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Determinants of performance of securities exchanges in East Africa

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Abstract

The purpose of the study is to examine the determinants of the performance of the securities exchange markets in East Africa. We use a pooled of crossectional approach in the analysis for 94 firms with 752 firm year observations for firms listed in the East African securities exchange markets. The findings of the study indicate that the three exchange houses do not respond homogeneously to profitability of trade as measures of securities exchange performance. There exists variations in the market dynamics for the three exchanges. The findings suggest that fostering of an active secondary market, a sensitized and informed public, and stability of currency can help improve the securities exchange performance.

JEL classification numbers: G10
Keywords- Profitability, Price Index, Trade Volume

1 Introduction

It has become almost impossible to discuss economic growth and development without a mention of the securities markets and their contribution to the growth of the economy (Yartey and Adjasi, 2007). The securities markets absorb savings and provide liquidity for investment, reduce investment risks, offer transparency for investments and encourage entrepreneurship. Economic development requires commitment of long-term investment and financing. The securities exchange therefore provides channels for accessing long-term capital for major sectors of the economy including businesses and the government. Besides, equity capital is useful in financing risky and long term investments (Craigwell and Grandbois, 1999).

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Heiko (2004) argues that securities exchange markets, these days behave more like business firms, adjusting to the new environment through increased automation, changes in organizational governance, and creation of alliances to compete for increased market share and to minimize costs and maximize revenue. The East African exchanges are no exception in this trend as evidenced by their quest for continuous innovation, adoption of new technology and alliance at various levels (Nairobi Stock Exchange (NSE), Uganda Securities Exchange (USE) and the Dar-es-Salaam Securities Exchange (DSE) annual reports 2005-2012).

With the stock exchange markets in East Africa having undergone series of reforms in comparison with other emerging markets and an immense increased influx of foreign investors there would be a recorded increase in performance. However, the stock exchange markets of East Africa have exhibited rather a mediocre performance over the years (Shivji, 2010). For example, among 15 African stock exchanges reviewed in 2010, only Tanzania in the region registered positive annualized profits to investors with a 21% growth compared to Ghana's 58% growth in the same period, Kenya's performance was ranked the 5th worst with a 35% decrease in annualized profits (Kenya Capital Markets Authority, 2010). Besides, extracts from the annual reports of the NSE, USE, and DSE for the period 2006 to 2013 reveal that the performance of the respective securities exchanges are still fickle as indicated in table 1 below;

Table 1. Cost of equity and profitability of trade performance extract for the NSE, USE and DSE.

Year	NSE		USE		DSE	
	Cost of Equity (Ksh.)	Profitability of trade (Ksh.)	Cost of Equity (UGX)	Profitability of trade (UGX)	Cost of Equity (Tsh.)	Profitability of trade (Tsh.)
2007	93	93	1,022	23	1,040	640
2008	73	-20	1,240	218	771	-269
2009	72	-2	1,192	-48	733	-39
2010	98	26	1,164	-28	1,188	456
2011	68	-30	1,303	139	864	-324
2012	96	28	1,486	182	1,203	339
2013	137	41	1,867	381	1,504	301

As noted earlier, stock exchanges have undertaken reform measures aimed at promoting development in the key sectors of the respective economies, increasing accessibility to the markets to enable rising of capital while keeping the stock markets attractive to both foreign and local investors. Much as the impact of these reforms may have been felt, and the factors that determine the performance of securities exchanges identified, there's still very scanty and far between empirical works on this subject.

The evidence that exists currently on the determinants of the stock exchange performance is based on the more developed exchanges. In some few instances, with the inclusion of the NSE. If the findings of these empirical studies are taken to

symmetrically apply to all the securities exchanges, then exclusion of the impact caused by regional and country heterogeneity on these findings could misinform investors. Thus, it will impede effective policy formulation needed to deepen the exchanges drive to integrate the region's markets, and continue to exert far reaching consequences on the region's fragile markets and the dream to have developed and active securities exchange markets will remain all but a dream. The above arguments cannot be settled without further and incessant empirical work. This is the thrust of this study i.e. to examine the influence of the factors that determine the performance of the securities exchanges on the performance outcomes in the Eastern African region over the period 2006-2013.

2 The Performance of the Securities Exchanges in East Africa

The extant literature support the notion that securities exchanges play a vital role in international financial systems and also in a country's economic development (Heiko, 2004). These arguments suggest that financial markets in general, and well-functioning securities exchanges in particular, are beneficial elements in promoting overall economic growth and stability (Levine and Zervos, 1998; Rajan and Zingales, 1998). Inefficient securities markets will have the effect of taxing productive investments thus reducing their scope for increasing the stock of equipment needed to compete globally and this inefficiency can cut growth from levels that might have been possible given appropriate policies and market structures (Geert and Campbell, 1997).

