

Do markets react to corporate governance reforms? Evidence from a developing economy

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Abstract

Purpose – The purpose of this study is to investigate market reaction to corporate governance reform pronouncements on board diversity in Kenyan listed firms.

Design/methodology/approach – An event study was performed using 240 days pre-event period and an event period that consisted of 25 days pre and 25 days post the March 2016 board diversity reforms announcement in Kenya. The difference in differences (DiD) method was also used for cause-effect analysis for two years before and three years after the March 2016 board diversity reforms announcement. The outcome variable was firm value, whereas the treatment and control groups were Kenyan listed firms and deposit-taking credit unions, respectively.

Findings – The event study method found cumulative abnormal returns after the date of the board diversity reforms announcement to be positive and significant. The DiD methods found a positive and significant market reaction to the March 2016 board diversity reforms announcement in Kenya.

Research limitations/implications – This study was limited by the secondary data that was collected and analyzed from financial statements and stock price data from the Nairobi Securities Exchange (NSE). Financial statements have the disadvantage of being affected by the judgment and estimates of their preparers or accountants.

Practical implications – Emerging markets like the NSE are vulnerable to market manipulation by insiders. Efficient stock markets are known to attract more investors who are interested in a trustworthy stock price determination mechanism. The Capital Market Authority should thus continue implementing corporate governance reforms aimed at improving the efficiency of the NSE and the trustworthiness of stock prices therein. The continued reforms thus imply better value for money for the NSE investors.

Originality/value – This study makes an important contribution to literature by combining an event study and DiD analysis to assess market reaction to board diversity reform announcements in emerging markets of sub-Saharan Africa which is a concept that has not been researched before. Past studies have used event studies to investigate the efficiency status of stock markets in sub-Saharan Africa, whereas the current study used an additional method of DiD and hence contributed to literature.

Keywords Board diversity, Event study, Difference in differences, Financial performance, Corporate governance

Paper type Research paper

1. Introduction

Emerging stock markets like the Nairobi Securities Exchange (NSE) are characterized by high volatility, high returns, infrequent trading and weak regulations and are vulnerable to manipulation by insiders at the expense of other investors (Magnusson and Wydick, 2005; Khwaja and Mian, 2005). Recently some blue Kenyan firms collapsed in retail trade, aviation, hospitality and commercial banking sectors despite being very successful in the past and the failure has been attributed to poor corporate governance (CMA, 2016). The motivation behind the current study was thus to investigate the market reaction to board diversity reforms announcement by Kenyan stock market investors.

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Several studies have found diversity in boards in terms of gender, age, position and nationality can yield important organizational benefits and even competitive advantages, capable of steering the organization into the future (Cox and Blake, 1991; Bhagat and Black, 1999). Studies such as Naciti (2019) find that board diversity enhances environmental performance, which is an important dimension of sustainability. As companies embrace improved corporate governance structures, a diverse board seems capable of attracting individuals who demonstrate concerns for sustainability and are capable of engaging in sustainability debates in their discussions. Burke *et al.* (2019) argue that board commitment has a positive association with social performance, whereas Brammer and Pavelin (2006) establish a significant association between corporate governance practices and the disclosure of environmental information.

Prior literature documents extensive findings on the contribution of board composition including diversity to a firm's financial performance (Hendry and Kiel, 2004; Finegold *et al.*, 2007; Grinblatt and Titman, 2016). Two approaches have been pursued in examining corporate governance and firm performance. Grinblatt and Titman (2016) focus on the nexus between corporate governance and the long-term survival of the entity. Other studies such as Finegold *et al.* (2007) focus on specific board characteristics such as the size of the board, independence, age and firm performance. However, the link between board composition in terms of diversity and investor reaction remains largely underexplored. It is on this basis that the present study argues that because board diversity has linkages with the performance of a firm, then this is likely to lead to investor reaction whenever there are any changes in board composition.

Past studies have been inconsistent about the reaction of the market to the appointment of female directors. Adams *et al.* (2011) found gender to be value relevant. This finding was consistent with that of Campbell and Vera (2019) who found that in the short term, stock markets react positively to female board appointments. The findings of Adams *et al.* (2011) and Campbell and Vera (2019) contradicted the findings of Gregory *et al.* (2013) who found that there are negative gender stereotypes in the short run and that the stock market fails to gather the capabilities of female directors.

Other studies have examined stock market reaction to the appointment of outside directors in general but the results are also mixed. Davidson *et al.* (2004) found that there is a significant and positive market reaction to the appointment of outside directors to the boards of companies. The finding by Davidson *et al.* (2004) supported the finding of Rossi and Cebula (2015) who found that there was a positive market reaction to board composition. However, these findings contradict those of Lin *et al.* (2003) who found that there was rather an insignificant stock market reaction when audit committee members who are normally part of outside directors and possess financial expertise are appointed to the board of directors.

In the context of mixed results of prior studies, in this study, we undertake a further examination of these issues. Specifically, we examine the market reaction to corporate governance regulatory reform announcements an issue that has seen very few studies (Malkiel, 2003; Black and Khanna, 2009). Corporate governance regulatory reforms tend to be market-wide and thus are supposed to affect all public firms at the same time when announcements are made. Stock prices are known to change because of the arrival of news in the market such as corporate governance reforms (Malkiel, 2003).

Our study is set in the context of NSE in Kenya, a developing country whose stock market is in the weak form efficiency (Magnusson and Wydick, 2005; Mlambo and Biekpe, 2007). This is important because most studies on market reaction to the appointment on boards or to corporate governance regulatory changes have been undertaken in the developed and more efficient stock markets.

