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Cost of Capital and Economic Development: The Case of Ghana's Liberalized Capital Market

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Abstract

The development of the private sector is an important driver of economic growth in Ghana. It is therefore imperative that Small and Medium Enterprises (SMEs) have access to affordable capital. The study analyzed the effects of Foreign Direct Investments, Savings, Stocks Traded, Inflation and Remittances as independent variables on Cost of Capital, which is used as the dependent variable. The study used empirical time series data to test the effect of the independent variables on the dependent variable. The results show that Remittance has a significant and inverse effect on Cost of Capital while inflation has a significant but direct effect on Cost of Capital. It is imperative that policy makers give due consideration to remittance when formulating policies to curb the volatile nature of Cost of Capital in the country. Conversely it is imperative that inflation be contained in order to bolster the growth of SMEs in the country.

Keywords: Cost of Capital, Foreign Direct Investment, Savings, Capital Asset Pricing Model, Weighted Average Cost of Capital, Modigliani and Miller (M & M), Small and Medium Enterprises

Introduction

The capital account market is the primary market for funding of firms' investments. The composition of a company's capital structure dictates the level of risk of that particular investment and consequently the expected rate demanded by investors or providers of the capital, be it creditors or stockholders. However it is notable that leverage, which is the proportionally use of debt versus equity, enhances risk and consequently affects the valuation of the firm's assets. Companies are always searching for the optimal point in their capital structure, since an optimal capital structure generally results in a lower cost of capital. A lower cost of capital boosts the value of cash flows from investments and results in positive net present values or valuation of the firm's assets. It encourages investments by both domestic private and foreign investors. Equity and credit investors, in instances of enhanced debt, will generally require a higher return on their investments because of significant exposure to default and marginalization of their assets' values. In essence a well-established equity market allows firms the ability to balance their capital structure to an optimal level by giving them an alternate avenue for leveraged investments. Research has shown that countries with well-established capital markets generally have lower cost of capital than those without (Abor, 2005), which is also underscored by the fact that the low rate of the cost of capital is a primary driver of economic development and the development of the private sector. In addition, a lower cost of capital enhances profitability and mitigates overall risk. This assertion is affirmed by the distinctive differences in the advancement of the capital markets and economic and human development among developed, emerging and developing countries. It is against these backdrops that the paper intends to (a) primarily investigate the impact on cost of capital resulting from key independent variables as Foreign Direct Investments (FDI), Savings, Stocks Traded, Bank Credit, Inflation and Remittances, (b) empirically determine whether cost of capital will add value to the economy through such sectors as Manufacturing, Agriculture, Industry, Services, and Merchandise trade. The literature review will analyze theories underlying cost of capital, the Capital Structure as it relates to the determination of cost of capital.

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It will also explore, using statistical analysis, the spread in cost of capital between financial markets in developed countries relative to those in developing countries such as Ghana. The recommendations will be used to encapsulate the significance of the findings to economic development via Small and Medium Enterprise (SMEs). The study will use empirical time series data encompassing the period 1991 to 2010 to first assess the impact on Cost of Capital resulting from key independent variables as (a) FDI, (b) savings, (c) Stocks Traded, (d) Bank Credit, (e) Inflation, and (f) Remittances.

Literature Review

Theories on investment and cost of capital clearly show an inverse relationship between these two prime variables. An increase in cost of capital drives a lower investment rate and vice versa. The cost of capital also accentuates the risk level of an investment project. This underlying concept applies to individual firms as well as national economies. Thus the drivers of cost of capital will seem to hold a pivotal place in the strategic planning of firms' capital structure – the proportional use of equity versus debt. The general theory posits that when firms use more external funding of debt rather than internally generated funds, their overall cost of capital rises. Modigliani and Miller (M & M) however postulated in Proposition 1, that capital investment projects value will not be driven by the funding composition of their investments (Graham, Smart, & Megginson, 2010, p. 467). In essence the use of debt will not enhance the enhanced risk perception of equity. In expanding on M & M Proposition, valuation of a firm's assets is not influenced by the weighted Average Cost of Capital. WACC model is formulated as

