EXISTENCE OF THE SEMI-MONTH EFFECT ON STOCK RETURNS AT THE NAIROBI SECURITIES EXCHANGE

By

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DECLARATION

This research project is my original work and has not been submittedfor examination in any other university.

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Date……

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This research project has been submitted for examination with my approval as the University supervisor.

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First and foremost, I acknowledge God for giving me this opportunity to live to see the completion of my project. I also acknowledge the tireless effort of my supervisor Mr. Cyrus Iraya Mwangi who instructed and directed me throughout the project. Last but not least, my family and friends who gave me moral support.

DEDICATION

This project is dedicated to my family for all the support and encouragement they accorded me towards making this research project a success.

ABSTRACT

Thesemi-montheffectpurportsthatstockreturnsin the firsthalfofthe tradingmonthis significantly higherthanthesecondhalfof the month. The objectiveof this studywas toestablishwhetherthere isexistenceof thesemi-montheffectsonstockreturnsattheNairobi SecuritiesExchange(NSE).Thisstudy useda descriptiveresearchdesign.Thepopulationof interestwasallthelistedcompaniesforequitystocksattheNSEasatDecember2013.The samplepopulationwascompanieslistedcontinuouslyintheNSE-20shareIndex.Thedataused inthisstudy constitutedindividualsharepricesfortheperiodstartingfromJanuary2011to December2013.Thedailyreturnforeachfirmstockwasdeterminedasthechangeinmarket priceofthestockplusanydividendreceived, expressedasafractionofinitialstockprice. Descriptivestatisticsused weremeanandstandarddeviation. Regressionanalysiswasusedtoassess the semi-month effect on stock returns. Themeanreturnsforthefirsthalfofthemonthforthe3yearperiodis0.0674%with a standard deviation of 0.7645%. For thesecondhalfthemean return was0.0304% with a standard deviation of 0.6091%.Thecoefficient$\beta_1$in the regression model was-0.000369with ap-valueof0.465038.The difference between the returns of the second half and the first half of the month had a negative effect on stock returns. Thep-value for the significance of the regression coefficient 0.465038 isgreaterthan0.05thusthecoefficientisnotsignificant.F-statisticwas found to be 0.534291witha p-valueof0.465038.Thisp-valueisalsogreaterthan0.05hencethe overallfitofthemodelispoor.Fromthefindingsofthisstudy thereisnoevidenceofthesemi-montheffectonstockreturnsintheNSE. Therefore investors should not expect returns from one half of the month to be statistically different from returns in the other half.

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LIST OF ABBREVIATIONS

CDSC	Central Depository and Settlement Corporation
CIP	Capital International Perspective
CMA	Capital Markets Authority
EMH	Efficient Market Hypothesis
ISE	Istanbul Stock Exchange
KSE	Karachi Stock Exchange
NSE	Nairobi Securities exchange

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CHAPTERONE:INTRODUCTION

1.1 Backgroundof theStudy

Stock marketanomalieshavebeenofgreat importanceto financialscholarsandpractitioners.NawazandMirza(2012)definedstockmarketanomaly asanunusualpatternofstockreturns thatexistwithinthestockmarkets.Thesemi-montheffectstemsfromthenotionthatthereturn ofthefirsthalfofthecalendarmonthishigherthanthesecondhalf(LakonishokandSmidt, 1988).Penman(1987)suggeststhatareasonforthisanomalymay beatendencyoffirmsto announcegoodnewsduringthefirsthalfofthemonthandbadnewsduringthesecondhalf.

Fama(1970)describedthreeformsofmarketefficiency;intheweakformsecuritypricesreflect thehistoricalpricesorreturnsequences,semi-strongformsecurity pricesreflectallthepublicly availableinformationandstrong formmarketefficiencyareconcernedwithwhetherindividual investorsorgroupshavemonopolisticaccesstoany informationrelevantforpriceinformation.

Aly,MehdianandPerry(2004)notedthattheevidenceof stockmarketanomaliescontradictsthe prediction oftheefficient markethypothesis (EMH), atleastinitsweakform,becausethe predictablemovementsin assetpricesprovideinvestorswithopportunitiesto generateabnormal returns.Theyfurtherobservedthatstockmarketanomaliesmay resultfromanineefficientflowof

informationinfinancialmarkets,whichisaviolationofanunderlyingassumptionofEMH.

TheNairobiSecuritiesExchange(NSE)hasatotal61listedcompaniesasat2013,categorised in11differentsectors.TheNSEisopenfortrading fromMondaytoFriday andclosedonSaturday and duringpublicholidays(NSE, 2013).The NSEplaysanimportantroleineconomicdevelopmentinKenya,by providingamediumforthetransferoffundsfromsurplusspending unitstodeficitspendingunits.

1.1.1 StockReturns

Stockreturnsaregainsorlossesfroma marketina particularperiodandareusuallyquotedasa percentage.Theconceptofefficientmarketpresentedby Fama(1970)suggeststhatstockprices fully reflectallavailableinformationsonoinvestorcanbeatthemarketbygeneratingabnormal returns.However, sometimesmonthly, weeklyanddailyreturnsonstockstendtoexhibit adiscernablepatternonwhosebasisstockpricescanbe predicted(Zafar,Urooj,Chughtaiand Amjad,2012).

BrownandReilly(2009)notedthattheobjectiveofinvestorsistoearnareturnfromsavingsdu e to theirdeferredconsumption. Theyobservedthatinvestorswanta rate ofreturnthatcompensatesthemforthetime,theexpectedrateof inflationandtheuncertaintyof thereturn. Garg,BodlaandChhabra(2010)indicatedthattheopportunitytogetextraprofitby forecasting security

pricesonthebasisofpastandpubliclyavailableinformationhasalmostdisappearedin recentyears.

Theyfurtherobservedthatincreaseduseofmoderninformationtechnologyand recentreformsintheoperating mechanism offinancial markets,haveresultedinenhancing marketefficiency.

FabozziandModigliani(2009)observedthatthestockreturnduringagivenintervalisequalto thechangeinmarketpriceofthe stockplusany dividendreceived,expressedasa fractionofthe initialstockprice.

1.1.2 TheSemi-monthEffect

Thetendencyofcommonstockreturnsforthesecondhalf-monthtobesignificantlybelowthe firsthalfofacalendarmonthis labeledas thesemi-montheffect(LakonishokandSmidt,1988).

Theydescribedthefirsthalfofthemonthasthefirstthroughthefifteenthcalendarday ofthe month,ifitisa tradingday,orifnot,throughthenexttradingday.Thelasthalfofthemonth consistsoftheremainingdays.Ariel(1987)definitionofthefirstpartofthemonthincludesthe lasttradingday ofthepreviousmonththroughthefirsteighttradingdaysofthemonth,a totalof ninetradingdays,whilethelasthalfof thetradingmonthconsistof ninetradingdaysbeforethe lasttradingdayofthemonth.

Fabozziand Modigliani(2009)indicatedthatcommonstock investmentstrategiescan be categorized intotwogeneralcategories; activeand passive strategies. Active investmentstrategiesattempttooutperformthemarketbyoneormoreofthefollowing:timin gofselection of transactionssuchasinthe

caseoftechnicalanalysis;identifyingundervaluedorovervalued stocksusingfundamentalsecurityanalysis;or selectingstocksaccordingto marketanomalies.

Passiveinvestmentstrategydoesnotseektooutperformthemarket.Knowledgeof stockmarket anomaliesisvitaltoinvestors.

The study adoptedthe samepatternusedby Zafaretal.(2012)andBahadurandJoshi (2005).Themeanreturnsforthefirsthalfofthetradingmonthiscomputedandcomparedagainstthe meanreturnofsecondhalfofthemonth.Toconfirmthesemi-montheffectsignificantnegative β_1 (thecoefficientfordifferenceofthemeanreturnsbetweensecondhalfandfirsthalfofthe month)isrequired.

1.1.3 TheSemi-monthEffectandStockReturns

NawazandMirza(2012)observedthatstockmarketanomaliesare the primary contributors towardstheabnormalitiesin thestockreturns.Withregardsto thesemi-montheffectsonstock returns, Ariel (1987) noted that thecumulative return fromthe first half islarger than the cumulative returnfromthelasthalfofatradingmonth.Hefurtherobserved thatatrading strategywhichcapitalizesonthesemimontheffectistoholdstockduring thefirsthalfof the tradingmonthandtoinvestrisklessly(orgoshort)duringthesecondhalf.

LakonishokandSmidt(1988)providedmildsupportoftheideathatratesofreturnarelargerin thefirsthalfofthemonththaninthelasthalf.Zafaretal.(2012)concludedthattheaverage

returnsinthefirsthalfof themontharesignificantlyhigherthanthesecondhalfof themonth. BahadurandJoshi(2005)didnotobserveevidenceofthesemi-montheffectonstockreturnsin theNapaleseStockMarket.A weaklysemi-montheffectwasreportedby JaffeandWesterfield (1989).They observedthatAustralia,UnitedKingdomandCanadahadpatternsconsistentwith Ariel(1987)findingsintheUnitedStates.

