THREE EMPIRICAL ESSAYS ON THE UGANDAN
FOREIGN EXCHANGE MARKET

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Statement of Originality

The thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to the final version of my thesis being made available worldwide when deposited in the University’s Digital Repository, subject to the provisions of the Copyright Act 1968.

Lorna Katusiime
Statement of Authorship

I hereby certify that the work embodied in this thesis contains a published paper/s/scholarly work of which I am a joint author. I have included as part of the thesis a written statement, endorsed by my supervisors, attesting to my contribution to the joint publication/s/scholarly work.

Lorna Katusiime
Endorsement by Co-Authors

I, Abul F. M. Shamsuddin, endorse the statement on the contribution of co-authors.

Abul F. M. Shamsuddin

I, Frank W. Agbola, endorse the statement on the contribution of co-authors.

Frank W. Agbola
Statement on the Papers Contained in the Thesis

The chapters presented in this thesis are largely a series of published and unpublished papers that I have completed on the topic. The following papers are listed in the order in which they are presented in the thesis.


My co-authors certify that I am the primary contributor to each of these papers. I initiated the research idea, undertook the literature review, conducted the data analysis and wrote the first draft of all of these papers. My co-authors gave me guidance regarding the topics and literature, reviewed the drafts of each paper, and provided feedback.
Dedication

I dedicate this thesis to my God, almighty Father, Son and Holy Spirit. Throughout my life you have always been there. You are my all in all.

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<tr>
<td>AERC</td>
<td>African Economic Research Consortium</td>
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<tr>
<td>AMH</td>
<td>adaptive markets hypothesis</td>
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<td>ARDL</td>
<td>autoregressive distributed lag</td>
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<tr>
<td>AVR</td>
<td>automatic variance ratio</td>
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<td>BOU</td>
<td>Bank of Uganda</td>
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<td>CBR</td>
<td>Central Bank Rate</td>
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<td>DOLS</td>
<td>dynamic ordinary least squares</td>
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<td>ECT</td>
<td>error correction term</td>
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<td>EMH</td>
<td>efficient market hypothesis</td>
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<td>EPRC</td>
<td>Economic Policy Research Centre</td>
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<tr>
<td>ERP</td>
<td>Economic Recovery Program</td>
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<tr>
<td>FMOLS</td>
<td>fully modified ordinary least squares</td>
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<td>FMOS</td>
<td>Financial Market Operations Subcommittee</td>
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<tr>
<td>FPM</td>
<td>Flexible price model</td>
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<tr>
<td>GARCH</td>
<td>Generalised Autoregressive Conditional Heteroscedasticity</td>
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<td>GDP</td>
<td>gross domestic product</td>
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<tr>
<td>GFC</td>
<td>Global Financial Crisis</td>
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<td>IFEM</td>
<td>interbank foreign exchange market</td>
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<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
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<tr>
<td>ITL</td>
<td>inflation targeting-lite</td>
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<tr>
<td>MCPC</td>
<td>Monetary and Credit Policy Committee</td>
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<td>MDG</td>
<td>Millennium Development Goals</td>
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<tr>
<td>MM</td>
<td>Market Microstructure</td>
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<td>NOEM</td>
<td>New Open Economy Macroeconomics</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>NPART</td>
<td>Non-Performing Assets and Recovery Trust</td>
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<td>NRM</td>
<td>National Resistance Movement</td>
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<td>OF</td>
<td>order flow</td>
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<tr>
<td>PPP</td>
<td>Purchasing Power Parity</td>
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<td>RMP</td>
<td>Reserve Money Program</td>
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<td>SAP</td>
<td>structural adjustment program</td>
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<tr>
<td>SBC</td>
<td>Schwartz Bayesian Criterion</td>
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<td>SDR</td>
<td>special drawing rights</td>
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<tr>
<td>SMM</td>
<td>Standardised Maximum Modulus</td>
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<tr>
<td>SOMO</td>
<td>Stichting Onderzoek Multinationale Ondernemingen</td>
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<tr>
<td>TRB</td>
<td>trading range break</td>
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<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<tr>
<td>US</td>
<td>United States</td>
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<tr>
<td>VMA</td>
<td>variable moving average</td>
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Abstract

