EMPIRICAL ANALYSIS OF DYNAMIC CAPITAL STRUCTURE: PECKING ORDER VS. TRADE OFF

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INTRODUCTION

Many studies have attempted to test the information content of financial decisions made by firms and focused on the factors motivating the choice between debt and equity. Empirical work has shown results inconsistent with the Modigliani and Miller (1958) irrelevance theorem. Reconciliation of theoretical and empirical study in this area has resulted in two major theories of optimal capital structure; the tradeoff theory and the pecking order theory (Myers, 1984). The purpose of the paper is to test the implications of the two theories in a dynamic setting.

The existence of debt financing generates agency costs of debt under informational asymmetry: the stockholders' incentive to take sub-optimal risky projects which transfer wealth from bondholders to stockholders (Jensen and Meckling,1976) and to abandon profitable projects in some future states (Myers, 1977). If debt is used as a valid signal of a more productive firm (Ross, 1977), an increase in the amount of debt may reduce the agency costs associated with informational asymmetry. The tradeoff theory views a manager as trading off the benefits from debt financing against the various costs of debt. The marginal agency cost of debt is regarded as an increasing function of debt in a capital structure. Therefore, a manager, acting as a shareholder value maximizer, should borrow up to the point where the marginal value of the benefits from debt financing including interest tax shields is equal to the marginal cost of debt including agency and financial distress costs. According to the tradeoff theory, mature firms holding mostly tangible assets should borrow more, other things equal, than growing firms with many intangible assets, since the costs of financial distress should be greater for firms with valuable intangible assets and growth opportunities. Barnea, Haugen and Senbet (1981) argue that a firm reaches an optimal capital structure when the costs associated with agency problems are balanced by the benefits associated with different financial contracts in terms of their inherent ability to resolve agency problems and tax exposure.

Another idea is that informational asymmetries between insiders and outsiders introduce incentive problems in financial relationship, making financing and investing dependent on each other. The pecking order theory states that firms prefer internal financing and if external financing is required, they issue the safest security first. The costs generated from asymmetric information are greater for equity than debt. Managers will choose to issue debt when investors undervalue the firm and issue equity when they overvalue the firm. Recognizing this policy of managers, investors will perceive an equity issue as bad news, making the cost of issuing equity higher. If the firm can use internal financing sources or issue low-risk debt, then the cost of asymmetric information can be minimized. If the manager has better information than investors, it is better to issue debt than equity (Myers and Majluf, 1984). That is, firms issue debt first, then possibly hybrid securities such as convertible bonds, then equity as a last resort.

Previous studies provide mixed empirical evidence for the two theories. Evidence in favor of the tradeoff theory includes industry effects of optimal ratios, the negative relation of leverage ratios to intangible assets proxied by research and development expenditures, and mean reversion in debt ratios. Bradley, Jarrel and Kim (1984) find that firms' optimal leverage is inversely related to the expected costs of financial distress and to the amount of non-debt tax shields. They also find the highly significant inverse relation between firm leverage and earnings volatility. Mackie-Mason (1990) provides evidence that firms issue less debt when they have tax loss carry forwards. According to Myers (1993), the most telling evidence against the tradeoff theory is the inverse correlation between profitability and financial leverage. Titman and Wessels (1988) find a significant negative relationship between profitability and debt ratios. Rajan and Zingales (1995) also report some evidence of a negative correlation between profitability and leverage among G7 countries. The negative effect of earnings on leverage is more significant for larger firms. However, the tradeoff theory
predicts the opposite relationship unless profitable firms incur more agency costs than less profitable firms as the debt ratio increases. Titman and Wessels (1988) find no relationship between debt ratios and a firm's expected growth, non-debt tax shields, volatility, or the collateral value of its assets. The pecking order theory suggests

that there is no well-defined optimal capital structure, instead the debt ratio is the result of hierarchical financing over time (Myers,1984). Kester (1986), in his study of debt policy in U.S. and Japanese manufacturing corporations, finds that the return on assets is the most significant explanatory variable for actual debt ratios. MacKie-Mason (1990) asks the question; ``Do firms care who provides their Financing?'' His result suggests that the importance of asymmetric information gives a reason for firms to care about who provides the funds (e.g., between public and private debt) because different fund providers have different access to information about the firm and different ability to monitor firm behavior. This is consistent with the pecking order theory implied by Myers and Majluf (1984) since private debt will require better information about the firm than public debt. Shyam-Sunder and Myers (1999) also report some evidence in favor of the pecking order theory. They show that firms follow the pecking order in their financing decisions.