1.1.4 TheNairobiSecuritiesExchange

Themarketwasstartedinthe1920'sbytheBritishasaninformalmarketforEuropeansonly. In1954themarketwasformalizedthroughitsincorporationintoa company.In1963Africanswere allowedto joinandtradein themarket.1988sawthefirstprivatizationthroughtheNSE,which wasthesuccessfulsaleofa20%governmentstakeinKenyaCommercialBank.In1996,the largest shareissueinthehistoryofNSE,theprivatization ofKenya Airways, cametothemarket.InSeptember2006livetradingontheautomatedtradingsystemsof theNairobiStock Exchangewasimplemented.InFebruary2007NSEupgradeditswebsitetoenhanceeasyand fasteraccessofaccurate,factualandtimelytradinginformation(NSE,2013).

In2008,theNSEAllShareIndex(NASI)wasintroducedasanalternativeindex.Itsmeasureis anoverallindicatorofmarketperformance.TheIndexincorporatesallthetradedsharesofthe day. The Complaints Handling Unit (CHU) was launched in August 2009 to bridge the confidencegapwithNSEretailinvestors.Investors,bothlocalandinthediasporacanforward theirissuesviaemail,telephone,fax,orSMSandhavetheabilitytotrackprogressonline.In

July2011,theNairobiStockExchangeLimitedchangeditsnametotheNairobi SecuritiesExchangeLimited. Thechangeofnamereflectedthe strategicplan ofthe NairobiSecurities Exchangetoevolveintoa fullservicesecuritiesexchangewhichsupportstrading,clearingand settlementofequities,debt,derivativesandotherassociatedinstruments.In November2011the NSEKenya15andNSEKenya25Indiceswerelaunched(NSE,2013). Thereare21licensedmemberfirmsor stockbrokersin themarket.The NSEconsistsof boththe primaryandsecondarymarket.Itisdividedinto fivesegments;theMainInvestmentsSegment (MIMS),the AlternativeInvestmentsSegment(AIMS),theFixedIncomeSecuritiesSegment (FIMS),theFuturesandOptionsMarketSegment(FOMS)andfinally theGrowthEnterprise MarketSegment(GEMS).TheGEMSwaslaunchedon22ndJanuary2013topaveway forthe listing ofSmallandMediumSizedEnterprises(SMEs)whichisamajordriverofcountry's economy(NSE,2013).Thereare61listedcompaniescategorisedin11differentsectorsasat31December2013asshownbyappendix1.

SeveralstudieshavebeendoneonseasonalanomaliesattheNSEincludingKuriaandRiro (2013),Gathoni(2012)andMwikali(2012)among others.Thesestudieshaveestablishedthe existenceofstockmarketanomaliessuchas;theweekeffect,weekendeffect,monthlyeffect, turnofthemontheffectandJanuaryeffect.Littlehasbeenexploredinthecaseofthesemi-montheffectonstockreturnsattheNSE,howeverageneralperceptionis that,in firsthalfof

the

month,tradingactivityishigherascomparedtosecondhalfofthemonthandsoisthereturn.

1.2ResearchProblem

Thepresenceofseasonaleffectsviolatesthebasicsofefficientmarkethypothesis(Zafaretal., 2012).Sometimesmonthly,weeklyordailyreturnsonstockstendtoexhibitdiscerniblepatterns on wholebasisstockpricescanbe predicted. This facilitatesmarketparticipantstodevisetradingstrategieswhichcouldfetchabnormalreturnsbasedonpastpatterns(KuriaandRiro, 2013). Emanating from these seasonal anomalies is the semi-month effect whereby the cumulativereturnfrom thefirst halfis largerthanthe cumulativereturnfromthe lasthalfof a tradingmonth(Ariel,1987).

TheNSEiscurrentlyconsideredoneofthebiggeststockmarketsinAfrica. Itisthemost developedinthe EastAfricanregion(Wachira,2013).Kenyabeing a developingcountry needs

hugeamountsofcapitalforinfrastructuraldevelopmentthereforethereisneedtoimprovethelevelof efficiencyof thestockmarketinordertoenhancetheconfidenceof bothlocaland internationalinvestors.Kenyaasan emergingmarket,theformalexpectationwouldbe that the marketisinefficient.Thisstudyseekstoestablishtheexistenceofthesemi-montheffectonstockreturnsattheNSE.ThefindingsofthisstudyareusefultotheCapitalMarketAuthority(CMA)forpolicyformulationwithregardto

improvingtheefficiencyofthestockmarket.

Severalstudieshavebeendoneon the semi-montheffecton stock

returns;Ariel(1987)analyzed datasetfrom1963to1981andfoundthattheaveragerateofreturnwaspositiveinthefirsthalf of themonthandnegativeinsecondhalf ofmonth.LakonishokandSmidt(1988)providedmild supportof theideathatratesof returnarelargerin thefirsthalfofthemonththanin thelasthalf. JaffeandWesterfield(1989)andFloros(2008)studiesalsoconfirmedthepresenceofsemi-montheffectin developedstockmarkets.Zafaretal. (2012)studiedcalendaranomaliesofthe KarachiStockExchange(KSE)andtheirfindingwasthattheaveragereturnsinthefirsthalfof themontharesignificantlyhigherthantheotherhalfof themonth.Nageswari,Selvamand Gayathri(2011)didnotfindthesemi-montheffectintheIndianstockmarket.

KuriaandRiro(2013)examinedthepresenceofday oftheweekeffect,weekendeffectand monthlyeffectonstockreturnsattheNSE.Thestudyrevealedtheexistenceofsignificantday of the weekeffect,weekendeffectandmonthlyeffect.Gathoni(2012)investigatedthe existenceof theturnof themontheffectattheNSE.Theresultsshowedthattheaveragemarketreturnforthe turnof themonthwasalwayshigherthanthereturnsfortherestof themonth.Mwikali(2012) establishedtheexistenceofJanuaryeffectsonstockreturnsattheNSE.Theidentificationof suchcalendareffectsonstockreturnsattheNSEservedasmotivationforthisstudytoexplore thesemi-montheffectsonstockreturnsinwhichnostudywasfoundtohavebeenpreviously doneontheanomaly.Thekeyquestionthatthisstudysoughttoanswerwas;are the average returns of the first half of the month different from those of the second half?

1.3ResearchObjective

Theobjectiveofthisstudywastoestablishtheexistenceofthesemi-montheffectonstock returnsintheNairobiSecuritiesExchange(NSE).

1.4ValueoftheStudy

Thisstudycontributestothescantliteratureonthesemi-montheffectonstockreturnsatthe NSE.Nostudywasfoundtohavebeenpreviouslydoneonthesemi-montheffectattheNSE, thusit isaimedatfillingtheexistingknowledgegapandexpandingliteratureonstockmarket anomalies.

Thestudy isusefulfor policyformulationtovariousstakeholderswhoattachimportancetothe stockmarket.Suchstakeholdersinclude:the government,investors,fund managers,financial analystsandacademicians.Thegovernmentasa regulatorofthe stockmarketthroughthecapital marketauthority(CMA)isabletomonitortheperformanceofthestockmarketasa signof economicstabilityof thecountry.Toimprovetheconfidenceof bothlocalandinternational investors,the efficiencyof theNSEisparamount.It shallalsoprovidepolicymakerswithvital informationthathelpsindecisionmakingandformulationofsoundinvestmentstrategies.

Fundmanagersarechargedwiththeresponsibilityof identifyingandinvestinginviableprojects thereforethisstudyisimportantinassistingthemtogaugetheperformanceofthestockmark

et

andhenceknowtherighttimetocommitfunds.Financialanalystsofferadvicetoinvestorsa nd this study would provide sound information for investors to make informed decisions.Knowledgeof suchcriticalinformationonstockvariationmay assistthefinancialanalystto plan well;whento tradeandgetabnormalreturnandwhento holdin orderto maximisereturn. Academicianswanttocontributetothebody ofknowledge;inthisdynamicandcomplexworld

wherevariablesareboundtochange,researchistheonlywaytostudythesamephenomenon overtime.Thisstudycanbeusedasabasisforfurtherresearchonthissubject.

CHAPTERTWO:LITERATUREREVIEW

2.1Introduction

Thischapterfocusesonareviewofliteratureonthesemi-montheffect.Theoriesthatformthe basisforthestudy,determinantsof stockreturns,empiricalstudieson theareaandasummaryof theliteraturearediscussed.