The objective of this thesis is to investigate exchange rate dynamics in Uganda. As part of extensive reforms, Uganda adopted a flexible exchange rate regime in 1993. However, the central bank periodically intervenes in the foreign exchange market to calm ‘disorderly’ markets because of the excessive volatility associated with a market-determined exchange rate and concern over the adverse effects of exchange rate volatility on financial sector soundness and economic growth. This thesis comprises three empirical studies that examine foreign exchange market behaviour in Uganda.

The first study examines the market efficiency and trading rule profitability of the Ugandan foreign exchange market using daily data for the period January 1994 to June 2012. The study investigates market efficiency using an array of variance ratio tests with superior size and power properties, such as the automatic variance ratio (AVR) test, and popular technical trading rules in the literature, such as filter rules. The results suggest that the Ugandan foreign exchange market is generally characterised by weak-form inefficiency. The level of market inefficiency varies over time, which is consistent with Lo’s (2004) adaptive markets hypothesis (AMH). Although evidence of return predictability is prevalent, the study observes that trading rules are not effective in exploiting return predictability due to transaction costs and time variation in inefficiency. The study also observes that market efficiency improves with increased central bank intervention, remittances and uncertainty of return predictability, and it declines with increased macroeconomic activity, foreign exchange market regulation, financial crises and transaction costs. Thus, in a market with limited numbers of informed market participants and low market depth and liquidity, central bank intervention is found to improve market efficiency. This suggests that central bank intervention may be a useful
signalling device because it relays additional information to foreign exchange market participants to attain pricing efficiency.

The second study examines the short- and long-term determinants of the Ugandan shilling/United States (US) dollar foreign exchange rate using monthly data spanning the period January 1995 to March 2013. The study extends the literature in the area of exchange rate prediction by developing a hybrid model consisting of macroeconomic fundamentals and market microstructure variables. The choice of macroeconomic fundamentals is guided by the monetary model of exchange rates, while market microstructure-related frictions are represented by order flow and bid-ask spreads. The Autoregressive Distributed Lag (ARDL) model is used as the empirical framework. The study finds that the key long-run determinants of exchange rate dynamics are money supply, stock of foreign exchange reserves and the Global Financial Crisis (GFC). Order flow is found to significantly influence the exchange rate in both the short and long run, confirming the vital role of order flow as an information aggregator in the Ugandan foreign exchange. The results highlight the key role of monetary and foreign exchange policies in influencing exchange rate movements in Uganda.

The third study investigates the effect of exchange rate volatility on economic growth in Uganda using annual data for the period 1960–2011. Utilising the ARDL framework, the effect of exchange rate volatility on economic growth is examined, controlling for the effects of domestic investment, human capital, trade openness, financial development, inflation, real trade balance and political instability. Consistent with Adewuyi and Akpokodje (2013), the results show that exchange rate volatility promotes economic growth in Uganda. This finding suggests that, although the flexible exchange rate regime is accompanied by increased exchange rate volatility, it provides Uganda with an effective buffer to absorb external shocks. However, in times of political instability, exchange rate volatility adversely affects economic growth. The other key determinants of economic growth are financial sector development and
capital stock accumulation. Thus, policies may be pursued to further develop the financial sector, increase capital stock accumulation and attain political stability.

Overall, this thesis observes that Uganda’s foreign exchange market is predominantly characterised by weak-form inefficiency, but the level of market inefficiency changes over time. Market participants are unable to exploit pricing inefficiencies because of transaction costs and time variation in inefficiencies under changing market conditions. In addition, the study establishes the usefulness of the hybrid model of macroeconomic fundamentals and market microstructure variables for explaining the Ugandan shilling/US dollar foreign exchange rate. Finally, the study finds that in the context of Uganda, exchange rate volatility promotes growth in stable political environments.