DYANMIC LINKAGE BETWEEN FOREIGN EQUITY FLOWS AND STOCK MARKET RETURNS AT THE NAIROBI SECURITIES EXCHANGE

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ABSTRACT
This study investigated the dynamic linkage between foreign equity flows and equity returns at the Nairobi Securities Exchange (NSE) since foreign equity flows are expected to induce a surge in domestic stock prices and consequently a fall in price when foreign equity investors exit the domestic stock market. An increase in the stock prices attracts foreign investors into the domestic stock market. The main objective of this study was to understand how stock prices in Kenya influence foreign equity flows, and in turn how foreign equity flows affect stock prices. To understand the dynamic linkages between foreign equity flows and stock market returns the study utilized vector autoregressive models, causality tests, vector decomposition and impulse response functions together with data from the Capital Markets Quarterly statistical bulletins for during and after 2007/2008 financial crisis (January 2007 to December 2015). Monetary variables used included NSE 20 share index which represents stock market returns, net foreign equity flows, foreign equity outflows and inflows. The study established that foreign equity flows has a positive and significant effect on stock markets returns. Also, foreign equity flows granger causes stock market returns at Nairobi Securities Exchange which is consistent with price pressure hypothesis. Hence, there is need for the government agencies to implement relevant policies that can attract equity inflows in Kenya.

Keywords: Foreign Equity Flows, Foreign Equity Flows, Stock Market Returns
INTRODUCTION

The role of foreign equity investors in the capital markets is a crucial unresolved issue in international financial markets. Do the participation of foreign equity investors disrupt a country’s stock market, or does it make that market more efficient and by extension better share prices? The answers to these questions form the main motivation behind exploring the linkage between the equity inflows and stock market returns in Kenya. The growth theory of neo-classical school emphasizes positive aspects that foreign capital inflows into developing economies promotes economic growth through the increase of investment, (Rogoff, 1999). Liberalization of capital flow enhances liquidity and efficiency in the host markets, (Anayochukwu, 2012).

In capital markets, Foreign Portfolio Investment (FPI) comprises such investment in equities, bonds, mutual funds and financial derivatives, (IMF, 1998). Principal motivating factors behind foreign investment include returns on a specific investment as well as reducing risks through cross border diversification. Investors get their returns from foreign investment through divided payment and capital gain on an asset. Equity Foreign Investors purchase hold shares and are not involved in the company’s management, (Reisen & Soto, 2001).

Foreign investors contribute to the development of a stable and efficient capital markets in the host country. An inflow of foreign investments into a given country leads to increased liquidity in the domestic capital markets, resulting in deeper and liquid capital markets, (Duasa and Kassim, 2009). In this study, therefore, foreign equity flows is considered as a cross-border investment or entry of funds into a host country for the purposes of purchasing securities in a country’s stock market with an intention of getting high rates of return on investment rather than management or legal control. Ferreira and Laux, (2009), using data from 50 countries during 1988-2001, established a strong correlation between stock market returns and equity inflows in developed and emerging markets. Opening the domestic capital market to investors from other countries, reduces the cost of obtaining capital as well as increasing the growth of the capital stock, (Blair 2003). Quinn and Toyoda (2008), used data from ninety four countries to model effects of financial liberation. They established that financial market liberalization has a positive and significant effect on host economy’s growth.

Although a study on effect of equity inflows on domestic equity prices is very crucial for policy reasons, only a few attempts have been made to examine the two variables for developing and emerging countries due to lack of reliable time series data. This study therefore was an attempt to bridge the gap by examining the linkage between equity inflows and stock returns in Kenya. Foreign equity investment improves the liquidity of domestic stock market, and can aid in making the host country’s stock market more efficient and liquid. Foreign equity investors can help the domestic stock markets by innovating more advanced instruments such as equity linked derivatives and contribute to the development of the host country’s capital market.

Foreign investors started trading shares listed at the Nairobi Securities Exchange in 1954. Back then, stocks were only subscribed and traded among European residents living in Kenya. After independence in 1964, the Government of Kenya encouraged its citizens to participate in stock market but continued protecting foreign investors by adopting Foreign Investment Protection Act the same year. The act permitted foreign investors to repatriate capital and profit, (Nyang’oro, 2013).