2.2TheoreticalReview

Theorieswhicharerelevantforthestudyandwhicharediscussedinthischapterare;thetheory of RandomWalk, theEfficientMarketHypothesis(EMH) andfinallyBehavioralFinance Theory.

2.2.1TheTheoryofRandomWalk

Yalsin(2010)observedthattheconceptofmarketefficiencywasfirstseenfromBachelier's workin1900.Henotedtherandomcharacteristics ofthestockpricesandthedifficultyto

outguessthemarket.Laterstudyby Cowles(1933)concludedthatprofessionalagencieshaveno obviousskillstobeatthemarket.Samuelson(1965)provedthatproperly anticipatedpricesfluctuate randomly.Hearguedthatrandomnessisachievedthroughtheactiveparticipationofmany investors seekinggreaterwealth.Fama(1995)observedthatthetheory impliesthataseriesofstockprice changeshasnomemory;thepasthistoryoftheseriescannotbeusedto predictthefutureina meaningfulway.Hefurthernotedthefuturepathofthepricelevelofasecurity isnomorepredictable than thepathofaseriesofcumulativerandomnumbers.

Underthetheory,investorscannotoutguessthemarkettoearnanabnormalreturn.Fama (1995) argues thatthe theoryof randomwalk in stockmarketpricespresentsimportantchallengestoboththe chartistandtheproponentof fundamentalanalysis.Heobservedthatthereisnorealvalueinmarket analysisfor thechartistandfor thefundamentalanalysis;iftherandomwalk theoryisvalidthenstock pricesatany pointintimewillrepresentgoodestimatesofintrinsicorfundamentalvalues.Thefact thatempiricalstudiesconfirmedthepresenceoffinancialmarketanomaliessuchas thesemi-month effectscontradictthetheory ofrandomwalk.

2.2.2TheEfficientMarketHypothesis(EMH)Theory

Fama(1970)describedthethreeformsofefficiencies exhibitedbythemarketas;weakform whichstatesthatsharepricesfullyreflectinformationin historicsharepricemovementandthat pastrates of returnandothermarketdata havenorelationshipwithfuturesecurityprices.Semi- strong formefficiency positsthatas soonas informationbecomespublicknowledgeor becomes availabletothepublicitisincorporatedalmostimmediatelyintothesecurityprices.Heargue d thatevenifits'adjustmentisnotimmediatelyincorporated,itwillinashortwhilebeanalyzed bythemarket andtherefore analystswould notmakesupernormal profits bycarryingout fundamentalanalysis.Strongformefficiencyarguesthatif marketswereefficientintheirstrong form,priceswouldfullyreflectallinformationeventhoughthisinformationis

onlyavailableto corporateinsiders.

TheEMHproposesthatitisnotpossibletooutperformthemarketthroughmarkettimingor stockselection;howeverinthecontextoffinancialmarkets,seasonalcomponentshavebeenr ecorded. The presence of seasonality in stock returns violates the weak form of market efficiencybecauseequitypricesarenolongerrandomand canbe predictedbasedon pastpattern (KuriaandRiro,2013). This couldfacilitateinvestorsto devise tradingstrategiesto earnabnormalreturns.

2.2.3BehaviouralFinanceTheory

Shefrin(2002)definedbehaviouralfinanceasapplicationofpsychologytofinancialbehavi or.

Hefurtherpositsthattherearethreepsychologicalphenomenathatpervadetheentirelandsca pe

offinancewhichare:behaviouralfinancerecognizesthatfinancialpractitionersusearuleof thumbcalledheuristicstoprocessdata;forexamplepastperformanceisthebestpredictorof futureperformance,inadditionto

objectiveconsiderations,practitionersperceptionofriskand returnareinfluencedby howdecisionproblemsareframedandthatheuristicdrivenbiasesand

framingeffectscausemarketpricesto

deviatefromfundamentalvalues.Shiller(2003)notedthat the collaboration betweenfinanceandothersocialsciencesthathas become known

asbehaviouralfinancehasledtoaprofounddeepeningofourknowledgeoffinancialmarkets

.

Whenselectingaportfolio,investorsnotonlyconsiderstatisticalmeasuressuchasriskand return, but also psychological factors such as sentiment, overconfidence and overreaction

(Aguila,2009).Fama(1998)inhisreviewoftheliteratureonbehaviouralfinanceobservedth at themarketsanomaliestendedtobeasoftenunderreactionby investorsasoverreaction.Healso

notedanomaliestendedtodisappear,eitherastimepassedorasmethodologyofstudy improved.

Shiller(2003)inresponsetoFama(1998)critiqueonbehaviouralfinanceobservesthattherei sno fundamental psychological principle that shows people tend always to overreact or underreact.

2.3DeterminantsofStockReturns

Identifyingthefactorsthatinfluencestockreturnsisa

majorconcernforpracticeandacademic

research.OlowoniyiandOjenike(2012)whilestudyingdeterminantsof

stockreturnofNigerian-

listedfirmsobservedthatexpectedgrowthandeffortsatincreasingassetsof thefirmswould significantlyimprovestockreturnlevel.They furthernotedthatlowernetprofitaftertaxand leverage areexpected toreduce level ofstock returns oflisted firms. Theyconcluded

thatattentionneedstobepaidtoimprovinggrowthandsizeof thefirmsinordertobenefitthe advantagesthatwouldarisefrom substantialstockreturn.Chen,RollandRoss(1986)notedthat stockreturnsareinfluencedby macroeconomicannouncementsandtheintensityofinfluence correspondswiththetotalexposureto them.Macroeconomicnewsannouncementsarerecurrent economicandfinancialindicatorswhichgiveinformationaboutthestateofeconomy.

FamaandFrench(1992)indicatedthattwoeasily measuredvariables,size andbook-to-market equitycombinetocapturecross-sectionalvariationinaveragestock.Theyobservedthatfirms withhighbook-to-marketequity(a lowstockpricerelativetobookvalue)tendtohavelow earnings; converselylowbook-to-market equity(highstockpricerelative tobookvalue) isassociatedwithpersistentlyhighearnings. Sizeisalsorelatedtoprofitabilitycontrollingfor book-to-marketequity;smallfirmstendtohavelowerearningsonassetsthanbigfirms.

Eraslan(2013)testedthevalidity ofFamaandFrenchthree-factormodelontheIstanbulStock Exchange(ISE).He realizedportfolioscontaininglargefirmshave higheraverageexcessreturns thanportfolioscontainingsmallersizedfirms.Healsorealizedportfolioscontainginglowboo k- to-marketratio firmsperformbetterthan thosecontaininghigh book-to-marketratio firms.He concluded that Fama and French three-factor model has power on explaining variations on excessportfolioreturns.

2.4EmpiricalReview

Theempiricalevidenceregardingthesemi-montheffecthasbeendocumentedbymanystudies whichsupporttheanomalyasastand-alonephenomenon.Thereis,however,adearthoflocal studiesonthesemi-montheffectonstockreturns.

Zafaretal.(2012)studiedcalendaranomaliesoftheKarachiStockExchange(KSE)tofindout the semi-montheffectin KSE.Datafor the studywasobtainedfromKSE100indexwhichis a capitalweightedindexandconsistsof100companiesandrepresentsabout86%ofthetotal marketcapitalizationoftheexchange.Anindexofalllistedshareswasgatheredfortheperiod fromNovember1991toDecember2007.Dailylogarithmicmarketreturnswerethencalculated fortestingcalendareffects.Datawasanalysedusing descriptivestatisticssuchasmeanand standarddeviation.Todeterminetheoverallprobabilityof the relationshipbetweenthevariables occurringbychance,theF-testandt-testwereused.Thefindingofthestudywasthatthe averagereturnsin thefirsthalfof themontharesignificantlyhigherthantheotherhalf of the month.

Floros(2008)studiedonthemonthlyandtradingmontheffectsinGreekstockmarketreturns. Theobjectiveof thestudywastoinvestigatethemonthlyandtradingmontheffectsinthestock marketreturnsusingdatabeforeandafterthecrisisof 1999-2001.Secondarydata wascollected fromthestockmarketfromNovember1996toJuly

2002.Datawasanalysedusingdescriptive statistics.Thefindingofthestudywasthatthereisno Januaryeffect,howevertradingmonth showhigherreturnsoverthefirstfortnightofthemonth.

ArsadandCoutts(1997)studiedthe tradingmonthanomalyin thefinancialtimesindustrial ordinarysharesindex.Theobjectiveofthestudywastoinvestigatetheexistenceoftrading montheffectintheFT30indexby employingdailylogarithmicreturnsfromJuly1993to December1994.Descriptivestatisticswasusedto analyzethedata.Thefindingofthestudywas thetradingmontheffectispresentintheindex,butthiseffectexistsforthelasttwodaysof the monthandfirstfivedaysofthemonth.