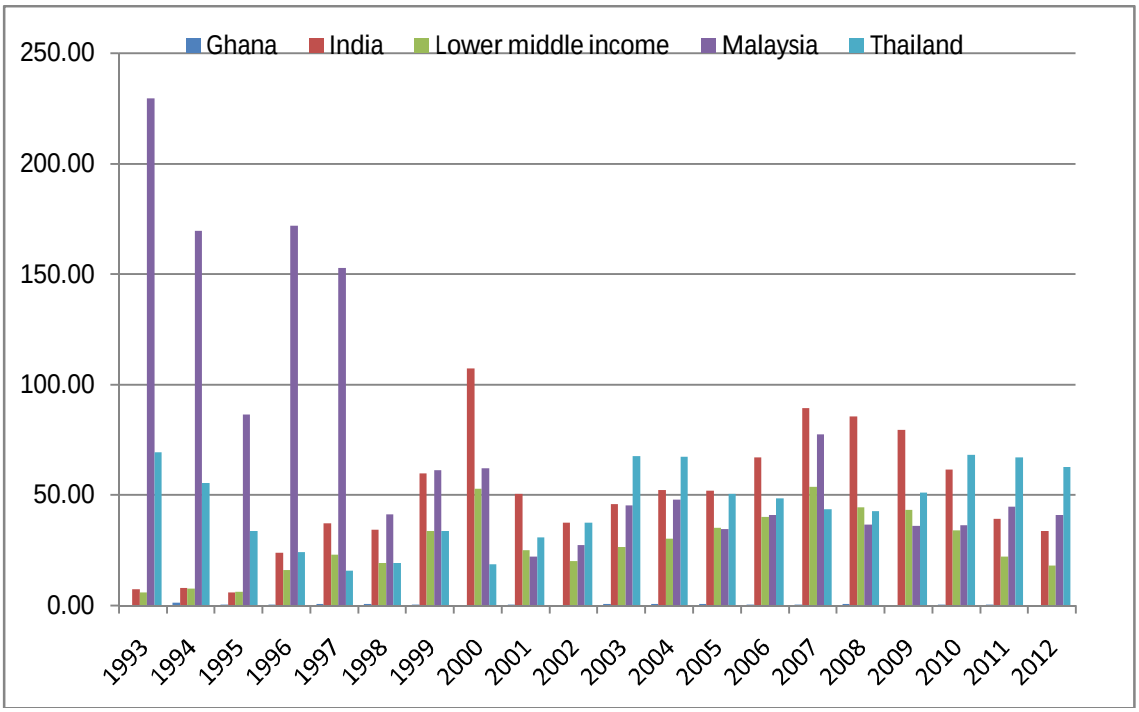
$$WACC = W_dC_d\ (1\text{-}T) + W_rR$$

Where W_d is the weight of debt and Cd the cost of debt and

W_r the proportion of equity and R being the cost of equity.

Thus if M & M proposition holds, the cost of funding will relatively be driven by cost of equity. Reality and logic suggest that investors, who are last in queue to receive compensations in the event of liquidation of a firm's assets, will definitely protect their investments by demanding a compensatory reward relative to their risk exposure. Even internally generated funds will use a risk level compensatory to the opportunity cost (rate of return) in securities of like characteristics in an open market. The question then becomes, will developing countries' corporate funding structure impact the cost of capital? Developing countries, unlike developed countries, have a greater appetite for leverage in their capital structure (Yartey, 2006). This can partially be explained by the imperfections in capital markets in developing countries. The means to correct imperfections are the availability of alternate (substitute) markets to allow the theory of supply and demand to register an equilibrium price for the cost of capital. The lack of alternate markets does not allow the market participants to correct the imbalances because they are handicapped and thus are not able to switch to other sources of lower cost of funding securities as found in well-established money or capital markets. Money market instruments such as Commercial Papers, Treasury-bills, Negotiable Certificate of Deposits, and Bankers' Acceptances, among others, could be used as short-term mechanisms of corrections in the debt markets such as market imperfections in the loan (debt) market. Even with the progress in the development of the equity market in Ghana, a significant number of the Small and Medium Enterprises (SME) are highly dependent on bank loans to fund their capital investments (Yartey, 2006). The costs of the loans are so extortionate that it is impeding economic and human development. If the equity market were to be developed to the extent that these SMEs have an avenue of raising equity, the W_d in the aforementioned WACC model will be low enough to put a downward pressure on interest rates. Singh and Hamid (Singh & Hamid, 1992) in their research concluded that more than half of corporations in developing countries use equity in funding their investments. However the study did not differentiate the number of big corporations versus SMEs who are more of the dominant group in the private sector in most developing countries, especially those from Sub-Saharan Africa. SMEs are generally not privy to raising funds from the equity markets. Figure 1 shows the insignificant role of the stock market as a channel for raising capital in Ghana compared to other developing countries and her peers in the Lower Middle Income countries. Since 2000, credit to the private sector as a percentage of GDP is roughly 14% and credit provided by the Banking Sector to the private sector is approximately 30% (Figure 2). This shows that the debt market does play a pivotal role in providing credit to the private sector than the stock market. To further highlight the point that the embryonic nature of the GSE enhances