According to the Financial Industry Regulatory Authority (FINA), investors use market indexes and averages as benchmarks, to see how particular investments or combinations of investments measure up. For example, in order to beat the market, a mutual fund manager has to assemble a portfolio that has a higher return than a particular benchmark. In contrast, the objective of index mutual funds is to replicate the performance of the market they track and the fund managers typically structure their portfolios by purchasing all of or a sample of the investments that make up their chosen benchmark.

Fischer and Merton (1984), using annual data, found that the changes in stock prices in isolation has power to predict business, fixed investment and inventory investment of companies who own the underlying stocks. Fama (1981), Kaul (1987), and Fama (1990) also find that real activity explains more variation in stock returns of longer return horizons. Similarly, Fischer and Merton (1984); Choi, Hauser, and Kopecky (1999); Chaudhuri and Smiles (2004); and Auret and Golding (2012) found stock performance to strongly predict economic performance of a given nation where the stock exchange is located thus underpinning the importance of stock markets.

In assessing the performance of the securities exchanges, this study focuses on financial performance; accordingly, this study addresses the measurement of securities exchange financial performance. This is consistent with Yuchtman (1967); Stewart III (2001); Robert (2004); and Heiko (2004). Heiko (2004) asserts that in evaluating the

performance of decision-making units, like financial institutions or exchanges, the idea should be to examine whether they operate efficiently and productively. This study adopted this concept which differs from allocative efficiency measured as the ability of a firm to use inputs and/or outputs in optimized proportions, given their respective prices and production technology (Heiko, 2004). Efficiency in this context relates to technical efficiency and this describes the ability of a firm or securities exchange to obtain maximal output from a given set of inputs. To nail it, Heiko (2004) puts it clear that a securities exchange is technically efficient when no equi-proportionate reduction in inputs is feasible without cutting its outputs and that a securities exchange may achieve higher profits at lower costs than other securities exchanges if it is able to better combine its inputs and transform them into outputs at lower cost.

Robert (2004) on the other hand argues that performance should measure actions taken to date and not include the value of future expectations as they may not materialize but it should be noted that the expectations of future performance depend upon the actions taken to date to create strategic alternatives and opportunities thus the need to test the firm's ability to survive in the future which calls for not only the need to measure past actions but also future intended actions.

However despite the important role securities exchanges play, the majority of the East African securities exchanges though had to wait only to emerge after 1998 with the latest arrival being the Rwanda Securities Exchange (RSE) in Rwanda, which was established in 2011. The region's oldest securities exchange which is found in Kenya was established in 1953. Mlambo and Biekpe (2007) as well as Moss (2004) assert that most of the African markets were formed at the instigation of government to act as vehicles to privatize state-owned enterprises.

As East African economies transform for development and meeting the development goals, capital to invest in developmental business venture is prime resource. According to Gakeri (2011), development of viable securities markets is among the central components for the envisioned transformation. However, it's one thing to set up the securities markets and another one to achieve the intended purposes.

2.1 Nairobi Securities Exchange

The Nairobi Securities Exchange (NSE) was originally set up in 1953 as a regional exchange for Kenya, Tanzania (then Tanganyika), Uganda, and Zanzibar. However after these countries attained independence, the exchange became Kenya's national exchange and stopped servicing the other countries' markets. The NSE today operates as a limited liability company and as of December 2012, 62 companies were listed on the Nairobi Securities Exchange and total market capitalization was US$14.53 billion, up by 46.5% from the previous year (NSE annual report, 2012). The exchange has three market tiers: Main investments market segment, alternative investment market segment, and fixed income securities market segment. A derivatives segment is planned at a later date. Plans are also underway for an over the-counter market.

According to Gakeri (2011), **t**he legal framework governing Kenya's securities markets replicates that of the United Kingdom and South East Asia markets. It consists of numerous Acts of parliament delegated legislation, guidelines and rules promulgated by the legislature, Capital Markets Authority (CMA), Nairobi Stock Exchange (NSE) and the Central Depository and Settlements Corporation. The legal frame work according to Gakeri (2011) that has been transforming originated from the 1907 transplantation of the UK framework to Kenya, through several developments. Prior to the establishment of the capital issues committee in 1990, the securities exchange in Kenya operated privately.

Liberalization of stock markets in developing countries has been advocated for as a way of improving their performance and financing investment through foreign capital (Nyang`oro, 2013).

The Nairobi exchange currently uses a floor-based open-outcry system to trade both equities and fixed-income securities. Settlement of trades is executed on a T+5 basis. The exchange plans to replace its manual trading system with an electronic trading system and has got a central depository system (CDS) in place and had 16 of the 17 participants connected to the Broker Back Office (BBO) platforms as of December 2012.

The Nairobi securities exchange, the Capital Markets Authority of Kenya, the Association of Kenya Stockbrokers, the CMA investor compensation fund and nine institutional investors joined together as investors in the new Central Depository and Settlement Corporation (CDSC), which is the legal entity that owns the CDS. At a later phase, the exchanges in Tanzania and Uganda will be linked to the Nairobi exchange's technology platform and the two exchanges are slated to each hold 2.5% stakes in the CDSC. The new CDS system, in conjunction with electronic trading, is expected to shorten the registration process, boost market liquidity and trading activity, and reduce market risk on all three EAC member exchanges.

