

Full Length Research Paper

# Stock market development and financing decisions of listed firms in Ghana

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The study examines the impact of stock market development on the financing choices of listed firms in Ghana using data covering the period 1991 to 2005. We regressed debt-equity ratios on market size and market liquidity variables using ARIMA models. Our results suggest that stock market development has not led to the substitution of equity for debt as per propositions by Demiguc-Kunt and Maksimovic (1996). Further, our results suggest market liquidity variables show mixed impact on the debt-equity proportions suggesting that the size of the Ghanaian stock market is not yet significant to impact on financing choices of firms on the exchange. Short-term debt was found to be significantly negatively related to the market size variable and turnover ratio (a measure of market liquidity), but insignificantly positively related to the other measure of market liquidity. Further, research on the openness of the macro-economy, and the entire financial market spectrum's development could put these results in a proper context.

**Key words:** Stock market, choice of financing, Ghana.

## INTRODUCTION

The financing choice of firms is perhaps the most researched topic area in finance in the past decades following the seminal article of Modigliani and Miller (1958) which raised the issue of the relationship between a firm's choice of finance and its value. Today there are still increasing research and new evidence being sought for the relevance or otherwise of the theory started by Modigliani and Miller. The theorem hinges on the principle of perfect capital markets. Empiricists have found various evidences for some level of imperfection in capital markets in the real world.

Even though there is no universally accepted theory explaining the debt-equity choice, there are several theories that have emerged in the last couple of decades explaining firms' capital structure. Among these theories include the pecking order theory, the free cash flow theory, the capital signaling theory and the trade-off theory. The trade-off theory of corporate financing is built around the concept of target capital structure that ba-

lances various costs and benefits of debt and equity (Modigliani and Miller, 1963; Mayers, 1990; Hovakimian et al., 2004). The pecking order theory on the other hand conceives the capital choice decision as one of making a scale of preference. The first source is internally generated funds, then debt and then equity depending on the funds requirements and other factors (Myers and Majluf, 1984).

The Ghanaian stock market has been around for close to two decades. The creation of the Ghana Stock Exchange was part of the recommendations of the economic reforms carried out in the 1980s to generate sustainable economic growth and development. As Boateng (2004) observes, after many years of experiment with heavy state intervention in the economy, a consensus emerged that the achievement of a more dynamic economic growth required a greater role for the private sector and stock markets are good levers for boosting private sector access to finance. The dynamism of an economy can be boosted by developments in the financial market as the principal intermediation function provided by financial market participants has significance for lubricating the pace of economic activity in the economy. Financial markets also play a crucial role of distributing resources

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and directing it towards the sectors of the economy that need it. This process talks about the allocative efficiency of financial markets.

A number of studies have considered the impact of financial market development on economic growth. There is evidence of a positive impact of financial market development on the economic performance of an economy as provided by Levine (1997). Shahbaz et al. (2008) using ARDL found a strong relationship between stock market development, for one, and economic growth both in the long-run and the short-run. The authors, indeed, observe that the relationship is bi-directional in the long-run but uni-directional (from stock market to economic growth) in the short-run. Earlier in King and Levine (1993), the authors found that financial intermediaries can improve the allocative efficiency of investment due to their capacity to effectively acquire and process information about the innovative activities of business people. The most widely used measure of financial development pertains to the level of financial intermediation, which measures the effect of financing institutions such as banks. Agarwal and Mohtadi (2004) find evidence in support of the fact that banking increases the use of leverage in developing countries. The developments in financial markets of most developing countries had financial liberalization as a precursor. Countries such as Ghana, Zimbabwe and a number of sub-Saharan African countries have experimented with financial liberalization and this has brought about significant developments in their financial systems. The Zimbabwean example has been found to have opened up the capital markets and improved transparency of firm financing behaviour (Mutenheri and Green, 2003).

In developed financial markets, and increasingly in developing financial markets, stock markets are taking center stage in financial markets. It has been argued that stock markets stimulate investments because as organized markets, they recognize and fund productive projects that lead to economic growth and ensure proficient allocation of capital (Caporale et al., 2004). A study conducted by Mutenheri and Green (2003) on the Zimbabwean economy showed that the difference between pre-reform and post-reform era in the country's financial systems suggest that the reform achieved partial success in opening up the capital market and improving the transparency of firm financing behaviour.