The limitation of the static capital structure models is that they do not consider the firm's optimal capital structure choices in response to fluctuations in asset values over time. Fischer, Heinkel and Zechner (1989) develop a dynamic tradeoff model in the presence of recapitalization costs. Their model suggests that even small recapitalization costs lead to wide swings in a firm's debt ratio over time and that different firms allow the actual leverage ratio to deviate from the target ratio by different amounts. Therefore, debt ratio observations may not be adequate measures of firms' capital structure policies in a dynamic setting. This study distinguishes itself from previous studies by investigating firms' dynamic capital structure decisions.

When the recapitalization cost is a lump-sum fixed amount, or non-convex function of the size of the adjustment, firms will not adjust even though their current capital structure is not at the optimal level. Firms will wait until the deviation is large enough to adjust the capital structure. Upon the adjustment, the capital structure is reset at the optimal level, and the firm may stay inactive for quite a while before another adjustment becomes necessary. This implies that each firm has an inaction range for recapitalization and the rage may provide important information about the firm's capital structure decision rules. Deviation from the optimal level may come from several sources: taxes, bankruptcy costs, asset value, market condition, investment opportunities, etc. Baker and Wurgler (2002) investigate how equity market timing affects capital structure. Their main results show that fluctuations in market value have very long-run impacts on capital structure. Since each firm comes infrequently to the market, the recapitalization may exhibit dynamics completely different from the results based on static models. Also, the dynamic capital structure decisions will shed light on the importance of adjustment costs in capital structure decisions. This paper examines these issues.

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The rest of the paper proceeds as follows. The hypotheses and methodology are discussed in Section 2. Section 3 describes the data. In Section 4, estimation results are reported with their implications. Concluding remarks are in Section 4.

HYPOTHESES AND METHODOLOGY

The limitation of the static capital structure models is that they do not consider the firm's optimal capital structure choices in response to fluctuations in asset values over time. Therefore debt ratio observations may not be adequate measures of firms' capital structure policies in a dynamic setting. Fischer, Heinkel and Zechner (FHZ, 1989) suggest that the debt ratio range is a more relevant measure of a firm's dynamic debt policy. In the FHZ model, the firm's optimal dynamic capital structure policy depends upon the benefit of debt financing (e.g., a tax advantage), the costs of debt financing (e.g., bankruptcy costs), asset variability, and the size of the costs of recapitalizing. Thus, the FHZ tradeoff model provides the following testable hypothesis:

H1: Firms with large debt ratio ranges have low effective corporate tax rates, high variances of asset value, small asset bases, and low financial distress costs.

Since the pecking order theory states that firms' observed debt ratios are resulting from the hierarchical financing decisions of the firms, we cannot intuitively specify a similar model that explains the cross-sectional variation of debt ratio ranges in terms of firm specific characteristics. However, according to the pecking order theory, debt ratios change when there is an imbalance of internal cash flow, net of dividends, and real investment (Myers, 1993). According to the pecking order theory, the debt ratio rises in deficit years and falls in surplus years (Shyam-Sunder and Myers, 1999). Accordingly, the pecking order theory should predict that firms with wide debt ratio ranges have more net financing needs and high variances of financing needs. Thus, we can specify the following hypothesis about capital structure relevance in terms of the debt ratio range for a firm following dynamic pecking order policy:

H2: Firms with large debt ratio ranges have large financial deficit and high variances of financial deficit.

Based on the above hypotheses, we consider following variables.