Shortly after the establishment of the East African Community in 1996, the Nairobi exchange and the EAC arranged for signature of a memorandum of understanding among the three East African countries' securities exchanges to promote harmonization of capital market policies and regulatory frameworks, development of capital markets, and mutual cooperation and assistance among the countries' financial markets; have since then put up draft resolutions for the operationalization of various harmonious aspects on the East African exchanges (Masafumi, 2012).

In general, foreign investors are limited to holding a maximum aggregate seventy five percent of the shares issued by any one Kenyan company listed on the Nairobi securities exchange. This limit may be exceeded, however, in the case of an initial public offering where shares reserved for local investors are not fully subscribed; in this case, with the approval of the Capital Markets Authority, the issuer may allocate those remaining shares to East African and other foreign investors. Participation of foreign investors in the Nairobi securities exchange (NSE) can be traced back to 1954 when trade in shares was confined to the resident European community. The presence and dominance of foreign investors in the market declined

after independence when the country adopted the Kenyanization policy, however, protection of foreign investor interest was still given prominence and thus the foreign investment protection act (1964) was passed. The act focused on foreign direct investors and allowed for repatriation of earnings and capital by foreign firms (Nyang`oro, 2013). When the NSE was liberalised and opened to foreigners, the trade picked up; overall, the total foreign turnover increased over time from a low of Kshs.695 million in 1996 to the highest of Kshs.78,765 million by the end of 2011 (Nyang`oro, 2013).

In November 2004 the central depository system was introduced thus automating settlement of transactions at NSE to achieve T+5. The NSE trading hours increased from 2 to 3 hours (10.00 am - 1.00 pm) and subsequently increased to 5 hours (10.00a.m – 3.00p.m). The new system offers and has led to greater transparency in the placement of bids and offers improvement in market surveillance. Transmission is almost real time and trading information relating to index movements, price and volume movements of traded securities is released on a timely basis (Kithinji & Ngugi, 2009).

2.2 Uganda Securities Exchange

The Capital Markets Authority acting under its powers provided for in the Capital Markets Authority Act of (1996), passed into law the capital markets, establishment of stock exchanges regulations in December 1996. The regulations provide guidance on the requirements for establishment of a stock exchange. Following the passing of these regulations, the Uganda securities exchange (USE) began operating in 1998 with the East African Development Bank's listing of a bond that matured in December 2001. The exchange has been trading equities since 2000. Total market capitalization as of December 2010 was US$5.11 billion (USE annual report, 2010). As of September 2013, seventeen companies were listed on the Uganda exchange. Since early 2004, 2, 3, 5, and 10 year government bonds have been listed on the USE. There is one corporate bond, a twenty-year bond issued by Kenya Commercial Bank, Ltd (Uganda Securities Exchange Annual report, 2012).

The exchange has three segments: fixed income securities market, major investment market segment (for large companies), and alternative investment market segment (for smaller companies). Trading is currently executed via an open outcry system and trades are settled on a T+5 basis. The Uganda securities exchange has harmonized listing, trading, and settlement rules and procedures with those of the Nairobi securities exchanges and the three East African exchanges plan to set up an East African central depository system and electronic trading system. Foreign investors in shares traded on the Uganda exchange are not subject to special restrictions as is the case with the NSE and DSE.

There are several statutes that regulate the operations of the Uganda Stock Exchange. The regulatory compliance of the USE is primarily monitored by the Uganda Capital Markets Authority, powers given to the body by the Capital Markets Statute of (1996). The regulations often recommended to parliament for deliberation and eventual adoption so far include; the Capital Markets (Establishment of Stock

Exchanges) Regulations, (1996), the Interim Stock Trading Facility Rules, (1996), the Capital Markets (Licensing) (Amendment) Regulations, (2003), the Capital Markets (Cross Border Introductions)(Amendment) Regulations (2006), the Capital Markets (Cross Border Introductions) Regulations (2004), the Collective Investment Schemes Act, (2003), the Collective Investment Schemes (Financial & Accounting) Regulations, (2003), the Collective Investment Schemes (Open Ended Investment Companies) Regulations, (2003), the Collective Investment Schemes (Unit Trusts) Regulations, (2003) and the Collective Investment Schemes (Licensing) Regulations (2003) among other amendments.

According to the Capital Markets Regulations, (1996), the USE is mandated to engage solely in the business of operating a stock exchange.The Capital Markets Authority ensures transparency of the stock exchange by obtaining detailed information before registering a stock exchange and continuously being appraised about changes in its operations.

The Uganda securities exchange signed a memorandum of understanding with the East African Development bank under which the two institutions aim to set up a US$50 million venture capital fund to help smaller companies that meet certain corporate governance criteria raise funds outside the traditional exchange. Mutual funds/collective investment vehicles have recently begun operating in Uganda, following passage of the Collective Investment Schemes Act 2003.