A theoretical explanation of stock market development influencing the choice of finance by firms can be found in the arguments of Booth et al (2001) that as equity markets become more developed they would become a viable option for corporate financing. This would be the case because in developing countries the banking sector is the main source of debt and which is far developed than the stock markets in these countries. Organized exchanges would influence the process, also, because they provide liquidity for financial assets, and by making risk diversification possible (Shahbaz et al., 2008; Osei,

2005). The study of Genenc (2003) provides empirical evidence that stock market activities along with firm characteristics and other variables determine the capital structure of Turkish firms.

Further, Booth et al. (2001) in their study, note that although some of the insights of modern finance theory are applicable across countries, much remains to be done to understand the impact of different institutional features on capital structure. This question, however, had been answered in an earlier observation. Mayer (1990) noted that financial decisions in developing countries are somehow different even though he did not indicate the effect of institutional variables in causing the difference. In terms of financing choice behaviour Demiguc-Kunt and Maksimovic (1999) showed that developing countries have substantially lower amounts of long-term debt; but whether this is a result of institutional factors or not is not directly stated in the study. In Ghana, Aboagye (1996) in a study on corporate debt levels did not find any correlation between debt ratios and return on equity for public companies, which gives an indication that Demiguc-Kunt and Maksimovic's (1999) observation is not far fetched.

In terms of cross-country capital structure differences, Ramamurti and Vernon (1991) found significant variations in capital structures among emerging market economy firms to suggest not only that financing choice is different between developed and developing countries, but also that it varies within the developing countries. These factors suggest that different economic environments and institutional factors have influence on the choice or mix of debt and equity for firms. Therefore, difference in capital market developments, influences the choice of financing by firms. A number of studies have investigated the capital structure choice in Ghana (Abor and Biekpe, 2004; Boateng, 2004) among others. Whilst Abor and Biekpe looked at the capital structure of listed firms, Boateng investigated the capital structures of international joint ventures in Ghana. An investigation of the role of debt in the balance sheets of Ghanaian firms was conducted by Aboagye (1996). Aboagye's study concentrated on public firms and therefore included firms listed on the Ghana Stock Exchange.

These studies have all sought to find the characteristics that influence capital structure choice and the role of debt finance and its relationship with other balance sheet variables such as profitability in Ghanaian firms. These studies did not, however, consider the role of the development of the stock market on the financing choice of listed firms in the country. It is against this background that this current study is being conducted using Ghana as a case study. The study specifically sought to document the impact of stock market development on the financing choices of firms listed on the Ghana Stock Exchange. The rest of the paper is organized as follows; section two examines literature on the impact of stock market development on financing decisions of firms, section three considers the methodology used in the study.

Section four discusses the results and presents the conclusions of the study.

### Literature review

The Modigliani-Miller theorem's central assumption is perfect capital markets hypothesis but the reality of life is that capital markets are not always perfect. This leads to the idea that the contexts in which market participants operate have implications for financing decisions. In effect, not only do firm level characteristics noted above have implications for the capital structure of the firm, but also the developments of capital markets. Demiguc-Kunt and Maksimovic (1996) has four arguments as to the consequences of stock market development for financing choice of firms: 1.) stock market development leads to substitution of outside equity, through public offerings or stock exchange listing, for debt. The effect would be a decline in the debt-equity ratio hence stock market development has a negative effect for debt use. 2.) Closely held firms (family owned firms for example) would do public offering to substitute inside equity for outside equity; thus, there would be no change in the debt-equity ratio. Therefore stock market development would have no effect on debt-equity ratio, 3.) stock market development would create opportunities for new diversification ability which would be used by firms to expand, through debt or equity issue. The direction of effect of stock market development on leverage would then depend on the financing choice made; and, 4) stock market development would lead to the flow of information, which would improve corporate governance and also lower cost of raising capital – debt or equity – leaving open the question of whether debt-equity ratio would be impacted negatively or positively by stock market development.

In the study of Booth et al. (2001) they concluded that capital structure in developing countries are affected by the same variables as in developed countries but remark that the country differences they observed was attributable to differences in institutional features. The organization of financial markets is the institutional features mentioned here, as developing countries have less developed trading systems on their stock exchanges compared with what pertains in more developed financial markets. In this regard, Demiguc-Kunt and Maksimovic (1996) noted that country characteristics such as efficiency of legal institutions and the development of capital markets are important in explaining differences in firms' capital structures. This is corroborated by Genenc (2003) who found that in the Turkish economy institutions, governmental actions, and stock market activities determine capital structures.

