

## Chapter XV

# CEO Tenure and Debt: An Artificial Higher Order Neural Network Approach

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### ABSTRACT

*This chapter proposes nonlinear models using artificial neural network models to study the relationship between chief elected official (CEO) tenure and debt. Using Higher Order Neural Network (HONN) simulator, this study analyzes debt of the municipalities as a function of population and CEO tenure, and compares the results with that from SAS. The linear models show that CEO tenure and the amount of debt vary inversely. Specifically, a longer length of CEO tenure leads to a decrease in debt, while a shorter tenure leads to an increase in debt. This chapter shows nonlinear model generated from HONN out performs linear models by 1%. The results from both models reveal that CEO tenure is negatively associated with the level of debt in local governments.*

### INTRODUCTION

Reducing debt costs through investment in financial control systems is important to the municipalities. Several theoretical and empirical studies examine the determinants of borrowing costs on tax-exempt bond issues (Benson 1979; Benson, Marks, and Raman 1991). In the early eighties and nineties of the last century, some early studies examine state imposed disclosure requirements. For example, Ingram and Copeland (1982), Benson, Mark, and Raman (1984), and

Fairchild and Kock (1998) consider state imposed disclosure requirements in the context of municipal debt costs. Benson, Mark, and Raman (1991) estimate the magnitude of the interest cost savings on general obligation bonds as a potential benefit from differential GAAP compliance. Their study suggests that bond prices incorporate the effects of differential GAAP compliance.

More recently, Downing and Zhang (2004) posit relatively less liquidity in municipal bond markets, while Harris and Piwowar (2004) show higher transaction costs in municipal bond mar-

kets. Most recently, Baber and Gore (2005) compare municipal debt costs in states that mandate the adoption of GAAP disclosure with debt costs in states that do not regulate municipal accounting methods. The result shows that municipal debt costs in states that impose GAAP are lower by 15 basis points.

Several studies examine the effect of audit variables and accounting variables on the borrowing costs on new bond issues for local governments. Wallace (1981) suggests that lower interest costs and higher bond ratings are associated with compliance with GAAP, hiring a national auditor, and having a clean audit report. Employing a national sample, Wilson and Howard (1984) find poorer financial operating performance and substandard reporting practices experience lower bond ratings and higher borrowing costs. Most existing studies in the government sector examine the determinants of cost of debt, determinants other than CEO tenure; an important goal for this chapter is to extend the current literature and shed light on the issue of debt in the nonprofit area.

Debt is studied extensively in the private sector. According to prior research, debt is associated with accounting methods and accounting conservatism (Beatty and Weber 2003; Ahmed et al. 2002). Beatty and Weber (2003) show that borrowers with bank debt contracts that allow accounting method changes to affect contract calculations are more likely to make income-increasing rather than income-decreasing changes. On the other side, accounting conservatism plays an important role in reducing firms' debt costs. Ahmed et al. (2002) provide the evidence that accounting conservatism is associated with a lower cost of debt after controlling for other determinants of firms' debt costs.

Prior studies have also examined complex relationships between debt and other factors. For example, Trigeorgis (1991) provides an explanation that cost-reimbursed not-for-profits (NFP) tend to use debt financing when purchasing capital assets. Schmukler and Vesperoni (2006) examine how

financial globalization affects debt structure in emerging economies. Frank and Goyal (2003) find that financing deficit is less important in explaining net debt issues over time for firms of all sizes. In addition, they also find that net equity issues can track financing deficit more closely than net debt issues do. Lang, Ofek, and Stulz (1996) show that at the firm level or at the business segment level for diversified firms, there is a negative relation between future growth and leverage. Corporate borrowing is shown to be inversely related to the proportion of market value accounted for by real options (Myers 1997). Jung, Kim and Stulz (1996) investigate firms' decisions on whether to issue debt or equity, the stock price reaction to their decisions, and their actions afterward using the pecking-order model, the agency model, and the timing model. The evidence shows that for certain firms, agency costs of managerial discretion can lead to issue equity when debt issuance would have better consequences for firm value.

Corporate governance and capital structure are studied rigorously in the current literature. On corporate governance, Shleifer and Vishny (1997) focus on the legal protection of investors and of ownership concentration in corporate governance systems. On capital structure, Rajan and Zingales (1995) investigate relevant determinants by analyzing the financing decisions of public firms in the major industrialized countries. To examine whether capital structure decisions are in part motivated by managerial self-interest, Friend and Lang (1988) show that the debt ratio is inversely related to management's shareholding.

To analyze the impact of managerial discretion and corporate control mechanisms on leverage and firm value, Morellec (2004) apply a contingent claims model where the manager derives perquisites from investment. The model shows that manager-shareholder conflicts explain the low debt levels observed in practice. Moreover, Defond and Hung (2004) examine whether measures of investor protection are associated with identifying and terminating poorly performing CEOs. They

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