2.3 Dar es Salaam Securities Exchange

The Dar es Salaam securities exchanges (DSE) was set up in 1998. Trading is open outcry and settlement is on an electronic T+5 basis for equities and T+3 for bonds. As of February 2012, total market capitalization of the DSE was just over US$8 billion (DSE annual report, 2012). DSE plans to adopt the automated trading, clearing, settlement, and depository systems being developed by Kenya for the EAC region and this should go some way toward improving the Tanzanian exchange's market infrastructure and should help to increase liquidity. As of September 2013, there were thirteen equity listings on the exchange.

In May 2003, the DSE liberalized its restrictions on cross listings to allow cross listings by companies based in EAC partners Kenya and Uganda. Kenya Airways was the first firm to cross list on the DSE (in December 2004). Tanzania's tiny bond market is currently dominated by government issues. The Tanzanian government introduced two-year bonds in 1997 and then five- and seven-year bonds in 2002, in moves to lengthen the maturity profile of government debt. Two- and five-year bonds were first listed on the DSE in 2002, although only Tanzanian residents are eligible to invest in these instruments. As of early 2005, other than the Tanzanian government's bond listings, "corporate" bonds, issued by the East African development bank and BIDCO, were listed on the DSE.

Until recently, foreign investment in securities issued and traded on the DSE was not permitted by law; the government opened up the securities exchanges to foreign investors in May 2003. Under the Foreign Exchange (Listed Securities) Regulations (2002), foreign investors, with the exception of licensed banks and

financial institutions, are permitted to invest in government securities. Foreign investors are able to hold a maximum of 60 percent of the total number of issued securities of any single issuer; this ceiling reportedly is slated to rise at a later stage to 70 percent. The 60 percent ceiling could be exceeded in the event Tanzanians do not invest in some portion of the remaining share of securities issued as a public offer, with prior written approval of the Capital Markets and Securities Authority (CMSA). In the latter event, residents of Kenya and Uganda will be given priority. Securities purchased by an individual foreign investor or two or more investors jointly will not be able to exceed 1 percent of the total number of issued securities of any single issuer; corresponding limits on single or joint share purchases by foreign institutional investors will be 5 percent (Masafumi, 2012).

The exchange is also preparing reforms that would encourage wider share ownership in general (e.g., through collective investment vehicles) and reduce listing costs.

Pursuant to the provisions of the Capital Markets and Securities Act, 1994 the DSE has established a Fidelity Fund Account to be used to compensate investors who suffer financial loss arising from fraud and misappropriation of funds by Licensed Dealing Members (LDMs). The Fund is maintained by the DSE. The fund can also be used to compensate investors who suffer losses as a result of Licensed Dealing Members' (LDMs) negligence (Shivji, 2010).

The stock Exchange facilitates trade in listed shares of business entities, corporate bonds and acts as a secondary market for the trade in Government bonds. The performance of the DSE has been more sluggish compared to the NSE or USE (Shivji, 2010). Listed companies include ToL Gases Limited, Tanzania Breweries Limited, Tanzania Tea Packers Limited, Tanzania Cigarette Company Limited, Tanzania Cement Company, Swissport Tanzania Limited, Tanzania Portland Cement Company Limited, National Investment Company Limited, Dar Es Salaam Community Bank, National Microfinance Bank PLC, Kenya Airways Limited, East African Breweries Limited, Jubilee Holdings Limited and Kenya Commercial Bank Limited among others.

3 The Determinants of the Performance of Securities Exchanges

According to the Capital Market Authority (of Uganda) handbook, the performance of the capital market depends of the following; the value of shares is determined by demand and supply during trading thus if there are more buyers than sellers, the price of the shares will tend to rise, and the reverse happens if sellers are more than buyers in other words, the price falls. It further emphasizes that performance of a company will depend on a variety of factors, including the type of industry, the performance of the economy, and whether the company is affected by external factors such as world prices. The handbook also stresses the non-market factor; government policy regarding interest rates whereby high interest on deposits may encourage the holding of savings in banks as opposed to investment on the Exchange.

Fernandez (1999) stresses liquidity as being the lifeblood of financial markets adding that it's adequate provision is critical for the smooth operation of an economy. And its sudden erosion in even a single market segment or in an individual instrument can stimulate disruptions that are transmitted through increasingly interdependent and interconnected financial markets worldwide.

Despite its importance, problems in measuring and monitoring liquidity risk persist. Fleming (2000) asserts that one measure of liquidity is the bid-ask spread, or the difference between quoted bid and offer prices. Fleming further says that market liquidity is important, as hedgers must be able to buy and sell large volumes with minimum cost.

