EXCHANGE RATE FLUCTUATIONS AND STOCK RETURNS IN UGANDA SECURITIES EXCHANGE

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1163-05026-07024

A THESIS SUBMITTED TO THE COLLEGE OF ECONOMICS AND MANAGEMENT

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE

AWARD OF THE MASTER DEGREE IN BUSINESS

ADMINISTRATION: FINANCE AND BANKING

OF KAMPALA INTERNATIONAL

UNIVERSITY

November, 2018

DECLARATION

I, ALIMALI BADOSA Richard, hereby truthfully declare to the best of my knowledge that this thesis is my original work and has never been published and/or submitted before for any academic award in any university or any other academic institution of higher learning.

Signature.

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APPROVAL

I acknowledge that this thesis titled: "Exchange rate fluctuations and stock returns in Uganda Securities Exchange" has been done under my supervision and has been submitted to the department with my approval.

**

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Date: 23/11/2018

DEDICATION

This work is dedicated to:

My dear parents BATUMIKE BARHAYEMERE Damien and CIBALONZA Julienne;

Our dear father, Jean de Dieu RUHIZA BOROTO;

My dear brothers and sisters;

My dear uncles and aunts;

My dearest in-laws;

My dear cousins;

My offspring.

ACKNOWLEDGEMENT

It would be ungrateful for me to finish this work without addressing my feelings of gratitude to all those who contributed to the success of this work.

My most ultimate gratitude is addressed first of all to the Lord Jesus Christ who loved me first by accepting to die on the woods of Calvary for my sins.

I grab this opportunity to express my sincere thanks to my thesis' supervisors, Dr. EMENIKE Kalu Onwukwe who accepted to supervise this thesis and his interest in this thesis' topic, may God bless you abundantly.

I'm indebted to all members of the College of Economics and Management of Kampala International University, including: Dr. Arthur Sunday, Dr. Mabonga Eric, Dr. Awolusi O. Dele and all the academic body of KIU for the scientific knowledge that they keep impart us so that we are well trained.

My sincere thanks to my family for giving me their trust; her constant and unwavering support have been a valuable source of energy and motivation. Through her: my parents; Batumike Damien and Cibalonza Julienne; my dear father, Boroto Jean De Dieu, who never ceased to support me financially and morally during my academic studies; my brothers and sisters; Akilimali Lucien, Alimasi Hermann, Bashokwire Gaetan, Awa Juliet, Ashobwire Raissa and Akonkwa Alice; our brother-in-law Ngengele Patrick; our sister-in-law, Naisha Nusura and Neema Sanginga.

I'm also thinking to the Boroto's Family such as Kahimano Boroto, Vaillant Boroto, Gustin Boroto, etc.; and to my friends: Bashamambirhe Anselme, Georges Bayose, Nteranya Francois, Nambitu Helene, Zanika Christelle, Bayose Faustin, Rukundo Romaric, Mugula Pacific, Bengehya Rodrigue, etc.

To all you my companions, colleagues; to those who, from near and far, joined me in prayer to achieve this work, they find here the expression of my gratitude and I keep a good memory of them.

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ACRONYMS

ALSIUG: Uganda all share index

BOU: Bank of Uganda

EMH: Efficient Market Hypothesis

E-Views: Econometric Views

FISHER-ADF: Fisher Augmented Dickey-Fuller

FISHER-PP: Fisher Phillips-Perron

FX: Foreign Exchange rate (Fluctuation)

IFE: International Fisher Effect

ISIN: International Securities Identification Number

NSE: Nairobi Securities Exchange

UGX: Uganda shillings

USE: Uganda Securities Exchange

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ABSTRACT

The purpose of this study was to examine the effect of the exchange rate fluctuations on stock returns in Uganda Securities Exchange (USE). The objectives of this study were to determine the effects of exchange rate fluctuations on stock returns, in both cross-listed companies and local-listed companies in USE, using the Jorion's model and panel data regression. Although empirical and anecdotal evidence suggest two types of results: a group of authors found the effect of exchange rate movements on stock returns; then, another group did not found that effects. The preliminary analysis from the USE monthly returns and nominal exchange rates, for January 1, 2014 to April 30, 2018 period, shows positive skewness, leptokurtosis, and nonnormal distribution. The findings of this study revealed a significant effect of exchange rate movements on stock returns in USE. However, level and even direction of this effect differ across companies listed on USE. The exchange rate fluctuations had a negative and significant effect on stock returns of the cross-listed companies but there was not a significant effect of that exchange movement on the local-listed companies. All estimations for the whole period and whole companies listed in USE revealed a negative and significant effect between exchange rate and stock returns due to the cross-listed companies with Kenyan stock market. Negative exposure coefficient suggests that if the exchange rate moves by one unit, the stock returns in USE decrease by the amount of the coefficient of exchange rate factor. The highest exchange exposure is observed in case of Cross-listed companies. Basing on these findings, the study concluded that exchange rate fluctuations have a negative and significant effect on the stock returns in USE. The recommendations were formulated regarding these findings such as the Bank of Uganda could define the proactive monetary policy to manage the price dynamics and to reduce the nominal interest rate because in the long run the exchange rate fluctuations cannot be controlled through the USE interventions. The USE's system could reduce the information asymmetry within the stock market, protect the small-scale investors and increase the number of the companies listed on it in the sense to reduce the negative effect of the exchange rate fluctuations on its stock returns. In all, this study has advanced the literature in understanding the mechanisms through which exchange rate fluctuation affects a stock return in Lower developed countries. The Uganda's stock market is vulnerable of the exchange rate fluctuations due to the cross-border companies with USE. The findings of this study joined the group of studies that have found a negative effect of the exchange rate fluctuations on stock returns.

CHAPTER ONE

INTRODUCTION

1.0. Introduction

Under this chapter, the background, problem statement, purpose, objectives, research questions, hypotheses, scope, and significance of the study are presented in line with the research title.

1.1. Background to the study

1.1.1. Historical perspective

The interest for the connection between foreign exchange rate fluctuations and stock returns goes back to the fall of the Bretton Woods system (1971-1972), known as Nixon Shock (Dufey, 1972 & Leeson, 2003). This system was replaced by a free-floating rates system in which the price of currencies is determined by supply and demand of money (Abor, 2005).

The securities exchanges are probably the most vital parts of the present worldwide economy. Nations around the globe rely upon securities exchanges for financial development regardless of whether they are the generally new trend (Hur, 2018). In Europe, the year 1773 promoted the adjustment in the market organization. As the volume of stocks increased, the requirement for a sorted out commercial center to trade these stocks became important. Therefore, stock merchants chose to meet at a London café, which they utilized as a market center. In the long run, they assumed control over the café and changed its name to the "*stock exchange*." Then, the first exchange, the London Stock Exchange, was established, so it was constrained on the grounds that organizations were not permitted to issue stocks until 1825 (Turner, Qing & Walker, 2018).

In USA, the New York Securities Exchange (NYSE) was founded in 1817 because of the restrictions of the London Stock Exchange (LSE). In this same period, the London Stock Exchange was the fundamental Stock market in Europe and keeping in mind that NYSE was the principal Stock market (Exchange) in America and the world (as today).

In 1971, the NASDAQ (National Association of Securities Dealers Automated Quotations stock exchange) was founded to resolve some lacks of NYSE. The NASDAQ is the first electronic stock exchange that allowed investors to buy and sell stock on a computerized, speedily and transparent system without a need for a physical trading floor (Hom, 2012). In the similar period, the former American's president, Nixon took a unilateral decision to change the fixed exchange rate to free-floating exchange rate and this last exchange rate regime was adopted through the Jamaica Agreement on 1976 (Halm, 1977 & Irwin, 2013).

In Africa, the first securities exchange was founded in Egypt named Egyptian Exchange (EGX) in 1883 followed by Casablanca Stock Exchange (CSE) in 1929. They adopted pegged-floating exchange rate respectively. Today, there are 29 stock exchanges around Africa continent and more than 2140 companies listed on them (Essays, 2013).

Today, numerous nations around the globe have their own particular market securities. Around the world, many securities exchanges regularly rose in the nineteenth and twentieth centuries not long after London Stock Exchange and New York Stok Exchange. The stock exchange indices are additionally a critical part of present day securities exchanges. The Dow Jones Industrial Average is apparently the most vital file in the word (DJIA) made by Wall Street Journal editorial manager Charles Dow in 1885 (Thirunavukkarasu, 2006).

Exchange rate and the stock market price are interconnected. The world is transforming into a village because of exchange liberalization and globalization. For example, foreign investors are interested to put their capital in the securities exchanges worldwide. In this procedure, global speculation is moving quickly and capital is moving over everywhere throughout the world. The advantages of these financial specialists (Investors) are being controlled by the foreign exchange. Also, insecurity in the exchange rate may realize vulnerability or generally in these speculators. Then, the exchange rate is the vital determinant of securities exchange fluctuations.

Uganda embraced the free-floating exchange rate system at the beginning of 1990s which implies the conversion of the Ugandan shilling versus the US dollar and other outside currencies is dictated by demand and supply of cash (Onegi-Obel, 2016). The Uganda Securities Exchange (USE) was created in 1997 as an organization limited by guarantee and was licensed in 1998 by the Capital Markets Authority to work as an affirmed securities exchange. A stock market is a focal place for exchanging of securities by authorized

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dealers/brokers of firms, financial specialists, a delegate of speculators and an agent of issues. It gives a credible platform for raising of capital; through the issuance of proper obligation, equity and different instruments offered to the public. Along these lines, the Exchange gives fundamental facilities to the private entity and government to fund-raise for business development and empowers the public to own shares in companies listed on this stock market. The first company quoted in USE was Uganda Clays Ltd (UCL) in 2000 and the first cross-listed company with Nairobi Security Exchange was East Africa Breweries Ltd (EABL) in 2001 (Businge, 1, 2014).

It is widely trusted that the exchange rate fluctuations are one of macroeconomic uncertainty that ought to significantly affect the stock returns (Shapiro, 1975; Marston, 2001 and Simakova, 2017). At that point, a firm has not a total control on exchange rate volatility and the firm can go for administration of such hazard (Jorion, 1990).

1.1.2. Theoretical perspective

This study was focused on two theories related to exchange rate fluctuations and the stock returns of a company listed at any stock exchange, which are: The Efficient Market Hypothesis (EMH) and International Fisher Effect (IFE).

The Efficient Market Hypothesis implies that present stock prices completely reflect all information accessible. This implies the value of the stock changes instantly when new information is accessible. There are three levels of the EMH: Weak form, Semi-Strong form, and Strong form efficiency (Fama, 1970).

One of the real ramifications of an efficient market is that, the present price changes instantly as new information is accessible. For instance, assume that Intel was to declare they had developed another approach to fabricate PC chips that would influence PCs to run ten times quicker at a large portion of the price, yet that it would take no less than a year to execute in the entirety of their assembling plants. An efficient market suggests that the stock price would increment promptly when the information is accessible, not in 12 months' time when the innovation is executed or even later when additional benefits are gotten. Basically, the EMH says that stocks react instantly to the Net Present Value (NPV) of new information (Harder, 2010).

However, the International Fisher Effect (IFE) was created at end of the Bretton Woods system in 1971-1972, so the association between exchange rate and interest rate differentials appeared.

The International Fisher Effect (IFE) proposes that the exchange rate between two countries should change vis-à-vis their nominal interest rates. The country which has a lower amount of interest rate will see their currency be appreciated in the future spot exchange and country which has a higher nominal interest rate, will see its currency be depreciated in the future spot exchange (Buckley, 2004).

The International Fisher Effect (or Fisher's open theory) is a speculation which deals with the nominal interest rates between two counties in sense to determine the spot conversion (exchange) of currencies (Eun & Resnick, 2011).

These economic theories have led this study especially the Efficient Market Hypothesis which has been the main theory in this study.

1.1.3. Conceptual Perspective

The exchange rate fluctuation, the stock return and the return on market portfolio (market index) are the key concepts in this study.