Boudreaux (1995) conducted a study on the monthly effect in international markets. The objectiveofthestudywastoinvestigatetheexistenceofmonthlypatternsininvestmentreturn s for seven differentcountries'stockmarketindexes.Thecountriesstudiedwere:Denmark,France, Germany, Norway, Singapore/Malysia, Spain andSwitzerland.Stockmarket returnswerecomputedfromtheindexesreportedbyCapitalInternationalPerspective(CIP)f romMarch1978toDecember1992.Datawasanalysedusingdescriptivestatisticsandregres sionmodel. Thefindingofthestudywasthatthreeofthesevencountriesmarketshadthemonthlyeffect whileaninvertedmonthlyeffectwasfoundinSingapore/Malysia.

LakonishokandSmidt(1988)used90yearsofdaily dataontheDowJonesindustrialaverageto testfortheexistenceofpersistentseasonalpatternsintheratesof return.Theyuseddescriptive statisticstoanalysethe data.They observedevidenceofpersistentanomalousreturnsaroundthe turnoftheweek,aroundtheturnofthemonth,aroundtheturnoftheyearandaroundholidays butonly mildsupportfortheideathattherateofreturnsare largerinthefirsthalfofthemonth.

Ariel(1987)studiedthemonthlyeffectonstockreturns.Theobjectiveofthestudywasto establishonwhetherthecumulativereturnfromthefirsthalfofa tradingmonthwillexceedthe cumulativereturnfromthesecondhalfofthe samemonth.Thestudy wasbasedonUSAstock marketsandcovereda periodextendingfrom1963to1981.Datawasanalysedusingdescriptive statisticsandregressionmodel.Thefindingofthestudywasthatthecumulativereturnforthe firsthalfwasclearlygreaterthanthecumulativereturnforthelasthalfofthemonth.

KuriaandRiro(2013)examinedthepresenceofday oftheweekeffect,weekendeffectand monthlyeffectonstockreturnsintheNSE.Datausedinthestudyincludeddailyclosingprices of theNSEindicessuchastheNSEallsharepricesindex(NSI),theNSEgeneralindex(NGEN) andtheNSE20shareindex(NSE20)foraperiodof12years.Thestudyusedsecondarydata fromthestockmarket.Thesignificanceofthedifferencebetweenaveragereturnswasverifie d with the help oft-test andF-test. Simple descriptiveanalysiswasconductedusingsimpleregressionmodelanalysisof the

respectivevariablesandresultcapturedinmeanreturns,co- efficient ofvariation andstandarddeviation.ThestudyusedtheANOVA modelwherethe dependent variableisquantitative innature andallindependent variablesarecategorical innature.The study established the existence of day of the week effect; weekend effect and monthlyeffectintheNSE.

Mwikali(2012)investigatedtheexistenceofJanuaryeffectsonstockreturnsintheNSE.The targetpopulationforthestudyincluded50companieslistedintheNSEasatDecember2011. Thestudywascarriedoutfocusingonaperiodof10yearsupto2011.Dataonmarketshare priceswasobtainedfromthesharepricesasreportedby theNSE.Datacollectedwasanalysed usingsimplelinearregressionandcorrelationanalysis.Thefindingsofthestudy wasthatthereis nosignificantrelationshipbetweenthemeanmonthlyJanuaryeffectonstockreturnsandthe meanmonthlystockreturnsfromFebruarythroughDecember.

Kai(2012)soughttotestthemarketefficiencyoftheNSEby investigatingifturnofthemonth effectexistsat the exchange.TheNSE20shareindexwasusedas the samplingframeanddaily indiceswereusedtocomputethedaily returns.Secondarydatawasobtainedfromthe NSEdata base.Descriptivestatisticswerecomputedfromthe returnsandaregressionmodelwasrun.The resultofthestudycouldnotconfirmtheexistenceofturnofthemontheffectsattheNSE.

Gathoni(2012)investigatedtheexistenceof theturnof themontheffectattheNSEduring the

periodbetween1stJanuary2003and31stDec2007usingdailyobservationsoftheNSE20 shareindex.Alog formulawasusedtocomputedaily returnsontheNSEIndexandthereafter meanandstandarddeviationsofboththeturnofthemonthandtherestofthemonthperiods werecalculatedandcomparedwhileapplyingthe student's t-test.Theresultsshowedthatthe averagemarketreturnfortheturnofthemonthwasalwayshigherthanthereturnsfortherestoft hemonthforallyearsexceptfortheyear2004.Thestudyconcludedthataturnofthemonth effectexistsattheNSE.

2.5SummaryofLiteratureReview

Typically markets are believed to be efficient and therefore prices reflect all available information.This meansthat investorscannotoutperformthemarkettoearn anabnormalreturn throughtheirmarkettimingsortradingstrategies.Investors'perceptionof risk andreturnare influencedby howdecisionproblemsareframedandthatheuristicdrivenbiasesandframing effectscausemarketpricestodeviatefromthefundamentalvalues.

Thoughmarketsaresupposedtobeefficient,studiesdoneby manyscholarsindicatedinthe literaturereviewdopointout to theexistenceofthesemi-montheffectanomalyandby extension marketinefficiency.Empiricalevidenceshowsthepresenceof theanomalyinbothdevelopedas wellasemergingstockmarkets.Howeverthebulkof thesestudieswereconductedindeveloped marketsthereforethereisneedtocarryoutmoreresearchontheareaintheemergingmarkets.

Alltheempiricalstudiesonthe semi-montheffectcoveredin the literaturereviewweredonein othercountries.NostudywasfoundtohavebeenpreviouslydoneontheanomalyintheNSE; thusthisstudysoughttofillthisgapbyexaminingtheexistenceofthesemi-montheffecton stockreturnsattheNSE.

CHAPTERTHREE:RESEARCHMETHODOLOGY

3.1Introduction

Thischapterhighlightstheresearchdesign,population,sampledesign,datacollectionmetho ds anddataanalysistechniques.

3.2ResearchDesign

Thestudyusedadescriptiveresearchdesign.Kothari(2004)defineddescriptiveresearchdes

ign

asthosestudieswhichareconcernedwithdescribingthecharacteristicsofaparticularindivid

ual orgroup.Thedescriptiveresearchdesigninvolvesthedescriptionofthestateofaffairsasit

existsatpresent.Thedesignwasappropriatebecausethestudy

soughttoestablishwhetherthe

returnsofthefirsthalfoftradingmontharegreaterthanthesecondhalf.

3.3PopulationoftheStudy

Thepopulation ofinterestinthisstudycomprises 61companies

thatarelistedintheNSEbetween2011and2013seeappendix1.

3.4SampleDesignandSampleTechnique

ThesampleincludedcompaniesintheNSE20sharethatarecontinuouslylistedfortwoyears

from1st January2011to31st

December2013.18companiessatisfiedthesamplingcriteriasee appendix2.

3.5DataCollection

Forthepurposeofthisstudysecondarydatawasused.Thedailyclosingpricesofcompaniesin theNSE20sharethatarecontinuouslylistedwereobtainedfromtheNSEdatabaseforthe period1st January2011to31st December2013.

3.6DataAnalysis

Bothdescriptiveandinferentialstatisticswereemployedtoanalysethedata.Themeanreturn of thefirsthalfof thetradingmonthwascomparedwiththemeanof thesecondhalf.Ordinaryleast squares(OSL)regressionanalysiswasusedtotesttheequality ofmeanreturnsacrosshalvesof calendarmonths.Totestforsignificanceofthedifferencebetweenthetwomeans,at-testat95%confidencelevel(p=0.05)wasconducted.

3.6.1MeasurementofReturns

Thewholemonthwasdividedintotwoparts.Firsthalfofthemonthisfrom1st dayofmonthto15th dayofthemonth.Ifthe15th dayisnotaworkingday,thenextdaywasconsidered.Allthe remainingdaysofthemonthareincludedinsecondhalfofthemonth.Thisis thesamepattern followedby LakonishokandSmidt(1988).Dailystockreturnswascalculatedusingtheformula shownbelow:

$$R_t = \frac{P_t + D_t - P_{t-1}}{P_{t-1}} \times 100\%$$

Where:

R_t=Dailystockreturn;P_t=marketpriceattimet;D_t=dividendattimet;P_{t-1}=marketpriceat time$_{t-1}$.

Meanoftheserieswascomputed.Itistheaveragevalueoftheseries,obtainedby addingupthe seriesanddividing by thenumberofobservations.Meanisthemostcommonmeasureofcentral tendency.