Liquidity is not a one-dimensional variable, but may be looked at from different points of view, such as time, tightness, depth, or resiliency (Wyss, 2004). He further defines Time as the ability to execute a transaction immediately at the prevailing price. The waiting time between subsequent trades or the inverse, the numbers of trades per unit time are measures for trading time. Tightness: The ability to buy and to sell an asset at about the same price at the same time. Tightness shows in the clearest way the cost associated with transacting or the cost of immediacy. Measures for tightness are the different versions of the spread. Depth: The ability to buy or to sell a certain amount of an asset without influence on the quoted price. On the contrary, Khan (2005) stresses turnover as being one of the proxies used to measure liquidity of an exchange. A sign of illiquidity is an adverse market impact for the investor when trading. Market depth can be measured, aside from the depth itself, by the order ratio, the trading volume or the flow ratio. Resiliency: The ability to buy or to sell a certain amount of an asset with little influence on the quoted price.

According to Shivji (2010), extant literature argues that the main obstacles to efficient financial markets in African countries include: Inadequate regulatory framework, a banking sector that fails to exercise its role of intermediation, underdeveloped capital markets and a lack of innovative financial instruments. This presentation however, fell short of highlighting the differences between the different East African Exchanges that has resulted into the differences in performance in spite of the highlighted commonalities in terms of structural challenges.

3.1 The Influence of Trade Volume on the Performance of Securities Exchange

Trade volume also known as the total number of shares traded in lay terms is one of the key indicator determinants of stock exchange performance (Kumar, 2008). According to Chandrapala (2011), studies on volume-price relation trace back to the 1950s. In one of these early studies, Granger and Morgenstern (1963) based their study on New York Stock Exchange (NYSE) composite index from 1939-1961 and found no relation between absolute value of daily price changes and daily volume, a finding that has been disputed by subsequent studies.

Osborne (1959) as quoted by Chandrapala, (2011), shows a theoretical relation between volume and price. He asserts that majority of studies reveal a positive correlation between the absolute value of daily price changes and daily volume for both market indices and individual stocks. His study however based only on Asian and

European markets. Similar studies like Ying (1966); Corouch (1970); Haris (1986); and Chandrapala (2011), give similar findings while others like Chen, Firth and Rui (2001); Lee and Rui (2002); Pisedtasalasai and Gunasekarage (2007); and Khan and Rizwan (2008) find that much as there exists a relationship between stock returns and trading volume, the relationship is a lagged one. These studies however were conducted on the American, European and Asian securities exchanges which are at a higher level of development and stability compared to the East African securities exchanges and may have had different findings if they were conducted on the East African securities exchanges.

In his study of key performance indicators for stock performance, Kumar (2008) found that behavioral factors largely influenced investor decisions which subsequently impacted stock trading volume. He however did not show how trade volume influenced the performance of securities exchange in terms of profitability of trade and cost of equity from the perspective of the stock holder investor and not the company whose stocks are traded.

3.2 The Influence of Share Price on the Performance of Securities Exchange

Applying the present value model to the equity markets, the price of a share in theory reflects the sum of current and expected dividends discounted by an appropriate discount factor. Dividends are usually paid out as a fraction of firms' profits which in turn should be positively related to overall demand. Therefore, holding the discount factor constant, higher stock prices are likely to reflect positive expectations of future profitability performance, as seen through the eyes of stock holders and investors.

On the other hand, Davis (2010); and Magnus, Antonello, Gabe and Moreno (2011) assert that higher stock prices can lower the cost of capital for investments. In that firms with higher stock prices can obtain cheap capital by issuance of new stocks, a financing channel which can be explored especially when other financing sources available may be constrained. Much as this is true if in the context of the company issuing the stocks, it may not be the same for an investor who buys the stocks of the given company hopping to profit on capital gains (absolute stock price changes) when he or she sales at a later date when the price of the stocks appreciate.

A US study by Hatzius, Hooper, Mishkin, Schoenholtz, and Watson (2010) shows the total stock market index as the best predictor among five single financial variables. They however conducted their study and made their conclusions based on more developed European and American securities exchanges and so these findings may differ for the under developed African securities exchanges.

Similarly Stock and Watson (2003) found from their literature review and empirical analysis that stock prices predict output growth in some sectors of countries during some periods implying the same may not hold for others. This is in line with Binswanger (2001) who argues that the performance predictive power of stock prices has declined from the mid-1980s and onwards for a number of G7 countries. Magnus et al (2011) attribute this loss of predictive content to extended periods of stock market overvaluations, as stock prices can sometimes rise beyond (or even fall below) their fundamental or intrinsic value if they are temporarily driven by non-fundamental

factors. These studies however, were conducted on a different context of European, Asian and American securities exchanges which are by far more developed in comparison to the East African securities exchanges

3.3 Summary of Arguments

The extant literature reviewed mostly concentrated on a rather blanket analysis of the factors underlying the performance of the East African Exchanges while other scholars concentrated on individual exchanges only referring to the other East African or African exchanges as part of their literature review. The studies did not inform on aspects like the profitability of trade and there exist differences in the computation of the cost of equity. The literature also reveals that the predictive power of performance variables on stock performance varies over time and may also vary from one stock exchange to another (Binswanger, 2001; Stock and Watson, 2003) and thus there is a need to test this predictive power on a stock exchange than assume findings from one follow for the other as well.