In finance, an exchange rate is a rate at which one currency will be traded for another with respect to the market powers (the supply and the demand of a particular currency versus another). In additionally viewed, it is as the estimation of one nation's money in connection to another money. The spot exchange rate is the present exchange rate; however, the forward conversion (Exchange) rate refers to a swapping rate that is concluded and traded today however for conveyance and payment on a particular future date. Something else, the purchasing rate is the rate at which cash merchants will purchase foreign currency, and the offering rate is the rate at which they will offer that currency (Abdulla, 2017). A currency is appreciated whenever its demand is greater than the accessible supply and it will depreciate whenever its demand is not as much as the accessible supply (Jorion, 1990). Central banks ordinarily have little trouble to adjust the available money supply to suit changes in the demand for cash because of business transactions (Speculations). It has been concluded that the speculation can undermine the real financial development, specifically since the speculators were able to forecast the future value of currencies and to take a profit on them. For transporter organizations shipping products from one country to another, exchange rate fluctuations could impact them severely.

However, the stock return is the money made or lost on a share or stock. The value of a stock is calculated by a change in its prices such as its beginning price and its ending price. It's

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ensured that an investor sets and gets the best price when he wants to sell a specific stock. The stock return, from the perspective of the stock exchange, measures the value of a specific business, venture or company (Amihud, 2002).

On another hand, the return in market index is a weighted average of the specific stock returns or other investment instruments from regarding a particular stock market, and it is computed from the stocks' prices of the selected stocks. Market indices show an entire stock exchange situation and cash the market's movements over a certain period. It is an instrument used by stakeholders and investors to describe the stock exchange and to compare the return on specific stock, investments (Arnott, Hsu & Moore, 2005).

Besides, the variables to consider in this specific study are: The Stock-Returns of the companies listed on USE as dependent variable (DVs); also, the Exchange rate fluctuations (FX) [Uganda shilling/Us dollar] and the return on market portfolio (Market index) [Uganda all share index] as the independent variables (IVs).

1.1.4. Contextual Perspective

This study is related to the exchange rate fluctuation and stock returns in the context of Ugandan Securities Exchange (USE).

The USE opened to exchange in January 1998 at that time, the exchange had just one listing, a bond issued by the East African Development Bank and trading was limited on a handful exchange a week (Onegi-Obel, 2016).

The USE took 16 years to undertake the fixed income instruments. It's on July 2014 that USE exchanged 16 firms (8 locally quoted companies and 8 cross-listed companies) and it had begun the exchanging of fixed income instruments (for example treasury bond, preference share, corporate bond, and debenture stock, also short-term financial instruments: commercial paper and treasury bill). The USE works with the "African Stock Exchanges Association" (Baganzi, Kim, & Shin, 2017).

The USE works in close relationship with the Dar es Salaam stock trade (Tanzania), the Rwanda Stock Exchange, and the Nairobi Securities Exchange (Kenya). As indicated by distributed reports in 2013. These Stock Markets could share their risks with the USE in the short run and long run.

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It's in 20 July 2015 that the USE initiated its electronic trading platform, backed by three independent data servers, cutting to three days (Muhumuza, 2015).

The USE possesses by 16 stockbrokers. In August 2016, a law was passed to enable the shareholders to sell stocks to public members through initial public offering (Anyanzwa, 2016). On 18 May 2017, the USE demutualized and enrolled as an "open organization, limited by shares." Then, the Companies quoted on it must have a minimum share capital of UGX 1 billion and net the net assets of UGX 2 billion on the off chance that to keep on operating in this stock trade (Oketch, 2017).

1.2. Problem statement

The foreign investments are increasing day by day in Uganda's businesses; so, multi-national and transnational corporations are playing increasingly important roles in Ugandan business. Uganda is also engaging in a much wider range of cross-border transactions with different countries and products. The companies have also been more active in raising financial resources abroad. Every one of these improvements consolidates to give a boost to cross-currency cash-flows and different countries. According to Tomanova (2016), when dealing in foreign currencies, fluctuations in the exchange rates are bound to occur and this affects positively or negatively the expected incomes of firms.

Uganda's economy faces an issue due to exchange rate exposure. On 2015, the Bank of Uganda's governor, Mutebile, stated that: "Over the course of the 2014/15 fiscal year, the Ugandan Shilling depreciated against the US dollar by 27 percent, by an estimated \$700 million." Uganda's market has suffered during that period because export commodity prices have fallen, demand in key export markets has weakened and it has become more difficult to mobilize capital on international markets (Onegi-Obel, 2016).

In 2016, the ALSIUG dropped by 501 points which were 15% due to the influence of the crosslisted companies (Muhumuza, 2017).

However, information collected by Crested Capital Ltd demonstrates that USE's aggregate market turnover fell from Ush173.77 billion (\$47.5 million) in 2016 to Ush96.17 billion (\$26 million) in 2017, a gap of \$21.5 million. There were critical outflows witnessed saw on key companies such as Umeme Ltd with poor revenues, lower than the Ush5 million (\$1,366) posted in numerous trading sessions (*The East Africa*, 2018).

This implies that the stock's values held by investors dropped significantly during these periods. When a stock value (price) drops, it also impacts Uganda All-Share Index (ALSIUG), which shows the changing average value of the stock values of all companies quoted on a stock exchange, and which is utilized as a measure of how well a market is performing.

All those problems are due to the poor tools which can measure historically the factors which affect Uganda's business value and the poor tools to predict the future risk of devaluation of the business in LDCs; also, there are few studies which have been done regarding the effect of foreign exchange rate fluctuations on stock returns, especially regarding LDCs' stock exchange.

It is in this context that the current study is focused on the effect that the exchange rate fluctuations can have on the stock returns in Uganda Securities Exchange.

1.3. Purpose of the study

The purpose of this research is to examine the effect of the exchange rate fluctuations on stock returns in Uganda Securities Exchange (USE).

1.4. Objectives of the study

This study is guided by the following objectives:

- 1. To examine the effect of exchange rate fluctuations on stock returns of cross-listed companies.
- 2. To examine the effect of the exchange rate fluctuations on stock returns of local-listed companies in USE.
- 3. To examine the effect of the exchange rate fluctuations on stock returns of all companies quoted in Uganda Securities Exchange (USE).

1.5. Research questions

This study sought to provide answers to the following questions:

Q₁: Is there a significant effect of exchange rate fluctuations on stock returns of cross-listed companies?

- Q₂: Is there a significant effect of the exchange rate fluctuations on stock returns of local-listed companies in USE?
- Q₃: Is there a significant effect of the exchange rate fluctuations on stock returns of all companies listed in Uganda Securities Exchange (USE)?

1.6. Hypotheses

The following hypotheses have been tested in order to determine the effect between variables considered in this study:

- H_{o1}: There is no significant effect of exchange rate fluctuations on stock returns of cross-listed companies.
- H_{o2}: There is no significant effect of the exchange rate fluctuations on stock returns of local listed companies in USE.
- H₀₃: There is no significant effect of the exchange rate fluctuations on stock returns of all companies listed in Uganda Securities Exchange (USE).

1.7. Scope of the study

Geographically, the study was carried out in Uganda precisely from USE (Uganda Securities Exchange). Basing on the content, this study was limited to measure the effect of exchange rate fluctuations on stock return's in Uganda Securities Exchange during a sample period of 52 months (2014/01-2018/04).

Basing on the time period covered by this study, the data have been collected by considering a long period and the researcher collected much of the recent data in order to obtain current information on exchange rate fluctuations and stock return's in Uganda Securities Exchange.

Besides, this provided an opportunity for further research in the excluded companies. Theoretically, the study was anchored on the Efficient Market Hypothesis (EMH) and the International Fisher Effect (IFE).

1.8. Significance of the study

The results and findings of this study are beneficial to different stakeholders as they provided a better understanding of the effect of exchange rate fluctuations on stock returns in Uganda Securities Exchange.

Thus, this study aims to bridge the gap between the exchange rate fluctuation literature and the studies on the stock market and determine whether there are actions over the stock returns which could lead the negative effects of company's reaction to exchange rate changes. Exchange rate fluctuation is appropriated to money decisions which states that firms will interpret the exchange rate fluctuation as a buffer against adverse cash flow shocks, particularly if they have more opportunities for investment. This research will assist the stakeholders with understanding the impact that the cross-listed companies can have on Uganda All Share Exchange (ALSIUG).

This study is a great benefit to academicians and future researchers who will be undertaking other researches related to it as it will be used as a reference. This is because it will contribute to the body of knowledge on the association between exchange rate changes and stock returns.

Regarding the emergent stock market, the findings of this research has contributed to improving the understanding of the effect of exchange rate fluctuations on the firms listed at any emergent stock market. The recommendations which provided in this study will be of benefit to the management of Uganda Securities Exchange and the companies listed on it because they will point out the areas ignored in exchange rate changes and stock returns as well as the ways of improving the quality of their analysis.

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1.9. Operationalization of key terms

- *Exchange rate fluctuation* is a fluctuation or variation of the trading rate regarding a specific period (such as: day, week, month, quarter, etc.). Then, an exchange rate represents a rate at which one currency will be traded for another by thinking about the worth of each one respectively.
- *Stock return:* A stock return is a difference between the price we have paid for it and its current price (or actual price); a stock return can represent either positive, zero or negative value. A stock can be a bond, a share, etc.
- Stock market: Stock exchange or share market is the aggregate of purchasers and sellers (a free system of financial exchanges, not a physical offices or discrete area) of stocks (additionally called shares, bonds) which hold ownership guarantees on businesses; these may incorporate securities quoted on a public stock exchange an also those exclusive exchanged privately.
- *Market index:* represent a price-weighted average of a certain type of stocks or other instruments which measure stock's value regarding a specific stock market.

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

The present chapter reviews the literature related to the exchange rates, the stock returns and stock market. It is subdivided into the theoretical review, conceptual review, empirical reviews and research gaps. These points have been reviewed in line with the objectives of the study.

2.1. Theoretical review

This study was focused on two theories related to Exchange rates and the stock returns, which are: The Efficient Market Hypothesis and the International Fisher Effect (IFE).

2.1.1. Efficient Market Hypothesis (EMH)

The EMH theory is all about the information related to the stock price and the volatility of its price. The EMH is essential for the purpose of the current study because it permits to have a look at the stock return and the speculations around it in the case to determine its price.

The efficient market hypothesis (EMH) stipulates that; the current stock's price fully reflects all information about its value. This means that the stock price changes immediately when new information becomes available. In an efficient market, the price rapidly translates into the available information. Then, it is difficult to "beat the market" (Fama, 1970).

The EMH theory suggests that the asset prices are determined by the demand and supply in the competitive market with rational investors. Rational investors gather information very rapidly and immediately incorporate this information into stock prices. Only new information, i.e. news, cause a change in prices but the news, by definition, is unpredictable; therefore, a stock market which is immediately influenced by the news is also unpredictable.

According to EMH theory neither technical (a study of past stock prices in an attempt to predict future prices) nor fundamental analysis (financial analysis such as industry analysis, company analysis, asset valuation etc.) can help the investor to select "under-valued stock". Past price contains no useful information and cannot predict the future change, today's price is totally

independent from past price so it is waste of time to analyze past return and on the basis of result attempt or expect to make a profit from a market.

If we can take a look to the historical background of EMH theory, an efficient market is as old as stock market itself but the hypothesis was first expressed by Louis Bachelier, a French mathematician in 1900. In his dissertation, "*The Theory of speculation*", he has suggested that price fluctuations are random and do not follow any regular pattern.

Consider three hypothetical paths for price adjustments:

- * Increase immediately to a new equilibrium level
- * Increase gradually to the new equilibrium level
- * First over-shoot and then settle back to a new equilibrium level





Source: Shafer and Hugo (1975). [Pareto efficiency or Pareto optimality is a state of allocation of resources from which it is impossible to reallocate so as to make any one individual or preference criterion better off without making at least one individual or preference criterion worse off]. The Pareto efficient is used in EMH theory.

The assumptions of EMH theory may be pointed out as follows (Akintoye, 2008):

- In an efficient market, a stock price is always at the "fair" level, a stock price change only when its fair value changes.
- The market is efficient if the reaction of market prices to new information is immediate and unbiased.
- \triangleright Stock prices immediately react on the news.
- > Stock price changes are unpredictable because no one knows tomorrow's news.
- Stock prices follow a random walk, if a price of today goes up nobody can tell what would be the price of tomorrow.
- > It is impossible for investors to consistently outperform in the market.