Other institutional features including the nature of the relationship between the financial institutions and business that need finance affect the financing decisions of firms. The literature has two strands of these features: the Anglo-Saxon capital markets model and the Conti-

mental-German- Japanese model (Booth et al., 2001). In the former, the connection between financial institutions and business are unlike the latter where banks and corporations are tightly linked resulting in differences in the capital market's influence on borrowing behaviour. The Ghanaian stock market is based on the Anglo-Saxon model.

So, with respect to capital market development, Subrahmanyam and Titman (1999) proffer another theoretical argument of how stock market development impacts financing choices of firms. The authors argue that when the stock market consists of a relatively smaller number of firms, the information conveyed by the public is less accurate, discouraging firms from taking advantage of public financing but as the stock market improves, and information quality improves, it increases the incentives for firms to go public. The evidence available of financial market development influence on choices of capital suggest financial liberalization has a negative influence on debt-to- equity ratios (Schmukler and Vesperoni, 2001) which supports an earlier conclusion by Demiguc - Kunt and Maksimovic (1996) that there was a negative correlation between long-term debt of firms in developing countries. The authors are also of the opinion that financial liberalization leads to shifts in maturity from long-term debt to short-term debt. The evidence thus explains the flight to short-term bank financing noted in Mutenheri and Green (2003) in their study of listed companies in Zimbabwe. Mutenheri and Green (2003) provide evidence that in Zimbabwe firms relied heavily on external finance especially short-term bank financing after the reforms of the country's financial system.

Another evidence is provided by Subrahmanyam and Titman (1999) who observed that the smaller the number of firms on the stock market the less accurate the information conveyed by stock market to the public which discourages private firms from going public but as the stock market improves, the information conveyed improves, and private firms are encouraged to go public. This observation in conjunction with the findings of Demiguc-Kunt and Maksimovic (1996) and Agarwal and Mohtadi (2004) leads to the expectations that as the stock market develops, firms would prefer equity financing to debt financing.

The indicators of the stock market development or performance are market capitalization, volume of shares traded, and the turnover ratio (Agarwal and Mohtadi, 2004; Demiguc-Kunt and Maksimovic, 1996). In studies into market liquidity and asset prices, turnover ratio is a measure of market liquidity (Keene and Pederson, 2007; Naes and Odegaard, 2008) . Volume of shares traded is important because as Booth et al. (2001), noted, if a large amount of equity is not traded it can be inhibiting to corporate financing as a small amount is traded. The authors are also of the opinion that volume of transactions is equally as important as market capitalization. The volume of shares traded also indicates liquidity on the

stock market (Demiguc-Kunt and Maksimovic's measurement of stock market development). At the same, this variable also measures transaction cost on the exchange. As an exchange develops and achieves greater efficiency, this should follow leading to more investors turn to the market, and more corporations being attracted to list.

The argument tested in this study from the arguments of Demiguc-Kunt and Maksimovic (1996) is that, as stock markets develop, firms would substitute outside equity through public offerings for debt hence a negative relationship. The other arguments are borne in mind but not taken because the firms on the Ghanaian stock market do not issue debt instruments of their own. Furthermore, the other arguments are not considered because of Demiguc-Kunt and Maksimovic's (1996) empirical evidence that if stock market liquidity quadruples, debt-equity ratios decrease by 25%, which suggests that there could be debt substitution for equity as stock markets develop.

**Model**

Demiguc-Kunt and Maksimovic (1999) provide a number of metrics for measuring the development of stock markets. Variable measurements relating to stock market development follows their metrics. Agarwal and Mohtadi (2004) model the relationship between financial market development and capital structure decisions as follows:

**Model 1:**  $D_{it} = \beta * X_{it} + \delta_i + \gamma_t + \varepsilon_{it}$

**Model 2:**  $D_{it} = \alpha D_{it-1} + \beta * X_{it} + \delta_i + \gamma_t + \varepsilon_{it}$

Where subscripts i and t, represent the firm and time respectively, and  $\delta_i$ ,  $\gamma_t$ , and  $\varepsilon_{it}$  represent the firm specific effects, time specific effects and the stochastic term in the equation. D in both models refers to the debt-equity ratio, and X is a vector variable including stock market development indicator in model 1 and with banking sector variables in model 2. The lagged D in model 2 is supposed to measure the hypothesis that firms aim for a target level of capital structure. All these models used only long-term debt as the main basis of measuring the leverage use over the period of development of the stock market. From the foregoing the models below are derived. The first equation is to test the effect that as the market develops, firms rely on short-term financing (Mutenheri and Green, 2003) and the negative correlation found between stock market development and short-term Agarwal and Mohtadi (2004), Demiguc- Kunt and Maksimovic (1996, 1999) and Schmukler and Vesperoni (2001).