There exist two schools of thought as regarding the relationship between trade volume and performance of securities exchanges one suggesting that trade volume influences the performance of securities exchanges and the other suggesting that this only holds for well-developed stock markets and that under developed markets may not necessarily show the same relationship (Granger and Morgenstern, 1963; Khan and Rizwan, 2008; Chandrapala, 2011).

More so, the few comparative studies focused on broad comparisons often attempting to answer the question of why East African exchanges do not perform as well as other best of the class exchanges in Africa or the world.

Therefore, based on the above arguments, there exists no evidence to demonstrate exactly how trade volume and stock price index influence the performance of the East African Exchanges. And whether, this influence differs from one East African Exchange market to another and the factors underlying such differences.Most importantly, looking at this variables from the perspective of the stock holder investor. Such evidence could also establish whether the East African exchanges markets respond homogeneously to the various factors or are there imperfections in some rather than others.

4 Methodology

The study uses a quantitative approach. This approach is used based on the existing related studies. For example, Mlambo and Biekpe (2007) examined stock market efficiency and Yartey (2008) using similar approaches examined the determinants of stock market.

We use a pooled crossectional data set using empirical data published by the securities exchanges in East Africa in analysis for the period 2011 upto 2013. The firms listed on the stock exchanges of the 3 East African Countries of Uganda (18), Kenya (63) and Tanzania (13).

Profitability of trade (Px) was computed as the price index at the last day of trading in the current year (t) minus the price index at the closing of trade of the most immediate previous year (t-1), similarly, the cost of equity (Cx) was computed as the number of shares traded during the year (trade volume) multiplied by the price index at the last day of trade of the most immediate previous year (t-1). This was based on the assumption that investor would buy shares at the beginning of the year and sale them off at the end of the year to lock in a profit of gain in capital from the absolute price movement.

This study analyzes the relationship between the performance of stock exchanges in East Africa and the factors underlying such performance. The model will underscore the direct relationship between the various performance parameters and the drivers of performance.

The study builds on the Calderon-Rossell (1991) modelwhich expressed a structural relationship between market development and two independent variables i.e.model economic growth and stock market liquidity (Yartey, 2008). Yartey (2008) used this model to establish the determinants of stock market development in emerging economies in South Africa. While Bawa & Yaroson (2013) used the model to study stock market development and corruption.

5 Findings

5.1 Examination of the performance of securities exchanges in East Africa

This section looks at a comparison of how the East African securities exchanges have performed based on the underlying independent variables used in the study, over the period 2006 – 2013.

Table 2: Comparative Descriptive Statistics on Determinants of Performance on the DSE and USE

	NSE			USE			DSE		
	2006	2013	Increase (%)	2006	2013	Increase (%)	2006	2013	Increase (%)
b	93	137	47%	400	1,504	276%	1,000	1,867	87%
Number of transactions	598,301	426,372	-29%	1,037	4,538	338%	1,423	12,673	791%
Trade volume	1,454,667,044	7,665,919,336	427%	11,058,994	1,133,813,156	10152%	3,869,297	243,537,149	6194%
Turnover	94,953,053,257	155,748,852,810	64%	7,746,818,840	197,777,970,520	2453%	2,679,378,290	252,389,529,158	9320%
KEY: b= All Share price index, NSE= Nairobi Securities Exchange, USE= Uganda securities Exchange, DSE= Dar es Salaam Securities Exchange									

The all share price index for the USE has seen the greatest growth of 276% between 2006 and 2013 compared to the DSE with 87% and the NSE trailing at 47%. Since the all share price index is an average which reflects the share prices of all underlying composite stocks, its fair enough to conclude that value of stocks on the USE have tremendously grown and appreciated during the period underreview, it follows that investors on the USE have better prospects of capital gains on the values of their shares over those in the DSE and NSE in that order.

The DSE showed the highest growth in terms of transactions or trades per day closed on the exchange in the period 2006 – 2013. The DSE registered a 791% growth compared to the USE's 398% and the NSE again showing a reduction of 28% in the same period. This could however be due to the fact that the USE and DSE have both had more new companies listed on their exchanges than the NSE has had thus the higher growth as the secondary markets of the respective exchanges are often dormant and only active a few months after the issue of an IPO. The negative growth in the NSE could also signal existence of investors who buy stocks to keep and not for resale in the near future however, this assertion needs to be viewed hand in hand with the trade volumes, as one may have few transactions closed but with each having high volumes while the other has many transactions but with small magnitudes in volume.

On the contrary, the USE again had the highest growth in trade volume of 10,152%, followed by the DSE with 6,194% and the NSE trailing with 427% in the period 2006 – 2013. This suggests that liquidity on the USE has tremendously increased over the period followed by the DSE and NSE in that order; this is in line with Fleming, (2000), and Khan, (2005) definitions of liquidity. They measure liquidity by the volume of transactions on the market.

Besides the above, the DSE also registered the highest growth in turnover (9,320%) over the period 2006 - 2013, and like other statistics have shown, this performance was followed by that of the USE with 2,453%, and then the NSE with a paltry 64%. The turnover by definition is a product of the shares traded and the prices at which the various trades occurred, this therefore makes it a secondary indicator.