* Forms of Efficient Market Hypothesis:

In 1970, Fama classified efficient market hypothesis in three categories according to the level of information reflected in market prices: weak form, semi-strong form and strong form; a summarized description of these different forms of market efficiency is presented below:

✓ Weak-form

The weak form efficiency is also popularly known as 'random-walk'. In a weak form of market efficiency stock prices reflect by all available trading information which can be derived from the market data such as past price, trading volume, etc. So nobody can use information related to past price to identify the undervalued security and make a big profit by them, it implies that no one should be able to outperform the market using something that "everybody else knows". If the markets are efficient in weak form, technical trading rules cannot be used to make a profit on a consistent basis (Emenike, 2017). This form of market efficiency is called weak-efficiency because the security prices are the most publicly and easily accessible pieces of information.

✓ Semi-Strong Form

In semi-strong form, all publicly available information is incorporated into current stock prices. Publicly available information includes past price information plus company's annual reports (such as financial reports, balance sheet and profit and loss account), company's announcement, macroeconomic factors such as (unemployment, etc.) and others. Some information (to the extent anticipated in advance) is discounted even before the event is announced and some before the event took place. Such matters as earnings reports, bonus, and rights affect the market even in anticipation before the formal announcements. Semi-strong form implied that share prices adjust to publicly available new information very rapidly and in an unbiased fashion, such that no one should be able to outperform the market using something that "everybody else knows".

✓ Strong Form

In a strong form of efficiency stock prices quickly reflect all types of information which include public information plus companies inside or private information. Thus, it is the combination of public and private information that is incorporated into current prices. This form implies that even companies' management cannot make a profit from inside information; they cannot take advantage of inside affairs or important decision or strategies to beat the market. According to strong-form market efficiency, inside information is also already incorporated into stock prices, the common rationale behind this is unbiased market anticipation that already reacts into a market before companies' strategic decision. A strong form of efficiency is hard to believe in practice except where rules and regulations of law are fully ignored (Reilly & Brown, 2008).

To illustrate this theory regarding the USE, we can take an example as follow:

DFCU						
Date	Price	Open	High	Low	Change %	
Apr, 2018	778	711	781	711	9.42	
Mar, 2018	711	683	712	683	4.1	
Feb, 2018	683	681	700	681	0.29	
Jan, 2018	681	680	681	680	0.15	
UMEME						
Date	Price	Open	High	Low	Change %	
Apr, 2018	400	410	410	400	-2.44	
Mar, 2018	410	405	415	405	1.23	
Feb, 2018	405	400	411	400	1.25	
Jan, 2018	400	400	410	400	0	

Table 1: Stock price changes under EMH

Source: https://www.investing.com/alsiug

This table, clearly shows that the stock prices are not stable all the time due to the change in informations about them. Speculators or investors follow permanently these kinds of stock

prices indices in the purpose to determine a type of stock which can be more profitable in future.

The stock returns changes are essential factors in the current study when it comes the time to establish the influence that the exchange rate fluctuations can have on then by considering a certain period.

2.1.2. International Fisher Effect (IFE)

The IFE is also an important theory related to this study because it permits to know how the spot exchange rate between two nations is determined by considering their different currencies. Exchange rate incorporates some microeconomic information which cannot be ignored when it comes the time to evaluate the stock market. The spot exchange rate or real exchange rate shows how a particular nation's currency is performing during a period of time (Shapiro, 2013).

Historically, the International Fisher Effect theory (IFE) was developed at the end of the Bretton Woods agreement (1971-1972), so the association between exchange rate and interest rate differentials appeared. The IFE theory suggests that the exchange rate between two countries should change by a sum similar to the difference between their nominal interest rates. If the nominal rate in one country is lower than another, the currency of the country with the lower nominal rate should appreciate against the higher rate country by the similar sum (Hatemi-J & Irandoust, 2008).

The IFE (or Fisher's open hypothesis) recommends that the differences in nominal interest rates between two nations equal the expected changes in the spot exchange rates of these nations at a specific time. The connection between interest rate and inflation first set forward by Fisher (1930), proposes that the nominal interest rate in any period is equal to the sum of the real interest rate and the expected rate of inflation. This is termed the Fisher Effect. He hypothesized that the nominal interest rate could be decomposed into two components, a real rate plus an expected inflation rate [(1+i) = (1+r)(1+Inflation Rate), Where i= nominal interest rate and r = real interest rate] (Hetemi-J & Irandoust, 2008)

International Fisher Effect says, in other words, the percentage change in the spot exchange rate over time is governed by the difference between the nominal interest rates of two currencies.

Mathematically, International Fischer effect is expressed as follow (Hetemi-J, 2009; Cheol & Resnick, 2011):

$$\frac{Spot_{today} - Spot_{After \ a \ year}}{Spot_{After \ a \ year}} = \frac{i_{USA} - i_{Uganda}}{1 + i_{Uganda}}$$
(1)

For example, suppose in January 2018, the nominal interest rate in Uganda is 12% per annum and it is 8% in the USA, then UGX is expected to depreciate vis-a-vis USD. Plugging the interest rate on the right-hand side of, we get:

$$\frac{i_{USA} - i_{Uganda}}{1 + i_{Uganda}} = \frac{8\% - 12\%}{1 - 12\%} = -3.57\% (2)$$

Hence, the percentage difference between the spot rate prevailing today and spot rate to prevail after a year should be equal to -3.57%. This indicates that UGX will *depreciate* by 3.57% at the end of one year, i.e.; 1st January 2019.

In other words:

$$\frac{UGX/USD - Spot_{After \ a \ year}}{Spot_{After \ a \ year}} = -3.57\% \ (3)$$

According to the same example, the USD appreciation, amount, is governed by:

 $\frac{Spot_{today} - Spot_{After \ a \ year}}{Spot_{After \ a \ year}} = \frac{i_{Uganda} - i_{USA}}{1 + i_{USA}} (4)$ $i_{Uganda} - i_{USA} = \frac{12\% - 8\%}{-2.706} (5)$

$$\frac{\iota_{Uganda} - \iota_{USA}}{1 + \iota_{USA}} = \frac{12\% - 8\%}{1 + 8\%} = 3.7\% (5)$$

In other words, USD is expected to appreciate by 3.7%.

The percentage of appreciation or of depreciation is governed by nominal interest rate differential according to this theory.

These economic theories, which are based on assumptions and perfect situations, help to illustrate the basic fundamentals of stock returns (prices) and the exchange rates.

2.2. Conceptual Review

For the past years, scientists have been experimentally researching on the exchange rate fluctuations and the stock returns. Therefore, the exchange rate fluctuation is acquired from a regression of stock returns on an exchange rate changes, regularly with extra control variables such as market index. Then, firms must be computed by some convergence characteristics to reduce errors and bias (Bodnar & Gentry, 1993; Jorion, 1990). Several numbers of studies done on exchange fluctuations and stock returns, typically use a month horizon for measuring returns (Simakova, 2017).

Exchange rate variability is one of the macroeconomic sources of vulnerability which has influencing firms exposed to open economy. Exchange rate fluctuation impacts the working cash flows and business value through the transactions. In addition, outside shocks may make an interdependence between exchange rate variabilities and stock returns. Therefore, it becomes critical to expect an association between exchange rate variabilities and stock returns (Prasad & Rajan, 1995).

This section reviews the key concepts regarding this thesis' title such as exchange rate fluctuation, stock return and stock market (IV and DV).

2.2.1. Exchange rate, exchange rate fluctuation and exchange rate regime

This point summarizes the concepts concerning the exchange rate, exchange rate fluctuation and exchange rate regime.

2.2.1.1. Exchange rate

In finance, Then, an exchange rate represents a rate at which one currency will be traded for another by thinking about the worth of each one respectively.

Economists define a real exchange rate as a purchasing power that one currency can have versus another currency at spot exchange rates. It represents units' number of one country's currency needed to buy a certain number of goods in the other country's currency in the foreign exchange market (Reinhart & Rogoff, 2004).

In the same way, we can take an example of an interbank exchange rate of 3,700 Uganda shillings (UGX) which equals to \$1 United States dollar; it means that UGX 3,700 will be

traded for each US \$1 or this US \$1 will be traded for each UGX 3,700. In this case, it is said that the price of a dollar in relation to Uganda Shillings, or equivalently that the price of a UGX in relation to dollars is \$1/3,700. Then, we can take a look at the following example of an exchange rate:





Source: https://www.exchangerates.org.uk/USD-UGX-exchange-rate-history.html

The exchange rate is influenced by the outside exchange market, which is available to a wide number of different types of buyers and sellers, and where currency exchanging is nonstop except the weekends. A spot exchange rate is the current trading rate (immediate trade between currencies), so the forward exchange rate refers to a trading rate that is registered and exchanged today but to deliver and to pay it, will be on a specific future date. Otherwise, the buying rate is the rate at which money dealers will buy foreign currency, and the selling rate is the rate at which they will sell that currency (Leviatan, 1981).

2.2.1.2. Exchange rate fluctuation

The exchange rate fluctuation is the volatility or change in exchange rate due to the link between supply and demand of a particular currency vis-à-vis another (US\$/UGX, for example). A currency is appreciated whenever its demand is more than its available supply. It will depreciate whenever its demand is less than its available supply (Jorion, 1991). The figure below shows the exchange vacillations:

Figure 3: Uganda shillings fluctuations vs US dollar (05/2008 - 05/2018)



Source: https://www.xe.com/currencycharts/?from=USD&to=UGX&view=10Y

Adler and Dumas (1984) demonstrate that expecting that firm's worth is the net value of future incomes, a firm exposed to the variation in the exchange rate could be determined by the sensibility of the business value with respect changes on the exchange rate.

Expanded demand for a money (currency) can be expected to either an expanded trading demand for cash or an expanded speculation for currency. The exchange request is very related to a nation's level of business activity, (GDP), and work levels. The more individuals are jobless, the fewer people, in general, will spend on merchandise and services. Central banks normally have little trouble to adjust the accessible cash supply to oblige changes in the demand for cash because of business speculations.

In any case, a speculator may purchase a money if the profit (interest rate) is sufficiently high. In many cases, the higher a nation's interest rate, the more prominent will be the demand for that currency. It has been concluded that such hypothesis can undermine genuine financial development, specifically since huge money such speculations may intentionally make descending the economy by shorting so as to constrain that central bank to purchase their own cash to keep it stable. At the point when that happens, the speculator can purchase the money (currency) back after it devalues, finish off their position, and in this way make a benefit. For

carrier firms shipping products from one country the onto another, exchange rate volatility can impact them severely.

2.2.1.3. Exchange rate regime

After the Bretton Woods system (1970-1972), every nation decides about which type exchange rate that it will apply to its currency. There are three kinds of exchange rate: the free-float, pegged float and fixed regime (O'Connell, 1968, & Nakamura & Steinsson, 2018).

The free-floating exchange rate is defined when the spot exchange rate is controlled by the market powers such as supply and demand of this specific currency. The exchange rate for such regime is probably going to change constantly as is quoted on monetary markets around the globe.

A changeable (adjustable) peg float system is a regime of fixed exchange rate, but with a provision for the revaluation (usually devaluation) of a currency. For example, in the period of 1994 and 2005, the Chinese yuan renminbi (RMB) was pegged to the United States dollar at RMB 8.2768 to \$1. China was by all account not the only nation to do this; from the finish of the world war 2 until 1967, Western European nations all kept up the fixed exchange rates regime with the US dollar based on the Britton Woods system. But that system had been surrendered to give place to a free-floating exchange rate due to market speculations. The former President Richard M. Nixon in his speech in August 15th, 1971, put a break to the fixed exchange rate regime which is known as Nixon shock (Lehrman, 2011).

Uganda adopted the free-floating regime at the beginning of the 1990s (Caramazza & Aziz, 1998).

2.2.2. Stok Return

A return (financial return) is a cash made or lost on an investment or a speculation. A return can be expressed as the variation in dollar value of a share or an investment after a period of time. A return can be expressed as a rate got from the proportion of profit to investment (Dichev & Piotroski, 2001).

A stock return is a difference between the price we have paid for it and its current price (or actual price); a stock return can be positive, zero or negative. negative. The adjustment in an estimation of a specific stock (Bond, offer or value) might be because of various financial viewpoints, such as interest rate, GDP, exchange rate, and so on. The stock price is a very

important parameter to evaluate a stock or a firm (in case of securities market) by stakeholders to ensure that they will get the best price when they need to offer a stock or a business. The stock return can be calculated as taking after:

 $Stock Return = \frac{\text{Ending price-Starting price}}{\text{Starting price}} * 100 \text{ (in percentage)}$

Source: www.fool.com/knowledge-center/return-stock-mark.aspx

As indicated by Shapiro (1975), theoretical ideas he developed, propose that a multinational firm with export sales and in competition should show exchange rate fluctuation and that the company's exposure should be related through the proportion of export sales, the level of substitutability between local and imported factors of production and the degree of competitions.