Dependent variable (debt ratio range):

$LDRR1_i$ = Difference between the maximum and the minimum debt ratio over the sample period for firm *i*, where the debt ratio is defined as long-term debt divided by total assets.

$LDRR2_i$ = Difference between the maximum and the minimum debt ratio over the sample period for firm *i*, where the debt ratio is defined as long-term debt divided by the market value of the firm's assets: the market value of the firm's assets is defined as the book value of assets minus the book value of equity plus the market value of equity.

$TDRR1_i$ = Difference between the maximum and the minimum debt ratio over the sample period for firm *i*, where the debt ratio is defined as total debt divided by total assets.

$TDRR2_i$ = Difference between the maximum and the minimum debt ratio over the sample period for firm *i*, where the debt ratio is defined as total debt divided by the market value of the firm's assets.

Explanatory variables:

$ASSET_i$ = Average of the logarithm of the market value of assets over the sample period for firm *i* (a proxy for an asset base).

TAX_i = Average of the yearly ratios of reported income tax paid to pre-tax income over the sample period for firm *i* (a proxy for an effective corporate tax rate).

SDA_i = Standard deviation of the logarithm of the ratio of the market value of assets at time *t* to the market value of assets at time *t*-1 over the sample period for firm *i* (a proxy for a variation of asset value): Fischer, Heinkel and Zechner (1989) suggest that there can be a significant nonlinear relationship between leverage ratio range and the standard deviation rate, SDA. Following their approach, I also include the squared standard deviation rate, SDA^2, in the model.

MB_i = Average of the ratios of the market value of assets to their book value (a proxy for financial distress costs): Book values reflect assets-in-place (tangible assets) while market values reflect intangible assets and growth opportunities as well as assets-in-place (Myers, 1984). Therefore firms with high market-to-book assets ratio have higher costs of financial distress (Rajan and Zingales, 1995). The Fischer, Heinkel and Zechner (1989) model implies that high distress cost firms should, on average, have narrower debt ratio ranges than firms with relatively low distress costs.

$MDEF_i$ = Average of the logarithm of financial deficit over the sample period for firm *i*. Financial deficit is defined as $DEF = DIV + X + \Delta W - C$, where DIV = Dividend payments, X = Net capital expenditures, ΔW = Net changes in working capital, C = Operating cash flows after interest and taxes. Positive DEF indicates the firm has financial deficit and require additional financing. Shyam-Sunder and Myers (1999) argues that according to the pecking order theory, the firm will issue debt facing positive DEF and only issue equity as a last resort. On the other hand, Jensen's (1986) free cash flow hypothesis suggests that negative DEF increases free cash flow problems and that effective governance may call for more leverage (Baker and Wurgler, 2002).

$SDEF_i$ = Standard deviation of the logarithm of DEF over the sample period for firm *i*.

DATA

The time period analyzed in this study is from 1981 to 2000. The primary data source consists of the Annual Industrial COMPUSTAT files. Financial firms and regulated utilities are excluded from the sample because these firms have very different capital structures and the financing decisions of these firms may not convey the same information as for non-financial and non-regulated firms.[1] For example, a relatively high leverage ratio is normal for financial firms, but the same high leverage ratio for non-financial firms may indicate a possibility of financial distress. I include firms that have a complete

[1] Financial firms are represented by SIC codes 6000-6799 and utilities are in SIC codes 4800-4999. Accordingly we exclude these industries in our sample.

record over at least 11 consecutive years during the entire sample period for the variables considered in the analysis. In this way, 1536 firms are identified.

The requirements for the data may bias our sample toward relatively large firms. It is also possible that this bias is greater for the tradeoff theory because the cost of new equity financing for relatively high-quality firms can be higher (because of the adverse selection or the wealth transfer from shareholders to bondholders). As pointed out by Shyam-Sunder and Myers (1999), however, these firms are large public firms with mostly investment grade and should have relatively easy access to the debt market. Therefore our sample can mitigate the concern about the liquidity constraints on real investment due to asymmetric information problems, as we assume real investment is exogenously given. Calomiris and Hubbard (1990) show that the allocation of new funds across classes of borrowers can ration funds away from some classes of borrowers who would receive credit in the absence of asymmetric information. Hence, the terms under which intermediary credit is available are key determinants of investment especially for firms lacking easy access to direct credit (Bernanke, 1983).