Following the above discussion, our objective is to examine the market reaction to corporate governance reforms, particularly the market reaction to board diversity reforms in Kenya

(these reforms are discussed in Section 2). Using daily stock return data for an event study analysis and by use of annual financial performance data for the difference in differences (DiD) analysis, the current study found that the year 2016 board diversity reforms in Kenya had a significant and positive market reaction. The study also found that NSE is not semistrong form efficient. This implies that NSE investors can still earn significant abnormal profits from public pronouncements. The Capital Market Authority (CMA) Kenya should continue with corporate governance reforms to improve the stock price determination mechanism to attract more investors to the market. Many stock investors are attracted to markets that have a pricing mechanism and stock prices that can be trusted (Fama, 1991).

The current study contributes to literature as follows: first, in terms of method, the current study used the DiD experimental technique which has not been used in similar studies in the emerging markets of sub-Saharan Africa. Second, in terms of context, the current study carried out an event study based on corporate governance reforms, which are important for the sustainability and survival of listed establishments. Numerous event studies have been carried out in sub-Saharan Africa based on stock market anomalies like dividend announcements, stock split announcements, chief executive officer change announcements and seasonality event studies but there is a dearth of event studies on corporate governance reforms event studies. Third, in terms of concept, the current study combined the efficient stock market hypothesis (Fama, 1991), the market overreaction hypothesis (De bondt and Thaler, 1985) and the resource dependency theories (Barney, 1991) which has not been done before in past studies in sub-Saharan Africa.

The rest of the paper is organized as follows: Section 2 presents corporate governance reforms in Kenya, Section 3 focuses on theories and empirical literature review, Section 4 focuses on methodology, Section 5 focuses on findings and discussions and Section 6 concludes the paper.

2. Corporate governance reforms and market performance in Kenya

On March 9, 2016, the CMA Kenya, a government agency, enacted a new corporate governance code for NSE listed companies to protect investors. The code provisions included: fair executive remuneration, setting the age limit of directors to 70 years, limiting the term of directors to a cumulative period of 9 years, rules to encourage board diversity, prevention and reporting of suspicious transactions such as money laundering and terrorism-related funding to the CMA and other government authorities. On the issue of board composition, the 2016 reforms placed a requirement that boards of directors should have at least two-thirds of the membership being independent nonexecutive directors (NED). This is to have more independent and objective decisions made. Board chairs were prohibited from holding such positions in more than two publicly listed companies.

The current study focused on market reaction to board diversity regulatory reforms of the year 2016 because most of the reforms announced by CMA Kenya were board diversity-related. Corporate governance reforms are intended to improve the operational and financial performance of the targeted firms and thus investors in a stock market are supposed to react positively to corporate governance reforms. The positive reaction should be reflected in stock price appreciation which should occur because of the investors placing more demand for shares of firms that have implemented the corporate governance reforms (Puneeta, 2018; Dhammika, 2012; Locke and Duppati, 2014; Mews, 2021).

Corporate governance reforms employ different approaches. The “comply or explain” reforms approach adopts a combined compulsory and voluntary approach as it allows for noncompliance as long as the involved firms explain the reasons for noncompliance to the authorities. The rule-based reforms approach on the other hand is compulsory. Stock market investors react differently to the two types of corporate governance reforms announcement (Fasterling and Duhamel, 2009).

The Kenyan stock market referred to as the NSE has 11 sectors including the agricultural sector, automobile, banking, commercial, construction, energy, insurance, investment, investment services, manufacturing and telecommunications. Kenyan firms appear to have borrowed heavily from the corporate governance practices of the UK and the US firms and hence shareholders in Kenya have a lot of power in terms of corporate decision-making as compared to other stakeholder groups (OECD, 2011).

In Kenya, some corporates are well run and even compete with leading companies in the world in terms of innovation and performance metrics, especially in the fields of financial technology and telecommunication. However, there are leading public and private firms that have wound up operations or are in receivership or have financial distress-related challenges as a result of poor corporate governance. The collapse or near-collapse of leading firms has caused a serious unemployment crisis. The Kenyan taxpayers have lost billions of Kenyan shillings in continued bailouts of ailing government agencies, yet their turnaround to profitability appears to be a mirage. The government has thus enacted corporate governance regulations for Kenyan Government agencies called the Mwongozo code (Swahili word for leadership) which was the equivalent of the CMA Kenya corporate governance reforms that targeted public listed companies in the NSE. The Mwongozo code provides for improved risk management, ethical leadership, transparency and disclosure, accountability, risk management and internal control, conflict of interest and whistle-blowing policy policies [State Corporations Advisory Committee (SCAC), 2015].

To promote sustainable investments in Kenya, investors in the NSE are being encouraged to align their investment portfolio and have companies that promote the Sustainable Development Goals (SDGs) launched by the United Nations in September 2015 which aim at solving the world's social and economic problems including poverty and hunger eradication, promotion of better health and well-being for all, better quality education for all, gender equality, clean water and sanitation among other goals (Organization for Economic Cooperation and Development and United Nations Development Programme, 2020). NSE listed companies thus need to align their objectives to the UN launched SDGs in a bid to attract more investors locally and from foreign countries. Companies in Kenya that appear to be going against the SDGs have been punished heavily in the past through boycott of their products in both local and international markets as witnessed when a Kenyan agricultural-based company was accused of human rights violation (Kenya Human Rights Commission, 2021).

3. Literature review and hypotheses development

This section is arranged in a manner that addresses literature review on corporate governance reforms and literature review on board diversity and stock performance in nonfinancial Kenyan listed companies.

3.1 Theoretical positioning

The current study was anchored on the efficient market hypothesis (EMH) by Eugene Fama (1965) which advocates that in stock markets that are efficient, the stock prices should be unpredictable and should be equal to the intrinsic or fundamental price of the stocks and this creates zero abnormal stock returns (Fama, 1991). The NSE is weak form efficient and thus abnormal stock returns should be zero unless there is an anomaly (Magnusson and Wydick, 2005; Mlambo and Biekpe, 2007). An efficient market is one in which all known information is immediately reflected in stock prices which causes stock prices to occur in a random manner instead of occurring predictably. Randomness in the occurrence of stock prices is associated with stock market efficiency and it leads to investor trust in the stock pricing mechanism as it generates value for money for stock investors (Fama, 1991; Brown, 2020).