There are several institutional changes that have been implemented by the Kenyan Government through the National Treasury to develop and improve the capital market efficiency. These include; establishment of the capital markets
regulator in 1990, reviewing of Capital Markets Act in 1995 which enabled foreign portfolio investors to trade government securities, repealing of Exchange Control Act in 1995 to remove exchange controls and introduction of Central Depository System in 2004, (Nyang’oro, 2013). Re-introduction of capital gain tax caused equity outflow early in the year 2014, a trend that reversed later in the year after blue-chip company’s shares surged and as a result attracting more liquidity in the respective equities. A spike is evident from July 2015 to December 2015 which can be attributed to removal of the Capital gain tax that had been re-introduced in the previous year. The Capital Gain Tax was later repealed in year 2015 and replaced with a one-off transaction fee of 0.3%.

**Statement of the problem**

Several researches have been done on foreign equity portfolio and the capital market performance in various stock exchanges in the world, (Reisen and Soto (2001), Bekaert and Harvey (2002), Jerome (2007), Duasa and Kassim (2009), Ferreira and Laux (2009), Nyangóro (2013)). Foreign equity inflows is always anticipated to drive equity market prices upwards but no relationship between the two variables. This is contrary to the intention of the financial globalization and market liberalization. Foreign equity flows in developing and emerging capital markets is expected to enhance liquidity and better market prices in domestic stock markets.

Additionally, none of the researchers investigated causality between foreign equity flows and NSE 20 Share Index and impact of equity flows on stock prices in Kenya. Further, the above researchers did not establish linkage between equity flows and stock prices in developing and emerging Capital Markets, during and post 2007-2008 global financial crises.

Therefore, an understanding of the link between the stock market returns and the foreign equity flows would help policy makers design appropriate policies to deal with equity inflows and enhance performance of the capital markets in Kenya. A combination of the identified gaps in the above studies, are the motivation factors towards exploring the dynamic linkage between foreign equity flows and stock returns in Kenya.

**Objectives of the study**

The main objective of this study was to examine the dynamic linkage between foreign equity flows and stock market returns in Kenya. The specific objectives were:-

- To examine the direction of Causality between foreign equity flows and stock market returns in Kenya.
- To measure the impact of net foreign equity flows on stock market returns in Kenya.

**LITERATURE REVIEW**

**Theoretical literature**

**Asymmetric information theory**

This theory looks at the information available to both the domestic and foreign investors. The theory assumes that domestic investors have an advantage since they can access information easily as compared to foreign investors. The foreign investors are therefore more sensitive to public information and any news or information on stock market, (French, 2011). Public information about a specific stock market influences foreign investors to revise their expected returns and reallocate investments in a more rapid and unsystematic manner.

**Return Chasing theory**

This theory looks at the nature of the linkage between the equity flows and returns. The return chasing theory argues that foreign investors are always after promising returns in foreign capital markets. Therefore, lagged returns are expected to be strongly and positively correlated with the equity flows. Foreign investors are always chasing returns in performing stock markets to take advantage of high returns. This eventually
contribute to a strong and positive correlation between equity flows and lagged returns, (Bohn and Tesar, 1996).

**Portfolio rebalancing theory**

The above theory suggests that investors with securities from different foreign countries, tend to dispose stocks from the performing countries and continue holding stocks from underperforming countries. Tobin (1967), authored a paper on a behaviour towards risk and liquidity preference where he came up with a theory on risk aversion and liquidity preference on portfolio selection. He started his portfolio selection model of liquidity preference with this presumption that an individual's assets holder has a portfolio of either of the assets. Tobin compares two assets i.e. cash and bonds and argues that, bonds has a risk but earns interest, on the other hand, cash does not bring any return nor does it impose any risk. The returns on the fixed income assets cannot be predicted due to the nature of the investment, since it has capital gain/loss and risks. The higher the investment provision on bonds, the higher the possibility of capital risks. High returns from bonds attracts investors in the fixed income market. The investor might not have invested due to high risks in the fixed income market as compared to other assets class, (Jhingan, 2002).

**Empirical literature**

Various empirical studies have shown that there is a positive correlation between capital flows and equity returns in various jurisdictions. Tesar and Werner (1995), conducted an empirical study of the asymmetric information theory and noted that, there is a strong relationship between stock market returns and capital flows. In their study using data from Asian markets, Griffin, Nardari and Stulz (2004) established that stock prices are positively correlated with equity flows. They also established that foreign investors make investments decisions based on the stock performance and flows in the target stock exchange.