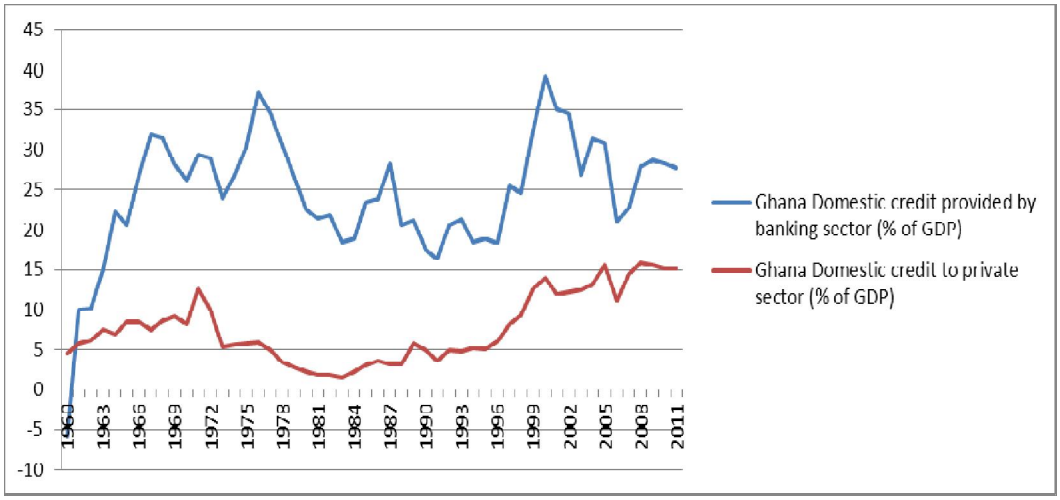
Figure 1: Stocks Traded, Total Value as a Percentage of Gross Domestic Product



Source: Extracted raw data from World Development Indicators (2014)

The risk level rather than minimize the cost of equity, Appendix A shows the standard deviation of the GSE as .53. Thus a systematic risk of the GSE is above .53 versus .19 for the S&P 500. The negative coefficient of the GSE with the S&P 500 (-.0801513) shows that a well-developed GSE with global outreach will result in lower risk for equity securities and subsequently a lower cost of capital for capital investments. The high level of systematic risk (beta) may explain the inconsistency or the volatile earnings of firms in the GSE relative to that of the S&P 500. The correlation coefficient is further evidence that the development of the GSE will mitigate risk and result in lowering of the cost of capital as a result of a lower required rate of return as modeled by the Capital Asset Pricing Model when optimized with debt.