Table I presents summary statistics on the book value of assets, the market value of equity, long-term debt to asset ratio and total debt to asset ratio for the sample of 1536 firms for the years 1981, 1990 and 2000 as well as the full sample of 25,756 firm-year observations. The debt ratio ranges a minimum of 0 and maximum of .9874 when the debt ratio is defined as long-term debt over total assets. This shows that there is significant variability in firms' debt ratios.

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Table 2 contains summary statistics for proxy variables and their predicted signs according to the pecking order theory and the tradeoff theory. The debt ratio ranges have a mean of .4516 (median = .4377) when the debt ratio is defined as total debt over the market value of assets. This shows that there are significant changes in firms' debt ratios over time. The minimum value of the effective tax rates is -14.189. I identify 9 firms with negative effective tax rates. To deal with these economically unreasonable sample tax rates, I set all the negative tax rates equal zero. All the other proxy variables have reasonable means, medians and bounds.

Table 3 reports OLS estimation results. The estimated coefficients of the tax rates (TAX) are not different from zero for all regressions and those of the asset base (ASSET) are not different from zero when the debt ratio is defined with long-term debt (LDRR1 and LDRR2). However, when the debt ratio is defined with total debt (TDRR1 and TDRR2), the coefficient estimates are negative and significant as predicted. The coefficient estimate for market-to-book asset ratio (MB) has expected negative sign and highly significant for all debt ratio ranges. Market value variability of assets (SDA) is only marginally significant when the debt ratio is defined as total debt over market value of assets. The coefficient estimates for the average and the standard deviation of the logarithm of financial deficit (MDEF and SDEF) are positive and highly significant for all regressions, suggesting that the pecking order is binding force even in the dynamic capital structure setting.

In the OLS regressions, Breusch-Pagan tests for homoskedasticity indicate the presence of heteroskedasticity. To correct for the heteroskedasticity, we use maximum likelihood (ML) estimation procedure based on the assumption that the errors are conditionally normal. Analysis of the OLS residuals reveals that the error variance is related to SDA, SDA^2 and ASSET. Accordingly, we assume multiplicative heteroskedasticity as follows:

$$e^2 = \text{Exp}(a + b_1 SDA + b_2\, SDA^2 + b_3 ASSET)$$

The ML estimation procedure involves deriving first derivatives of the log-likelihood function with respect to the mean equation parameters and the variance equation parameters. A quasi-Newton method for nonlinear optimization is employed to estimate the parameters simultaneously.

The estimation results are shown in Table 4. When we define the debt ratio as long-term debt over total assets (LDRR1), the coefficient estimates of the market-to-book asset ratio (MB) and the standard deviation of the market value of assets (SDA) are not different from zero. For all other regressions, the results show that the asset base (ASSET), MB and SDA are important determinants of firms' debt ratio ranges, as predicted by the Fischer, Heinkel and Zechner (1989) model. However, the effective tax rate (TAX) does not have significant effects on debt ratio ranges. This result casts a doubt on the importance of tax benefits of debt financing in making dynamic capital structure decisions.

Both of the average and standard deviation of financial deficit (MDEF and SDEF) have positive and highly significant coefficient estimates as predicted by the hypothesis of dynamic pecking order capital structure. Pecking order appears to be an important consideration in making dynamic capital structure decisions. The results suggest that firms with greater financial needs and with higher variability in their financial needs are more likely to have wider range of debt ratio.