Choe, Kho, Stulz (1999), studied the relationship between capital flows and stock prices in Korea, before and after Asian financial crisis. They established that foreign investors targeted more stocks before the surge in prices and preferred stocks that were performing well a day before trading day. This supports the positive feedback hypothesis. However, they found out that, positively feedback theory did not apply during the Asian financial crisis.

Bekaert and Harvey (2002), argue that permitting foreign investors to trade stocks at the domestic stock market enables companies at the nascent stage of development to access capital with ease. Further, having foreign investors in a domestic market would lead to an enhanced market liquidity, and as well attract more potential investors thus increasing the risk sharing.

Calvo and Mendoza (2000), established that allowing foreign investors to access domestic capital market leads to a surge in trading volumes and as a result a boom in stock prices. The high trading volumes lasts for a short period during the capital inflows. The Surge usually dies off before capital inflows completely subsides.

Froot and Donohue (2002), established that Asian markets experienced foreign capital inflows during the Asian financial crisis. In pre-crisis period, daily inflows averaged around 30 per cent into the Asian market and averaged approximately 40 per cent into emerging markets.

Pavabutr and Yan (2003), established that foreign flows in domestic market is linked with a lower risk premium. The risk premium decreases on the securities traded by the foreign investors and reduces further when the market is fully liberalised.

Warther (1995), modelled flows and market returns and established that, there is no evidence that market returns are negatively correlated with the past flows, but found out a positive correlation between lagged returns and flows and
a negative correlation between lagged flows and returns, which supports price pressure hypothesis.

**METHODOLOGY**
In this study, non-experimental causal research design method was employed. The empirical analysis explored data as captured to provide an evidence on whether equity foreign investors at the Nairobi Securities Exchange make investment decisions based on price signals. The study also tested causality between the stock returns and foreign equity flows. The study explored two theories. These theories are; return chasing theory and price pressure hypothesis.

**FINDINGS**

**Analysis of time series properties**
Table 1 below highlighted descriptive time series properties of two variables. These included measures of central tendency and dispersion.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net flow(00000)</td>
<td>108</td>
<td>1000.461</td>
<td>1776.955</td>
<td>-4025.02</td>
<td>9857.242</td>
</tr>
<tr>
<td>NSE 20 Share Index</td>
<td>108</td>
<td>4328.75</td>
<td>774.3203</td>
<td>2475</td>
<td>5774</td>
</tr>
</tbody>
</table>

The data analysed had a total of 108 observations (realizations) i.e. a total of 108 months from January 2007 to December 2015. Net foreign equity flows had a mean of 100 million and a standard deviation of 177 Million. The NSE 20 Share index had a mean of 4,328.75 and a standard deviation of 774.32. The maximum value for net equity inflow was approximately 0.985 billion and a minimum of equity outflow of 0.4025 billion. In the same period NSE 20 share index had a minimum of 2,475 and a maximum of 5,774.

**Net Foreign Equity flows**

Figure 1 below depicted foreign net equity flows from January 2007 to December 2015. The series showed net equity out flows from year 2008 to end of year 2009, this could be attributed to low investor appetite for the Kenyan stock market as a result of 2007/2008 post-election violence crisis.

![Net Foreign Equity flows from January 2007 to December 2015](image_url)

**Figure 1: Net Foreign Equity flows from January 2007 to December 2015**

From year 2010 to end of year 2013, the Kenya stock market experienced foreign equity inflows which could be attributed to high returns on shares listed at Nairobi Securities Exchange. From early 2014, the market experienced equity outflows as a result of re-introduction of Capital Gain tax which was previously suspended in year 1985.
At the end of year 2015, the Capital Gain tax on listed securities was reversed which resulted in attraction of more investors in the Kenyan capital market leading into equity inflows.

**NSE 20 Share index from January 2007 to December 2015**

![Figure 2: NSE 20 Share index from January 2007 to December 2015](image)

The series has a down trend from mid-2007 to early 2009. This was the same period when the country was experiencing post-election violence and the global financial crises. The series picked in year 2010 when the country was stable politically but showed a downside trend in year 2011 when the country was heading for a general election.