Figure 2: Ghana Domestic Credits Provided by Banking Sector versus the Private Sector



Source: Extracted raw data from World Development Indicators (2014)

Investments are, theoretically, generally driven by the cost of capital and liberalization of credit markets is conceptualized to lower cost of capital (Henry, 2003). The analysis thus begs the question if liberalized credit markets in developing nations such as Ghana will result in a lower cost of capital and furthermore economic development? However, researches of the impact of a lower cost of capital on economic development are mixed (Abor, 2005). Empirical evidence also shows that the Equity Markets of most developing countries, especially those in Sub-Saharan African countries such as Ghana have not reached the minimal world threshold level (Yartey, 2006). Ghana with the acknowledged benefit of the equity market to economic development formed the Ghana Stock Exchange (GSE). The GSE currently boasts of approximately 19 non-financial companies (Yartey, 2006). The lack of the development of the equity market in developing countries put them at a disadvantage. It results in higher beta (Appendix A) as a result of the significant dependence on debt sources such as bank loans, micro-finance loans, and bonds. These sources of capital sometimes come with interest rates above 20% ("Bank of Ghana Monetary Policy Report," 2013). These delimitating interest rates stifle investments and economic development in developing countries such as Ghana. Even the rates for 3-year Treasury notes are 19.24 % ("Bank of Ghana Monetary Policy Report," 2013). They tend to be at the mercy of commercial banks who charged extortionate interests on loans. The growth rate of the private sector credit was at a dismal 16.5 per cent of the first quarter of 2014 versus 20 per cent of the last quarter of 2013(Frimpong, 2014). In that same announcement to the press, the President of Bank of Ghana Dr. Kofi Wampah announce the key lending rate to commercial banks at 16% (Wampah, 2013). This rate is bound to increase the lending rate to SMEs at the anecdotal observed average of 700 basis points, which is equivalent to 7% increase. To make matters worse, the spread between the interests paid on their savings versus the interests charged on their loans is quite wide.

Research Methodology

The research used empirical time series data to first assess the impact on Cost of Capital resulting from key independent variables such as (a) FDI, (b) savings, (c) Stocks Traded, (d) Bank Credit, (e) Inflation, and (f) Remittances. The time-series multiplicative analysis using logarithm will be modeled as follows:

Equation 1:

$$\ln k = \ln fdi + \ln s + \ln st + \ln bc + \ln f + \ln r$$

Where:

- ln *k* is the dependent and natural log of cost of capital, which is proxied by WDI (World Development Indicators_ World Bank Database) as the lending rate in percent
- ln *fdi* is the natural log for foreign direct investments
- ln s is the natural log for savings
- ln *st* is the natural log for stocks traded
- ln *bc* is the natural log bank credit
- ln *f* is the natural log for inflation
- ln *r* is the natural log for remittances

The study then analyzes the effect on domestic credit as a result of cost of capital and its impact on prime drivers of economic growth such (a) Manufacturing, which is proxied as Manufacturing Value Added (MVA); Industry, which is proxied as Industry Value Added (IVA); Services, which is proxied as Service Value Added (SVA); Merchandise, which is proxied as Merchandise Value Added; and Agriculture, which is proxied as Agriculture Value Added (AVA). Increased demand for capital from each of the sectors will be driven by the cost of capital and the demand for each of the sector products, among others. The research is aware of the fact that a low cost of capital (interest rate) does not necessitate an increased demand for capital, especially during recessions as exemplified by the 2008 global recession, where a near zero interest rate in the U.S did not result in an increase in demand for capital.

Definition of the Variables

- Foreign direct investment (% of GDP) are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor (http://data.worldbank.org/)

- Savings proxied as Gross Domestic Savings as per cent of Gross Domestic Product
  Stocks Traded is defined as total value of stocks traded during the period relative to GDP(http://data.worldbank.org/)
- Stocks traded refers to the total value of shares traded during the period. This indicator complements the market capitalization ratio by showing whether market size is matched by trading (http://data.worldbank.org/).
- Domestic credit provided by the banking sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The banking sector includes monetary authorities and deposit money banks, as well as other banking institutions where data are available (including institutions that do not accept transferable deposits but do incur such liabilities as time and savings deposits) (http://data.worldbank.org/).
- Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly (http://data.worldbank.org/).
- Remittance is defined as transfer of funds by foreign workers to their country of birth.
- Lending Rate proxied as Cost of Capital (interest rate) is defined as the bank rate that usually meets the short- and medium-term financing needs of the private sector. This rate is normally differentiated according to creditworthiness of borrowers and objectives of financing (http://data.worldbank.org/)

Source of Data

The data from the analysis were retrieved mostly from the International Monetary Fund (IMF) data base and Bank of Ghana library. There were gaps in the limited data for the lending rates. For example the IMF database did not have any data for 1989 to1999 and also 2001 and 2002. I extrapolated the data for these years using the following formula:

Interest rate spread = Lending Rate – Deposit Interest rate
Therefore,
Lending rate = Interest rate Spread + Deposit Interest rate

Thus using available date for Interest rate Spread and Deposit Rate, I extrapolated the data for the aforementioned missing data for the Lending Rate.