CONCLUSION

The paper investigates implications of the tradeoff theory and the pecking order theory under a dynamic setting. While the results are in favor of the pecking order theory, they are also consistent with the dynamic tradeoff theory. In particular, we find that firms with greater financial needs and with higher variability in their financial needs are associated with wider range of debt ratio. This is consistent with the pecking order theory because it predicts that firms follow pecking order as financing needs arise which implies that firms are more likely have wide debt ratio range with variable financing needs. We further find that firms with wide debt ratio ranges tend to have, on average, smaller asset base, market-to-book asset ratio and a larger standard deviation of asset values than firms with narrow debt ratio ranges. Therefore, the tradeoff theory captures a significant portion of variations in debt ratio ranges. This finding is consistent with the Fischer, Heinkel and Zechner (1989) model in which a firm's optimal dynamic capital structure policy depends upon the benefit of debt financing, costs of debt financing, asset variability, and the size of the costs of recapitalizing.

Overall evidence supports both the pecking order theory and the tradeoff theory of dynamic capital structure. It seems reasonable to regard the theories as "complementary" rather than "competing" ones.

Table 1 . Summary Statistics for Selected Variables

The sample consists of 25,756 firm-year observations and the time period is 1981 through 2000. Our primary data source consists of the Annual Industrial COMPUSTAT files. The sample include firms that have at least $3 million of assets as of 2000, a complete record of variables over at least 11 years in the COMPUSTAT. Market value of equity is total number of shares outstanding times closing price as of the last day of the fiscal year.

	Mean	Median	Minimum	Maximum	Standard Deviation
Book value of total Assets ($ million)					
1981	878.17	120.63	3.08	62931.10	2993
1990	1191.25	133.75	3.28	106431.00	5050
2000	3161.03	505.67	3.39	149000.00	9183
1981-2000	1441.29	167.62	3.00	149000.00	5372
Market value of equity ($ million)					
1981	502.82	68.45	2.00	33686.72	1782
1990	941.89	76.61	2.10	64567.18	3843
2000	5395.68	285.38	2.17	301240.00	23190
1981-2000	1719.45	122.14	2.00	301240.2	9315
Total debt / Total Assets					
1981	0.2465	0.2293	0.0017	0.8821	0.1536
1990	0.2769	0.2508	0.0004	0.9462	0.1859
2000	0.2764	0.2687	0.0001	0.9823	0.1799
1981-2000	0.2594	0.2384	0.0001	0.9984	0.1765
Long-term debt / Total assets					
1981	0.1904	0.1745	0	0.8734	0.1381
1990	0.2045	0.1817	0	0.8886	0.1661
2000	0.2144	0.1956	0	0.9793	0.1720
1981-2000	0.1982	0.1714	0	0.9874	0.1617

Table 2. Summary Statistics for Proxy Variables

The sample consists of 1536 firms with at least 11 years of relevant Compustat data for 1981-2000. Dependent variables are debt ration ranges based on: long-term debt divided by total assets (LDRR1); long-term debt divided by the market value of the firm's assets (LDRR2); total debt divided by total assets (TDRR1); total debt divided by the market value of the firm's assets. Independent variables are defined as follows (TDRR2). Independent variables are: ASSET = Average of the logarithm of the market value of assets over the sample period; TAX = Average of the yearly ratios of reported income tax to pre-tax income over the sample period; SDA = Standard deviation of the logarithm of the ratio of the market value of assets at time *t* to the market value of assets at time *t*-1 over the sample period; MB = Average of the ratios of the market value of assets to their book value; MDEF = Average of the logarithm of financial deficit defined as DEF = DIV+ X + ΔW- C, where DIV = Dividend payments, X = Net capital expenditures, ΔW = Net changes in working capital, C = Operating cash flows after interest and taxes. In the parentheses are p-values of t-statistics; SDEF = Standard deviation of DEF.

Variables	Predicted Signs		Mean	Median	Minimum	Maximum	Standard Deviation
	Pecking order	Tradeoff					
LDRR1			0.3286	0.2947	0	0.9565	0.1781
LDRR2			0.3853	0.3691	0	0.9030	0.2060
TDRR1			0.3694	0.3346	0.0196	0.9408	0.1786
TDRR2			0.4516	0.4377	0.0140	0.9921	0.2067
ASSET		-	5.1553	5.0133	1.5554	11.3336	1.8665
TAX		-	0.3228	0.2396	-14.189	73.2319	2.1401
SDA		+	0.8172	0.7228	0.1168	2.8989	0.4545
MB		-	1.3831	1.1479	0.2434	15.7527	0.8886
MDEF	+		-2.9489	-2.9304	-8.6478	-0.5068	0.7267
SDEF	+		1.2437	1.1601	0.1091	12.8133	0.6712