The series showed an upward trend from 2013 until end of 2015 when the Kenyan Government reintroduced Capital Gain tax on listed securities at the Nairobi Securities Exchange.

**Test for autocorrelation**

The following were the hypothesis to test existence of a serial autocorrelation;

**Table 2: Serial autocorrelation: Lagrange-Multiplier Test**

<table>
<thead>
<tr>
<th>lag</th>
<th>Chi-square</th>
<th>Degree of freedom</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.5184</td>
<td>4</td>
<td>0.34037</td>
</tr>
<tr>
<td>2</td>
<td>5.1134</td>
<td>4</td>
<td>0.27586</td>
</tr>
</tbody>
</table>

From table 2, P-values were 0.34 and 0.27 which was greater than 0.05 and therefore we cannot reject null hypothesis that there was no serial correlation.

**Normality test Analysis**

**Table 3: Normality Test: Jarque-Bera test**

<table>
<thead>
<tr>
<th>Equation</th>
<th>Chi-square</th>
<th>Degree of freedom</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net flow</td>
<td>292.803</td>
<td>2</td>
<td>0.00000</td>
</tr>
<tr>
<td>NSE 20 Share Index</td>
<td>11.994</td>
<td>2</td>
<td>0.00249</td>
</tr>
<tr>
<td>All</td>
<td>304.796</td>
<td>4</td>
<td>0.00000</td>
</tr>
</tbody>
</table>
From table 3 above, P-value for the net outflow and NSE20 share index was 0.0000 which was less than 0.005 which meant that the null hypothesis should be rejected. This implied that there was need to transform the data in order to have normal residues. The data was transformed through log transformation as shown in table 4 below.

**Table 4: Test of normality after log transformation: Jarque-Bera test**

<table>
<thead>
<tr>
<th>Equation</th>
<th>Chi-square</th>
<th>Degree of freedom</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Net equity flow</td>
<td>6.598</td>
<td>2</td>
<td>0.03693</td>
</tr>
<tr>
<td>Log NSE 20 Share Index</td>
<td>1.826</td>
<td>2</td>
<td>0.40123</td>
</tr>
<tr>
<td>All</td>
<td>8.424</td>
<td>4</td>
<td>0.07722</td>
</tr>
</tbody>
</table>

The P value for Net equity flow was 0.03693 and for NSE 20 share index was 0.40123 which was greater than 0.05. The residues were normally distributed after log transformation.

**Lag Selection Criteria**

Inference in Autoregressive models depends critically on choice of a lag length. The choice of lag-length is thus a critical step in the estimation procedure and affects the inference in the VAR model. Hsiao (1981), demonstrates that the acceptance or rejection of a null hypothesis in many cases depend on the selected lag-length.