3.6.2RegressionModel

Thestudy usedthe ordinaryleastsquares(OSL)regressionmodeltotesttheequalityofmean returnsacrosshalvesofcalendarmonths.Thestudyadoptedthesameapproachfollowedby Zafar etal.(2012),BahadurandJoshi(2005)andLakonishokandSmidt(1988).Regressionequation runfortestingsemi-montheffectwas:

$R_t = \beta_0+\beta_1 d_{2t}+\varepsilon$

WhereR_t=dailyreturnofthemarket;$\beta_0$isthecoefficientformeanreturnsinfirsthalfofthe month(takenasabenchmarkforanalysis)and$\beta_1$isthecoefficientrepresentingthedifference betweenthemeanreturnsofthefirstandsecondhalfoftradingmonth.In the model $d_{2t}$is assigned a value of one ifthereturnsoccur in the secondhalfofthemonth and zero ifreturnsoccurinfirsthalfofthe month,andfinally ε=errorterm.A significantnegativecoefficient$\beta_1$confirmstheexistenceofthesemi-montheffect.

Thehypothesistestedwas:

Ho:Themeanreturnsforfirsthalfofthetradingmonthandsecondhalfofthemonthisnot statisticallydifferent.

HA:Themeanreturns forfirsthalfofthetradingmonth andsecond halfofthemonth isstatisticallydifferent.

CHAPTERFOUR:DATAANALYSIS,RESULTSANDDISCUSSION

4.1Introduction

Thischapterhighlightsthedescriptiveanalysisforthestockreturnsduringthefirsthalfand secondhalfofthetradingmonth,theregressionmodelresults,statisticalsignificanceforthe overallregressionmodelanddiscussion.

4.2DescriptiveAnalysis

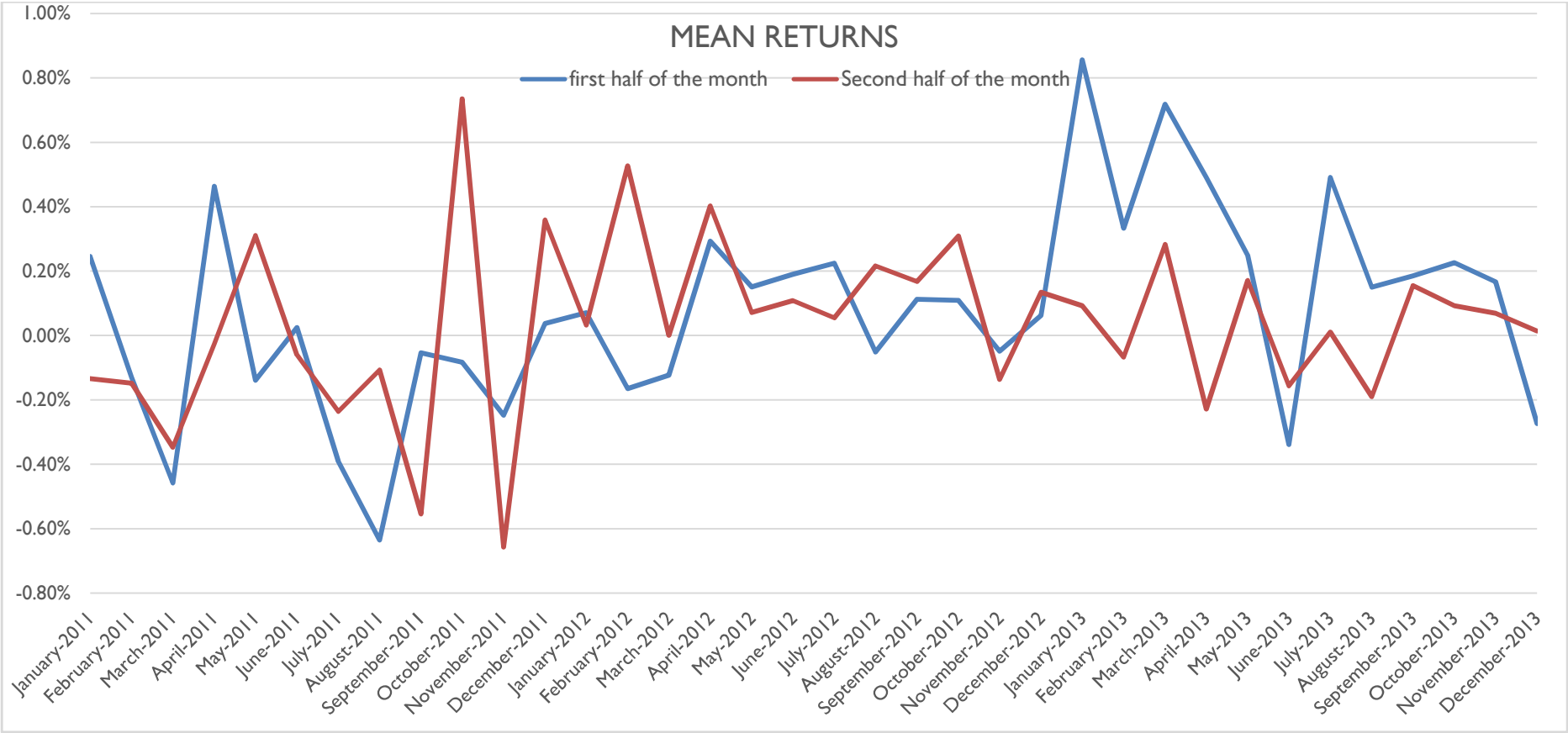
Table4.1showsthedescriptivestatisticsforthestockreturnsduringthefirsthalfofthemonth andsecondhalfofthemonthattheNSE.

Table4.1DescriptiveStatisticsfortheSemi-monthEffectintheNSE

Period	Numberof Observation	Mean	Std. Deviation	Standard Error
2011-2013				
Firsthalfofthemonth	375	.0674%	.7645%	.0395%
Secondhalfofthemonth	372	.0304%	.6091%	.0316%

Theresultsindicatethatthemeanreturnsforthefirsthalfofthemonthforthe3yearperiodis0.0 674%witha standarddeviationof0.7645%.Themeanreturnsforthesecondhalfofthesame periodis0.0304%withastandarddeviationof0.6091%.Themeanreturnsforthefirsthalfof themonthistwotimesgreaterthanthemeanreturnsforthesecondhalfofthemonth.

Graph 4.1: Returns for the first half and second half of the month.



4.3RegressionResults

Theregression result have been categorised into thefollowing; model summary, regression modelandstatisticalsignificanceoftheoverallregressionmodel.

4.3.1ModelSummary(MeasureofFitness)

Table4.2providesstatisticalmeasuresfor themodel.Themeasuresincludecoefficientof correlation-R,coefficientofdetermination-RsquareandadjustedRsquareandthestandarderror oftheestimate,whichcanbeusedtoexplainhowtheregressionmodelfitsthedata.

Table4.2ModelSummary

Model	R	RSquare	AdjustedRSquare	Std.Erroroftheestimate
1	.0267704	.0007166	-.0006246	.00691523

Themodelstatisticsshowthatwhentheindependentvariable(thereturnsinthesecondhalfof the month) and dependent variable (daily return of the market) interact, the model has a Pearson'scorrelationcoefficient(R)of0.026andcoefficientofdetermination(RSquare)of0 .0007.Thereisaveryweakcorrelationbetweenreturnsinthefirstandsecondhalfofthe month.Inadditionthemodelexplanatorypowerasmeasuredbythecoefficientofdeterminati on isvery low.

4.3.2RegressionModelResult

Thegeneralformofregressionequationrunfortestingthesemi-montheffectfortheentire periodisshownasfollows:

R_t=0.000674-0.000369d_{2t}

Thisisobtainedfromthecoefficienttablebelow:

Table 4.3 Regression Coefficient for the Semi-month Effect on the NSEReturns

Variable	Coefficients	t-statistic	P-value	Standard error
β_0	.000674	1.887732	.05945	.000357
β_1	-.000369	-.73095	.465038	.000506

Predictor:Dummyvariable(0forfirsthalf,1forsecondhalfofthemonth)

Dependentvariable:Dailyreturnofthemarket.

Table4.3showsthe regressionresultsfor thesemi-montheffectonthe NSEreturns.The coefficient $\beta_0$represents mean returns in first half of the month (taken as bench mark for

analysis).$\beta_1$isthecoefficientrepresentingthedifferencebetweenthemeanreturnsofthefirst andsecondhalfoftradingmonths.Thecoefficientfor$\beta_0$is0.000674with ap-valueof0.05945 while$\beta_1$is-0.000369witha p-valueof0.465038.Thesep-valuesaregreaterthan0.05thusthe coefficientsarenotsignificant.

4.3.3StatisticalSignificancefortheoverallRegressionModel

TheF-ratiointheAnalysis of Variance (ANOVA)tableasshownbelowtestswhethertheoverallregressionisagood fitfordata.

Table4.4ANOVAAnalysisfortheSemi-monthEffect

Model	Sum of Squares	Df	Mean Square	F	Fcritical value
Regression	.00002555	1	.00002555	.534291	.465038
Residual	.03562627	745	.00004782		
Total	.03565182	746			

Fromabovep>0.05thatis0.465038(p)isgreaterthan0.05thustheoverallfitofthemodelis poorandhencethesemi-montheffectisinsignificantintheNSEreturns.

