Modelling the Causal Relationship between Seniority of the CEO in the Enterprise and the Debt in USA

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Abstract: This paper develops a model in which the interaction of Seniority of the C.E.O in the enterprise and the debt can be analyzed. Multiple securities arise as optimal in the model. This allows for a meaningful analysis of interaction effects between Seniority of the C.E.O in the enterprise and the debt for a panel of USA firms from 2000 to 2009. There is a predicted (positive) relationship between Seniority of the C.E.O in the enterprise and the debt. Finally, this paper uses the recent developments in the econometrics of non-stationary dynamic panels to reassess the relationship between Seniority of the C.E.O in the enterprise and the debt

Keywords: Seniority of the C.E.O; debt; cointegration; unit root; FMOLS

JEL Classification: G32

1. Introduction

The relationship between Seniority of the CEO in the enterprise and the debt is an important issue in the literature on corporate governance. One key aspect of the relationship between Seniority of the CEO and the debt is the direction of causality between them. The causal relationship between Seniority of the CEO and the debt has remained an empirically debatable issue in the field of finance, (i.e., Hart and Moore (1995), Berger, Ofek and Yermack (1997)). Over the Past three decades, a large number of studies have investigated the relationship between Seniority of the CEO and the debt. This is not surprising given the importance of the subject matter in finance; particularly the direction of causality has important implications for the entrenchment managerial. The focus of this paper is to examine the relationship between seniority of the CEO and the debt for a sample of 70 USA firms over the period of 2000-2009.

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We organize this paper as follows. Section 2 describes data collection. Section 3 describes methodology and empirical analysis. We conclude this paper in Section 4.

2. Data

Our initial sample consists of over 100 firms listed on the USA Stock Exchange. We select the firms based on the availability of annual reports. As has been the practice in previous studies. We have also removed firms with negative book equity values. After these filtering procedures, our final sample consists of 70 firms during the time period of 2000-2009. We hand-collect data on board attributes and ownership concentration of individual companies from their respective annual reports for the financial year ending in 1999 or 2000. The source for other control variables is from DataStream. The Seniority of CEO variable is defined as the number of years in the enterprise.

3. Methodology and Empirical Analysis

3.1. The Model Proposed and Definition of Variables

To investigate the relationship between Seniority of the CEO in the enterprise and the debt, we use the following model

$$ANCI\ it = \beta_0 + \beta_1 * L1\ it + \beta_2 * L2it + \beta_3 * TAILL\ it + \beta_4 * AG\ it + \beta_5 Qit + \beta_6 * S\ it + e\ it \quad (1)$$

Where:

ANCI: Seniority of the leader in his duties as C.E.O in the enterprise

L1 : Total debt in book value
L2 : Total debt in market value
TAILL : Firm size
AG : Firm age
Q : Opportunities of growth
S : Structure of asset
e : is the error term.

The equation is to be considered as long run, or equilibrium relation. We may, of course, have more cointegrating relations involving firm size or firm age or opportunities of growth or structure of asset as the dependent variable. Provided all variables involved are integrated of order one, or I (1), valid economic inferences can be drawn only if these relations are cointegrating relations, otherwise spurious inferences would result. Previous studies have examined cointegration on firm by firm basis by using time-series techniques, like Dickey-

Fuller tests, and Johansen's maximum likelihood cointegration methodology. However, given the short span of the data, we need to utilize information in the most efficient way, and make use of panel-based unit root and cointegration tests as well. In our empirical analysis, we will use pure time series tests and procedures as well, for comparison purposes.

Further analysis indicates that the relation between debt yields and the Seniority of C.E.O is not strictly linear but rather as the number of C.E.O years in the enterprise increases, debt costs decrease more rapidly. The evidence is consistent with the idea that large C.E.O Seniority positions reduce executive opportunism and generate incentives for greater managerial effort, However, to the extent that our control variables (e.g., firm size, firm age, structure of asset, etc.) do not fully capture credit risk, both the mitigation of agency problems and other factors inherent in debt pricing may contribute to the non-linear relation between CEO ownership and bond yields.

Our research contributes to the literature in two important ways. First, we document that Seniority of C.E.O influences the cost of debt financing; suggesting that bondholders view managerial equity stakes as an important element in debt pricing. To best of our knowledge, this is the first study that examines the relation between Seniority of C.E.O and the cost of debt financing. Second, we add to the growing literature on the effects of Seniority of C.E.O on corporate activity. Our evidence is generally consistent with the notion that managerial equity holdings are associated with reduced executive shirking and with greater managerial diligence.

Our study offers several contributions to the literature on the managerial entrenchment and corporate governance. We provide comprehensive sample evidence that debt and managerial entrenchment (the Seniority of C.E.O) are negatively related. This finding is contrary to the evidence presented in Garvey and Hanka (1999) and to several of the findings in Berger et al. (1997). We also show that this increased use of debt by entrenched managers is higher with higher ownership by large shareholders. Second, we employ robust econometric estimation techniques and tests that are able to address the concerns of endogenous choice of governance and financial policy. Therefore, we then suggest the following hypothesis:

Hypothesis 1: the debt is positively associated with the Seniority of C.E.O

3.2. The Panel Unit Root and the Panel Cointegration Tests

The empirical results are presented in the following order. First, we examine the stationarity of the relevant series using panel unit root tests. Second, we explore whether there is any long-run relationship between Seniority of the CEO in the enterprise and the debt, using the panel co-integration technique. Third, we test the

validity of the absolute LOP using the FMOLS estimator. Finally, we investigate whether the long-run relationship varies with industry characteristics, such as the degree of product differentiation and market integration

3.2.1. Panel Unit-Root Tests

In recent years, a number of investigators, notably Levin, Lin and Chu (2002), and Im, Pesaran an Shin (2003) have developed panel-based unit root tests that are similar to tests carried out on a single series.