2.2.3. Stock market return and Market index (Return on market portfolio)

Stock market return

The securities exchange returns are the profits that the stakeholders create out of the share trading system. This return could be a benefit through exchanging or in kind of dividends given by the enterprise to its shareholders every once in a while. The stock exchange returns can be also referred through dividends announced by the companies (Ang, et al., 2006).

Toward the finish of each quarter, a firm making benefit offers a piece of the kitty to the investors. This is one of the benefits of securities exchange return on which shareholders could anticipate. The most well-known type of generating a securities exchange return is to exchange in through the secondary market (Market of second hand's stock). In the secondary market, a shareholder could gain a securities exchange return by purchasing a stock at a lower price and selling at a higher price. Securities exchange returns are not fixed guaranteed returns and are concerned with market risks. They can be certain or negative. Securities exchange returns are not homogeneous and may change from financial specialist to speculator depending upon the measure of hazard which one is set up to take and the nature of his stock market analysis. Contrary to the fixed incomes generated by the bonds, the securities market returns are variable in nature. The thought behind the stock return is to purchase cheap and sell dear. Therefore, a risk is an integrated part of this market and a speculator can likewise observe a negative return in case of wrong speculations. A financial specialist speculates on the basis of fundamental and

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technical analyses. Fundamental Analysis examines relevant information (return on assets, history of profits, cash flow) related to the business, which could affect the intrinsic of the stock. This investigation helps in anticipating the price change of the stock based on its fundamental strength. Fundamental analysis is generally relevant for the long-term (Maurya, 2016 & Economywatch, 2018).

Market index

A stock market index or securities market index is an estimation of a section of the stocks or the stock market. It is calculated from the prices of selected securities (typically a weighted average). It is an instrument utilized by stakeholders and financial specialists to depict the market and to look at the return on particular investments (Market index, 2018).

Market indexes are intended to represent an entire stock market and track the market's changes over time (Chordia at al., 2014).

Index values enable financial specialists to track changes in market prices over short run or long period. For example, Uganda all share index (ALSIUG) is examined by combining 16 types of stock prices regarding companies listed in USE, shareholders can track changes in the indexes' values over time and use it as a monitoring for their particular portfolio returns. In the event that an index goes up for one level or 1%, this implies a gathering of stocks has, correspondingly, augmented its value by one level also and become more attractive to investors.

The following table illustrates a simple example of the Market index:

Let's consider three firms' stock prices and their respective weights:

Table	2:	Simple	example	of a	Market	index
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Firm	Stock price	Weight		
Firm 1	\$ 130	52%		
Firm 2	\$100	40%		
Firm 3	\$20	8%		
Total \$250		100%		

Note: the Firm 3 has a much lower weight than the bigger companies (-8%) compared to the (52%) of Firm 1 and the (40%) of Firm 2. That means Firm 3 will have a much smaller impact on the index.

Weight = (Firm/Total) *100

The Market Index = (52+40+8)/3 = 33.3%

Source: Researcher's confections.

2.3. Empirical review

A certain number of empirical studies have been conducted in exchange rate fluctuations and stock returns in developed, emerging and Lower developed countries (LDCs).

The first empirical studies, which started in developed market, such as in U.S. markets, include the empirical studies the effect of the foreign exchange rate fluctuations on U.S. firms (for example, Shapiro, 1975, Jorion, 1990, Bodnar, & Gentry 1993, Choi & Prasard, 1995); these studies, typically found low or negligible levels of exposure for most firms regarding the exchange fluctuations, even when the firms examined have significant foreign operations (Bodnar & Marston, 2002). Then, Choi and Prasad (1995) examined exchange risk sensitivity and its determinants: A firm and industry analysis of U.S. multinationals. They developed a model of firm valuation ($R_{jt} = \alpha_i -+ \beta_j R_t + \gamma_j e_t + V_{jt}$) to examine the exchange risk sensitivity of 409 U.S. multinational firms during the sample period of 11years (1978-1989). Their results stipulated that approximately 60% of the firms were benefited when the dollar was depreciated instead of 40% lost during the same period (of their study). They found also that the variation in exchange risk sensitivity of individual firms is related to firm-specific operational variables such as sales, assets, and profits, and its exchange risk sensitivity. It means that there was a positive relationship between exchange rate fluctuations and the firm valuation.

In Europe, Simakova (2017) conducted a study on the Impact of Exchange Rate Movements on Firm Value in Czech, Hungary, Poland, and Slovakia. The aim of her paper was to evaluate the effect of exchange rates on the value of companies listed on stock exchanges in these countries. Her Paper applies Jorion's (1990) two factor model (Rit= $\alpha i + \beta i$ RMt + δi RFXt + ϵi ; where: αi is the constant term, Rit, is the stock return of firm i over time period t, RMt is the return on the market index, β_i is the firm's market beta and RFX t is the real effective exchange rate. Hence, the coefficient δ_i reflects the change in returns that can be explained by movements in the exchange rate after recognition on the market return) and panel data regression for the sample period of 14years (2002-2016). All-time series she used for estimating the exchange rate exposure on the firm value were on a monthly frequency. Therefore, her findings revealed a negative relationship between exchange rate and value of stock companies. She estimated that all tested markets seem to be exposed to the exchange rate risk, at least, at 10 % significance level during the sample period. In the same area, Tomanova (2016) conducted a study on exchange rate volatility exposure on corporate cash flows and Stock Prices: The Case of Poland. Her paper analyzed the foreign exchange rate exposure on the value of publicly listed companies in Poland on the basis of stock prices and more than 6,000 large, medium-sized and small firms on basis of corporate cash flows. Her analysis covered a sample period of from 11 years (2003 to 2012 to 2014). In the case of stock prices, she used a panel regression by using monthly data. Her results showed that a significant number of these firms, especially small and medium-sized is exposed.

It is well known that the emerging stock markets are riskier than the developed stock markets; therefore, in its study, Flota (2014) examined the impact of exchange rate movements on firm value in emerging markets: The Case of Mexico. Using a sample of non-financial firms from Mexico Stock Exchange (BMV), she collected data from a sample period between the first quarter in 1994 to the third quarter in 2003. She used a two-stage model, based on the empirical form of the CAPM (Capital Asset Pricing Model) { $R_{it} = \alpha_i + \beta_i RM_t + \delta_i FX_t + \varepsilon_{it}$ }. However, her findings suggested that the firms which have heavily activities on international sales are significantly less sensitive to exchange rate movements than firms that rely primarily on domestic sales. He found a positive relationship between the exchange rate exposure and the firm valuation.

Thirunavukkarasu (2006) hypothesized that the exchange rate exposure of the EMNCs would be greater than the developed market multinationals (DMNCs). Using a sample of 212 MNCs from emerging and developed markets, he found that: More than 60% of the EMNCs and the DMNCs are significantly exposed to exchange rate fluctuations. Then, by analyzing the magnitude of the exposure of that sample, he found that EMNCs are 20% more exposed than developed market DMNCs.

In another hand, Yaw-Yih (2004) had examined the Fluctuations of Exchange Rate on the Valuation of Multinational Corporations as Taiwan's Samples. Considering a sample (Panel) of 11 years (from 1991 to 2002), he found that the Exchange rate fluctuations affected stock returns significantly in all industries.

In Africa, a certain number of empirical studies was done regarding the exchange rates exposure on the firm valuation. It's the case of Mugera (2013) who investigated on "The effect of foreign exchange risk management on firm value of Firms listed at Nairobi Securities Exchange (NSE)". He found that foreign exchange risk (rate) does not significantly affect the firm value.

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Mwangi (2013) tried to analyze "The effect of foreign exchange risk management on financial performance of microfinance institutions in Kenya". He analyzed the data collected on 44 MFI's registered by the Association of Microfinance Institutions of Kenya and he found out that a strong positive relationship exists between financial performance of these institutions and the foreign exchange rate.

Mbubi (2013) tried to analyze the effect of foreign exchange rates on the financial performance of listed firms at the Nairobi Securities Exchange. He had used a linear regression to analyze the data which he had collected among 41 firms listed at Nairobi Securities Exchange during a period of 10 years (2002-2012). From the findings of his study, he found that listed firm's financial performance is negatively affected by the foreign exchange rates movements.

In Uganda, some studies were conducted on Ugandan Securities exchange and Uganda's exchange rate fluctuations such as the work of Emenike and Kirabo (2018) and Nampeera (2015), Oluka (2010), among many others. Emenike and Kirabo (2018) sought to evaluate the Ugandan Securities Exchange (USE) for evidence of a weak-form efficient market hypothesis in the context of random walk model by using both linear and non-linear models. Their preliminary analysis from the USE daily returns, for the September 1, 2011 to December 31, 2016 period, showed negative skewness, leptokurtosis, and non-normal distribution. They used the linear and non-linear models to estimate the weak form efficient of the USE. They found the weak form efficient in both models regarding this specific stock market. Their study concluded that USE returns may only be predicted using non-linear models and fundamental analysis. In other words, linear models and technical analyses may be clueless for predicting future returns.

Nampeera (2015) examined the "Foreign Exchange risk management and performance of forex bureaus in Uganda". His study focused on a sample size of 177 forex bureaus out of a population size of 264 in Kampala city Centre; using a primary data, he found that forex bureaus have experienced positive and unstable performance over the period and also firm have implemented numerous foreign exchange risk management practices to assess and lessen the impact of risk losses due foreign exchange fluctuations.

Oluka (2010) sought to examine the relationship between firm characteristics, foreign exchange risk management practices and the performance of Ugandan export firms.

Using a cross-sectional and correlation research designs, he found that there is no significant relationship between firm characteristics, foreign exchange risk management practices and the performance of Ugandan export firms.

2.4. Research Gaps

This study is emphasizing the effect of exchange rate fluctuations on stock returns in Uganda Securities Exchange (USE) which are a particular case regarding the theoretical and empirical findings.

Several studies related to the relationship between exchange rate fluctuations (Exposure) and the stock returns (firm values) were done on a certain number of countries such as US, Mexico, Brazil, Kenya, Ghana, Czech, Poland, etc.; then researchers did not have the same conclusions about the puzzle that concerns the exchange fluctuations. That is the reason why Bodnar and Marston (2002) tried to elaborate the Simple Model theory which can be applied in term of Exchange rate exposure but their model is not actually the only reference model when it's come the time to measure the effect of the foreign exchange rate fluctuations on stock returns. This is due to the particularity of each country vis-à-vis another county. Every country has his specific economic situation. The relationship between exchange rates and stock returns is too recent because the theories related to it, have been developed after the fall of Bretton Woods system (Shapiro, 1975, Jorion, 1990, & Choi & Prasad, 1995).

The macroeconomic aggregates of Uganda are different from others country by considering the inflation rate, interest rate, a rate of unemployment, GDP, monetary policy, the period in which the study have been done, etc.

Then, the gap between the current research and others is related to the macroeconomic aggregates of Uganda [to firm valuation (size, sales, profit, etc.)] and there is, also, a lack of studies related to this particular subject under study in Uganda area. This study will help also Uganda's investors and shareholders at USE to take into consideration the influences that the cross-listed companies can have on their stock or share returns.

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CHAPTER THREE METHODOLOGY

3.0. Introduction

Six sections have constituted the frame of this chapter, such as research design, data collection, sample period, model specification, measurement of variables and data analysis have been presented.

3.1. Research design

This study has used a quantitative approach with an *ex-post-facto* research design. Indeed, employing the experimental method in research is sometimes impractical or prohibitively costly in time, money, and effort; in other instances, it is unethical or immoral. Ex post facto research is ideal for conducting social research when is not possible or acceptable to manipulate the characteristics of human participants. It is a substitute for the experimental research and can be used to test hypotheses about cause-and-effect or correlational relationships, where it is not practical or ethical to apply a true experimental even a quasi-experimental design (Neil, 2010).

For example, explain a consequence based on antecedent conditions; determine the influence of a variable on another variable, etc. Ex post facto research uses data already collected, but not necessarily amassed for research purposes (Cohen, Manion & Morison, 2000).