If there is a significant over or underreaction by investors to the news, this will be an anomaly implying that abnormal returns from the news event such as corporate governance reforms announcement should be significantly different from zero as per the EMH (Fama, 1991). EMH is criticized by behavioral scientists as being idealistic more than realistic and believed that psychological errors cause market inefficiencies by inhibiting the ability of investors to make good investment decisions (De bondt and Thaler, 1985; Nofsinger, 2008).

The second theory on which the current study was grounded was the resource dependence theory by Jay Barney (1991) which advocates that resources can be valuable, difficult to imitate, rare and cannot be substituted. The theory also posits that firms should look inwardly in search of resources for competitive advantage. However, there are limited resources in the firm and hence there is a need for the firm to also depend heavily on its external environment for resources to boost its sustainability (Pfeffer and Salancik, 2003). The traditional resource-based theory was criticized for being limited in explaining how firms gain from a competitive advantage in a world that is unpredictable and rapidly changing (Kleinschmidt *et al.*, 2007). Concerning the current study, resource dependence theory posits that the board of directors provides a link between the organization and its environment from which resources like workers, technology, materials and information can be sourced (Kiel and Nicholson, 2003). The resource dependence theory advocates for board diversity in the form of more female directors and more nonexecutive external directors. The theory also advocates for larger board sizes (Lückerath, 2013).

Behavioral finance advocates believe that if investors are very optimistic in the presence of good news, they are likely to overestimate the impact of such news on stock prices and this generates market overreaction to the news. The overreaction anomaly is associated with stock price reversal where positive stock price changes are followed by negative stock price changes and vice versa (De bondt and Thaler, 1985; Parveen, 2020). The underreaction anomaly on the other hand occurs when investors delay in responding to the news in the market and this leads to positive stock price changes that are followed by positive stock price changes or negative stock price changes to be followed by negative stock price changes (Engel and Morris, 1991). The underreaction is an anomaly associated with the momentum anomaly where there is a sustained stock price increase or sustained stock price decline and hence allowing investors to take advantage of the sustained stock price movement (De bondt and Thaler, 1985). Both the over and underreaction behaviors tend to reverse with time when the stock market corrects itself after a period of inefficiency (Chatarina and Utama, 2019).

3.2 Empirical literature review

There are a limited number of related past empirical studies on corporate governance reforms and they have used mixed approaches and have thus generated mixed findings on the effect of market reaction to corporate governance reforms announcement events. These research gaps have resulted in inconclusiveness arising from the past-related studies and have thus necessitated the need for the current study to fill the research gaps left by the past studies.

Tariqul *et al.* (2019) studied corporate governance reform and firm performance: evidence from an emerging economy of Bangladesh from 2007 to 2011 as a prereform period and 2013–2017 as a postreform period. The effects of board size, board independence and CEO duality were assessed against the operating performance of firms using the generalized method of moments. The results indicated that board size had a significant and positive effect on firm performance in the postreform period but not in the prereform period. Tariqul *et al.*'s (2019) research differs in terms of method from the current research as it did not employ the event study and DiD analysis.

Tariqul *et al.*'s (2019) findings were consistent with those of Puneeta (2018) who studied the implication of corporate governance on financial performance in India and used two reform

periods (Financial Year FY 2012–2013 as Period 1) and (FY 2015–2016 as Period 2). The study on reforms announcement focused on mandatory regulations on listing in security exchanges in India in the year 2013. The study also used a corporate governance measurement index which was regressed against profitability metrics, market capitalization and price–earnings ratio. Using the analysis of variance (ANOVA) method, the study found that there was a significant difference between the pre and postreforms periods. These findings agreed with those of [Dhammika \(2012\)](#) who studied corporate governance reforms announcement and firm value in India using 4,335 firms and used a DiD approach. In the study, the treatment group comprised of firms that were targeted by clause 49 corporate governance reforms, whereas the control group comprised of firms that were not targeted by clause 49 corporate governance reforms. The results indicated a significant positive causal effect of the reforms in combination with the 2004 sanction increase.

[Tariqul *et al.* \(2019\)](#), [Puneeta \(2018\)](#) and [Dhammika's \(2012\)](#) studies agreed with that of [Locke and Duppati \(2014\)](#) who studied financial performance in Indian state-owned enterprises following corporate governance reforms during the period 2003–2011 and used the DiD analysis method. In their study, the treatment group was central public sector enterprises (CPSE), whereas the Indian private listed companies formed the control group as they are not affected by the public firm corporate governance reforms. By using the DiD approach, the findings indicated that various corporate governance reforms collectively displayed a statistically significant and positive effect on performance. Further, the results showed that the performance of state-owned enterprises was less than that of publicly listed companies.

[Tariqul *et al.* \(2019\)](#), [Puneeta \(2018\)](#), [Dhammika \(2012\)](#) and [Locke and Duppati's \(2014\)](#) studies had consistent findings with the study by [Rossi and Cebula \(2015\)](#) who studied stock market reaction to announcements of appointments to the board of directors in Italy. The study used data relating to 100 appointments from 2012 to 2014. The event study method was used and the findings showed that there was a positive market reaction especially if the appointments enhanced the composition of the board and not just increased its size.

[Tariqul *et al.* \(2019\)](#), [Puneeta \(2018\)](#), [Dhammika \(2012\)](#), [Locke and Duppati \(2014\)](#) and [Rossi and Cebula \(2015\)](#) had findings that were consistent with those of [Davidson *et al.* \(2004\)](#) who studied market reaction to the voluntary announcement of audit committee appointment: the of financial expertise and used data involving 136 voluntary audit committee appointments during years 1990 to 2001 in the USA. The event study and multiple regression methods were used and the findings indicated a significant positive stock price reaction when news of the appointment of audit committee members who possessed financial expertise.