$STDE_t = \alpha_t + \beta_1 * MCAP_t + \beta_2 * STRD_t + \beta_3 TR_t + \varepsilon_t$   
 ..... (1)

$LTDE_t = \alpha_t + \beta_4 * MCAP_t + \beta_5 * STRD_t + \beta_6 TR_t + \varepsilon_t$   
 ..... (2)

debt by Demiguc-Kunt and Maksimovic (1996). The second equation would test for the long-term debt part of capital structure decision in line with the findings of

Where:

- LTDE = long-term debt to equity at time t
- STDE = short-term debt to equity at time t
- MCAP = market capitalization/GDP at time t
- STRD = market value of shares traded/GDP at time t
- TR = turnover ratio at time t
- = constant in each equation stated
- above = error term

**Data and variables**

Whilst the studies of Agarwal and Mohtadi (2004) looked at both the banking sector and the equity market, this study concentrates on only the development of the equity market and its influence on the choice of financing of listed firms. The banking sector has been the mainstay of sources of finance for Ghanaian firms prior to the arrival of the stock exchange. The GDP data used are nominal values instead of real GDP because market capitalization and value of shares traded are all reported in nominal values.

In a large part, the measurement of leverage variables follows that of Agarwal and Mohtadi (2004). Both long-term debt to equity and short-term debt to equity are measured as liabilities over shareholders fund (equity) – an aggregation of these values for all firms on the market is used. Debt and equity are both book values rather than market values because the firms on the exchange have not been issuing debt instruments except one firm – HFC Bank (a financial institution). Even though the market value of equity could be determined it is not used because the comparison of book value of debt to market value of equity is not theoretically sound.

Turnover ratio is defined as the total value of shares traded divided by the market value of shares listed on the exchange. This is a proxy for transaction cost on the exchange (Agarwal and Mohtadi, 2004) and compliments total values of shares traded as a ratio of GDP. It also measures the liquidity of the market. The lower the transaction cost the more preferable the stock market would become in raising funds. Market capitalization as a ratio of GDP seeks to measure the market size and it assumes that the market size measures the market's ability to mobilize capital hence the negative relationship with debt finance.

Time series data was used for this study. The Ghana Stock Exchange Fact-book for the period 1991 to 2005

**Table 1.** Descriptive Summary Statistics.

	<b>Obs</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Min</b>	<b>Max</b>
<b>MCAP</b>	15	0.2895	0.3497	0.0115	1.2411
<b>STRD</b>	15	0.0044	0.0039	0.000	0.0141
<b>TR</b>	15	0.0208	0.0158	0.0035	0.0519
<b>STDE</b>	15	41.4279	88.2127	0.7289	311.2011
<b>LTDE</b>	15	0.2895	0.3497	0.0115	1.2411

was used, coupled with GDP data from the State of the Ghanaian Economy published by the Institute of Statistical, Social and Economic Research, ISSER annually. The variables provided in the annual statements of companies for each year was extracted for the various years for the purpose of this study from the GSE Fact-book, which was easier and more reliable than collecting the data directly from the financial statements of each company. The accounting data used in this study were extracted from the figures reported and published in the Ghana Stock Exchange Fact-book for the various years. Data on the macroeconomic variables were extracted from various editions of the State of the Ghanaian Economy published by the Institute of Statistical, Social and Economic Research, ISSER.

### Robustness checks

To ensure that regression results were not spurious, non-stationarity was tested for. Series stationarity is essential to avoid spurious correlation. The Dickey- Fuller Generalized Least Squares approach of Elliot, Rothenberg, and Stock (1996) unit root test was conducted to determine the presence of unit roots in all the series of the study. The presence of unit roots indicates that the series is integrated; that is, the moments of the stochastic process depend on time. The test for unit root is thus essential because ordinary least squares regression relies on the series being stationary – absence of unit roots. Using time series data, this was an important test to ensure that robust results were obtained. The null hypothesis of the Dickey- Fuller test is that there is a unit root, otherwise there is no unit root or the series is stationary. The test results are presented in Table 2 in the appendix. The results show that there were unit roots in TR, and STRD. The series had therefore to be differenced as differencing eliminates unit roots.