**Table 5: Lag selection criteria**

<table>
<thead>
<tr>
<th>lag</th>
<th>LL</th>
<th>LR</th>
<th>DF</th>
<th>P</th>
<th>FPE</th>
<th>AIC</th>
<th>HQIC</th>
<th>SBIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-157.82</td>
<td></td>
<td></td>
<td></td>
<td>.095735</td>
<td>3.32958</td>
<td>3.35117</td>
<td>3.383</td>
</tr>
<tr>
<td>1</td>
<td>-129.299</td>
<td>57.042</td>
<td>4</td>
<td>0.000</td>
<td>.057441*</td>
<td>2.81872*</td>
<td>2.88351*</td>
<td>2.97899*</td>
</tr>
<tr>
<td>2</td>
<td>-126.629</td>
<td>1.3395</td>
<td>4</td>
<td>0.855</td>
<td>.061577</td>
<td>2.8881</td>
<td>2.99608</td>
<td>3.15522</td>
</tr>
<tr>
<td>3</td>
<td>-126.249</td>
<td>4.7601</td>
<td>4</td>
<td>0.313</td>
<td>.063712</td>
<td>2.92185</td>
<td>3.07302</td>
<td>3.29582</td>
</tr>
<tr>
<td>4</td>
<td>-124.657</td>
<td>3.1845</td>
<td>4</td>
<td>0.527</td>
<td>.067029</td>
<td>2.97201</td>
<td>3.16637</td>
<td>3.45283</td>
</tr>
<tr>
<td>5</td>
<td>-121.023</td>
<td>7.2675</td>
<td>4</td>
<td>0.122</td>
<td>.067604</td>
<td>2.97964</td>
<td>3.21719</td>
<td>3.56731</td>
</tr>
<tr>
<td>6</td>
<td>-118.113</td>
<td>5.8197</td>
<td>4</td>
<td>0.213</td>
<td>.069249</td>
<td>3.00236</td>
<td>3.28309</td>
<td>3.69687</td>
</tr>
<tr>
<td>7</td>
<td>-117.551</td>
<td>1.1236</td>
<td>4</td>
<td>0.891</td>
<td>.074526</td>
<td>3.07399</td>
<td>3.39791</td>
<td>3.87534</td>
</tr>
<tr>
<td>8</td>
<td>-116.569</td>
<td>1.9649</td>
<td>4</td>
<td>0.742</td>
<td>.079551</td>
<td>3.13685</td>
<td>3.50396</td>
<td>4.04506</td>
</tr>
<tr>
<td>9</td>
<td>-116.263</td>
<td>.61096</td>
<td>4</td>
<td>0.962</td>
<td>.086177</td>
<td>3.21382</td>
<td>3.62412</td>
<td>4.22887</td>
</tr>
<tr>
<td>10</td>
<td>-116.134</td>
<td>.25893</td>
<td>4</td>
<td>0.992</td>
<td>.093768</td>
<td>3.29446</td>
<td>3.74795</td>
<td>4.4636</td>
</tr>
<tr>
<td>11</td>
<td>-111.765</td>
<td>8.7368</td>
<td>4</td>
<td>0.068</td>
<td>.093483</td>
<td>3.28678</td>
<td>3.78346</td>
<td>4.51553</td>
</tr>
<tr>
<td>12</td>
<td>-106.808</td>
<td>9.9154*</td>
<td>4</td>
<td>0.042</td>
<td>.092147</td>
<td>3.26683</td>
<td>3.8067</td>
<td>4.60243</td>
</tr>
</tbody>
</table>

From table 5 above, the optimal length for the model was one (1) as indicted by Akaike Information Criteria, Final prediction error (FPE), Schwarz Bayesian Information Criterion (SBIC) and Hannan and Quinn information criterion (HQIC).

**Unit root test**

**Table 6: Net equity flows Dickey Fuller test: Augmented Dickey-Fuller test for unit root**

<table>
<thead>
<tr>
<th>Z(t)</th>
<th>Test statistic</th>
<th>1% critical value</th>
<th>5% critical value</th>
<th>10% critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-4.203</td>
<td>-4.038</td>
<td>-3.449</td>
<td>-3.149</td>
</tr>
</tbody>
</table>

MacKinnon approximate p-value for Z(t) = 0.0044

From the results in table 6, at 95% confidence level, absolute test statistics for the net equity flows was 4.203 which was greater than than critical value 3.449. Therefore, since the test
statistics was greater than the critical value, we can reject the null hypothesis and concluded that the variable had no unit root and therefore the variable is stationary.

Table 7: NSE 20 share index Dickey Fuller test: Augmented Dickey-Fuller test for unit root

<table>
<thead>
<tr>
<th>Test statistic</th>
<th>1% critical value</th>
<th>5% critical value</th>
<th>10% critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z(t)</td>
<td>-4.203</td>
<td>-4.038</td>
<td>-3.449</td>
</tr>
</tbody>
</table>

MacKinnon approximate p-value for Z(t) = 0.0044

The test statistics for the NSE 20 share index was 2.039 which was less than the critical value (3.449) at 5% level of confidence and therefore we could not reject the null hypothesis. This suggested that the variable did not have a constant mean, constant variance and a constant co-variance at its level form. The variable was analysed for the presence of unit root at first difference and the results are reported in table 8 below.

Table 8: NSE 20 share index Dickey Fuller test after first difference: Augmented Dickey-Fuller test for unit root

<table>
<thead>
<tr>
<th>Test statistic</th>
<th>1% critical value</th>
<th>5% critical value</th>
<th>10% critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z(t)</td>
<td>-5.129</td>
<td>-3.508</td>
<td>-2.890</td>
</tr>
</tbody>
</table>

MacKinnon approximate p-value for Z(t) = 0.0000

After the first difference, the test statistic i.e. 5.129 which was greater than the critical value which was 2.890 at 95% confidence interval, implied that the variable did not have a unit root after the first difference.