[Tariqul *et al.* \(2019\)](#), [Puneeta \(2018\)](#), [Dhammika \(2012\)](#), [Locke and Duppati \(2014\)](#), [Rossi and Cebula \(2015\)](#) and [Davidson *et al.*'s \(2004\)](#) study findings agreed with those of [Black and Khanna \(2009\)](#) who studied the effect of corporate governance reforms on the market value of 746 listed firms in India with an event window of four days before and four days after the announcement of a new voluntary industry code on corporate governance for the listed firms to comply with. The treatment group comprised of large firms that were targeted by the reforms, whereas the control group comprised of small firms that were not targeted by the reforms. The findings of the event study indicated a 4%–7% rise in the stock price of large and small size firms, respectively, from the market reaction to the corporate governance reforms announcement.

The studies by [Tariqul *et al.* \(2019\)](#), [Black and Khanna \(2009\)](#), [Dhammika \(2012\)](#), [Puneeta \(2018\)](#), [Rossi and Cebula \(2015\)](#) and [Locke and Duppati \(2014\)](#) agreed with the findings of [Adams *et al.* \(2011\)](#) who studied whether gender matters in the appointment of directors and how the market reacts to such news. The event study and probit regression methods

were used with the data from a sample of 3,157 outside director appointments year 2004–2006 involved. The findings indicated that there was significant and positive market reaction to female director appointments than the appointment of their male counterparts.

The findings by [Tariqul *et al.* \(2019\)](#), [Black and Khanna \(2009\)](#), [Dharmika \(2012\)](#), [Puneeta \(2018\)](#), [Rossi and Cebula \(2015\)](#), [Locke and Duppati \(2014\)](#) and [Adams *et al.* \(2011\)](#) were consistent with the findings of [Campbell and Vera \(2019\)](#) who studied market reaction to female board appointments in the short and long term in Spain using 105 female appointments data. The event study and multiple regression analysis methods were used. The findings indicated stock market has positive reaction in the short term to female director appointments.

The findings of [Tariqul *et al.* \(2019\)](#), [Black and Khanna \(2009\)](#), [Dharmika \(2012\)](#), [Puneeta \(2018\)](#), [Rossi and Cebula \(2015\)](#), [Locke and Duppati \(2014\)](#), [Adams *et al.* \(2011\)](#) and [Campbell and Vera \(2019\)](#) disagreed with that of [Mews \(2021\)](#) who studied the impact of scandalous news on automobile manufacturing in Chinese and European markets using the event study and the DiD methods. The findings indicated a significant but negative market reaction to the scandalous news announcement for the German automobile firms involved in the scandal and a positive effect on the German and non-German automobile firms not involved.

The negative and significant market reaction to scandalous news by [Mews \(2021\)](#) was consistent to the findings by [Gregory *et al.* \(2013\)](#) who studied whether there was gender stereotyping of corporate boards in a stock market reaction research that involved 80,930 trade transactions involving directors or not from 1994 to 2006. Using the event study and multiple regression analysis, the findings indicated that in the short run there was gender bias and negative market reaction to female director trade transactions but in the long run there was no difference in male or female director trade transactions.

The positive and negative significant market reaction to corporate news disagreed with those of [Chatarina and Utama \(2019\)](#) in India who found that there is an insignificant market reaction to corporate governance reform related announcements. Their study involved an event study and ordinal regression analysis of 1,043 companies over the 2014–2015 study period. [Chatarina and Utama's \(2019\)](#) findings were consistent with those of [Lin *et al.* \(2003\)](#) who studied stock market reaction to the appointment of outside directors and used data comprising 714 appointment announcements during 1993–1996 in the UK. Using the event study and panel data regression analysis, the findings indicated an insignificant market reaction to outside director appointments.

Our study also reviewed the relationship between board characteristics of firm size, outside directorships and gender on firm value. Some past studies have observed that large firms are associated with the implementation of corporate governance principles which leads to improved firm value compared to small- and medium-sized firms. [Xu *et al.* \(2018\)](#) studied the effect of executive age on the readability of financial reports in the USA using 16,341 firm years and logit regression analysis and found a positive correlation between board size and firm value. The finding contradicted that of [Campbell and Vera \(2019\)](#) who studied the long- and short-term effects of female board appointments and firm valuation in Spain and found a negative and significant relationship between board size and firm value. The conflicting past-related findings created a research gap that called for additional research.

Outside directors are associated with improved firm value because of the expertise and independence that they bring to the boards ([Davidson *et al.* \(2004\)](#)). In South Africa, [Pamburai *et al.* \(2015\)](#) studied the relationship between corporate governance and firm value using 158 companies during the year 2012 and multiple regression analysis and found a significant and positive relationship between NED and firm value. [Lin *et al.* \(2003\)](#) however found that there is no significant association between the presence of outside directors and firm value in a study on stock market reaction to the appointment of outside

directors in the UK. This indicated inconsistent findings in the past-related studies and called for the need for additional research like the current study.

There are mixed findings on the relationship between gender and firm value with [Adusei et al. \(2017\)](#) in a global study that covered 76 countries, and using panel data regression analysis found not only a significant positive relationship between firm value and the presence of female managers but also found significant negative relationship between female directors and firm value. [Adams et al. \(2011\)](#) found a significant positive relationship between the appointment of female directors and firm value in Australia. This inconclusiveness in the relationship between gender and firm value created a research gap that called for additional research.

The efficiency status of the NSE has been unclear with many studies indicating that the NSE is weak form efficient; [Mlambo and Biekpe \(2007\)](#) studied the weak form of efficiency of African stock markets and used runs serial correlation tests. The research focused on the period 1990–1995 for the Kenyan stock market and found NSE to be weak form efficient. [Magnusson and Wydick \(2005\)](#) studied efficiency of eight African stock markets indices during 1986–1998 drawn from the International Finance Corporation index and also found NSE to be weak for efficient. [Vitali and Mollah \(2010\)](#) found the NSE not to be weak for efficient after studying the weak form of market efficiency in African stock markets of Egypt, Kenya, Mauritius, Morocco, Nigeria, South Africa and Tunisia during 1999–2009 using the unit root, auto-correlation, runs and variance ratio tests on the daily price indices. Their results indicated that only South Africa stock market was weak form efficient market. The findings on the efficiency of NSE have thus been in conflict which calls for additional research by our study.