Having established that there was unit root in the TR and STRD series, both the STDE and LTDE equations were estimated using a first order difference of these series. The Breusch-Godfrey LM Test indicated that there was serial autocorrelation in the regression after the transformation. Given this result, an ARIMA with first order auto-regression and two year moving average component to achieve covariance stationarity and avoid autocorrelation effects. Results reported for the both models

are reported on the results obtained from ARIMA estimation.

### ANALYSIS OF RESULTS

The appendix provides the results of unit root tests, and correlation matrix between the variables. Table 1 here presents the summary statistics of data used in the study.

MCAP is a measure of market size, STRD measures liquidity on the stock market, and TR is a measure of a proxy for transaction cost. STDE is a measure of short term debt to equity and LTDE is a measure of long term debt to equity, all measures are in terms of book values of debt and equity.

Table 1 reports the mean and standard deviation of all the variables over the sample period. It also reports the minimum and maximum score of both the dependent and the independent variables. The mean score for market capitalization to GDP is 0.2895 with minimum and maximum values of 0.0115 and 1.2411 respectively. The standard deviation of 0.3497 accounted for the variation between the minimum and maximum values noted earlier. Market value of shares traded to GDP registers an average score of 0.0044 with little variation as shown by the standard deviation of 0.0039 and a minimum and maximum score of 0.0000 and 0.0141 respectively. Turn-over ratio has a mean value of 0.0208 with a standard deviation of 0.0158. It also registers a minimum value of 0.0035 and 0.051 for the maximum value. Short term debt to equity on the average is 41.4279. It registers the largest variation over the period with a standard deviation of 88.2127. Long term debt to equity also registers a mean score of 0.2895 with a minimum and maximum score of 0.0115 and 1.2411 respectively. There is also variation in this variable as evidenced by the standard deviation of 0.3497.

### Long term debt

The results obtained for the long-term debt to equity and short term debt to equity as presented in Table 2. The above results show that market capitalization even though showing a negative coefficient as predicted, the coefficient was not significant. Total share traded, however, shows a negative and statistically significant coefficient and thus sup-

**Table 2.** White Heteroskedasticity-Consistent Standard Errors and Covariance Results.

	Long term debt to equity	Short term debt to equity
MCAP	-0.0441 (-0.9871)	-2.7658 (-2.2135)***
D(STRD)	-4.0902 (-4.4239)**	15.9821 (0.7920)
D(TR)	0.6905 (2.7753)***	-17.8011 (-2.5658)**
AR(1)	1.0214 (102.3148)	1.0264 (68.0169)
MA(2)	-0.9731 (-28.9649)	-0.9799 (-3132.649)
R-squared	0.8644	0.8496
Adjusted R-squared	0.7965	0.7744
S.E. of regression	0.0152	0.4613
Sum squared resid	0.0018	1.7023
Log likelihood	39.1670	-5.2319
Durbin-Watson stat	1.9829	1.7289
Inverted AR roots	1.02	1.03
Inverted MA Roots	0.99	0.99

**Notes:** All regressions include a constant. T-statistics are in parentheses. \*\*\* \*\* \* means significant at 10, 5 and 1% level of significance respectively.

supports the hypothesis that there is negative correlation between stock market trading volume and the choice of debt over equity. Turnover ratio also shows a significant coefficient but rather it has a positive coefficient not a negative coefficient as expected. The F -Statistic p-value as reported above shows that the model is significant and the Durbin-Watson statistic confirms the absence of serial correlation in the transformed series. The R-squared and the adjusted R-square are equally high to show a significant explanatory power of the equation.

### Short term debt

The result obtained in the case of the short term debt equation indicates the following. The regression is significant as evidenced by the p-value of the F-statistic and the values of R-squared and adjusted R-square are equally significant. With respect to the explanatory variables, MCAP has a negative coefficient, contrary to expectation and significant only at 10% level of significance. Further, turnover ratio is found to be significant at 5% level of significance and negative, also contrary to expectation. However, STRD has a positive coefficient that is not significant.