Table 9: Vector Autoregression output

<table>
<thead>
<tr>
<th>Equation</th>
<th>Excluded</th>
<th>Chi2</th>
<th>df</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log net equity flow</td>
<td>D(log NSE 20 share index)</td>
<td>0.21146</td>
<td>1</td>
<td>0.646</td>
</tr>
</tbody>
</table>

The following autoregression table showed relationship between the lagged variables used in the model.

From table 9 above, R-squared value for the Net equity flow equation was 0.3594 and R-squared value for the NSE20 share index was 0.1168. This showed that, Net equity flows explained only 11.68% of the variability in NSE 20 share index and therefore net equity flows had positive and a significant impact on NSE 20 share index.

Granger causality

Table 10: Causality between NSE 20 Share index and Net Equity flows: Granger causality Wald tests

<table>
<thead>
<tr>
<th>Equation</th>
<th>Excluded</th>
<th>Chi2</th>
<th>df</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log net equity flows</td>
<td>D(log NSE 20 share index)</td>
<td>0.21146</td>
<td>1</td>
<td>0.646</td>
</tr>
</tbody>
</table>

NSE 20 share index contributed to 35.94% of the variable in net equity flows, which implied that 64.06% of the net equity flows was contributed by other factors not considered in this research.
Table 10 above, established existence of causal relationship between the net equity flows and NSE 20 share index. The result when NSE 20 share index was the dependent variable showed a Chi-square of 0.2115 and a probability of 0.646. Based on these results, the null hypothesis of causal relationship from net equity flows to NSE 20 share index was not rejected. This therefore suggested that NSE 20 share index did not cause net equity flows at the Nairobi Securities Exchange in the short run.

When net equity flow was the dependent variable shows a Chi-square of 14.128 and a probability of 0.000 which was less than 0.05 level of significance, and therefore we could not reject the null hypothesis that net equity flows Granger causes NSE 20 index in short run which was in consistent with price pressure hypothesis theory.

Stability of the VAR model
Checking stability of the estimated VAR model was necessary prior to estimating impulse-response functions (IRF) and forecast-error variance decompositions (FEVD). The following table of eigenvalues confirms that the estimate is stable.

<table>
<thead>
<tr>
<th>Table 11: Stability of the VAR model: Eigenvalue stability condition test</th>
</tr>
</thead>
<tbody>
<tr>
<td>eigenvalue</td>
</tr>
<tr>
<td>0.5835547</td>
</tr>
<tr>
<td>-0.05870324</td>
</tr>
</tbody>
</table>

All the eigenvalues lie inside the unit circle. VAR satisfies stability condition.

Impulse response functions and Variance decomposition of forecast errors
Impulse response functions of NSE 20 Share index to its own shock

Figure 3: Impulse response functions NSE 20 share index to its shock
From the above figure, NSE 20 share index responds positively to its own shock during the first period but the effect dies after the second period.

Impulse response functions of net foreign equity flow to its own shock

![Graph showing impulse response functions for NSE 20 share index](image)

**Figure 4: Impulse response functions on foreign equity flows to its shock**

From figure 5, foreign equity flows responds positively to its own shock during the five periods and the effect dies out over time.

The response of net equity flows to a shock to NSE 20 share index and vice versa

![Graph showing response of net equity flows](image)

**Figure 5: The response of net equity flows to a shock to NSE 20 share index and vice versa**

Net equity flows initially responded negatively to a shock on NSE 20 share index during the first period, then responds positively after the second period, but crossed its steady state value to the positive region after period three. This result suggests that the shock to NSE 20 share index affects the net equity flows negatively in the first two periods but the effects dies off after period three (3).
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Table 12: Variance decomposition of forecast errors

<table>
<thead>
<tr>
<th>step</th>
<th>(1) fevd lower</th>
<th>(1) upper</th>
<th>(2) fevd lower</th>
<th>(2) upper</th>
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95% lower and upper bounds

1. Impulse = D (log NSE 20 share index), and response = D (log NSE 20 share index);
2. Impulse = D (log NSE 20 share index), and response = log Net equity flow;
3. Impulse = log Net equity flow, and response = D (log NSE 20 share index);