Empirical Results

Table 1 provides the results from regression analysis of the independent variables relative to the dependent variable. The results indicate that FDI is moderately and inversely related to cost of

Table 1: Regressional Analysis of Variables Pertaining to Equation 1

Regression Statistics				
Multiple R	0.905050			
R Square	0.819116			
Adjusted R Square	0.602055			
Standard Error	0.202033			
Observations	12			
ANOVA				
	df	*SS*	*MS*	*F*
Regression	6	0.924187	0.154031	3.773663
Residual	5	0.204087	0.040817	
Total	11	1.128274		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.825603	3.331672	0.247804	0.814141
FDI	-0.312751	0.235811	-1.326280	0.242098
Savings	0.057715	0.098852	0.583853	0.584665
Stock Traded	-0.006600	0.309093	-0.021351	0.983791
Banks Credit	-0.134208	0.866553	-0.154875	0.882978
Inflation	0.807175	0.306561	2.633000	0.046365
Remittances	-0.882762	0.635628	-1.388804	0.223577

Note: the insignificance of most of the t-stats may be attributed to the low number of observations. The research used the most current data since there were many gaps in the data from the late 1990s.The coefficients were plotted at a significance level of 10%.

Capital. In essence an increase of a unit of FDI will result in a reduction of cost of capital by -.312. The two most important parameters, in terms of their effect on cost of capital, are remittances and inflation. Remittances are significantly inversely related to cost of capital with a coefficient of -.88 and inflation is positively related to cost of capital with a significant coefficient of .81. Savings was insignificant with a coefficient of .058. This can be attributed to the low deposit rate on savings, which is currently averaging less than 10% versus the interest rates on government securities such as short term Treasury bills (approximately 22%) and long term treasury bonds("Bank of Ghana Monetary Policy Report," 2013). The research used the Spearman Rank Correlation to further test the low linear relationship between cost of capital and Savings, The result, a correlation of .20979 (see Appendix B), further affirmed that savings have an insignificant effect on interest rate, This result can deductively imply that any long-term decrease in savings may exponentially increase the cost of borrowing, which could further lead to a higher proportion of the population hoarding rather than depositing their money in the financial institutions. The stock market has an insignificant yet inverse effect on cost of capital with a coefficient of -.0066. I repeated the Spearman Rank Correlation to further test the low linearity (Table 1) between cost of capital and stocks traded. The test showed a correlation coefficient of -.0979 (see Appendix C). The result is further proof that the GSE is in its infant stages and education is needed to bridge the knowledge gap of the benefits of the Exchange to both investors and the SMEs (Abor, 2005). The result could also be attributed to the low returns from the stock market relative to Government Treasury Bills and Bonds (Bank of Ghana Monetary Policy, 2014). Few private companies (thirty firms) are listed on the GSE (Ghana Stock Exchange). In essence, most private companies generally use debt rather than stocks to raise capital for investments in Ghana. This result is affirmed by Joshua Abor (Abor, 2005) with his finding that Ghanaian firms generally use 58% of debt relative to equity to fund their investments. Bank Credit has a moderate coefficient of -.13 impacts on cost of capital. Financial institutions in Ghana shy away from offering credit to small firms, generally due to the risk from default (Pfeifer, 2014).