Table 3. OLS Estimation Results

Coefficient estimation results are reported from the OLS estimation. The sample consists of 1536 firms with at least 11 years of relevant Compustat data for 1981-2000. Dependent variables are debt ration ranges based on: long-term debt divided by total assets (LDRR1); long-term debt divided by the market value of the firm's assets (LDRR2); total debt divided by total assets (TDRR1); total debt divided by the market value of the firm's assets. Independent variables are defined as follows (TDRR2). Independent variables are: ASSET = Average of the logarithm of the market value of assets over the sample period; TAX = Average of the yearly ratios of reported income tax to pre-tax income over the sample period; SDA = Standard deviation of the logarithm of the ratio of the market value of assets at time *t* to the market value of assets at time *t*-1 over the sample period; MB = Average of the ratios of the market value of assets to their book value; MDEF = Average of the logarithm of financial deficit defined as DEF = DIV+ X + ΔW- C, where DIV = Dividend payments, X = Net capital expenditures, ΔW = Net changes in working capital, C = Operating cash flows after interest and taxes. In the parentheses are p-values of t-statistics; SDEF = Standard deviation of DEF. B-P represents the Breusch-Pagan test statistics which have chi-square distributions with 7 degrees of freedom under the null hypothesis of Homoskedasticity.

Variables	LDRR1	LDRR2	TDRR1	TDRR2
Constant	0.5892	0.7108	0.6572	0.8776
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ASSET	-0.0019	-0.0016	-0.0084	-0.0090
	(0.2260)	(0.2828)	(0.0000)	(0.0000)
TAX	-0.0003	0.0013	-0.0005	0.0004
	(0.4325)	(0.2532)	(0.4031)	(0.4251)
MB	-0.0133	-0.0974	-0.0088	-0.1018
	(0.0034)	(0.0000)	(0.0312)	(0.0000)
SDA	-0.0057	0.0222	0.0420	0.0323
	(0.2549)	(0.2862)	(0.0941)	(0.1972)
SDA^2	-0.0101	-0.0032	-0.0085	-0.1033
	(0.2501)	(0.4251)	(0.2796)	(0.2607)
MDEF	0.0942	0.0844	0.1047	1036
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SDEF	0.0328	0.0027	0.0397	-0.0397
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
R-square	0.1345	0.2099	0.2008	0.2696
B-P	55.41	73.58	42.83	73.93

Table 4. Maximum Likelihood Estimation Results with Multiplicative Heteroskedesticity

Maximum Likelihood Estimation Results are reported. The error term are corrected with multiplicative heteroskedesticity: $e^2 = \text{Exp}(a + b_1\text{SDA} + b_2\ \text{SDA}^2 + b_3\text{ASSET})$. The sample consists of 1536 firms with at least 11 years of relevant Compustat data for 1981-2000. Dependent variables are debt ration ranges based on: long-term debt divided by total assets (LDRR1); long-term debt divided by the market value of the firm's assets (LDRR2); total debt divided by total assets (TDRR1); total debt divided by the market value of the firm's assets. Independent variables are defined as follows (TDRR2). Independent variables are: ASSET = Logarithm of average of the market value of assets over the sample period; TAX = Average of the yearly ratios of reported income tax to pre-tax income over the sample period. SDA = Standard deviation of the logarithm of the ratio of the market value of assets at time *t* to the market value of assets at time *t*-1 over the sample period; MB = Average of the ratios of the market value of assets to their book value; SDEF = Standard deviation of the logarithm of financial deficit defined as DEF = DIV+ X + ΔW- C, where DIV = Dividend payments, X = Net capital expenditures, ΔW = Net changes in working capital, C = Operating cash flows after interest and taxes. In the parentheses are p-values of t-statistics; SDEF = Standard deviation of DEF. In the parentheses are p-values of t-statistics.