All these inconsistent findings in the past-related studies triggered the need to generate the following hypothesis:

- H1.* The Kenyan securities exchange market significantly reacted to the board diversity reforms implementation in 2016.

4. Research methodology

4.1 Sample and data

The current study used daily stock return data for an event study that comprised 290 days and involved 25 listed companies in the NSE. The 290 daily stock return data were divided into 240 days of data for the prediction model development and 50 days of data for the prediction model testing. The current study also used annual data for a period of five years during 2014–2018 being studied for regression analysis.

During the five-year study period, the NSE had a population of 42 nonfinancial listed companies that were distributed into ten sectors. Because of the challenges of infrequent trading, only 24 nonfinancial listed NSE companies were selected to be in the sample using the purposive sampling technique. The study used secondary data only that was collected from the NSE and used data collected from annual financial reports of the listed companies in the NSE. The current research carried out an event study and the DiD regression analysis. For the DiD analysis, 37 deposit-taking credit unions were also used in the study to act as a control sample, whereas the 24 listed companies acted as the treatment sample in the current study during the five-year study period. This implied that in the current study sample, deposit credit unions comprised 185 firm years and listed companies comprised 120 firm years as indicated in [Table 1](#).

4.2 Empirical modeling

4.2.1 Event study modeling. An event study method was used in the current study to test market reaction to the announcement of the year 2016 corporate governance code reforms.

Table 1 Sample representation

S. no.	Type of organization	Sample size	Firm years
1	Nonfinancial Kenyan listed companies	24	120
2	Deposit-taking credit unions	37	185
	Total	61	305

The event study method adoption in the current study was informed by other similar studies carried out in the past by [Puneeta \(2018\)](#) and [Chatarina and Utama \(2019\)](#). In the current study, potential and not realized actual stock returns were computed using the holding period yield or arithmetic returns formula but without dividend per share (DPS) component as daily stock price data was used yet DPS is payable half-yearly or annually. The arithmetic returns formula was as follows ([Black and Khanna, 2009](#); [Chatarina and Utama, 2019](#)):

$$\text{Arithmetic returns (RTi)} = (P1 - P0)/P0 \quad (1)$$

where $P1$ = today's closing stock price and $P0$ = the previous day's closing stock price.

Once arithmetic returns were computed, there was a need to compute abnormal returns by subtracting the required rate of returns from stock returns of each listed company in the samples as follows ([Black and Khanna, 2009](#); [Chatarina and Utama, 2019](#)):

$$\text{Abnormal return (AR)} = \text{actual return (RTi)} - \text{required rate of return (RRRi)} \quad (2)$$

The required rate of return is a method employed in event studies to estimate the predicted returns for comparison with the actual stock returns. The market model was employed in the current research as done in relevant past studies by [Black and Khanna, \(2009\)](#) and [Chatarina and Utama \(2019\)](#) as follows:

$$\text{Required rate of return (RRR)} = \text{alpha } (\alpha) + \text{beta } (\beta) \text{ market returns (RM)} \quad (3)$$

To develop the prediction model, individual listed companies' daily stock price data and daily NSE 20 share index data (a proxy for estimating market returns) were divided into two data sets. The daily stock price and NSE index data for the development of the prediction model were separated from data for testing the model. A pre-event period of 240 days was chosen for model development, whereas the event period of 25 days before the corporate governance reforms announcement date, that is, March 9, 2016, and 25 days after the announcement date was used for model testing. Once the daily abnormal returns were established, it was necessary to derive the average abnormal returns (AAR) for the sampled stocks in the event period of 25 days before and 25 days after the reform announcement date. The AAR were computed as follows ([Black and Khanna, 2009](#); [Chatarina and Utama, 2019](#)):

$$\text{Average Abnormal Return (AAR)} = \text{Total Abnormal Return}/n \quad (4)$$

where n = number of firms is the sample.

The AAR are then tested for whether they are significantly different from zero using the one sample T -test procedure. The abnormal returns being residuals should ideally sum up to zero with some being positive and others negative. According to [Fama \(1991\)](#), if a stock market is efficient, then abnormal returns should be zero but with possibilities of deviations from zero in both directions. After deriving the AAR, there was a need to establish the cumulative AAR (CAAR) to study the behavior of investors during the event period of 25 days before and 25 days after the corporate governance reforms announcement date.

The CAAR were computed as follows (Black and Khanna, 2009; Chatarina and Utama, 2019):

$$Cumulative\ Average\ Abnormal\ Return\ (CAAR) = \sum AAR \quad (5)$$

4.2.2 *Difference in differences modeling.* The DiD regression model used in the current research was as follows (Black and Khanna, 2009; Dhammika, 2012):

$$\begin{aligned} Firm_Value_{it} = & \beta_0 + \beta_1 Treat_Control_{it} + \beta_2 Post_{it} + \beta_3 Treat_Control * Post_{it} \\ & + \beta_4 Board_Size_{it} + \beta_5 Female_Directors_{it} + \beta_6 Non_ED_{it} + \beta_7 Liquidity_{it} \\ & + \beta_8 ROA_{it} + \beta_9 Size_{it} + \beta_{10} DPS_{it} + \mu_i + \lambda_t + \varepsilon_i \end{aligned} \quad (6)$$

All variables are given in Table 2.

