SSM) model (1999) to test the pecking order of firms, we note a high coefficient value for old firms but relatively weak coefficient values for young and middle age firms. These high/low coefficient values do not perfectly indicate that firms adhere/do not adhere to the pecking order. The implication of a single coefficient value is different for deficit and surplus firms. The SSM model fails to explain under what situation (deficit/surplus) firms most follow the pecking order. It appears that the pecking order hypothesis (POH) is much more comprehensive (Leary & Roberts, 2010). For instance, using the SSM model, we assume that deficit firms closely track financing deficits; the coefficient value, however, does not indicate whether the new debt issues have been used, on priority basis, to finance deficits or redeem existing debt. There may be a possibility that

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deficits are of negligible amounts but the new debt issues are in large quantum and that may be used to redeem existing debt.

Likewise, in a surplus situation, there is a possibility that a weak coefficient value may arise due to small surpluses that are insufficient to cover large debt redemptions, and firms may issue new debt (when they already have surpluses) to retire existing debt. To overcome this limitation of the SSM model, we have segregated firms into deficit and surplus firms using negative and positive values. Further, we focus more on gross debt issues/gross debt redemptions than on net debt issues.

Another major challenge to SSM tests is the observations made by Chirinko and Singha (2000). They are of the view that if the pecking order coefficient is low, even then it could be assumed that firms follow the pecking order due to existing high debt-to-equity ratios that restrain firms from borrowing more debt and firms, with no other option, have to opt for equity (Leary & Roberts, 2010). Bhama, Jain, and Yadav (2015) find that Indian firms borrow more debt than equity for their financing needs and thus, most of the firms follow POH. In the present study, we analyse the extent to which firms adhere to the POH across different age groups. As the SSM model suffers from serious limitations, we extended the model to test the results separately for deficit and surplus firms using gross debt issues/redemptions. The impact of debt redemptions during deficiency and new debt issues in surplus conditions has been tested discretely as they do not fall under the realm of POH.

It is also imperative to control for different conditions/situations in order to truly test the POH. Generally, firms issue/retire debt under certain conditions. Using simulation, we have created different situations by setting up a conceptual framework. In this study, we have observed that there are firms that do not issue/retire debt when they have deficits/surpluses. The other sets of firms are those that raised/retired only debt, only equity or both. Given the different conditions, we have tested the model across all age groups.

To the best of our knowledge, this is the first study to investigate the relationship of age with the pecking order of firms in the Indian context. The present study contributes significantly by adding new aspects to the existing literature of POH in the Indian context by: 1) segregating deficit and surplus firms with more focus on gross debt issues and redemptions; 2) analysing debt-to-equity ratios as suggested by Chirinko and Singha (2000), and Leary and Roberts (2010); and 3) controlling for different conditions of debt and equity. The remainder of the paper has been organised as follows. The next section describes the literature review. Data and methodology have been explained in the third section. Empirical evidences have been discussed in the fourth section. The last section enumerates the concluding observations.

Literature review

Analysing the life cycle of small business firms, Berger and Udell (1998) indicate that growing firms rely more on debt, and middle and old age firms, however, use less debt. The life cycle theory of a firm is affected by profitability and growth over a period of time. Profitable firms avail more of internal funds than debt (Booth, Aivazian, Demirguc-Kunt, & Maksimovic, 2001). Generally, mature firms have more cash funds available due to high profitability and lower expansion opportunities. These firms prefer internal to external funds for financing requirements. Bulan and Yan (2009) observe that mature firms follow the pecking order more than young and growing firms. Good credit relationship with lenders lowers the cost of debt of mature firms (Bernasconi, Marenzi, & Pagani, 2005), whereas young firms face more financial constraints (Carpenter & Rondi, 2000). Mature firms are more stable with higher profitability and good credit histories and thus borrow significantly from private financial intermediaries (Bulan & Yan, 2009). By their good reputation, older firms face fewer adverse selections and moral hazard problems (Petersen & Rajan, 1994).

In marked contrast, Ezeoha and Botha (2012) demonstrate that there is a theoretical ambiguity in the relationship between age and debt financing. A few studies indicate a positive correlation between age and debt financing. The other school of thought is that as firms become older, the usage of debt declines. The argument is that older firms face asset deterioration that may erode their value; this, in turn, impacts their growth negatively (Loderer & Waelchli, 2009). As a result, costs go up as a firm becomes older and profitability declines. Other reasons for older firms to go for alternative financing like equity are the uncertainty and information asymmetry issues (Berger & Udell, 1995).

A few studies show that young firms experience more severe financing constraints than mature firms in countries like the U.S., China and Italy. These constraints sometimes hinder potential entrepreneurs (Evans & Jovanovic, 1989) and thus reduce the likelihood of new business ventures (Paulson & Townsend, 2004). These constraints reduce the growth rate of small firms (Beck, Demirguc-Kunt, & Maksimovic, 2004). The high equity ratio of young firms positively affects research and development (R&D) investments, although this effect is observed less in mature firms (Muller & Zimmermann, 2006; Baldwin, Gellatly, & Gaudreault, 2002). Further, Allen, Chakrabarti, De, Qian, and Qian (2012) postulate that family and friends provide funds for start-up and growth phase in the case of Indian Small and Medium Enterprises (SMEs). Ayyagari, Demirguc-Kunt, and Maksimovic (2010) observe that firms use informal financing more than bank financing. Formal financing is significantly associated with higher growth rates. Chavis, Klapper, and Love (2011) confirm that young firms rely more on informal financing than bank financing.

Pecking order tests

Testing the pecking order model for the first time, Shyam-Sunder and Myers (1999) observe that pecking order is an excellent first order descriptor of firms' financing behaviour. In marked contrast, Frank and Goyal (2003) and Fama and French (2005) observe pecking order to be a poor descriptor of financing behaviour. Firms rely heavily on equity financing to fill up deficiency needs. Agca and Mozumdar (2004) find results in tune with the pecking order theory. When firms face information asymmetry and are not constrained by debt capacity issues, Leary and Roberts (2010) observe that only 20% of firms of their study are able to follow the assumptions of theory. In contrast, the findings of Lemmon and Zender (2010) favour the pecking order theory. Further, De Jong,

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