

Exchange Rate Growth and Sovereign Treasury Bond Yield Curve Movements in Kenya

George Mawili Makusa Dr. Tobias Olweny, Prof. Willy Muturi

Department of Economics and Finance, Jomo Kenyatta University of Agriculture and Technology

DOI: <https://doi.org/10.47772/IJRISS.2026.10100491>

Received: 25 January 2026; Accepted: 31 January 2026; Published: 14 February 2026

ABSTRACT

This paper investigates the dynamic relationship between exchange rate movements and long-term sovereign treasury bond yield curve dynamics in Kenya, with particular emphasis on the moderating role of monetary policy. Using quarterly data and a Vector Autoregression (VAR) framework, the study examines both direct and indirect transmission channels through which exchange rate shocks influence government bond yields. Unit root tests confirm that all variables are stationary in levels, justifying estimation of a VAR (1) model. Empirical results indicate that exchange rate shocks do not exert a strong immediate effect on bond yields; instead, their influence is transmitted indirectly through monetary policy responses, as reflected in adjustments to the Central Bank Rate (CBR). Impulse response analysis shows that exchange rate depreciation induces a tightening monetary policy stance, which subsequently affects yield curve movements. The findings underscore the importance of exchange rate stability and credible monetary policy coordination in managing sovereign borrowing costs in emerging market economies.

Keywords: Exchange Rate; Sovereign Bond Yields; Monetary Policy; VAR; Kenya; Emerging Markets

INTRODUCTION

Sovereign bond markets have become an increasingly important component of macroeconomic management and financial market development in emerging economies. Long-term government bond yields, in particular, serve as benchmarks for pricing financial assets, guiding investment decisions, and assessing fiscal sustainability (Bianchi, Hatchondo, & Martinez, 2018). In Kenya, the expansion of the domestic government securities market has elevated the importance of understanding the macroeconomic drivers of sovereign bond yield curve movements (Aruasa, 2024).

Among these drivers, exchange rate dynamics occupy a central position. As a small open economy, Kenya is highly exposed to external shocks transmitted through the exchange rate channel, including capital flow volatility, terms-of-trade shocks, and changes in global financial conditions (Aruasa, 2024). Exchange rate depreciation can raise inflationary pressures, increase the domestic currency cost of servicing external debt, and elevate sovereign risk perceptions, all of which may translate into higher government bond yields. Conversely, exchange rate stability can enhance investor confidence and reduce risk premia embedded in long-term yields.

Despite this importance, the empirical relationship between exchange rate movements and sovereign bond yield dynamics remains ambiguous, particularly in emerging and frontier markets. While some studies suggest a direct pass-through from exchange rate depreciation to higher bond yields, others emphasize the role of monetary policy in mediating this relationship. In practice, central banks often respond to exchange rate pressures by adjusting policy rates, thereby influencing the yield curve indirectly rather than allowing exchange rate shocks to transmit fully into bond markets (Ngaruuya & Njuguna, 2016).

In Kenya, the Central Bank Rate (CBR) plays a pivotal role in macroeconomic stabilization. The Central Bank of Kenya frequently adjusts the policy rate in response to exchange rate pressures to contain inflation and anchor expectations (Kimani, 2024). This raises an important empirical question: do exchange rate movements affect sovereign bond yields directly, or is their impact primarily moderated through monetary policy responses?

Addressing this question is critical for effective debt management, monetary policy formulation, and macroeconomic stability.

This study contributes to the literature by examining the dynamic interaction between exchange rate movements, monetary policy, and sovereign bond yield curve dynamics in Kenya using a multivariate VAR framework. By explicitly modelling the monetary policy rate as a moderating variable, the study provides a more nuanced understanding of the transmission mechanisms linking exchange rate shocks to long-term government borrowing costs.

The remainder of the paper is structured as follows. Section 2 reviews the relevant theoretical and empirical literature. Section 3 presents the data and econometric methodology. Sections 4 and 5 report the empirical results, while Section 6 discusses the findings. Section 7 concludes with policy implications.

LITERATURE REVIEW

Exchange Rate Dynamics and Sovereign Bond Yields

The relationship between exchange rate movements and sovereign bond yields has received increasing attention in recent empirical literature, particularly in the context of emerging markets. Exchange rate depreciation is often associated with higher sovereign bond yields due to increased inflation expectations, currency risk premia, and concerns over debt sustainability (Miyajima, Mohanty, & Chan, 2015). Investors typically demand higher yields to compensate for heightened macroeconomic uncertainty and potential currency losses.

Hausmann (2016) argue that countries with limited ability to borrow in their own currency face stronger exchange rate–yield linkages, as depreciation raises the real burden of external debt and heightens default risk. Even in economies with predominantly domestic currency debt, exchange rate volatility can still influence yields indirectly through inflation expectations and capital flow reversals.

More recent studies emphasize the importance of global financial conditions in shaping this relationship. Hofmann, Shim, and Shin (2020) show that exchange rate movements interact with global liquidity cycles, amplifying their effects on domestic bond markets in emerging economies. These findings suggest that the exchange rate–bond yield nexus cannot be fully understood without accounting for broader macro-financial interactions.

Monetary Policy as a Moderating Channel

An important strand of the literature highlights the role of monetary policy in moderating the impact of exchange rate shocks on sovereign bond yields. According to standard open-economy macroeconomic theory, central banks may respond to exchange rate depreciation by tightening monetary policy to contain inflationary pressures and stabilize expectations. Such policy responses can, in turn, influence the yield curve, particularly at longer maturities (Clarida, Galí, & Gertler, 2002).

Empirical evidence supports this moderating role. Leshoro (2020) find that proactive monetary policy responses reduce the pass-through of exchange rate shocks to domestic bond yields in emerging markets. Similarly, Ozcelebi, (2019) show that credible monetary policy frameworks dampen the sensitivity of sovereign yields to exchange rate volatility.