4.4Discussion

Dailyreturnswereanalysedfor the first halfand secondhalfofthetradingmonthto establishthe existenceofthesemi-montheffectonstockreturnsattheNSE.Toconfirmthesemi-month effectonstockreturnsasignificantnegative$\beta_1$coefficientisrequired.Theanalysisshowsthat themeanreturnsforthefirsthalfofthemonthforthe3yearperiodis0.0674%comparedto0.03 04%occurringinthesecondhalfofthemonth.

Thecoefficient$\beta_1$representingthedifferencebetweenmeanreturnof

thefirstandsecondhalfof tradingmonthsis-0.000369withap-valueof0.46503whichisgreaterthan0.05indicatingthatthecoefficientisnotsignificant.Th ecoefficientofdeterminationRsquareis0.0007whichis verylowandasshownby table4.3F-statisticindicatestheoverallfitofthemodelispoorand hencethemeanreturnsforfirsthalfof thetradingmonthandsecondhalfof themonthis not statisticallydifferent.

LakonishokandSmidt(1988)obtainedanaveragedifferenceof 0.00237betweenfirsthalfof month andsecondhalfof month,similarlyBahadurand Joshi(2005) reportedanaverage difference0.000309.Howeverfindingsofthisstudyshowonlyasmallmagnitudeof0.00036 9 forthis,witha p- valueof0.465038whichisnot statisticallysignificantat5%level.Thereisno statisticaldifferencebetweenstockreturnsatfirsthalfof monthandsecondhalfof monthatthe NSE.Theresultis consistentto thatobservedininternationalmarkets:LakonishokandSmidt (1988)fortheUSAmarket,Nageswarietal.(2011)fortheIndiastockmarketandBahadurand Joshi(2005)forthe Nepalesestockmarketandis inconsistentwiththe findingsofZafaret al. (2012) andAriel(1987) for USA and Pakistan stock markets respectively.

CHAPTERFIVE: SUMMARY,CONCLUSIONANDRECOMMENDATION

5.1Introduction

Thischapterprovidesthesummaryoftheentirestudy,conclusion,recommendation,suggestion forfurtherstudiesandlimitationsofthestudy.

5.2Summary

Theobjectiveofthisstudywastoestablishwhetherthereisexistenceofthesemi-montheffect onstockreturnsattheNairobiSecuritiesExchange.Toachievethisobjective,daily returnsof individual share prices were calculated for companies listed in NSE-20 index. From thesereturns,differencesbetweenmeanreturnsoccurringthefirsthalfoftradingmonthandsecond halfofthemonthwerecalculated.Thedaily returnswereregressedagainsta dummyvariable representingreturninthesecondhalfofmonth.Thedummyvariableisassignedavalueofone forreturnsinthesecondhalfofthemonthandzeroifthereturnsoccurinthefirsthalfofthe month.Thecoefficient$\beta_1$representsthedifferencebetweenthemeanreturnsofthefirstand secondhalfoftradingmonths.Asignificantnegativecoefficient$\beta_1$wouldconfirmtheexistence ofthesemi-montheffect.

Themeanreturnsof thethreeyearperiodduringthefirsthalfofthemonthwas0.0674%as comparedto0.0304%occurringinthesecondhalfofthemonth.Themeanreturnsforthefirst halfofthemonthistwotimesgreaterthanthemeanreturnsforthesecondhalfofthemonth. Thestandarddeviationduringthefirsthalfofthemonthwas0.7645%and0.6091%forthe secondhalfofthemonth.Theregressionanalysisresultforthethreeyearperiodindicatestheco efficient$\beta_1$is-0.000369witha p-valueof0.465038.Thisp-valueisgreaterthan0.05thusthe

coefficientisnotsignificant.Theresultofthestudyindicatesthatthemeanreturnsforthefirst halfofthemonthisnotstatisticallydifferentfromthatofthesecondhalfofthemonth.

5.3Conclusion

Thepreviousstudiesconductedonvariousstockmarketshavefoundthatseasonalanomalies haveimpactedstockreturns.Amongtheanomaliesthathavebereportedisthesemi-month effectwhichcausesthemeanreturnsof firsthalfof themonthtobe higherthanthatrealisedin secondhalfofthemonth.

Theobjectiveofthisstudywastoestablishwhetherthereisexistence ofthesemi-montheffectonstockreturnsintheNSE.Daily stockreturnswerecalculatedforthe periodfromJanuary 2011throughDecember2013for the companiesin the NSE20shareindex.

Themeanreturnsoffirsthalfofthemonthwascomparedagainstthemeanreturnsofsecond halfofthemonth.$\beta_1$isthecoefficientrepresentingthedifferencebetweenthemeanreturnsof thefirstandsecondhalfoftradingmonths.Asignificantnegative$\beta_1$coefficientwouldconfir m theexistenceofthesemi-montheffectonstockreturns.

Theresultsindicatethatthemeanreturnsforthefirsthalfofthemonthforthe3yearperiodis0.0 674%andthesecondhalfofthesameperiodis0.0304%.Thecoefficient$\beta_1$is-0.000369with a p-valueof0.465038.Thisp-valueisgreaterthan0.05thusthecoefficientisnotsignificant.F-statisticis0.534291witha p-valueof0.465038.Thisp-valueisalsogreaterthan0.05hencethe overallfitofthemodelispoor.Fromthefindingsofthisstudy thereisnoevidenceofthesemi-montheffectonstockreturnsintheNSE.ThefindingsofthestudyalsoindicatetheNSEiswea

k formefficientwithrespectto the semi-montheffect.Thatmeanspastmovementsin stock pricescannotbeusedtopredictfuturemovementinprices.

5.4Recommendation

The semi-month effect purports that stock returns for the second half of the month are significantlybelowthatofthefirsthalfofthetradingmonth.Basedontheresultofthisstudy, the NairobiSecuritiesExchangedoesnotdepictthisanomaly. There is no indicationthatinvestorscanformulatetheirinvestmentstrategiesandtimingonthebasisof thisstudyandearn someabnormalreturn by predictingfutureprices.Thestudyrecommendstoinvestorstoconsider investingineitherhalvesofthetradingmonthsincestockreturnsarenotstatisticallydifferent.

The empirical results did not indicate visible pattern on stock returns hence the study recommendstobothlocalandinternationalinvestorstoinvestintheNSEsincesecuritiesare tradedatfairprices.

5.5SuggestionforfurtherStudy

Thisstudy covereda periodofthreeyearsfrom1stJanuary2011to31December2013.Itis possiblethata shorterperiodcouldhaveanimpactonthefindingsofthisstudy.Itisimportantto conductasimilarstudythatcoversalongerperiodoftime.

ThestudyusedtheIndividualstockpricestocalculatethedailystockreturns,similarstudycan beconductedusingtheNSEindicessuchastheNSEallshareindexandtheNSE 25index (NSE25)toestablishtheexistenceofthesemi-montheffectinthestockmarket.

Thestudycoveredcompanieslistedin theNSE20share,furtherstudyneedtoconsiderall companieslistedin the NSE.Thereare 61listedcompaniesasat31December2013as shownby appendix1.

The study involved the Nairobi Securities Exchange only, future studies may check the existenceof thesemi-montheffectin otherstockmarketsin theregionsuchastheDares Salaam StockExchange(DSE)andtheUgandaSecuritiesExchange(USE).

Thesemi-montheffectcanbe extendedtothebondmarketin theNairobiSecuritiesExchangeor otherstockmarketsin theregionsuchas theDares SalaamStockExchange(DSE)andUganda SecuritiesExchange(USE)toascertainifthesemi-montheffectexists.

5.6Limitationofthestudy

Thestudycoveredaperiodofthreeyearsfrom1stJanuary2011to31December2013.The shorterdurationmighthaveanimpactonthefindingsofthestudy.Futurestudiesmay considera longerperiodoftime.

The sample for the study comprised of companies in the NSE 20 share index. This is aproportionofallcompanieslistedin

theNSE.Therefore,considerationofalllistedcompanies
mighthaverevealeddifferentfindings.

Thestudy alsousedindividualstockpricesratherthanthemarketindex,thereforeinvestment strategybasedonthefindingsinthisstudy
appliedtothemarketindexmaynotprovideexpected results.

Timeconstraintwasalimitingfactorbecausethestudy
hadtobeconductedwithinashorttime.
Givenampletimeitwouldhavebeeninsightfultoinvestigatethepresenceofthesemi-month effectonvariousNSEindicesandtocomparetheirresultsforconsistency.

ThisstudywasconductedfollowingaKenyanperspectiveandisonlyapplicabletoitsculture andwayoflifeofhercitizens.Thereforeitmaynotbeapplicabletoothercountriesdueto culturaldifferencesandbackground.