Variables	LDRR1	LDRR2	TDRR1	TDRR2
Constant	0.6011	0.5185	0.6537	0.8899
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ASSET	-0.0057	-0.0072	-0.00499	-0.0105
	(0.0080)	(0.0048)	(0.0000)	(0.0000)
TAX	-0.0002	-0.0015	-0.0003	-0.0006
	(0.4635)	(0.2532)	(0.4340)	(0.4845)
MB	-0.0146	-0.0873	-0.0086	-0.1054
	(0.3338)	(0.0000)	(0.0382)	(0.0000)
SDA	0.0026	0.0641	0.0451	0.0389
	(0.4699)	(0.0492)	(0.0812)	(0.0948)
SDA^2	-0.0005	-0.0127	-0.0082	-0.0126
	(0.2851)	(0.2301)	(0.2788)	(0.2207)
MDEF	0.0912	0.0844	0.1020	0.1046
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SDEF	0.0317	0.0256	0.0396	0.0397
	(0.0000)	(0.0013)	(0.0000)	(0.0000)

REFERENCES

Baker, Malcolm and Jeffrey Wurgler, 2002, "Market timing and capital structure," Journal of Finance 57, 1-32.

Barclay, M.J. and C.W. Smith, JR., 1995, "The Maturity structure of corporate debt," Journal of Finance 50, 609-631.

Barnea, A., R.A. Haugen and L.W. Senbet, 1980, "A rationale for debt maturity structure and call provisions in the agency theoretic framework," Journal of Finance 35, 1223-1234.

Barnea, A., R.A. Haugen and L.W. Senbet, 1981, "Market Imperfections, Agency Problems, and Capital Structure: A Review," Financial Management, Summer, 7-22.

Bernanke, B., 1983, "Non-Monetary Effects of the financial Crisis in the Propagation of the Great Depression," American Economic Review 73, 257-276.

Calomiris, C.W. Hubbard, R.G., 1990, "Firm Heterogeneity, Internal Finance and Credit Rationing," Economic Journal, 100, 90-104.

Fischer, E.O., R. Heinkel, and J. Zechner, 1989, "Dynamic Capital Structure Choice: Theory and Tests," Journal of Finance 44, 19-41.

Jensen, Michael, 1986, "The agency cost of free cash flow, corporate finance, and takeovers," American Economic Review 76, 323-329.

Jensen, M.C. and W.H. Meckling, 1976, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," Journal of Financial Economics 3, 305-360.

Kester, W.C., 1986, "Capital and Ownership Structure: A Comparison of United States and Japanese Manufacturing Corporations," Financial Management 15, 5-16.

MacKie-Mason, J.K., 1990, "Do Taxes Affect Corporate Financing Decisions?" Journal of Finance 45, 1471-1494.

Modigliani, F. and M. Miller, 1958, "The Cost of Capital, Corporation Finance and the Theory of Investment," American Economic Review 53, 261-297.

Myers, S.C., 1977, "Determinants of Corporate Borrowing," Journal of Financial Economics 5, 147-175.

Myers, S.C., 1984, "The Capital Structure Puzzle," Journal of Finance 39, 575-592.

Myers, S.C., 1993, "Still Searching for Optimal Capital Structure," Journal of Applied Corporate Finance 39, 4-14.

Myers, S.C. and N.S. Majluf, 1984, "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have," Journal of Financial Economics 13, 187-221.

Rajan, R.G. and L. Zingales, 1995, "What Do We Know about Capital Structure? Some Evidence from International Data," Journal of Finance 50, 1421-1460.

Ross, S.A., 1977, "The Determination of Financial Structure: the Incentive-Signaling Approach," The Bell Journal of Economics, 23-40.

Shyam-Sunder, L. and S.C. Myers, 1999, "Testing Static Trade-Off against Pecking Order Models of Capital Structure," Journal of Financial Economics 51, 219-244.

Titman, S. and R. Wessels, 1988, "The Determinants of Capital Structure Choice," Journal of Finance 43, 1-19.