3.2. Nature of source of Data

The current study has used the secondary data only. The data had been collected regarding all companies listed at Uganda Securities Exchange (USE); the USE currently has 16 listed companies comprising of 8 local listed companies and eight cross-listed firms (Appendix I).

The data have been collected via different sources such as: the annual reports of different listed companies at Uganda Securities Exchange (USE), the Bank of Uganda (bou.or.ug), the Uganda Securities Exchange (use.or.ug) and Investing.com

Then, the data for the exchange rate exposure have been collected through Bank of Uganda; however, the data concerning the stock returns and market indices have been found via annual reports of listed companies at USE, USE, and Investing.com

3.3. Sample period

This study used the quantitative data which have been collected between 2014/01 and 2018/04 which are 52 months. The choice of this period is related to the situation in which the USE had registered 16 companies on its stock exchange in 2013. This current study concerns 16 listed companies and the data collected, have been related to these companies. The purpose of this specific sample period is to cash all sensibilities or informations about these firms during that sample period.

3.4. Model specification

The link between foreign exchange rate fluctuations and stock returns have been measured by employing a panel regression model based on Jorion (1990); it is a two-factor model.

Foreign exchange rate exposure is defined as the sensitivity of the value of an asset (Stock return) to changes in foreign exchange rates, based on Adler and Dumas (1984). More precisely, the established framework usually employs the regression between exchange rate changes and assets to study exposures to foreign exchange risk.

Regarding the exposures of stock prices to the foreign exchange risk, research suggests two measurements:

One is measured by a single factor market model, as illustrated in the following equation (Aggarwal, 1981; Adler & Dumas, 1984):

$$R_{it} = \alpha_i + \beta_i F X_t + \varepsilon_{it}$$
(1)

Where, R_{it} is the stock return of firm *i* over a period *t*, FX_t is the exchange rate changes of any currency or currency index over time period *t*, βi measures firms' total stock price exposures with regard to foreign exchange rates.

The **single factor model** measures the exchange exposure on firm's stock returns only by considering the foreign exchange rate fluctuations as an independent variable (IV).

Then, Jorion (1990) extended this model and included a market index as a second factor, in addition to the exchange rates. This two-factor model can be written as follows.

$$R_{it} = \alpha_i + \beta_i F X_t + \delta_i R M_t + \varepsilon_{it} \quad (2)$$

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Where:

 R_{it} ; is the monthly stock return of firm *i* over time period *t*;

 α_i ; is the constant term of company *i*;

 β_i ; reflects the change in returns that can be explained by movements in the exchange rate after conditioning on the market return (more is great more the firm is exposed to *FX*);

 FX_t ; is any monthly exchange rate fluctuation over time period t (UGX Vs US dollar),

 δ_i ; is the coefficient which reflects the return on market delta (ALSIUG);

 RM_t ; is a market index over the period t;

 ε_{it} ; is an error term of a company *i* over a time period *t*.

And;

i: 1, 2, ..., 16 firms t: ,1, 2, ..., 52 months

This two-factor model is the most widely used in exchange rate exposure studies. (for example; Muller & Verschoor, 2006; Bartram & Bodnar, 2012; Šimáková, 2017; among others). So, this two-factor model is used to examine if the exchange rate fluctuations have an effect on stock returns on a firm or not. The sign of the exchange rate coefficient can be either positive or negative.

All-time series used for estimating the effect of exchange rate fluctuations on firm's stock returns, are on a monthly frequency.

3.5. Measurement of variables

This segment is given to showing the chosen variables. The independent variable is the stock return and it has been estimated by the firm's stock prices. The independent factors are exchange rate variations (fluctuations) and market index has been measured by utilizing weighted average index prices value. The monthly data are utilized for this present investigation.

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Table 3: Operationalization of Variables

VARIABLE	SYMBOL	MEASURES
Stock Return	R	Firm's monthly average of stock returns
Exchange rate Fluctuation	FX	Monthly average of exchange rates
Market Index (Return on Market Portfolio)	RM	Monthly Price-weighted of indexes

Source: Adapted from Simakova (2017).

3.6. Data analysis

Same preliminary tests have been made to test variables and data (after presenting the descriptive statistics) before running the panel regressions such as stationarity test and the test of normality. The decision rule has been established thereafter.

3.6.1. Stationarity test

A random procedure is stationary or solid when the mean and variance will be constant beyond period and the measure of covariance between two-time frames just depends on the distance or interval between the two periods and there will be no connection with real-time calculation of covariance.

Panel Unit Root Test

The panel unit root tests are the same, but not equal, to unit root tests developed on a single dated data (time series). Many recent studies stipulate that the panel-based unit root tests are powerful than a single time series unit root tests (Hlouskova & Wagner, 2006). While these tests are generally named "panel unit root" tests, theoretically, they are simply multiple-series unit root tests that have been applied to panel data structures (the presence of cross-sections creates "multiple series" out of an individual series). For the objective of current research, an individual panel unit root has been utilized and based on Fisher Augmented Dickey-Fuller test (Dickey & Fuller, 1979).



Fisher – ADF

The method chose to deal with panel unit root regressions (tests), utilizes Fisher's (1932) results to determine the tests that join the *p*-values from individual unit root analyses. This thought had been implemented by two researchers such as Maddala and Wu (1999), and Choi (2001). The Fisher-ADF and Fisher-PP tests all permit for single unit root procedures so that *p*-values may change through cross-sections. The panel stationarity tests are all identified by the combining of individual unit root tests to determine a particular panel result.

The below table point out the basic characteristics of the panel unit root analyses available in EViews related to Fisher-ADF and Fisher-PP:

Table 4: Panel Unit Root Testing

TEST	NULL	ALTERNATIVE
Fisher-ADF	Unit Root	Some Cross-sections without Unit Root
Fisher-PP	Unit Root	Some Cross-sections without Unit Root

Source: http://www.eviews.com/help/helpintro.html#page/content/advtimeser-Panel_Unit_Root_Testing.html

The probability's value which has been utilized to reject the null hypothesis must be less than 5% (p-value < 0.05). We tested each series of stock returns, exchange rate volatilities and returns on market portfolio one by one for all listed companies in USE.

3.6.2. Panel Regression

The regression analysis looks to discover the connection between one or more independent factors (variables) and a dependent variable.

The ordinary least squares (OLS) are one of the popular approaches regarding the regression process estimators which are highly sensitive to (i.e. not robust regression against) outliers' residues or errors. The gap found among the data anticipated by the regression (formula) and the observed information is called residual. The outliers are the type of data distributions which

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do not follow the path of the other data distributions. Only one bad data point or outlier can make regression results meaningless (Mack, 2016).

However, the **robust regression** represents a type of regression approach designed to overcome limitations due to the traditional Ordinal Least Squares regression's methods (Chatterjee & Mächler, 1995).

Robust Regression (Robust Least Squares methods)

The OLS have positive properties if their assumptions are verified (such as: The linear in parameters among the model specification, mean should be equal to zero, normal distribution residual, perfect collinearity, etc.), but can give misleading results if those assumptions are not verified; thus OLS are not robust to violations of its assumptions. The Robust regression refers to a variety of regression techniques established to be robust, or less sensitive to outliers or error terms. EViews offers three distinct techniques of analysis related to the robust regression such as M-estimation (Huber, 1973), S-estimation (Rousseeuw & Yohai, 1984), and MM-estimation (Yohai, 1987).

The three methods differ in their emphases:

- M-estimation addresses dependent variable outliers where the value of the dependent variable differs markedly from the regression model norm (large residuals).
- S-estimation is a computationally intensive procedure that focuses on outliers in the regressor variables (high leverages).
- MM-estimation is a combination of S-estimation and M-estimation. Since MM-estimation is a combination of the other two methods, it addresses outliers in both the dependent and independent variables.

Regardless of its performance over OLS estimations, in many situations, robust regression can be utilized in any circumstance in which you would utilize OLS regression (Zaman, Rousseeuw & Orhan, 2001). One of the reasons why the Robust Regression is not used in many studies is because some popular statistical software packages failed to implement methods related to it (Stromberg, 2004).

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✤ CHOICE OF THE PANEL REGRESSION METHOD

The normality test is important either we want to use the OLS regression or Robust Regression.

✓ Test of normality of residues

The test of normality of a distribution is to find out if this distribution meets the criterion of normality (Hurlin, 2003). Indeed, the Jarque and Bera test, based on the criterion of the asymmetry coefficient "Skewness" and flattening "Kurtosis", makes it possible to verify the normality of a statistical distribution (Bourbonnais, 2009). Thus for Rakotomalala (2008), the test of Jarque-Bera is a hypothesis test that seeks to determine whether the data follows a normal distribution. The Jarque-Bera statistic is given like this:

$$JB = \frac{n-k}{6} \frac{[s^2 + (K-3)^2]}{24}$$

Where;

- n: Number of observations
- k: Number of explanatory variables if the data come from the residues of a linear regression, otherwise, k = 0
- s: Skewness (Coefficient of asymmetry)
- K: Kurtosis

The hypotheses formulated for this test are as follows:

H₀: residues are normally distributed, if Prob. (Jarque-Bera) > 5%, (1)

H₁: residues are not normally distributed, if Prob. (Jarque-Bera) <5%. (2)

By using this criterion, Jarque and Bera (1987), H₀: s = 0 and K=3; and, H₁: $s \neq 0$ and K \neq 3 We have used a 0.05 level of significance which has allowed us to set a decision criterion on the normality distribution or not of the residues.

The output of the normality test helped to define the type of regression which has been used in this study to avoid the misleading results and its interpretations. Therefore, if the residues are normally distributed, OLS regression methods could be used (Ordinal Least Squares) to test the hypotheses of this study and ten the error terms are non-normally distributed, we have used the Robust regression (Robust least squares) methods to test these hypotheses.

3.6.3. Decision rule

The probability's value which has been utilized to reject the null hypothesis must be less than 5% (p-value < 0.05); then, the calculated value of p must be less than 0.05 to accept the alternative hypothesis. In the same line, there is a significant effect if p<0.05 or no significant effect, if the calculated p-value is more than 0.05.

The collected data have been organized by using Office Excel 2016, and they have been analyzed with the help of E-Views 9.5 (Econometric Views) which have provided descriptive and inferential analysis regarding the data related to the current study.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0. Introduction

Under this chapter, three sections have been developed such us the descriptive statistics, the preliminary tests on data and, in the last section, the panel regressions. The descriptive statistics summarize some statistics related to the data of this study, however, the preliminary tests helped to measure data before running the panel regressions. The panel regressions have been conducted to test the hypotheses related to the current study.

4.1. Descriptive statistics

This section is focused on the analysis of some characteristics (statistics) of the data related to the current study such as mean, median, maximum & minimum, and the Standard deviation. The statistics of different variables have been measured (Stock returns, Exchange rate fluctuations and Market indices). So, the explanation for each statistic comes after the table 5.

Statistics	R_ALL_COMPANIES_LISTED	FX	RM
Mean	0.572464	0.771923	0.815000
Median	0.000000	0.590000	0.680000
Maximum	608.3300	8.120000	10.34000
Minimum	-96.27000	-6.640000	-15.16000
Std. Dev.	24.13593	2.271168	5.035342
Sum	476.2900	642.2400	678.0800
Sum Sq. Dev.	484093.5	4286.467	21069.73
Observations	832	832	832

Table 5: Descriptive statistics

Source: EViews 9.5

The mean value, related to this table, tells as the average values for each of variable. The average values for Stock returns equals to **0.57**, for exchange rate fluctuations, is **0.77** and **0.82** for Returns on market portfolio (Market indices).

The median which comes up through this table, tells us the middle value for each variable related to it. So, the middle value regarding the stock returns of the companies listed at USE

equals to 0, the middle value for Exchange rate fluctuations equals to 0.59 and the middle value of market indices equals to 0.68.

The maximum value tells us the highest value for each variable. The highest value for all Stock Returns equals to 608.33, for Exchange Rate Fluctuations is 8.12 and 10.34 for Returns on market portfolio.

The minimum values which come directly through this table, show us the lowest (least) value related to each variable. The minimum value for Stock Returns equals to -96.27, -6.64 for the Exchange rate fluctuations and -15.16 for variable Market indices.

Therefore, the Standard deviation values, tell us the deviation from the sample mean for respective variables which are Stock returns, Exchange rate fluctuations and Market indices (24.14, 2.25 and 5.04).