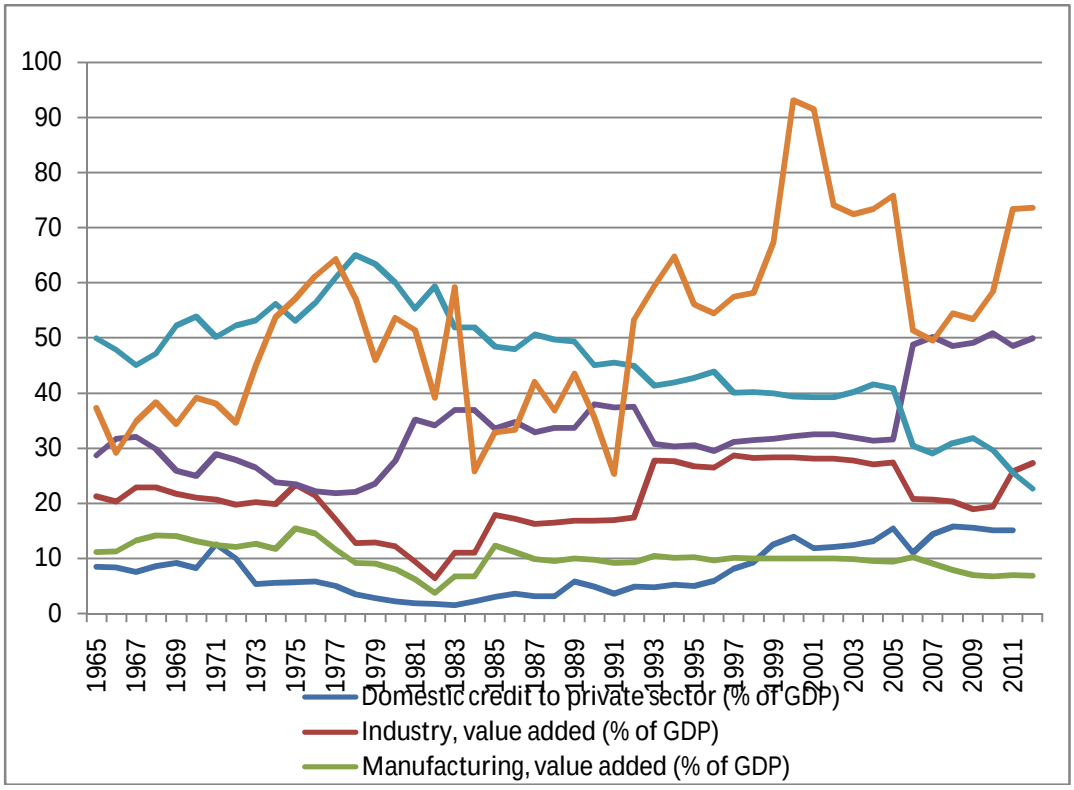
Limitations of the Study

The research was limited by the inability to secure the most recent data for lending rates in the country. The research then used the process of extrapolation to bridge the gaps. Banks in Ghana have generally not released their lending rates and thus the research was more dependent on the limited data from the Bank of Ghana data archives.

Recommendations

One prime driver to the economic development of the private sector is affordable and easy access to capital. However, interest rate on bank loans, as noted in the paper, is extortionate in the Ghanaian capital market. This generally impedes growth even with the upward trend in terms of market participants in key sectors as Merchandise, Services and Industry (figure 2). The retention rate of profitability is low and this directly impedes economic growth of the private sector (Frimpong, 2014). To correct this imbalance, it is pertinent that there are other sources of leverage for market participants. The country may have to develop the Money Market as alternate to sources of debt. The government can also get directly involve by establishing a prototype of U.S Small Business Administration, as a means of encouraging banks to lend, at lower interest rates to small businesses. The lower rate will be justified with the government's guarantee to protect the banks against defaults. Another recommendation to affect the Equity in the equation for Cost of Capital is the development of GSE. The GSE need to be developed to the level whereby markets participants may be able to create portfolio made up of both domestic and foreign securities. The ability to do so will minimize risk and consequently the return on invested capital. To facilitate that development, investors will first like to see transparency in the financial reporting of results and credible disclosures. Secondly investors have to be assured that dividends and capital gains redemptions will be in the currencies of the country of original investment. This recommendation is underscored by the significant devaluation of the local currency relative to currencies such as the dollar and euro. The research findings found moderate but significant inverse relations between FDI and cost of capital. Thus it will be prudent to promote and steer FDI to sectors that add more value to economic growth (figure 2). These investments will minimize the pressure on the demand and increase the supply of foreign exchange. Foreign exchange risk drives the expected return on invested capital and consequently on the cost of capital. Thus with increased supply of foreign exchanges from these value-added industries, cost of capital will trend downward as modeled by the Weighted Average Cost of Capital model. To enhance the foreign inflow of funds to firms in the GSE, Ghanaians in diaspora must be encouraged to directly invest in the GSE and to recoup all the dividends and capital gain yields in the currencies of their resident countries.