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APPENDICES

APPENDIX 1: COMPANIES LISTED AT THE NSE AS AT DECEMBER 2013	
MANUFACTURING AND ALLIED	**COMMERCIAL AND SERVICES**
B.O.C Kenya Ltd	Express Ltd
British American Tobacco Kenya Ltd	Kenya Airways Ltd
Carbacid Investment Ltd	Nation Media Group
East Africa Breweries Ltd	Standard Group Ltd
Mumias Sugar Co. Ltd	TPS Eastern Africa (Serena) Ltd
Unga Group Ltd	Scangroup Ltd
Eveready East Africa Company Ltd	Uchumi Supermarket Ltd
Kenya Orchards Ltd	Hutchings Biemer Ltd
A.Baumann Co. Ltd	Longhorn Kenya Ltd
CONSTRUCTION AND ALLIED	**TELECOMMUNICATION AND TECHNOLOGY**
Athi River Mining	Safaricom Ltd

Bamburi Cement Ltd	AccessKenya Group Ltd
Crown Berger Ltd	**BANKING**
E.A.Cables Ltd	Barclays Kenya Ltd
E.A.Portland Cement Ltd	CFC Stanbic Holdings Ltd
ENERGY AND PETROLEUM	I & M Holdings Ltd
KenolKobil Ltd	Diamond Trust Bank Kenya Ltd
Total Kenya Ltd	Housing Finance Co. Ltd
KenGEN Ltd	Kenya Commercial Bank Ltd
Kenya Power and Lighting Co. Ltd	National Bank of Kenya Ltd
Umeme Ltd	NIC Bank Ltd
GROWTH ENTEPRISE MARKET SEGMENT	Standard Chartered Bank Ltd
Home Africa Ltd	Equity Bank Ltd
AGRICULTURAL	The Co-operative Bank of Kenya Ltd
Eaagads Ltd	**INVESTMENT**
Kapchorua Tea Co. Ltd	Olympia Capital Holdings Ltd
Kakuzi	Centum Investment Co. Ltd
Limuru Tea Co. Ltd	Trans-Century Ltd
Rea Vipingo Plantations Ltd	**AUTOMOBILES AND ACCESSORIES**
Sasini Ltd	Car and General (K) Ltd
Williamson Tea Kenya Ltd	CMC Holdings Ltd
INSURANCE	Sameer Africa Ltd

Jubilee Holdings Ltd	Marshalls (E.A.) Ltd
Liberty Kenya Holdings Ltd	
British-American Investments Ltd	
Kenya Re-insurance Corporation Ltd	
Pan African Insurance Holdings Ltd	
CIC Insurance Group Ltd	

APPENDIX 2: COMPANIES LISTED AT THE NSE 20 SHARE INDEX AS AT DECEMBER 2013	
Mumias Sugar Co. Ltd	Kenya Commercial Bank Ltd
Express Ltd	Standard Chartered Bank Ltd
Athi River Mining	Bamburi Cement Ltd
Sasini Ltd	British American Tobacco Kenya Ltd
E.A.Cables Ltd	KenGEN Ltd
Kenya Airways Ltd	Kenya Power and Lighting Co. Ltd
Safaricom Ltd	East Africa Breweries Ltd
Nation Media Group	Centum Investment Co. Ltd
Barclays Kenya Ltd	
Equity Bank Ltd	

APPENDIX 3: DAILY AVERAGE RETURN (%) - 2011

	Jan	Feb	March	Apr	May	June	July	Aug	Sep
1	-	-0.76	-0.97	1.06	-	-	-0.25	0.41	-1.65
2	-	-0.83	-0.45	-	-	-	-	0.08	-0.44
3	1.15	-0.24	-0.27	-	0.35	0.40	-	-0.35	-
4	0.03	0.23	-0.31	1.06	0.26	-0.20	0.25	0.16	-
5	0.98	-	-	1.32	0.07	-	-0.69	-1.05	-1.59
6	1.45	-	-	0.29	0.05	0.03	-0.43	-	-0.39
7	0.73	0.05	-0.72	-0.51	-	0.43	-0.44	-	0.12
8	-	-0.28	-1.02	0.69	-	0.07	-0.63	-1.88	1.43
9	-	0.88	-1.57	-	-0.36	-0.30	-	-3.78	0.04
10	-0.39	-0.43	-2.65	-	-0.84	-0.35	-	-0.44	-
11	-0.76	0.37	0.28	0.17	-0.28	-	-0.53	0.21	-
12	-0.52	-	-	-0.08	-0.07	-	-1.05	-0.03	0.00
13	0.25	-	-	-0.53	-0.12	-0.67	-1.42	-	0.82

14	-0.09	-0.01	1.49	0.70	-	1.44	-0.21	-	0.46
15	-0.14	-0.41	1.16	0.91	-0.45	-0.59	1.09	-0.32	0.59
16	-	-0.42	0.00	-	-	-0.06	-	0.23	1.03
17	-	-0.04	-0.46	-	0.39	0.36	-	0.32	-
18	0.10	-0.42	-0.32	-0.05	-0.30	-	-1.06	0.57	-
19	0.21	-	-	0.05	0.65	-	0.84	0.35	-0.65
20	-0.24	-	-	-0.29	-0.21	-0.28	-0.04	-	-0.12
21	-0.48	-0.39	-2.67	-0.16	-	0.66	-0.50	-	-0.67
22	-	0.39	-0.95	-	-	-1.51	0.64	-0.55	-0.39
23	-	-0.12	-0.52	-	0.37	0.23	-	0.08	-0.75
24	-0.25	0.08	-0.21	-	1.12	0.11	-	-1.40	-
25	-0.07	0.15	0.38	-	0.50	-	-0.62	-0.90	-
26	0.34	-	-	-0.21	-0.58	-	-0.71	0.13	-0.95
27	0.39	-	-	0.18	1.32	-0.24	-0.02	-	-0.64
28	-0.74	-0.58	0.42	-0.41	-	-0.40	-1.11	-	-1.44
29	-	-	-0.14	0.68	-	0.40	0.21	-0.64	-0.78
30	-	-	-0.04	-	-0.14	0.07	-	0.64	-0.72
31	-0.61	-	0.35	-	0.31	-	-	-	-

	Oct	Nov	Dec
1	-	0.47	-0.78
2	-	0.83	-0.47

3	-0.02	-1.32	-
4	0.25	0.14	-
5	-0.01	-	-1.11
6	-0.15	-	0.17
7	-0.29	-0.92	0.34
8	-	-0.28	1.67
9	-	0.24	-0.36
10	0.39	-0.01	-
11	-0.28	-0.75	-
12	-0.11	-	-
13	-0.63	-	0.23
14	-0.55	-0.88	0.56
15	0.48	-0.25	0.12
16	-	-0.20	-0.14
17	-	0.15	-
18	-0.26	-0.60	-
19	0.17	-	-0.29
20	-	-	0.27
21	-0.04	-0.38	0.86
22	-	-0.61	0.53
23	-	-0.21	0.32
24	0.10	-0.97	-
25	0.03	-1.04	-

26	0.80	-	-
27	1.66	-	0.99
28	1.83	-0.32	0.77
29	-	-1.73	-0.12
30	-	-1.34	0.40
31	1.81	-	-

APPENDIX 4: DAILY AVERAGE RETURN (%) - 2012

	Jan	Feb	March	Apr	May	June	July	Aug	Sep
1	-	-0.65	0.71	-	-	-	-	-0.04	-
2	-	0.31	0.39	0.18	-0.27	-	1.40	-0.14	-
3	0.33	-0.25	-	0.69	1.40	-	0.36	0.57	-0.51
4	0.13	-	-	0.54	0.40	-0.04	0.30	-	0.92
5	0.04	-	0.11	-0.09	-	-0.80	0.23	-	0.09
6	0.35	-0.82	-0.14	-	-	0.45	0.02	-0.32	-0.29
7	-	-0.37	0.52	-	-0.52	0.58	-	-0.42	0.46
8	-	0.07	0.27	-	-0.08	-0.16	-	0.32	-
9	-0.23	-0.15	0.01	-	-0.15	-	0.19	0.38	-
10	-0.06	0.25	-	0.17	-0.29	-	-0.27	0.23	-0.81
11	1.23	-	-	0.65	0.35	0.42	0.19	-	1.24
12	-0.14	-	-0.18	0.51	-	0.47	0.07	-	0.51