4.2. Preliminary tests on data

Two points have been developed in this section such as stationarity tests and normality test. The panel stationarity test based on Fisher-ADF and Fisher-PP have been made to appreciate variables related to this research, at level and at first difference. The stationarity is important for forecasting as it informs of the models to build in order to make accurate predictions (Diebold & Kilian, 1999). The normality test, based on Skewness, Kurtosis and Jarque-Bera, have been conducted to take a choice regarding the panel regression which has convened the type of data of this research.

4.2.1. Panel stationarity Test

* Fisher-Augmented Dickey-Fuller

a. Fisher-ADF for dependent variables

Table 6: Unit root tests for dependent	variable	2S
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		ATLEY	VEL				
Series: R_ALL_COMPANIES_LISTED Sample: 2014M01 2018M04 Cross-sections included: 16							
Method	Statistic	P-Value	Method	Statistic	P-value		
ADF - Fisher Chi-square	520.725	0.0000*	PP - Fisher Chi-square	537.082	0.0000*		
ADF - Choi Z-stat	-20.6484	0.0000*	PP - Choi Z-stat	-21.0377	0.0000*		

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Intermediate ADF test results R_ALL_COMPANIES_LISTED		Intermediate Pillips-Perron test results R_ALL_COMPANIES_LISTED			
Cross-section	P-value	Obs.	Cross-section	P-value	Obs.
BOBU	0.0001*	51	BOBU	0.0001*	51
BATU	0.0000*	51	BATU	0.0000*	51
DFCU	0.0000*	45	DFCU	0.0000*	51
NIC	0.0000*	51	NIC	0.0000*	51
NVL	0.0000*	51	NVL	0.0000*	51
SBU	0.0000*	51	SBU	0.0000*	51
UCL	0.0001*	51	UCL	0.0001*	51
UMEME	0.0001*	51	UMEME	0.0001*	51
CENT	0.0000*	51	CENT	*0.0000	51
EABL	0.0000*	51	EABL	0.0000*	51
EBL	0.0000*	51	EBL	0.0000*	51
JHL	0.0000*	50	JHL	0.0000*	51
KA	0.0000*	51	KA	0.0000*	51
КСВ	0.0000*	51	KCB	0.0000*	51
NMG	0.0000*	51	NMG	0.0000*	51
UCHM	0.0000*	51	UCHM	0.0000*	51

FIRST DIFFERENCE

Fisher- ADF			Fisher-PP		
Method	Statistic	P-value	Method	Statistic	P-value
ADF - Fisher Chi-square	588.954	(0.0000*)	PP - Fisher Chi-square	364.291	(0.0000*)
ADF - Choi Z- stat	-22.2601	(0.0000*)	PP - Choi Z- stat	-16.6619	(0.0000*)

Source: EViews 9.5

Note: (*) : indicates significance at the 1% level (**) : indicates significance at the 5% level (***): indicates significance at the 10% level

b. Panel unit root tests for independent variables (Summaries)

At Level **At First Difference Fisher-PP Fisher-ADF Fisher-PP Cross-**Conclusion Fishersections **ADF** Test Test Test Test Variables Statistic & Statistic & Statistic & Statistic & P-value **P-value** P-value **P-value** FX (Exchange rate 302.111 294.731 484.443 294.731 16 I (0) fluctuations) (0.0000*)(0.0000*)(0.0000*)(0.0000*)RM (Return on 490.116 490138 479.809 294.731 16 I (0) market portfolio) (0.0000*)(0.0000*)(0.0000*)(0.0000*)

Table 7: Unit root tests for independent variables

Source: EViews 9.5

Note: Statistics in parentheses are p-values

(*) :indicates significance at the 1% level

(**):indicates significance at the 5% level

(***): indicates significance at the 10% level

The ADF's (and PP) null hypothesis for the Panel Unit Root test is accepted if the p-value computed is more than 0.05 (Prob.>5%) and which means that the series have a unit root (Series are not stationary) and we can reject the null hypothesis if p-value is less than 5% (series are stationary). According to table 6 and 7, the Unit root tests show us like all variables are stationary at level and at first difference (dependent variables and independent variables). Hence, unit root results of Fisher-ADF and Fisher-PP show that the stock return of companies listed in USE, the exchange rate fluctuations and Market indexes series are stationary.

In conclusion, the results of Fisher-ADF and Fisher-PP, tables 6 and 7, indicate that all data's series of the current study are integrated of order [I(0)] or are stationary at level.

4.1.2. Choice of the regression's methods

✤ Normality test

The normality test has helped to detect outlier or not among residuals. It was important to run this test before running the regressions on data with the aim to avoid misleading interpretations of results due to the no appropriated methods of regressions.





Source: EViews 9.5

According to the criterions of Kurtosis, Skewness and Jarque-Bera the residuals are normally distributed if the value of Kurtosis approximates 3, and also the value of Skewness is approximate zero (0). Then based on Jarque-Bera hypotheses, the null hypothesis is accepted if the probability of Jarque-Bera is more than 0.05 (residuals are normally distributed) and if not, we can reject the null hypothesis (data are not normally distributed, if P<5%). The results of the above table (figure 5) estimate the value of K=494 and the value of S=19.48 which is different for 3 and 0 respectively. The probability of JB is less than 0.05. We can conclude that the data are non-normally distributed, there are outliers among data. According to the literatures, the Robust regressions methods are chosen to deal with these outliers due to the results of normality test instead of OLS regressions which are more sensitive for outliers. The MM-estimations, for Robust regressions, have been applied to test hypotheses of the current study.

4.3. Panel regressions

The current study was anchored on three hypotheses. The first one was stipulated that there is no significant effect of exchange rate fluctuations on stock returns of cross-listed companies, the second hypothesis was estimated that there is no significant effect of the exchange rate fluctuations on stock returns of local listed companies in USE, and the last hypothesis said that there is no significant effect of the exchange rate fluctuations on stock returns of all companies listed in Uganda Securities Exchange (USE).

The aim of this section was to fulfil the tests on these hypotheses via the inferential analyses. The first regression on data have been made regarding the first hypothesis, the second regression was accomplished according to the second hypothesis and the last regression have been made related to the third hypothesis.

4.3.1. Test of hypothesis One (Test of the effect of the exchange rate fluctuations on stock returns of cross-listed companies)

Table 8: Test of hypothesis One

Dependent Variable: R_CROSS_LISTED Method: Robust Least Squares Sample: 2014M01 2018M04 Included observations: 416 Method: MM-estimation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C FX RM	-1.040508 -0.504790 0.837354	0.415568 0.173820 0.078400	-2.503824 -2.904103 10.68047	0.0123** 0.0037* 0.0000*
	Robust S	Statistics		
Rn-squared statistic	116.3056	Prob.(Rn-square	ed stat.)	0.000000*

Note: Robust p-value (level of significance); p<0.01, p<0.05, p<0.05, p<0.1Source: Researcher's confections using EViews 9.5

The regression results above (Table 8) indicate that the Exchange rate fluctuations and stock market indexes have significant effects on the stock returns of the companies cross-listed. The null hypothesis is rejected because the p-value(FX) calculated is less than 0.05 (and for both

4.0

independent variables). The alternative hypothesis is accepted regarding the figures which were come through this table.

The p-value of the exchange rate fluctuations (FX) equals to 0.0037 which is less than 5%(The decision rule of this study). In the same line, the coefficient's value of FX equals to -0.504790; the (-) sign tells use the information of the elasticity of the exchange rate fluctuation vis-à-vis the stock returns of the cross-listed companies. It means that for every **one-unit** increases in exchange rate, a **0.504790-unit** decrease in Stock returns of cross-companies, holding that all other variables are remaining constant (Negative relationship). The p-value of the Returns on Market portfolio equals to **0.0000** and the corresponding coefficient of **0.837354**; the coefficient of RM has a **positive** correlation with the stock returns of cross-listed companies The robust probability [Prob.(**Rn²-stat=0.000000**)] is less than 5% which implies the goodness of fit of the regression's model.

The model related to the returns of cross-listed firms and exchange rate changes is fitted as follow:

 $R_{cross\ listed}(predicted) = -1.040508 - 0.504790FX + 0.837354RM$ (1)

4.3.2. Test of hypothesis Two (Test of the effect of the exchange rate fluctuations on stock returns of local-listed companies in USE)

Table 9: Test of hypothesis Two

Dependent Variable: R_LOCAL_LISTED_UG Method: Robust Least Squares Sample: 2014M01 2018M04 Included observations: 416 Method: MM-estimation

Variable	Coefficient	Std. Error	z-Statistic	Prob.	
C FX RM	-0.039204 -0.069537 <mark>0.055520</mark>	0.126076 0.052734 0.023785	-0.310957 -1.318647 2.334222	0.7558*** 0.1873*** <mark>0.0196</mark> **	
Robust Statistics					
Rn-squared statistic	6.482276	Prob.(Rn-squar	ed stat.)	0.039119 ^{**}	

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Note: Robust p-value (level of significance); p<0.01, p<0.05, p<0.05, p<0.1

Source: Researcher's confections using EViews 9.5

The results of the table revealed that the exchange rate fluctuations did not have a significant effect on the stock returns of local-listed companies during the sample period. The probability associated with the exchange rate fluctuations is more than 0.05 (p>5%), then we cannot reject the null hypothesis. However, the Returns in market portfolio revealed to have a significant effect on stock returns of these companies. The model estimated is widely good because the Robust probability is less than 5% (Prob.[\mathbf{Rn}^2 -stat =0.039119)].

The fitted model for Stock returns of local listed firms and Market indexes is shown thereafter:

$$R_{Local \ listed}(predicted) = -0.039204 + 0.055520RM \quad (2)$$

The formula (2) above shows the positive relationship between stock returns of local-listed companies in USE and the Stock market indexes. When the Market index changes with 1 unit, the stock returns of the local-listed companies change of 0.055520.

4.3.3. Test of hypothesis Three (Test of the effect of the exchange rate fluctuations on stock returns in USE)

Table 10: Test of hypothesis Three

Dependent Variable: R_ALL_COMPANIES_LISTED Method: Robust Least Squares Sample: 2014M01 2018M04 Included observations: 832 Method: MM-estimation

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C FX RM	-0.326173 -0.302683 0.331468	0.217676 0.091047 0.041066	-1.498436 -3.324458 8.071513	0.1340*** 0.0009* 0.0000*
	Robust Sta	atistics		
Rn-squared statistic	70.29882	Prob.(Rn-square	d stat.)	0.000000*

Note: Robust p-value (level of significance); p<0.01, p<0.05, p<0.05, p<0.1

Source: Researcher's confections using EViews 9.5

The coefficients are the values of the regression equation for predicting the dependent variable from the independent variable, therefore the probabilities values are important to determine whether or not the null hypothesis can be rejected for given alpha level of significance (5% related to this study).

The regression results above (Table 10) indicate that the Exchange rate fluctuations and stock market indexes have significant effects on the stock returns of the companies listed in Uganda Securities Exchange (USE). The null hypothesis is rejected because the *p*-value (*FX*) calculated is less than 0.05 (for both independent variables). The alternative hypothesis is accepted regarding the results of the table above. The *p*-value of the exchange rate fluctuations (FX) and Market indexes (RM) equal to 0.0009 and 0.0000 respectively which are less than 5%. The robust probability [Prob.(**Rn²-stat =0.000000**)] is less than 5% which implies that the goodness of fit of the regression's model.

The model related to the effect of exchange rate fluctuations on stock returns of the companies listed in USE is fitted as follow:

$$R_{USE}(predicted) = -0.326173 - 0.302683FX + 0.331468RM$$
(3)

The explanation about the above formula is that the coefficient's value of FX equals to - 0.302683, the (-) sign stipulates the negative correlation between exchange rate fluctuations and stock returns in USE (elasticity). It means that for every **one percent** increases in exchange rate, a 0.302683 percent decrease in Stock returns in USE, holding that all other variables are remaining constant. The corresponding coefficient for RM is 0.331468, that means the return on market portfolio has a **positive** relationship with the stock returns of companies listed in USE, when Stock market index increases with one unit, the stock returns of the companies listed in USE increase with 0.331468.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

5.0. Introduction

This empirical research had a purpose to examine the effect of exchange rate fluctuations on stock returns in Uganda Securities. Three objectives have been developed to achieve that purpose. These objectives have been achieved through the findings of the current study.

Under this chapter, several sections have been developed particularly: discussion of major findings, the conclusions and the recommendations.