Figure 2: Value Added to the Economy by Key Sectors



Source: Extracted raw data from World Development Indicators (2014)

Conclusion

The study' objective was to establish the impact of independent variables such as FDI, Savings, and Foreign Remittances on cost of capital. The findings, even in the light of limited data produced findings generally observed in Ghana and alluded to in literature. The significant but inverse relationship between foreign remittances and cost of capital will be of importance when creating economic policies to boost the SME's development in the country. Another finding with a significant economic implication is the positive correlation between inflation and cost of capital. This finding, though not new in financial and economic literature, emphasizes the urgent need to tame inflation at all cost.

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Appendix A

Table 1 - Beta for Ghana Stock Exchange Index

Year	GSE Return	S&P 500 Index	Covariance
1990	-29.75%	-3.10%	0.40%
1991	-8.18%	30.47%	-0.42%
1992	-3.62%	7.62%	0.04%
1993	113.73%	10.08%	0.02%
1994	124.35%	1.32%	-0.38%
1995	6.33%	37.58%	-0.37%
1996	13.82%	22.96%	-0.12%
1997	41.85%	33.36%	0.11%
1998	69.69%	28.58%	0.35%
1999	-15.22%	21.04%	-0.27%
2000	16.55%	-9.10%	0.15%
2001	11.42%	-11.89%	0.23%
2002	45.96%	-22.10%	-0.21%
2003	154.67%	28.68%	1.16%
2004	91.33%	10.88%	0.04%
2005	-29.72%	4.91%	0.15%
2006	5.21%	1.79%	0.11%
2007	31.21%	5.49%	0.00%
2008	58.16%	-37.00%	-0.60%
2009	-46.58%	26.46%	-0.66%
2010	32.25%	15.06%	0.00%
Mean	32.55%	9.67%	
Variance	0.28723549	0.037270362	-0.30%
Standard Deviation	0.53594355	0.193055334	
Number of observations		21	
GSE Beta relative to the S&P 500			**-0.0801513**

Source of Data S&P: http://en.wikipedia.org/wiki/26P_500#External_links
Source of data for GSE: http://www.gse.com.gh/

Appendix B

Spearman Rank Correlation

Cost of Capital(k)	*Stocks Traded(k_{st})*	*Rank$_k$*	*Rank$_{st}$*	*d_{kst} (k-st)*	*d^2_i*
12.42434	9.61408	1	1	0	0
12.74450	10.93366	2	5	-3	9
12.83513	15.83949	3	10	-7	49
13.73081	15.47333	4	9	-5	25
15.63516	29.76551	5	12	-7	49
15.88382	11.89840	6	7	-1	1
18.95392	9.65231	7	2	5	25
18.96701	18.67787	8	11	-3	9
19.65859	12.00740	9	8	1	1
24.21956	11.86593	10	6	4	16
28.43518	10.08279	11	4	7	49
32.20617	9.92630	12	3	9	81
					314

-0.0979

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}.$$

Where d^2_i is the summation of the difference between the variables squared.

Appendix C

Spearman Rank Correlation

Cost of Capital(k)	*Stocks Traded(ks)*	*Rankk*	*Rankst*	*dks (k-st)*	*d2i*
12.42434	9.61408	1	1	0	0
12.74450	10.93366	2	5	-3	9
12.83513	15.83949	3	10	-7	49
13.73081	15.47333	4	9	-5	25
15.63516	29.76551	5	12	-7	49
15.88382	11.89840	6	7	-1	1
18.95392	9.65231	7	2	5	25
18.96701	18.67787	8	11	-3	9
19.65859	12.00740	9	8	1	1
24.21956	11.86593	10	6	4	16
28.43518	10.08279	11	4	7	49
32.20617	9.92630	12	3	9	81
					314

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}.$$

-0.0979