5.2 Relationship between trade volume, price index and profitability of trade on the Nairobi securities exchanges

This section looks at the first aspect, how trade volume and price index influence the profitability of trade across the three exchange houses.

Table 3: The model used to test the relationship is: Pox = $\alpha_0 + \alpha_1$ Trade volume+ α_2 Price index

Variable	Coefficient	T-statistic	Standard Error	P-Value
Trade Volume	$-1.50E^{-08}$	-3.02	$4.96E^{-09}$	0.039
Price Index	1.636173	3.70	0.4418354	0.021
Constant	-49.41335	-1.31	37.59348	0.259
R-squared 0.7992, F-Statistic 0.0403, Root Mean Square 22.903				
Key: Pox= Profitability of Trade based on the All share price index, α_0, α_1, α_2= constant variables, a= Trade volume, b= All Share Price Index				

The results in above table confirm the argument that all-share price index and trade volume influence the profitability of trade on the NSE. Both independent variables trade volume and all share price index have P-values of 0.039 and 0.021 which are

significant at 95% levels. The findings also consistent with those of Hatzius et al. (2010) who find stock price index to be a better predictor of performance.

5.3 The relationship between trade volume, price index and profitability of trade based on the all share price index on the USE

Table 4: The model used to test the relationship is: **$Pox = \alpha_0 + \alpha_1 a + \alpha_2 b$**

Variable	Coefficient	T-statistic	Standard Error	P-Value
Trade Volume	$5.42E^{-08}$	0.07	$7.39E^{-07}$	0.944
All share Price Index	0.3670324	0.48	0.7614009	0.650
Constant	-201.4781	-0.37	550.1196	0.729
R-squared 0.1694, F-Statistic 0.6288, Root Mean Square 373				
Key: Pox= Profitability of Trade based on the All share price index, a= Trade volume, b= All Share price index				

The results show an insignificant influence of the all share price index and trade volume of profitability of trade. This is demonstrated by P-values of 0.944, 0.655, and 0.6288 for trade volume, all share price index a respectively. The R-squared value also shows that these two independent variables when combined together explain only 16.9% of the variations in profitability of trade on the USE. These findings inconsistent with the results obtained for the NSE.

5.4 The relationship between trade volume, price index and profitability of trade based on the all share price index on theDSE

Table 5: The model used to test the relationship is: $Pox = \alpha_0 + \alpha_1 a + \alpha_2 b$

Variable	Coefficient	T-statistic	Standard Error	P-Value
Trade Volume	$-8.39E^{-07}$	-2.03	$4.13E^{-07}$	0.098
Price Index	0.6323606	5.13	0.123232	0.004
Constant	-617.0802	-4.61	133.8927	0.006
R-squared 0.8618, F-Statistic 0.0071, Root Mean Square 65.404				
Key: Pox= Profitability of Trade based on the All share price index, α_0, α_1, α_2= constant variables, a= Trade volume, b= All share price index				

As evidenced by the results above, both trade volume and all share price index influence the profitability of trade on the DSE though the trade volume has got a negative influence as shown by the negative coefficient of $8.39E^{-07}$. The two variables with P-values of 0.098 and 0.004 respectively are significant at 90% and 95% level. These findings are consistent with the arguments of Hatzius et al. (2010) who find stock price index to be a better predictor of performance

6 Implications and Conclusions of the Study

6.1 Findings on Whether Stock Trade Volume Influences the Performance of the Securities Exchange

As noted earlier all the securities exchanges i.e. the NSE, USE, and DSE have shown tremendous growth as demonstrated by the trade volumes. All the three securities exchange houses registered their lowest trade volumes in 2006, and rose to finish at record highs in 2013. A similar performance is replicated on the price indices where all the three exchange houses registered their highest ever price index performance in 2013. Extant literature argues that volume of trade and stock market price as being the two most reliable indicators of stock performance. Other indicators like turnover are secondary and are derived from these two most basic primary indicators, and that these two indicators are all you need to gain insight on the strength and direction of any market.

Despite the dips in performance during the period under study, all three securities exchange houses as of 2013 had actually doubled the base figures of 2006 for volume of shares traded and turnover with growth in shares traded although no securities exchange under the study has demonstrated consistency in the growth as shown by the large variations evidenced in the trade volume, price index and turnover.

This study also reveals that the NSE as the most stable and most liquid among the East African securities exchanges, followed by the USE and DSE in that order. Based on the variances in trade volume it follows therefore that any trader will find it easier to buy or dispose of shares on the NSE than on any other of the DSE and USE and that investors place more confidence in the NSE than they with the USE and DSE.