13	-0.63	0.07	-1.52	0.12	-	0.08	-0.07	-1.29	0.04
14	-	-1.26	-1.19	-	0.51	0.35	-	0.25	-0.31
15	0.22	0.97	-0.32	-	0.16	0.54	-	-0.11	-
16	-	0.13	0.42	-0.14	0.44	-	0.04	0.46	-
17	-0.19	0.43	-	0.60	0.66	-	-0.56	0.07	-0.11
18	-0.67	-	-	0.40	0.31	1.06	-0.04	-	0.29
19	-0.23	-	-0.50	1.51	-	-0.30	1.14	-	0.15
20	-0.73	0.10	-0.98	1.09	-	0.83	0.27	-	-0.74
21	-	0.32	0.23	-	-0.05	-0.46	-	-0.07	-0.13
22	-	0.56	-0.11	-	-1.47	0.28	-	0.21	-
23	0.04	0.26	0.42	0.78	0.45	-	0.26	0.20	-
24	0.35	1.45	-	0.59	-0.38	-	0.15	0.26	0.35
25	0.19	-	-	-0.25	-0.46	0.10	1.09	-	0.53
26	0.28	-	-0.21	-0.44	-	0.19	-0.03	-	0.20
27	0.14	0.24	0.27	-0.41	-	0.01	-1.14	0.47	0.87
28	-	0.74	0.59	-	0.12	-0.50	-	-0.12	-0.01
29	-	1.05	-0.33	-	-0.15	-0.13	-	0.93	-
30	0.55	-	0.22	0.14	-0.03	-	-0.53	-0.06	-
31	0.60	-	-	-	1.39	-	-1.02	0.05	-

	Oct	Nov	Dec
1	0.03	-0.28	-
2	-0.72	-0.21	-

3	0.49	-	-0.45
4	-0.09	-	-0.05
5	0.64	-0.35	0.01
6	-	-	-0.66
7	-	-0.17	0.28
8	0.16	0.40	-
9	0.04	0.62	-
10	-0.19	-	-0.21
11	-	-	0.65
12	0.74	0.16	0.63
13	-	-0.47	0.34
14	-	0.13	-
15	-0.02	-0.32	-
16	0.03	0.22	-
17	0.16	-	0.09
18	0.17	-	0.29
19	0.35	-0.30	0.75
20	-	0.27	0.16
21	-	0.37	0.07
22	0.61	-0.21	-
23	0.31	0.01	-
24	0.41	-	0.12
25	0.45	-	-

26	0.70	0.16	-
27	-	-0.76	0.07
28	-	-0.15	-0.10
29	0.29	-0.53	-
30	0.45	-0.57	-
31	-0.23	-	-0.28

APPENDIX 5: DAILY AVERAGE RETURN (%) - 2013

	Jan	Feb	March	Apr	May	June	July	Aug	Sep
1	-	0.03	0.22	-	-	-	-0.86	0.22	-
2	0.54	-	-	4.14	0.92	-	-0.42	0.20	0.30
3	0.38	-	-	-0.69	-0.16	0.00	0.24	-	-0.27
4	1.57	0.26	-	-1.35	-	-0.34	0.02	-	0.25
5	-	0.62	0.61	0.46	-	0.12	0.57	0.10	0.66
6	-	0.95	1.16	-	0.24	0.06	-	-0.31	0.48
7	0.18	0.90	1.17	-	0.33	-0.42	-	1.05	-
8	0.68	0.88	1.24	0.67	0.64	-	0.25	0.11	-
9	1.08	-	-	-	0.40	-	-	-	0.41
10	-0.07	-	-	1.09	-0.43	-0.10	1.29	-	0.29

11	0.70	0.48	3.46	0.94	-	-1.38	0.24	-	-0.07
12	-	0.16	3.99	-0.25	-	-0.51	-	-0.22	0.41
13	-	0.21	-1.15	-	-0.53	-0.09	-	-0.46	0.16
14	1.68	-0.40	-2.11	-	0.06	-0.52	-	-0.39	-
15	1.83	-0.42	-1.41	-0.59	1.03	-	3.09	1.19	-
16	2.55	-	-	-0.97	0.27	-	0.75	0.88	-0.58
17	-	-	-	-0.25	0.34	-0.55	-0.11	-	-0.13
18	0.31	-0.57	-0.29	-0.58	-	-1.21	-0.18	-	0.52
19	-	-0.36	0.67	-0.37	-	0.11	0.26	-0.09	0.26
20	-	-1.44	-0.20	-	-0.14	0.49	-	-0.30	0.86
21	-0.96	-0.14	-0.32	-	0.38	0.00	-	-0.23	-
22	-0.05	-0.62	0.24	-0.27	0.36	-	0.30	-0.27	-
23	-1.18	-	-	-0.42	-0.24	-	-0.56	0.12	-0.51
24	-0.47	-	-	-0.34	0.22	-0.14	0.15	-	-0.20
25	-0.02	0.25	0.75	-0.69	-	-0.92	0.65	-	0.47
26	-	0.13	0.59	0.01	-	-0.08	-0.28	-0.11	0.22
27	-	1.55	1.92	-	-0.12	-1.23	-	-1.29	0.30
28	0.57	0.26	0.59	-	0.20	0.47	-	-0.86	-
29	-0.03	-	-	-0.52	0.75	-	-0.28	-0.72	-
30	-0.26	-	-	0.74	0.27	-	-0.19	-0.17	0.70
31	0.55	-	-	-	0.44	-	-0.35	-	-

	Oct	Nov	Dec

1	0.15	0.37	-
2	0.56	-	-0.23
3	0.19	-	0.13
4	0.26	0.18	-0.26
5	-	0.02	-0.69
6	-	0.26	-0.18
7	0.47	0.66	-
8	0.70	-0.64	-
9	0.40	-	-0.49
10	0.13	-	-0.34
11	0.04	0.20	-0.58
12	-	0.54	-
13	-	-0.24	-
14	-0.03	0.58	-
15	-0.37	-0.10	-
16	0.14	-	0.18
17	-0.03	-	-1.13
18	0.45	-0.31	-0.54
19	-	0.08	-0.03
20	-	-0.15	0.06
21	-	0.85	-
22	-0.62	-0.05	-
23	0.14	-	0.13

24	0.58	-	0.82
25	-0.50	0.10	-
26	-	0.90	-
27	-	0.70	0.10
28	0.06	0.08	-
29	-	-1.10	-
30	0.70	-	0.16
31	0.54	-	0.65

APPENDIX 6: MEAN MONTHLY RETURNS 2011-2013.

	2011		2012		2013	
Month	First half	Second half	First half	Second half	First half	Second half
January	0.24539%	-0.1346%	0.07045%	0.03168%	0.85607%	0.09191%
February	-0.13049%	-0.1482%	-0.1653%	0.52702%	0.33290%	-0.0671%
March	-0.45896%	-0.3473%	-0.1230%	0.00044%	0.71789%	0.28242
April	0.46290%	-0.0267%	0.29249%	0.40259%	0.49068%	-0.2289%
May	-0.13971%	0.31065%	0.15027%	0.07102%	0.24806%	0.17033%
June	0.02446%	-0.0599%	0.18994%	0.10811%	-0.3389%	-0.1573%
July	-0.39208%	-0.2363%	0.22388%	0.05438%	0.49110%	0.00996%
August	-0.63580%	-0.1076%	-0.0513%	0.21619%	0.15018%	-0.1900%

September	-0.05425%	-0.5547%	0.11196%	0.16738%	0.18517%	0.15520%
October	-0.08307%	0.73488%	0.10850%	0.30886%	0.22566%	0.09188%
November	-0.24765%	-0.6575%	-0.0490%	-0.13664%	0.16663%	0.06846%
December	0.03740%	0.35879%	0.06181%	0.13391%	-0.2736%	0.01374%

Appendix 7

Descriptive Statistics summary 2011-2013

	FH		*SH*
Mean	0.00067411	Mean	0.00030422
Standard Error	0.0003948	Standard Error	0.00031582
Median	0.00062492	Median	0.00068357
Standard Deviation	0.00764529	Standard Deviation	0.00609135
Sample Variance	0.0000584	Sample Variance	0.0000371
Kurtosis	6.58534711	Kurtosis	1.92692436
Skewness	0.59537653	Skewness	-0.0304957
Range	0.07920696	Range	0.05218744
Minimum	-0.03779843	Minimum	-0.0266914
Maximum	0.04140853	Maximum	0.02549604
Sum	0.25279188	Sum	0.11317154
Count	375	Count	372
Confidence Level(95.0%)	0.00077631	Confidence Level(95.0%)	0.00062103

Regression Analysis summary 2011-2013

	Regression Statistics
Multiple R	0.026770415
R Square	0.000716655
Adjusted R Square	-0.000624665
Standard Error	0.006915237
Observations	747

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.00002555	0.00002555	0.53429098	0.465038226
Residual	745	0.035626276	0.0000478		
Total	746	0.035651826			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
β_0	0.00067411	0.000357101	1.887732275	0.0594503
β_1	-0.00036989	0.000506035	-0.730952108	0.46503823