5.1. Discussion of major findings

5.1.1. The effect of exchange rate fluctuations on stock returns of cross-listed companies).

The first objective of the current study was to examine the effect of exchange rate fluctuations on stock returns of cross-listed companies. Ugandan stock market has eight companies that it shares with the Kenyan stock market (Appendix I). The findings related to this objective showed that the exchange rate fluctuations have significant effect on stock returns of the crosslisted companies because the p-value associated to it was less than five percent. Then, we rejected the null hypothesis which told us like the exchange rate fluctuations hadn't the effect on the Kenyan's companies listed in USE. The coefficient's sign of the exchange rate fluctuation was negative which means that the exchange rate fluctuation and the stock returns of these companies are negatively correlated; one percent of change in exchange rate fluctuation's coefficient.

This finding joins the study of Simakova (2017) who conducted a study on the impact of the exchange rate movements on the companies listed in Czech, Hungary, Poland and Slovakia stock markets, using a Jorion's model, all her time series used in her study revealed a negative relationship between exchange rate and movement and the stocks returns in these countries' stock markets. This finding is also related to the conclusion of Bodnar and Marton(2002), and Tomanove (2016).

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The Kenyan's companies which are quoted in Uganda Securities Exchange are more exposure to Ugandan shilling's rate changes and this affect severally their stock returns according to the findings. On the other hand, return on market portfolio had also a significant effect on the stock returns of these cross-listed companies, which is normal. The market Index is the weighted average of the companies listed in a particular stock market; it implies that when the stock market performs well, the impact of that performance can affect positively the firms listed on that particular Stock exchange. This finding confirms the theories related to the stock exchange (Chordia at al., 2014).

5.1.2. The effect of exchange rate fluctuations on stock returns of local-listed companies in USE.

The second objective of this study was to examine the effect of exchange rate fluctuations on stock returns of local listed companies in Uganda Securities Exchange. The Uganda's firms listed at USE are eight and there are in partnership with the eight Kenyan's companies which are also listed in the same Stock market.

The findings related to this second objective estimate that the exchange rate fluctuations hadn't a significant effect on stock returns of local-listed companies in USE regarding our sample period (January, 2014 - April, 2018) because the *p-value* associated to it was more than five percent that why we accepted the null hypothesis. However, the return on market portfolio showed a positive and significant effect on the stock returns of the local-listed companies with a positive coefficient which means that when the market index change with one percent, the stock returns of the local-listed companies in USE will also increase by the value of the return on market portfolio's coefficient.

This finding is also joined the results of Mugera (2013) who investigated on "the effect of foreign exchange rate risk management on firm value of firms listed at NSE. He did not find a significant impact of exchange rates on these companies.

5.1.3. The effect of exchange rate fluctuations on stock returns of firms listed in USE.

The third objective of this study was to examine the effect of the exchange fluctuations on the stock returns of all companies quoted in Uganda Securities Exchange. The USE has 16 listed companies; the 16 companies are subdivided into two types: we have 8 Ugandan companies and 8 companies which are listed in both NSE and USE.

The findings demonstrate that the exchange rate fluctuations have a negative and a significant effect on stock returns of the companies listed in USE. The probability value associated with the exchange rate fluctuation was less than five percent which lead us to reject the null hypothesis and accept the alternative hypothesis (The exchange rate changes have a significant effect on stock returns in USE) but the market index has a positive and significant effect on the stock returns in USE.

Many researchers tried to establish whether there is an effect of exchange rates on firms' valuation; there have been mix-results: some authors found the effect of the exchange rate fluctuations on stock returns (Shapiro, 1975, & Simakova, 2017) and others did not find any effect (Bartram & Bodnar, 2012). That's why we call it "the exchange rates' Puzzle" (Bodnar & Marston, 2002). Grouping firms by certain characteristics can lead to a less noisy estimation (Simakova, 2017). The Panel regressions were subdivided into three categories: cross-listed companies, local-listed companies, and whole companies (USE: 2014/01-2018/04).

The major finding for this study is that the exchange rate fluctuations have a negative and significant effect on stock returns in USE due to the cross-listed companies with Nairobi Security Exchange. Negative exposure coefficient suggests that the change of one unit in exchange rate is followed by a decrease of firm's stock returns. All robust models developed had a goodness of fit which is quite high.

Regarding the puzzle of the link between exchange rate fluctuations and stock returns, the results obtained from this study joined the group of researchers who have found the negative correlation between exchange rate changes and stock returns such as Chapiro (1975), Tomanova (2016), Simakova (2017), among others.

5.2. Conclusion

The purpose and objectives of this study have been achieved through different tests on data. Company's involvement in global activities through international trade is the primary source of its foreign exchange exposure, but there are many factors which can cause the indirect exposure as well. The aim of this paper was to evaluate the effect of exchange rate fluctuations on stock returns in Uganda Securities Exchange. This study applies Jorion's model and panel data regression for the sample period 52 months (2014/01-2018/04). Panel data approach was applied to pool the data across companies and time. The study takes into account also cross-

listed and local listed companies in USE what allows to test the effect of exchange rate fluctuations on stock returns in USE. The preliminary tests from the USE monthly returns and real exchange rates show the stationarity among series $\{I(0)\}$, positive skewness, leptokurtosis (positive kurtosis), and non-normal distribution.

Regarding the purpose of this study, the findings of this study revealed a significant effect of exchange rate movements on the stock returns of the companies listed in USE; then, level and even direction of this effect differs across companies listed in USE.

According to the objective one, the findings demonstrated that the exchange rate fluctuations had a negative and significant effect on stock returns of the cross-listed companies.

The objective two was achieved through the findings which showed that there is not a significant effect of exchange rate fluctuations on stock returns of local-listed companies in USE but I find a positive relationship between stock returns and return on market portfolio which is normal.

Therefore, according to objective three, all estimations for the whole period and whole companies listed in USE revealed negative and significant effect between exchange rate fluctuations on of stock returns due to the cross-listed companies with Kenyan stock market. Negative exposure coefficient suggests that if the exchange rate moves by one unit, the stock returns in USE decrease by the amount of the coefficient of exchange rate factor. The highest exchange exposure was observed in case of the cross-listed companies.

5.3. Recommendations

The findings of this study provide policy recommendations to regulators in Uganda.

The first objective of this study was to examine the effect of exchange rate fluctuations on stock returns of cross-listed companies. Hence, this study is important to the government policy makers as it informs the sensitivity of cross-border trade volatility, from the currency market to the stock market. There is need for formulation of government policies that involve crossing border asset effects. Policies of the introduction of the derivatives in the market should be formulated in order to hedge against foreign exchange volatility in the Ugandan market. The governor of USE could reduce information asymmetry through the Ugandan exchange.

However, the second objective of this study was to examine the effect of the exchange rate fluctuations on stock returns of local-listed companies in USE. Uganda adopted the free-floating exchange rate ate the beginning of 1990s and the exchange rate is determined by the market forces such as the supply and demand of the Ugandan currency, thus the Uganda shilling is vulnerable with that because the Ugandan economy is not yet strong enough to face directly the dollar or Euro currencies, I could propose the pegged float exchange rate regime which can help the Governor of the Ugandan central bank to stabilize the nominal exchange by issuing money or withdraw it at any time within the economy to stabilize the exchange rate; the transmission mechanism through prices to the exchange rate is immediate. This could protect Ugandan companies against foreign exchange rates risks. Also, the financial regulators should increase the companies listed at this stock exchange, thus elevating the Uganda bourse to a global level. This would increase the financial integration. Thereby, this will enable global competitiveness that will attract foreign investments on the locally listed companies.

Besides, the third objective of this study was to examine the effect of the exchange rate fluctuations on stock returns of all companies quoted in Uganda Securities Exchange (USE). In the long run, exchange rate volatility cannot be controlled through the stock market interventions. Therefore, financial market policy formulation is applicable in the short run. The Bank of Uganda can develop instruments regarding the price dynamics and to reduce the nominal interest rate because a change in the domestic money supply leads to a change in the level of prices and a change in the level of prices leads to a change in the exchange rate, the management of the monetary policy is very important to reduce the exchange rate fluctuations in Uganda. The good management of the money supply can help to determine the exchange rate, then the Uganda Central bank can focus it forces to manage the interest rate set and the amount of money printed by the treasury. And thereby reduce the inflationary pressure due to the increased amount of money in circulation which can lead to a devaluation of the currency. Another recommendation derived from this study is the asset protection of small-scale investors. An insurance scheme should be established in order to protect the small market investors. Strict guidelines should be formulated to inform the market discipline of stockbrokers and agencies amongst other intermediaries to minimize the risk of loss of investments. This will enhance market integrity that will increase investor confidence and increase the returns on investments.

5.4. Limitations of the study

The current study was dealing with the secondary data; clearly, the issues with data availability are a significant constraint for student researchers due to the costs of internet conations and also some websites asked money when we wanted to access some information about companies listed at Ugandan Securities Exchange.

Regarding the theoretical limits, we could not gather all theories related to stock market returns and exchange rate movements in this study that is the reason why we have focused only on two popular theories related to stock returns and exchange rate fluctuations which are the Efficient Market Hypothesis and the International Fisher Effect. In this particular case, the tests in this study would have been more powerful if information about the currency denomination of sources of revenue were available in addition to the currency denomination of liabilities.

5.5. Contribution to knowledge

In all, this study has advanced the literature, however modestly, in understanding the mechanisms through which exchange rate fluctuation affects the stock returns in Lower Developed Countries. The studies related to exchange rate fluctuations and stock returns in LDCs are very few especially when it is regarding the stock exchange.

Flotta (2014) tried to analyze the impact of exchange rate movements on firm value in Mexico; She used a sample of returns of non-financial firms but she found two results: The firms that engage international activities are significantly less sensitive to the exchange rate movements than firms that rely primary domestic sales. So, the current study had a gap with the work Flotta in two points: first, this work analyzes the effect of exchange rate fluctuations on stock returns in Ugandan area and the second fact the firms selected in the current work are financial and non-financial firms. The results of these two works are very different by considering those facts.

The current work is different from Simakova (2017) because his study analyzed the impact of the exchange rate movements on firm values regarding the stock markets of four developed countries, however the current study analyzes the effect of exchange rate fluctuations on stock returns in LDCs (Lower Developed Countries) situations. Even if the conclusion of this study was similar to the conclusion of Simakova but there is a gap between them regarding their methodologies and approaches.

The originality of this study is that: first of all, it was analyzed the effect of exchange rate on the stock returns in Uganda macroeconomic situations which is very different from Kenya and from developed countries, the second aspect of this empirical research, it has analyzed the effect of exchange rate fluctuations by grouping companies by certain characteristics (cross-listed and local listed companies). The findings of this research revealed the negative impact of the foreign listed companies on Uganda's listed companies regarding the exchange rate exposure, the foreign companies shared their risks with the Ugandan companies and that could affect the wealth of stakeholders. This study is different for others empirical researches (Shapiro, 1975, Flota, 2014, Tomanova 2016, and Simakova, 2017) regarding the geographic area, macroeconomic specificities of countries, specificity of the Stock Exchange, type of companies and the appropriated analyses, and so on.

Due to the puzzling of the link between exchange rate fluctuations and stock returns (Bodnar & Marston, 2002), this study has an important place in empirical and theoretical views because it was joined the group of studies that have found a negative effect of the exchange rate fluctuations on stock returns.

5.6. Areas of further research

This study was focused on the exchange rate fluctuations and stock returns in Uganda Securities Exchange. Further research should be carried out on the hedging activities on the exchange rate movements. This would investigate the effect of various hedging activities on the foreign exchange market. Consequently, this should follow the various economic transmission mechanisms so that it may be clear to define which channels can never be hedged or which channel is easily to hedge. Further research can develop models on hedging markets in a case to provide instruments which can help the companies to reduce the effect of exchange rate on their stock returns because hedging against currency risk can change the character of exchange rate exposure in significant way. The further research can conduct, also, the investigations on the effect of the exchange rate fluctuations on stock returns by considering the East Africa stock Markets (Kenya, Rwanda, South Soudan, Tanzania, and Uganda).

