

# **Dynamic Capital Structure Choice**

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**Discussion paper**

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The traditional debate on whether or not firms try to maintain a target capital structure or whether they follow a financial hierarchy has taken a new form in recent years. Some have argued that firms are essentially passive with respect to capital structure, and show little tendency to rebalance capital structures after shocks to equity values. Instead, they try to take advantage of favorable market conditions, and this behavior, rather than a desire to attain a particular target debt ratio, is the main determinant of the observed debt ratio at a given point of time. However, several new papers on dynamic capital structure take a different view. Leary and Roberts (2004) show that the results that Welch (2004) and Baker and Wurgler (2002) attribute to managerial inertia or indifference can be consistent with a process of dynamic adjustment to a target capital structure in the presence of adjustment costs. Firms do rebalance; however, they do not rebalance all the time due to adjustment costs. Firms that are likely to face lower adjustment costs show less persistent effects of past financing decisions or equity shocks as reported by Baker and Wurgler (2002) and Welch (2004). Strabulaev (2004) also considers the role of adjustment costs in a dynamic framework. He shows that because firms do not rebalance all the time due to the presence of adjustment costs, traditional tests of the determinants of capital structure are flawed. Thus, the interpretation of observed coefficients of leverage regressions in support of specific theories must be regarded as unreliable.

In this project, we propose a somewhat different theory of dynamic capital structure choice. We note that firms are in fact quite active in terms of issuing or repurchasing securities. Firms are active, on average, in one of every four quarters, i.e. once a year. This is true even when we take a fairly conservative view of what constitutes a debt or equity issuance or repurchase (the absolute size of the financing deficit must exceed 5% of the book value of assets). Thus, firms are not “inactive” as, for example, Strabulaev’s (2004) simulated model based on adjustment costs indicates. However, even though firms are active, and in fact have an optimal “target” debt ratio, adjustment may still be slow. We argue that there are two reasons for this. First, when firms are close to their target debt ratios, they are unlikely to be too concerned with “drift” of the debt ratio. In particular, they will show a high degree of sensitivity to the relative cost of issuing debt or equity (here, “cost” includes costs due to mispricing), or the relative value of debt and equity. This is because deviations from the target are not costly when they are already close to the target. However, since even small differences in relative costs or valuations will cause the firm to choose either debt or equity, and the reasons for these differences are often likely to be idiosyncratic, the debt ratio will show a tendency to “drift”. Thus, adjustment will be slow. When firms have drifted from the target not because of their past financing behavior but because of persistent upward or downward movement of the stock price, their incentive to rebalance will also be weak. This is because a firm

whose debt ratio drifts upwards because of persistent and poor stock price performance will be the least inclined to issue equity and rebalance. Similarly, when the stock price has had a persistent good performance, a firm would like to issue equity, and not debt. Thus, only when the firm has drifted due to its own financing choices and not because of exogenous shocks to equity values will adjustment be relatively rapid.

Shyam-Sunder and Myers (1999) have argued that the time series behavior of real investment and operating profits have important impacts on the dynamics of capital structure. To see whether our hypotheses about financing choices and the constraints faced by firms can generate data that are consistent with what we observe, we propose to take the actual investment and operating results of firms in Compustat as given, and perform Monte Carlo simulations. We will assume that firms' financing decisions made by firms are consistent with our hypothesis. Model parameters will be calibrated to match actual and simulated debt ratios in some key respects. We will examine whether Welch (2004) and Baker and Wurgler (2002)'s results can be replicated for our simulated data. Since we will know more about the data generating process for our simulations data, we can design tests and check whether these tests can identify the assumed relationships. Once this is achieved, these tests can be taken to the actual data.

In sum, the study attempts to integrate tradeoff theory and market timing theory. It posits that firms can have an optimal or target debt ratio (consistent with traditional tradeoff theory that stresses tax benefits and bankruptcy costs) and at the same time, can be slow to adjust due to timing behavior. While the "horse race" between models based on adjustment costs and our theory cannot be directly addressed as we do not have a formal model of optimizing behavior (either in the presence of likely misvaluation of securities, or when adjustment costs must also take into account the need to finance real investment), we hope to establish timing behavior as a credible alternative.

In joint work with Gilles Hilary and Sudipto Dasgupta, we have found strong evidence that timing behavior affects financing choices; however, timing behavior is most pronounced among firms that are followed by fewer equity analysts (Chang, Dasgupta and Hilary, 2005). This result is reminiscent of results reported by Leary and Roberts (2004), who find that the persistent effects of past timing decisions on capital structure are weaker for firms that are ex-ante likely to have lower adjustment costs. However, unlike Leary and Roberts (2004), our results point to mis-valuation, and not adjustment costs, as a factor associated with rebalancing behavior. We find that firms that are more likely to suffer from equity misvaluation adjust more slowly, and only when market conditions are exceptionally good. Timing incentives are not inconsistent with a desire to maintain debt ratios at a certain target. In fact, the incentive is greatest for firms that suffer from systematic misvaluation of equity, since they cannot normally issue equity. Thus, they take advantage of a

“window of opportunity” to issue equity and rebalance their capital structures. The current research is similarly motivated.

The emphasis on adjustment costs, and the seeming ability of dynamic models based on adjustment costs to explain some existing results, undoubtedly represents a major breakthrough in research on capital structure. However, since subsequent research will most likely focus on issues related to adjustment costs, it is important to understand whether costly adjustment is the only way to explain stylized facts about capital structure. In this research, we propose an alternative to costly adjustment that has the potential of explaining observed financing behavior and associated empirical relationships.

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