Firm value as measured by the value of equity shares was used as the outcome variable. The Kenyan listed firms formed the treatment group because listed firms were subject to CMA corporate governance reforms, whereas the deposit-taking credit unions in Kenya formed the control group because this group was not subject to the CMA corporate governance reforms. The choice of the treatment and control groups in the current research was informed by past-related studies. In Black and Khanna's (2009) study, the treatment group comprised of large firms that were targeted by the reforms, whereas the control group comprised of small firms that were not targeted by the reforms. In Dhammika (2012), the treatment group comprised of firms that were targeted by clause 49 corporate governance reforms, whereas the control group comprised of firms that were not targeted by clause 49 corporate governance reforms. Locke and Duppati (2014) had a treatment

Table 2 Variable definitions

Variable	Abbreviation	Measurement	Source
<i>Dependent variable:</i> Firm value	<i>Firm Value</i>	Value of equity shares	Black and Khanna (2009), Dhammika (2012)
<i>Test variables</i>			
Treatment*Control	<i>Treat* Control</i>	Treatment group = listed NSE companies and control group = deposit-taking credit unions	Black and Khanna (2009), Dhammika (2012)
Post-implementation date	<i>Post</i>	2 years pre and 2 years post 2016 board diversity reforms	Black and Khanna (2009), Dhammika (2012), Puneeta (2018)
Board size	<i>Board Size</i>	Number of firm directors	Palaniappan (2017), Adusei (2017)
Female directors	<i>Female Directors</i>	The proportion of female directors on a board	Adusei (2017), Adams <i>et al.</i> (2011), Campbell and Vera (2019), Gregory <i>et al.</i> (2013), Rossi and Cebula (2015)
Non-executive directors	<i>Non-ED</i>	The proportion of nonexecutive directors on a board	Palaniappan (2017), Adusei (2017), Ciavarella (2017), Lin <i>et al.</i> (2003), Davidson <i>et al.</i> (2004)
<i>Control variables</i>			
Liquidity	<i>Liquidity</i>	Current assets/current liabilities	Ferrero-Ferrero (2015)
Return on assets	<i>ROA</i>	Profit after tax/total assets	Palaniappan (2017), Adusei (2017)
Size	<i>Size</i>	Natural log of total assets	Palaniappan (2017), Adusei (2017)
Dividend per share	<i>DPS</i>	Dividends attributable to ordinary shares/number of issued ordinary shares	Sanan (2019)

group being CPSE, whereas the Indian private listed companies formed the control group as they are not affected by the public firms' corporate governance reforms.

In the current study, the treatment group was symbolized by the dummy variable "0" and the control group was symbolized by the dummy variable "1." The pre-year 2016 board diversity reforms period was symbolized by the dummy variable "0," whereas the post-year 2016 board diversity reforms period was symbolized by the dummy variable "1." The interactive variable involved the multiplication of the treatment and control group dummy variables with the period pre and postboard diversity reforms announcement dummy variables. In the current study, the pre and postcorporate governance periods and the interactive terms were also informed by past relevant studies ([Black and Khanna, 2009](#); [Dhammika, 2012](#); [Locke and Duppati, 2014](#)).

5. Results and discussions

This section initially presents the descriptive statistical findings followed by inferential statistics findings supported by discussions.

5.1 Descriptive statistics

[Table 3](#) on descriptive statistics findings indicates that the average board size of nonfinancial listed Kenyan companies comprised of eight members. The number of female directors was two out of the eight board members. NED ratio was 54.9% of the eight board director positions.

The descriptive analysis findings in [Table 3](#) indicated the mean liquidity value as measured by current assets/current liabilities was 9.2:1. Return on assets as a measure of profitability had a mean value of 0.025 which implied that the sampled firms in the study had a very low and almost breakeven level of profitability. Firm value as measured by the value of equity shares had a mean value of 21.024. Total assets had a mean value of 19.559 and the DPS was 2.113 for the firms involved in the research.

5.2 Correlation analysis

[Table 4](#) shows correlation findings using Pearson's coefficients.

The findings in [Table 4](#) on the correlation matrix indicated a significant positive correlation between firm value and board size. This finding agreed with that of [Xu et al. \(2018\)](#) who found a positive correlation between board size and firm value in the USA. The finding contradicted that of [Campbell and Vera \(2019\)](#) who found a negative and significant relationship between board size and firm value in Spain.

Table 3 Descriptive statistics findings

	N	Minimum	Maximum	Mean	sd
<i>Firm Value</i>	305	15.840	27.300	21.024	2.195
<i>Post</i>	305	0.000	1.000	0.600	0.491
<i>Treat control* Post</i>	305	0.000	1.000	0.364	0.482
<i>Female directors</i>	305	0.000	0.600	0.281	0.153
<i>Board size</i>	305	5.000	18.000	8.236	2.596
<i>NED ratio</i>	305	0.110	1.000	0.549	0.240
<i>Liquidity</i>	305	0.010	339.990	9.204	29.919
<i>ROA</i>	305	-2.770	0.570	0.025	0.269
<i>LNTA</i>	305	12.160	24.560	19.559	3.050
<i>DPS</i>	304	-1.380	125.850	2.113	9.133

Table 4 Correlation findings

	<i>Treat</i>	<i>Post</i>	<i>Treat*post</i>	<i>FD</i>	<i>BS</i>	<i>NED</i>	<i>Liq.</i>	<i>ROA</i>	<i>FV</i>	<i>LNNTA</i>	<i>DPS</i>
<i>Treat</i>	1										
<i>Post</i>	0	1									
<i>Treat*post</i>	0.609**	0.61**	1								
<i>FD</i>	0.314**	-0.045	0.139*	1							
<i>BS</i>	-0.644**	-0.001	-0.392**	-0.15**	1						
<i>NED</i>	-0.426**	-0.059	-0.321**	-0.108	0.219**	1					
<i>Liq.</i>	0.205**	-0.134*	-0.011	0.009	-0.160**	0.038	1				
<i>ROA</i>	0.019	-0.012	0.012	-0.058	-0.07	-0.08	0.006	1			
<i>FV</i>	-0.721**	0.056	-0.359**	-0.23**	0.608**	0.27**	-0.229**	0.128*	1		
<i>LNNTA</i>	0.869**	0.045	0.565**	0.318**	-0.455**	-0.40**	0.133*	0.04	-0.378**	1	
<i>DPS</i>	-0.139*	0.036	-0.027	-0.012	0.132*	-0.05	-0.051	0.125*	0.225**	-0.154**	1

Notes: **Correlation is significant at the 0.01 level (two-tailed); *Correlation is significant at the 0.05 level (two-tailed)

The findings in Table 4 on the correlation matrix indicated a significant positive correlation between firm value and outside directors. This finding was consistent with that of Pamburari *et al.* (2015) in South Africa but was inconsistent with that of Lin *et al.* (2003) who found that there is no significant association between the presence of outside directors and firm value in the UK.