Similarly, the findings also revealed that profitability of trade on the NSE, USE and DSE was largely due to other factors other than trade volume. Trade volume only showed a significant relationship with price index based on profitability of trade on the DSE, which could be explained by the restrictive policies of the DSE on the purchase of shares by foreigners at the initial public offer (IPO). The bulk of shares has to be purchased by the local citizens of Tanzania thus if the foreign investors wish to purchase shares, they will have to pay higher prices attractive enough to the local investors to tempt them sell, which isn't the same with the USE and NSE where the policy is relaxed.

6.2 Findings on whether share price index influences the performance of the securities exchange.

The Price index also showed commendable growth and good performance during the period under study; implying that there is good performance of the underlying stocks that constitute the indices in the respective securities exchanges. The exchange houses also showed similar trends in all the share index performance, with all three exchange houses registering their lowest indices in 2006, and gradually rising to finish with all-time highs in 2013, on the contrary however, the DSE showed

the least variation in the price index, followed by the USE and the NSE had the highest variations in the all share index. Taking the extreme years under the period of study, the NSE actually showed a fall in local share price index as opposed to the USE and DSE that both showed great growth in the same. When stock prices and trade volumes move in the same positive direction, the market is said to exhibit bullish trends and that stocks tend to perform well when the trend in the market is bullish with growing investor confidence.

In addition, the findings show significant positive relationship between share price index and profitability of trade on NSE and DSE implying that the all share price index and all share index profitability move in the same direction signaling increasing investor confidence in the markets. On the other hand, share price index and profitability showed weak relationships for the USE and such trends are associated with low investor confidence in the market.

6.3 Conclusion of the study

Trade volume significantly (positively) influences the cost of equity on the East African securities exchanges however doesn't have significant information content on the profitability of trade.All thethree securities exchanges i.e. the NSE, USE and DSE have a key challenge of the ability to maintain a low variance in the volumes traded thus stay liquid in order to attract traders and investors. High trade volumes attract investors as this shows they can be able to sell off their shares at any time should they feel like while low trade volumes on the other hand deters investors or could imply presence of dormant traders who buy and hold on to stocks and thus limiting the volumes of shares traded on the market.

Price index positively influences the profitability of trade on the DSE. However, investors in the NSE and USE seem to react to non-fundamental factors thus distorting the expected patterns. The price index also does not influence the performance of all stocks alike thus some stocks respond differently to the changes in the price index.

Lastly we conclude that, the three securities exchanges i.e. the NSE, USE and DSE do not respond homogeneously to all the variables thus there exist to some extent variations in the market dynamics for the three exchange houses.

6.4 Implications and contribution of the Study

The study showed that the three securities exchanges have high variances in trade volume performance and that the trade volume performance is largely driven by new listings, this poses a challenge for the growth of the securities exchanges as they could be holding dormant investors who buy and hold, this distorts the efficiency of the market. This could also hint at limited awareness among the current investors and prospective investor public. Regulatory authorities thus need to increase awareness and put in place an environment that fosters trade other than buy to stock. This will help yield an informed and expanded investor public, and maintain a high level of activity in the market.

The variations and limited information content of stock price in measuring profitability of trade suggest over/ under reaction of stocks to market information and lack of arbitrageurs, in traditional finance theory; arbitrageurs use sophisticated techniques to help smooth out over or under reaction of the market to information thus ensuring that the stocks maintain their correct price.

Since some variables have shown correlation among the securities exchanges, it implies that one exchange's performance can influence the other and thus the exchange houses should invest in sharing information and jointly under take projects to enhance good trading environment and benefit from the advantages of synergies although, caution needs to be taken as the results show the exchange houses do not respond homogeneously to all the performance variables. Interdependence of variables on the other hand can be detrimental if one exchange is facing serious challenges, as these will spill over to the other dependent exchange house.

Investors should not only look at trade volumes and price index as determinants of performance in making their investment decisions as their information content is not sufficient for all performance dimensions and more so, stocks may respond differently to movements in price and volume on the market.

We recommend that, the exchange houses and capital markets authorities should intensify sensitization of the investors and the general public to foster participation and address issues that hamper trade volume like easing of trade through electronic or online trading, investor and public education on stock exchange operations among others. Through such avenues, the investor base can be increased and ably maintained and the more the participants (buyers and sellers) the better for the exchange.

Additionally the traders seem to be driven by new listings or stock splits on the securities exchanges thus signaling poor performance or presence of dormant traders in the secondary markets, more needs to be done in boosting post listing trade activity and ensuring an active secondary market. Reducing the cost of trade settlements for say lager volumes would help boost activity in the secondary market by encouraging investors to trade large volumes as the study has shown that trade volume greatly influences cost of equity.

Lastly the regulatory authorities (capital market authorities) should design policies that encourage listing and sensitize business owners of the benefits of raising capital through the capital markets. Deliberate policies aimed at reducing costs associated with issuance of shares, fair and equal treatment of all investors should be considered. When more companies are listed or more shares issued, the more there will be shares available for trade and investors will have a broad base or mix of shares from different industries from which to buy and balance their portfolios.

Monetary authorities should support the securities exchanges by maintaining stable currencies to avoid the destabilizing effects that inflation has on the operations and thus performance of the securities exchanges.

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