The results appeared in four quadrants. The column labelled one shows forecast error variance decomposition of NSE 20 share index for periods one to eight with respect to its shock. The column labelled 2 shows forecast error variance decomposition of net equity flows for periods one to eight with respect to NSE 20 share index shock. The column labelled 3 showed forecast error variance decomposition of NSE 20 share index for periods one to eight with respect to net equity flow’s shock. In period one of column one for instance, NSE 20 share index shocks explain about 6.3 per cent of net equity flows. In the column marked (3) for period two, a shock to net equity flow’s triggered about 8.1 percent variation in NSE 20 share index. From columns one and four, it was clear that shock on either variable, responded to its performance and no effect on the other variable.

Conclusion

From the above empirical findings, it was established that the market returns significantly affects the foreign equity flows but equity flows showed a positive but a less impact on market returns. Granger causality test demonstrated that, market returns does not Granger cause foreign equity flows but foreign equity flows Granger causes market returns in Kenya.

A shock to the market returns affects net equity flows negatively during the first and the second period and stabilises after the third period. These results support the price pressure hypothesis theory.

CONCLUSION AND POLICY IMPLICATIONS

Conclusions

Vector Autoregression output table showed that, Net equity flows explained only 11.68 percent of the variability in market returns. Other factors not explored in this research contributed the rest of 88.32 percent. This showed that net equity flows has less impact on performance of NSE 20 Share index. Granger Causality analysis showed that net equity flows granger causes market returns in short run which is consistent with price pressure hypothesis theory. Net equity flows was found to be positively affecting the market returns with a smaller impact as indicated in chapter 4, but granger causes market returns.

In Impulse response functions, a shock in NSE 20 share index had a negative effect on net equity flows during the first period but responded positively during the second period but crosses a
In Variance decomposition, a shock on net flows found to be having approximately 8.1% variation on NSE 20 share index. 

Policy Implications
There is need to fully “open” the Kenyan stock market to foreign investors. The National Treasury need to work with the Capital Markets Authority to permit 100 percent subscription of NSE listed shares with no restrictions or conditions. This will attract more stock market investors and result in more and enhanced liquidity at the NSE. It would also push the NSE as the preferred Securities Exchange.

Secondly, there is need to embrace thorough “fit and proper test” for directors of listed companies. The Capital Markets Authority should ensure that directors of listed companies undergo vigorous fit and proper test. This will ensure that only eligible members are appointed as directors of the listed companies and will ensure that companies are well managed. With trusted directors, foreign and local investors will be assured of the financial reports and high level of corporate governance.

Thirdly, there is need for more international marketing activities to attract foreign equity investors. The Capital Markets Authority needs to work together with Nairobi International Financial Centre Authority (NIFCA) to come up with more aggressive marketing activities to attract foreign investors to the Kenyan stock market.

Fourthly, the Capital Markets Authority need to join International Capital Markets Association (ICMA). By joining ICMA the capital markets regulator will have a platform to interact with potential foreign investors. The CMA will also learn valuable lessons as well as benchmark with the best jurisdictions on how to enhance market liquidity.

Five, there is need to ensure stability of the Kenyan currency. The Central Bank of Kenya need to ensure that the country has a monetary policy that is geared towards having a stable Kenya Shilling against hard currencies. Minimal currency fluctuations will give foreign investors comfort to invest in Kenya Shillings denominated investments such as shares.

Lastly, there is need for more local market investor education activities. The Capital Market and the Nairobi Securities Exchange need to work together to ensure that more Kenyans are conversant with listed securities and are participating in buying and selling of shares listed at NSE. They will also benefit from capital gains when there is more foreign equity inflows.

Areas for Further Research
The main gap from this research could be exploring on dynamic linkages among net equity flows, Kenya Shillings exchange rate and Foreign Direct Investment in Kenya. Other issues that could be investigated further are the variables that affect stock market prices at Nairobi Securities Exchange and contribution of foreign equity flows on capital market development in Kenya. For policy purposes, it may also be important to carry out research into effects of financial liberation on Kenyan economic growth.

REFERENCES


Hilde C. Bjørnland: PhD Course: Structural VAR models, Norwegian School of Management (BI).