The findings in Table 4 on the correlation matrix indicated a significant positive correlation between firm value and female directors. This agreed with that of Adams *et al.* (2011) who found a significant positive relationship between the appointment of female directors and market reaction in Australia and was consistent with the finding of Adusei *et al.* (2017) who found a significant positive relationship between firm value and the presence of female managers in a global study. However, Adusei *et al.* (2017) also found a significant negative relationship between female directors and firm value.

5.2.1 One sample T-test on average abnormal returns and cumulative average abnormal returns. To test market reaction in the NSE using the event study method, AAR and CAAR were analyzed over a total event period of 51 days. The 51 days comprised 25 days before the board diversity reform announcement day 0 and 25 days after the board diversity reform announcement. The findings of the event study using T-test analysis as indicated in Table 5 revealed that the AAR were not significantly different from zero (t -stat. = 0.591). In stock markets that are efficient in the semistrong form, abnormal returns are not significantly different from zero.

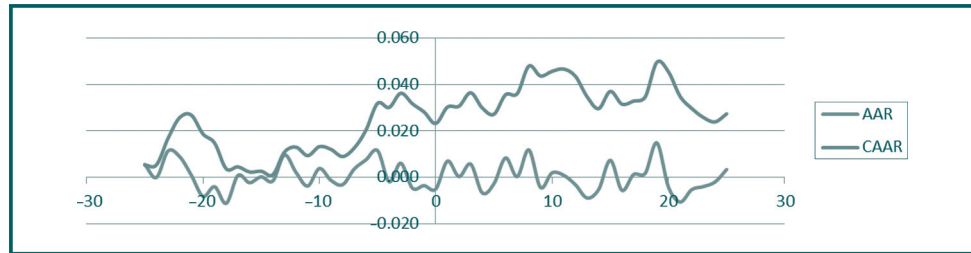
Findings in Table 5 on CAAR were not consistent with those of AAR. The CAAR in Table 5 were significantly different from zero (t -stat. = 13.406). The CAAR findings in Table 5 implied that it is possible for investors in the NSE to profit from public pronouncements on corporate governance reform and thus the NSE was not efficient in the semistrong form (Fama, 1991).

5.2.2 Trend analysis in average abnormal returns and cumulative average abnormal returns. Figure 1 indicates the movement of the CAAR curve began increasing from zero, on F1 day -25, which was 25 days before the corporate governance reforms announcement in the NSE. The positive reaction on day -25 implied that there may have been leakage of privileged information in the NSE before the day of the announcement of the board diversity reform or that the investors in the NSE were expecting the announcement of the reform to be

Table 5 AAR and CAAR one sample T-test

Variable	t	df	Sig. (two-tailed)	Mean difference
AAR	0.591	50	0.557	0.000
CAAR	13.406***	50	0.000	0.025

Note: ***Significance at the 1% level

Figure 1 Trends in AAR and CAAR

made. The possible leakage of news on corporate governance reforms before the official announcement date or the expectation by NSE investors of the announcement, may have triggered the NSE investors to start investing in the NSE stocks well before the corporate governance reforms were officially announced. This behavior by the investors caused excess demand for the stocks and consequently caused the eventual increase in stock prices and thus a positive market reaction to the corporate governance reforms news announcement. This market reaction was similar to that of past studies (Black and Khanna, 2009; Dhammika, 2012). It should be noted that during the enactment of laws and regulations in Kenya, the public is given a chance to give their views and hence the NSE investors can become aware of reforms that are to be announced soon. The year 2016 corporate governance code reforms were positive as they aimed at protecting the interests of stock market investors by legislating increased board diversity and anti-money laundering practices in the NSE.

In stock markets that are semistrong form efficient, the board diversity reform announcement should have immediately incorporated in stock prices and should not have generated increased demand for stocks, increased stock prices, increased stock returns and the eventual increased stock abnormal returns (Fama, 1991). The positive CAAR finding thus implied that the NSE is not semistrong form efficient.

5.3 Multivariate results

5.3.1 Multivariate analysis using difference in differences approach. Based on Table 6 findings on DiD analysis (random effects), the interactive term consisted of the product between the treatment and control groups difference and the pre and postgroups difference had a significant and positive effect on firm value (coefficient = 0.848, z-value = 9.12). This

Table 6 Difference in differences regression findings

Variable	Firm value (random effects)	Firm value (fixed effects)
Treatment and control groups	-3.271*** (-7.62)	-
Pre and post periods	-0.250*** (-3.47)	-0.248*** (-3.43)
Treatment & control*pre & post periods	0.848*** (9.12)	0.847*** (9.06)
Female director ratio	0.157 (0.69)	0.157 (0.68)
Board size	0.128 (2.50)	0.096 (1.59)
NED ratio	0.307 (2.19)	0.308*** (2.17)
Intercept	21.582*** (34.07)	19.871 (37.30)
Overall R-squared	0.569	0.0025
F statistic	192.06	23.36
Prob. > F	0.000	0.000
Controls	Yes	Yes
Firm-year observations	286	286
Hausman test	0.912	

Notes: *, **, and *** denote significance at the 10%, 5% and 1%, respectively; Z-values are in parentheses

implied that there was a significant and positive market reaction to the 2016 board diversity reforms announcement in the NSE.