### DISCUSSION AND CONCLUSIONS

The results obtained above needs to be looked at in the light of available evidence from other studies to bring out the implications of the current study and the conclusions drawn from this study. We take, first, the long-debt results. Market capitalization as a ratio of GDP seeks to measure the stock market size and it assumes that the market size measures its ability to mobilize capital hence the negative relationship with debt finance. The present

results show that the market capitalization to GDP ratio has an insignificant relationship to debt-equity ratio. Casting this result in the frame of the first argument for stock market development implications for equity choice proffered by Demiguc-Kunt and Maksimovic (1996), that stock market development leads to substitution of outside equity, through public offerings or stock exchange listing for debt, it suggests that this has not been the case in the Ghanaian stock market over the period studied. Ownership structure, even though not directly studied in this instance, may be at play.

However, this could also be symptoms of the development stage of the market given the period of over which the stock market has been in existence to date. Other evidence provided by Demiguc-Kunt and Maksimovic (1996) was that when a less-developed market doubled in size, there would be an initial increase in debt-equity ratios before a decrease of 25% in debt- equity when the size quadruples. Perhaps, the size of the Ghanaian stock market is not yet significant to impact on financing choices of firms on the exchange. Nonetheless, the complimentary factor to market liquidity and turnover ratio, showed a positive and significant relation which could be reflective of the initial change in size effect provided by the authors. The authors also offer a third argument for the direction of the change in leverage following stock market development, that stock market development would create opportunities for new diversification ability for investors which would be used by firms to expand, through debt or equity issue. The direction of effect of stock market development on leverage would then depend on the choice made by the firm. This theory could perhaps explain the results in this case providing semblance of some sort of equilibrium in the choice of financing by firms.

Turnover ratio which has been found to be significant is

a proxy for transaction cost on the exchange (Agarwal and Mohtadi, 2004) and compliments value of shares traded. In the light of the present study, the evidence of other studies has not been confirmed. For the Ghana stock exchange an important part of transaction cost, taxes on capital gains, were absent during the first ten years of the stock markets existence. Lower transaction cost should encourage higher transactions on the stock exchange; this result does not confirm that view. The lower the transaction cost the more preferable the stock market would become in raising equity, the results suggests that this has not been the case for Ghanaian firms. One explanation could be the developmental nature of the exchange where considerations are not given to cost because stock purchase decisions are influenced by other factors rather than cost. These other factors include institutional investors desirous of making acquisitions and individuals looking for alternative investments aside the traditional vehicles of investment known to the economy such as treasury bills and fixed deposits with banks, even though these factors have not been directly examined by this study.

In the case of the short-term debt equation, the evidence provided that financial liberalization which contributes to financial market developments leads to a flight to short-term financing in the study of Greene and Muthenri (2004) is not supported by this study. Perhaps, it is because this study did not take the whole impact of the financial market into consideration. The size of the stock market and turnover ratio are found to be significantly related to short-term debt, negatively though, suggesting that the market development leads to a flight to long-term debt rather than relying on short-term bank financing or otherwise. But this having not been corroborated by the long-term debt equation results, suggests that there are other factors that influence corporate capital structures decisions that are not specifically influenced by market developments. This fact has been alluded to by Demiguc-Kunt and Maksimovic (1996).

Future studies would need to consider the impact of the level of openness of the macro-economy on capital structure choices. Specifically, the implications of factors such as the flow of FDI and the ownership composition of equities traded on the market and its influence on debt-equity decisions in the light of developments in the stock market should be investigated.

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## Appendix

**Table 1.** Dickey-Fuller Test Results.

<b>Variable</b>	<b>Test statistic value</b>	<b>MacKinnon approximate p-value</b>
MCAP	-1.299	0.6296
STDE	-1.745	0.4083
LTDE	-1.299	0.6296
TR	-1.3.624	0.0053
STRD	-3.705	0.0040

**Table 2.** Correlation Matrix.

	<b>LTDE</b>	<b>MCAP</b>	<b>STRD</b>	<b>TR</b>
<b>LTDE</b>	1.000000	0.122999	-0.011921	-0.028445
<b>MCAP</b>	0.122999	1.000000	0.379430	-0.302392
<b>STRD</b>	-0.011921	0.379430	1.000000	0.669755
<b>TR</b>	-0.028445	-0.302392	0.669755	1.000000