In this section, the estimation results obtained from panel unit root tests and the equation (1) which shows the relationship between of the Seniority of C.E.O and the debt. Table 1.1 and Table 1.2 provide panel unit root tests results for investment and saving variables respectively. In the first Table, the LLC panel unit root tests are given. While the second table provides the IPS panel unit root test results. However, the first differences of these variables are stationary under the test. Hence, we conclude that these six variables are integrated of order 1 or I (1).

Table 1.1. Results of panel unit root test (LLC test)

Statistique	ANCI	L1	L2	Taill	AG	Q	S
Levin-Lin ADF-stat	2,734	-1,603	-2,608	2,130	3,609	-4,721	-0,255

Table 1.2. Results of panel unit root test (IPS test)

Statistique	ANCI	L1	L2	Taill	AG	Q	S
IPS ADF-stat	2,928	-5,331	-14,305	1,568	4,653	-10,168	-1, 173

3.2.2. Panel Cointegration Tests

To determine whether a cointegrating relationship exits, the recently developed methodology proposed by Pedroni (1999) is employed. Basically, it employs four panel statistics and three group panel statistics to test the null hypothesis of no cointegration against the alternative hypothesis of cointegration

These results are also displayed in Table 2. In this case, we see that for the whole period 2000- 2009, results are obtained that are similar to those without time dummies.

The results of the cointegration analysis tests are presented in table 2. Those tests are developed by (Pedroni 1995, 1997, 2001). In this case, we see that for the whole period 2000- 2009, the results of the ADF tests are presented in the same table for the sake of comparison only. From results of Pedroni cointegration tests

we can notice that the whole of statistics are lower than breaking value of normal law for a threshold of 5% (-1,64). The null hypothesis of no co-integration is rejected by all the seven panel statistics, suggesting the series are co-integrated, it can therefore be concluded that there is evidence of cointegration, which means that long-run relationship between of the Seniority of C.E.O and the debt.

Table 2. Results of cointegration test

Statistique	**Panel v-stat**	**Panel rho-stat**	**Panel PP-Stat**	**Panel ADF-stat**	**Rho-stat Group[1]**	**PP-stat Group[1]**	**Stat-ADF Group[1]**
ANCI, L1, L2, TAILL, AG, Q,S	**-3,840**	**10,220**	**-5,450**	**1,567**	**13,814**	**-10,543**	**-4,398**

[1] it acts of the tests based on dimension BETWEEN

3.3 FMOLS and DOLS

When order of integration is decides than for the long run "elasiticities", utilize the FMOLS method. FMOLS was originally designed first time by [Philips and Hansen, (1990); Pedroni, (1995, 2000); and, Philips and Moon, (1999)] to provide optimal estimates of Co-integration regressions (Bum and Jeon, 2005)., we use FMOLS methodology proposed by Phillips (1992) to estimate the idiosyncratic cointegration vectors and the modified FMOLS methodology proposed by Pedroni (2000) to estimate the panel's cointegration vector. FMOLS is superior to OLS when applied to heterogeneous panel with I (1) variables. This technique modifies least squares to account for serial correlation effects and test for the endogeneity in the regressors that result from the existence of a Co-integrating Relationships. Although this non-parametric approach is an elegant way to deal with nuisance parameters, it may be problematic especially in fairly very small samples. To apply the FMOLS for estimating long-run parameters, the condition that there exists a Cointegration relation between a set of I (1) variables is satisfied. There fore we have to confirm the presence of the unit root and test the Co-integrating relation. Standard tests of the presence of the unit root based on the work of Augmented Dicky Fuller (1979, 1981) used to investigate the degree of integration of concerned variables. According to Pedroni, these problems can be marked in heterogeneity presence. For our model estimated cointegrant vectors by FMOLS method is given by (t-student between brackets). The results are shown below:

$$\beta' = \begin{pmatrix} 1 & 3.44 & -1.71 & 1.59 & 65.44 & 0.91 & 6.06 \\ - & (1.79) & (-4.97) & (8.43) & (8.41) & (-9.29) & (9.36) \end{pmatrix}$$

4. Conclusion

In this study, 70 firms were selected by employing panel data in order to test long run relation between the Seniority of the CEO in the enterprise and the debt by using cointegration tests. Firstly, unit root test were applied in order to test series stationarities. After testing unit root of series, cointegration tests were applied. Pedroni cointegration test resulted in that there was not a clear cointegration between series in the long run. The application of LL and IPS unit root tests shows that the whole of statistical series is affected of a unit root. It should be noted that the number of maximum lags is fixed at three. Selection of the numbers of lags is programmed by Pedroni. The checking of non stationary properties for all variables of panel leads us to study the existence of a long run relation between these variables. From results of cointegration tests of Pedroni we can notice that the whole of statistics are lower than the breaking value of normal law for a threshold of 5% (-1.64). So the whole of these tests requires the existence of a cointegration relation.

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