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APPENDIXES

Appendix I: Listed Companies at Uganda Stock Exchange

Symbol		Company	Note	ISIN	Date
ALSIUG		USE All-Share Index	Finance	UG000000071	1997
		Local Listed Companie	es (Primary listed	USE)	
Number	Symbol	Company	Notes	ISIN ¹	Listed Date
1.	BOBU	Bank of Baroda (Uganda)	Finance, banking	UG000000055	2002
2.	BATU	British American Tobacco	Tobacco products	UG000000022	2000
3.	DFCU	DFCU Group	Finance, banking	UG000000147	2004
4	NIC	National Insurance Corporation	Insurance	UG000000758	2010
5	NVL	New Vision Printing & Publishing Company Ltd	Printing, publishing, broadcasting, television	UG000000162	2004
6.	SBU	Stanbic Bank Uganda	Finance, banking	UG000000386	2007
7	UCL	Uganda Clays Limited	Manufacturing, construction materials	UG000000014	2000
8	UMEME	Umeme Limited	Power distribution	UG0000001145	2012

¹ **ISIN:** International Securities Identification Number

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Cross-listed companies (With NSE)					
	CENT	Centum Investment	Investments,	KE000000265	2011
9		Company Ltd	private equity,		
			real estate		
	EABL	East African Breweries	Brewing, gin,	KE0009081092	2001
10		Limited	distilled		
			beverages		
11	EBL	Equity Bank Limited	Banking,	KE000000554	2009
11			finance		
12	JHL	Jubilee Holdings Limited	Insurance	KE000000273	2006
13	KA	Kenya Airways	Aviation	KE0009081084	2002
14	KCB	Kenya Commercial Bank	Finance,	KE000000315	2008
14		Group	banking		
	NMG	Nation Media Group	Publishing,	KE000000380	2010
15			printing,		
15			broadcasting,		
			television		
16	UCHM	Uchumi Supermarkets	Supermarkets	KE000000489	2013
10		Limited			

Sources: https://www.use.or.ug/listed-securities, https://www.cmauganda.co.ug/ug/smenu/23/Listed-Companies.html, and https://www.wikipedia.org/use, Emenike and Kirabo (2018).

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Appendix II: Descriptive statistics

	R ALL COMPA		
	NIES_LISTED	FX	RM
Mean	0.572464	0.771923	0.815000
Median	0.000000	0.590000	0.680000
Maximum	608.3300	8.120000	10.34000
Minimum	-96.27000	-6.640000	-15.16000
Std. Dev.	24.13593	2.271168	5.035342
Skewness	19.21356	0.370603	-0.543984
Kurtosis	485.9945	5.988371	3.624008
Jarque-Bera	8138359.	328.6313	54.53275
Probability	0.000000	0.000000	0.000000
Sum	476.2900	642.2400	678.0800

Sum Sq. Dev.	484093.5	4286.467	21069.73
Observations	832	832	832

Appendix III: Stationarity test at level (Summaries)

a. R_ALL_COMPANIES_LISTED panel unit root test summary

Panel unit root test: Summary Series: R_ALL_COMPANIES_LISTED Date: 09/07/18 Time: 14:36 Sample: 2014M01 2018M04 Exogenous variables: Individual effects Automatic selection of maximum lags Automatic lag length selection based on SIC: 0 to 6 Newey-West automatic bandwidth selection and Bartlett kernel

			Cross-	
Method	Statistic	Prob.**	sections	Obs
Null: Unit root (assumes commo	n unit root pro	cess)		
Levin, Lin & Chu t*	-25.0517	0.0000	16	809
Null: Unit root (assumes individu	al unit root pro	ocess)		
Im, Pesaran and Shin W-stat	-26.5190	0.0000	16	809
ADF - Fisher Chi-square	520.725	0.0000	16	809
PP - Fisher Chi-square	537.082	0.0000	16	816

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

b. RM (Market indexes) panel unit root test summary

Panel unit root test: Summary Series: RM Date: 09/07/18 Time: 14:33 Sample: 2014M01 2018M04 Exogenous variables: Individual effects Automatic selection of maximum lags Automatic lag length selection based on SIC: 0 Newey-West automatic bandwidth selection and Bartlett kernel Balanced observations for each test

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common	unit root pro	cess)		
Levin, Lin & Chu t*	-30.0402	0.0000	16	816
Null: Unit root (assumes individua	l unit root pr	ocess)		
Im, Pesaran and Shin W-stat	-24.8261	0.0000	16	816
ADF - Fisher Chi-square	490.116	0.0000	16	816
PP - Fisher Chi-square	490.138	0.0000	16	816

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

c. FX (Exchange rate fluctuations) panel unit root test summary

Panel unit root test: Summary Series: FX Date: 09/07/18 Time: 14:30 Sample: 2014M01 2018M04 Exogenous variables: Individual effects Automatic selection of maximum lags Automatic lag length selection based on SIC: 0 Newey-West automatic bandwidth selection and Bartlett kernel Balanced observations for each test

Method	Statistic	Prob.**	Cross- sections	Obs
Levin, Lin & Chu t*	-18.4244	0.0000	16	816
Null: Unit root (assumes individu Im, Pesaran and Shin W-stat ADF - Fisher Chi-square	ual unit root pro -16.6622 302.111	ocess) 0.0000 0.0000	16 16	816 816
PP - Fisher Chi-square	294.731	0.0000	16	816

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Appendix IV: Panel Cointegration Test

The analysis of long-run cointegrating relationships has received considerable attention in modern time series analysis. In this point, we describe EViews' tool for estimating cointegrating relationships using panel data. The Pedroni (2000) Residual Cointegration Test is applied for the purpose of this study. The Pedroni Cointegration Test has eleven p-values results after its regression and if the majority of these probabilities are less than 0.05, we can reject the null hypothesis which is the variables are not cointegrated and we can accept the alternative hypothesis that there are long-run associations between variables (DVs and IVs). Based also on AR(1) process of panel data, the value of AR(1) value for each cross-section must be less than 1 to appreciate the stationarity among dependent variable, (Eviews, 2017).

Pedroni Residual Cointegration Test Series: R_ALL_COMPANIES_LISTED FX RM Date: 09/07/18 Time: 14:21 Sample: 2014M01 2018M04 Included observations: 832 Cross-sections included: 16 Null Hypothesis: No cointegration Trend assumption: No deterministic trend Automatic lag length selection based on SIC with a max lag of 10 Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)					
Weighted					
	<u>Statistic</u>	<u>Prob.</u>	Statistic	Prob.	
Panel v-Statistic	0.043932	0.4825	-1.558436	0.9404	
Panel rho-Statistic	-28.12460	0.0000	-23.10293	0.0000	
Panel PP-Statistic	-23.57185	0.0000	-22.92266	0.0000	
Panel ADF-Statistic	-23.74698	0.0000	-22.60761	0.0000	

Alternative hypothesis: individual AR coefs. (between-dimension)

	<u>Statistic</u>	Prob.
Group rho-Statistic	-22.86574	0.0000
Group PP-Statistic	-27.16362	0.0000
Group ADF-Statistic	-25.86212	0.0000

Cross section specific results

Phillips-Peron results (non-parametric)

Cross	ID AR(1)	Variance	HAC	Bandwidth	Obs
BOBI	J 0.189	13.63655	13.51257	3.00	51
BATL	J -0.154	29.88733	34.54788	3.00	51
DFCl	J -0.066	61.65772	59.99838	3.00	51
NIC	-0.305	75.79724	97.89180	3.00	51
NVL	-0.214	3.609759	3.823248	2.00	51
SBU	-0.137	21.33272	16.40823	7.00	51
UCL	0.321	89.74142	90.11207	2.00	51
UMEN	IE 0.294	26.43995	25.76512	3.00	51
CEN	Г -0.032	46.06306	44.52825	2.00	51
EABL	-0.078	13.13770	12.32428	3.00	51
EBL	-0.121	7251.859	9212.421	3.00	51
JHL	-0.155	44.19843	34.77926	3.00	51
KA	0.178	397.3548	447.6341	2.00	51
KCB	-0.304	40.11456	33.77710	2.00	51
NMG	-0.047	55.22135	38.83741	7.00	51
UCHN	<i>I</i> -0.081	332.1948	332.1948	0.00	51

Augmented Dickey-Fuller results (parametric)

Cross ID	AR(1)	Variance	Lag	Max lag	Obs
BOBU	0.189	13.63655	0	10	51
BATU	-0.369	20.65160	3	10	48
DFCU	-0.066	61.65772	0	10	51
NIC	-0.305	75.79724	0	10	51
NVL	-0.214	3.609759	0	10	51
SBU	-0.137	21.33272	0	10	51
UCL	0.321	89.74142	0	10	51
UMEME	0.294	26.43995	0	10	51
CENT	-0.032	46.06306	0	10	51
EABL	-0.078	13.13770	0	10	51
EBL	-0.121	7251.859	0	10	51
JHL	-0.155	44.19843	0	10	51
KA	0.178	397.3548	0	10	51
KCB	-0.304	40.11456	0	10	51
NMG	-0.047	55.22135	0	10	51
UCHM	-0.081	332.1948	0	10	51

Appendix V: Regressions (Panel)

a) Regression related to cross-listed companies

Dependent Variable: R_CROSS_LISTED Method: Robust Least Squares Date: 09/07/18 Time: 13:43 Sample: 2014M01 2018M04 Included observations: 416 Method: MM-estimation S settings: tuning=1.547645, breakdown=0.5, trials=200, subsmpl=3, refine=2, compare=5 M settings: weight=Bisquare, tuning=4.684 Random number generator: rng=kn, seed=1773513275

Huber Type I Standard Errors & Covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.		
C	-1.040508	0.415568	-2.503824	0.0123		
FX	-0.504790	0.173820	-2.904103	0.0037		
RM	0.837354	0.078400	10.68047	0.0000		
	Robust Statistics					
R-squared	0.130474	Adjusted R-squared		0.126264		
Rw-squared	0.267041	Adjust Rw-squared		0.267041		
Akaike info criterion	549.2365	Schwarz criterion		562.3681		
Deviance	27545.28	Scale		7.114002		
Rn-squared statistic	116.3056	Prob(Rn-squared stat.)		0.000000		
Non-robust Statistics						
Mean dependent var	1.143486	S.D. depender	it var	33.47064		
S.E. of regression	33.29490	Sum squared r	esid	457831.3		

b) Regression related to local-listed companies

Dependent Variable: R_LOCAL_LISTED_UG Method: Robust Least Squares Date: 09/07/18 Time: 13:44 Sample: 2014M01 2018M04 Included observations: 416 Method: MM-estimation S settings: tuning=1.547645, breakdown=0.5, trials=200, subsmpl=3, refine=2, compare=5 M settings: weight=Bisquare, tuning=4.684 Random number generator: rng=kn, seed=1317997394 Huber Type I Standard Errors & Covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C FX RM	-0.039204 -0.069537 0.055520	0.126076 0.052734 0.023785	-0.310957 -1.318647 2.334222	0.7558 0.1873 0.0196
Robust Statistics				
R-squared Rw-squared Akaike info criterion Deviance Rn-squared statistic	0.005156 0.023632 969.2972 3525.744 6.482276	Adjusted R-squared Adjust Rw-squared Schwarz criterion Scale Prob(Rn-squared stat.)		0.000338 0.023632 982.5289 1.912003 0.039119
Non-robust Statistics				
Mean dependent var	0.001442	2 S.D. dependent var 6.		6.749275

c) Regression related to all companies listed at USE

Dependent Variable: R_ALL_COMPANIES_LISTED Method: Robust Least Squares Date: 09/07/18 Time: 13:38 Sample: 2014M01 2018M04 Included observations: 832 Method: MM-estimation S settings: tuning=1.547645, breakdown=0.5, trials=200, subsmpl=3, refine=2, compare=5 M settings: weight=Bisquare, tuning=4.684 Random number generator: rng=kn, seed=479679347 Huber Type I Standard Errors & Covariance

Variable Coefficient Std. Error z-Statistic Prob. С -0.326173 0.217676 -1.498436 0.1340 FX -0.3026830.091047 -3.324458 0.0009 RM 0.331468 0.041066 8.071513 0.0000 **Robust Statistics** R-squared 0.039730 Adjusted R-squared 0.037414 Rw-squared 0.106998 Adjust Rw-squared 0.106998 Akaike info criterion 1358.515 Schwarz criterion 1373.054 Deviance 29842.73 Scale 4.696660 **Rn-squared statistic** 70.29882 Prob(Rn-squared stat.) 0.000000 Non-robust Statistics Mean dependent var 0.572464 S.D. dependent var 24.13593 S.E. of regression 24.08204 Sum squared resid 480773.9