The positive and significant market reaction indicated that NSE investors are positive about board diversity and corporate governance reforms implemented by the CMA Kenya as the reforms are meant to improve the operations and performance of companies listed on the NSE. The current findings of significant positive market reaction to board diversity reform announcements are consistent with those of [Puneeta \(2018\)](#) in India, and [Dhammika \(2012\)](#) also in India who found that corporate governance announcements caused a significant and positive market reaction. However, the current study findings disagreed with those of [Chatarina and Utama \(2019\)](#) in India who found that there was an insignificant market reaction to corporate governance reform announcement. The current findings support the evidence and opinion that the NSE is not yet semi-strong form efficient but may be weak form efficient since it is possible to profit from the NSE during public event announcements [Fama \(1991\)](#); ([Magnusson and Wydick, 2005](#); [Mlambo and Biekpe, 2007](#); [Vitali and Mollah, 2010](#)) since it is possible to profit from the NSE during public event announcements.

5.3.2 Robustness test findings. To test for robustness check in the current study, the three board diversity characteristics of female directors, NED and board size were replaced by firm characteristics of liquidity, profitability and DPS. [Table 7](#) on the robustness test indicated that the interactive term that comprised of the product between the test and control difference and pre and postreform announcement difference had a significant and positive effect on firm value in the NSE with (coefficient = 0.681, z-value = 7.84). The robustness test replaced board characteristics with firm characteristics as control variables in the DiD analysis. These findings implied a significant and positive market reaction to the board diversity reforms in the NSE. The robustness test findings resembled the DiD analysis findings in [Table 6](#) which also indicated that the interactive term had a significant and positive relationship with firm value in the NSE.

[Table 7](#) on robustness test findings also indicated that the firm size control variable had a significant and positive effect on firm value in the NSE (coefficient = 0.599, z-value = 6.72). The results implied that larger firms are associated with higher firm values in Kenya. The findings were inconsistent with those of [Adams et al. \(2011\)](#), [Davidson et al. \(2004\)](#) and [Lin et al. \(2003\)](#) who found that firm size had insignificant effect on firm value. The findings were also inconsistent with those of [Campbell and Vera \(2019\)](#) who found that firm size had a negative and significant effect on firm value.

Table 7 Robustness test findings

Variable	Firm value (random effects)	Firm value (fixed effects)
<i>Treatment and control groups</i>		
<i>Post</i>	-7.323*** (-18.60)	-
<i>Treatment & control* post</i>	-0.339*** (-4.91)	-0.333*** (-4.97)
<i>Liquidity</i>	0.654*** (7.29)	0.681*** (7.84)
<i>ROA</i>	-0.001 (-1.60)	-0.001 (-1.73)
<i>Size</i>	-0.051 (-0.50)	-0.129 (-1.29)
<i>DPS</i>	0.684*** (11.63)	0.599*** (6.72)
<i>Intercept</i>	0.002 (0.78)	0.000 (0.04)
<i>Overall R-squared</i>	12.052*** (12.39)	9.272*** (5.34)
<i>F statistic</i>	0.782	0.164
<i>Prob. > F</i>	470.74	32.54
<i>Controls</i>	0.000	0.000
<i>Firm-year observations</i>	Yes	Yes
<i>Hausman test</i>	285	285
	0.017	

Notes: *, **, and *** denote significance at the 10%, 5% and 1%, respectively; Z-values are in parentheses

Liquidity, ROA and DPS were used as control variables in our robustness test. As per Table 7, liquidity (coefficient = -0.001 , z-value = -1.73); ROA (coefficient = -0.129 , z-value = -1.29); and DPS (coefficient = 0.000 , z-value = 0.04) all lacked significant effect on firm value in our study.

6. Conclusion

The objective of the current study was to investigate market reaction to board diversity corporate governance reform announcement by the Kenyan capital markets authority on March 16, 2016. The current study was unique in the emerging economies of sub-Saharan Africa by studying the market reaction to corporate governance reforms announcement using the event study and DiD methodology. The event study data comprised daily stock price historical data sourced from the NSE. The DiD analysis data comprised of annual financial and board characteristics data sourced from the NSE handbooks and audited financial statements on the listed company websites. The main findings were that there was a positive and significant market reaction to the 2016 board diversity reforms announcement in the NSE. Corporate governance reforms are associated with improved operations and performance of the targeted firms and also aim at improving the stock price determination mechanism. The better stock pricing mechanism is aimed at attracting more investors in the stock market who can trust the stock prices on offer.

Finance theory assumes that stock markets have a large number of rational profit-maximizing investors who are actively competing to outdo each other in predicting future stock prices and to profit from stock markets. The intense competition causes the new information to be instantaneously reflected in stock prices and thus hinders any participant from possessing superior and profitable information. An efficient market is one in which all known information is instantaneously reflected in stock prices which causes stock prices to occur in a random manner instead of occurring in a predictable fashion. The random occurrence of stock prices reflects the randomness in the occurrence of new information which can be in the form of news, announcements, expectations, opinions, stories and even lack of news. Random occurrence of stock prices prevents any trends or patterns in prices from occurring and also prevents the market participants from possessing superior information that can aid in outperforming the market (Fama, 1991). The evidence of the current study findings indicated that NSE suffers from delayed incorporation of news in stock prices and thus is not efficient at least in the semistrong form.

Based on the findings in the current study, the Kenyan Government through its capital market regulating agency should be encouraged to implement additional corporate governance reforms in the NSE to improve the market's efficiency. Investors place more trust in the stock pricing mechanism of stock markets that are efficient than in those that are not efficient (Fama, 1991). More corporate governance reforms should also be advocated for by NSE investors and intermediaries as it will lead to additional investments from local and foreign investors.

The current study was limited by the secondary data that was collected and analyzed from financial statements and stock price data from the NSE. Financial statements have the disadvantage of being affected by the judgment and estimates of their preparers or accountants (Faello, 2015). Future scholars can focus on primary data collection and analysis in related studies.

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