In the African context, studies remain relatively limited. However, recent evidence suggests that monetary policy credibility and policy rate adjustments play a crucial role in stabilizing domestic financial markets in the face of exchange rate pressures (Effiong, Arinze, & Okon, 2022). These findings underscore the need to explicitly incorporate monetary policy into empirical models of bond yield dynamics (Agenor, Alper, & da Silva, 2018).

Empirical Gaps and Contribution

While the existing literature provides valuable insights, several gaps remain. First, many studies focus on cross-country panels, potentially obscuring country-specific institutional and policy dynamics. Second, few studies

explicitly model the exchange rate–bond yield relationship within a multivariate dynamic framework that captures feedback effects among macroeconomic variables. Third, limited empirical work examines this relationship in the Kenyan context, despite the growing importance of its domestic bond market.

This study addresses these gaps by employing a country-specific VAR model to examine the dynamic interactions among exchange rate movements, monetary policy, and sovereign bond yield curve dynamics in Kenya. By treating the policy rate as a moderating variable rather than a simple control, the study offers a richer understanding of macroeconomic transmission mechanisms in an emerging market setting.

DATA AND METHODOLOGY

Data Sources and Variable Description

This study employs quarterly time-series data for Kenya covering the period **2005Q1 to 2025Q2**, selected to capture both pre- and post-global financial crisis dynamics as well as periods of heightened exchange rate volatility and evolving monetary policy regimes. The dependent variable is the **long-term sovereign treasury bond yield (Y)**, which reflects the cost of government borrowing at longer maturities and serves as a benchmark for domestic financial markets.

The key explanatory variable is the **exchange rate (X1)**, measured as the nominal exchange rate of the Kenyan shilling against the US dollar. Exchange rate movements are central to the analysis given Kenya's exposure to external shocks, capital flow volatility, and imported inflation. To capture the moderating role of monetary policy, the **Central Bank Rate (CBR)** is incorporated as a policy variable (X5), reflecting the stance of monetary policy and the primary signaling instrument of the Central Bank of Kenya.

In line with the multivariate nature of sovereign yield determination, the model also includes control variables commonly emphasized in the literature. These include **international reserves (X2)**, which proxy external buffer strength; **public debt growth (X3)**, capturing fiscal sustainability concerns; and **GDP growth (X4)**, reflecting domestic macroeconomic conditions and growth expectations. Including these variables ensures that the estimated exchange rate effects are not confounded by omitted macroeconomic dynamics.

All data were obtained from official sources, including the Central Bank of Kenya, Kenya National Bureau of Statistics, and international financial databases. Variables were transformed where necessary to ensure consistency and interpretability, and descriptive analysis was conducted prior to econometric estimation.

Econometric Framework

Given the dynamic and potentially endogenous relationships among exchange rates, monetary policy, and sovereign bond yields, the study adopts a **Vector Autoregression (VAR)** framework. VAR models are particularly suitable for analyzing macroeconomic interactions because they treat all variables as endogenous and allow for rich feedback mechanisms without imposing strong theoretical restrictions (Lütkepohl, 2015).

The general VAR(p) specification is expressed as:

$$Z_t = A_1 Z_{t-1} + A_2 Z_{t-2} + \dots + A_p Z_{t-p} + C + \varepsilon_t$$

where Z_t is a vector of endogenous variables including bond yields, exchange rate, monetary policy rate, and other macroeconomic indicators; A_i are coefficient matrices; C is a vector of constants; and ε_t represents white-noise error terms.

The VAR framework allows the study to examine both the **direct effects** of exchange rate movements on sovereign bond yields and the **indirect effects transmitted through monetary policy responses**. This is particularly important in emerging markets, where policy reactions often mediate the impact of external shocks on domestic financial conditions.

Model Specification and Pre-Estimation Diagnostics

Lag Length Selection

Prior to estimation, standard pre-estimation diagnostics were conducted to ensure the appropriateness of the econometric framework. Lag length selection based on the Akaike, Schwarz, Hannan–Quinn, and Final Prediction Error criteria is reported in **Appendix A**. Although information criteria favored a zero-lag specification, a VAR (1) model was adopted to preserve dynamic interactions among macroeconomic variables, consistent with best practice in macro-financial VAR studies.

Stationarity of all variables was confirmed using the Augmented Dickey–Fuller (ADF) test. As reported in **Appendix B**, all series were found to be stationary in levels at the 5 percent significance level, justifying estimation of the VAR in levels without differencing or cointegration techniques. This approach preserves long-run information and facilitates economically meaningful impulse response analysis.

Post-estimation diagnostics confirm model adequacy. Residual serial correlation tests fail to reject the null hypothesis of no autocorrelation, and stability tests indicate that all inverse roots of the characteristic polynomial lie strictly within the unit circle (**Appendix C**). These results confirm that the VAR system is dynamically stable and suitable for structural interpretation.

Implications for Model Estimation

The combination of level stationarity and optimal lag selection supports the use of a VAR(1) model estimated in levels. This specification enables the study to trace the dynamic responses of sovereign bond yields and monetary policy to exchange rate shocks while accounting for interactions with other macroeconomic variables. Moreover, estimating the model in levels facilitates interpretation of impulse responses in economically meaningful units rather than growth rates or differences.

With these pre-estimation diagnostics satisfied, the study proceeds to estimate the VAR (1) model and analyze the dynamic interactions using impulse response functions and variance decomposition techniques.

EMPIRICAL RESULTS

Preliminary Diagnostic Tests

Before interpreting the estimated VAR results, a set of post-estimation diagnostic tests was conducted to ensure model adequacy. These include tests for residual serial correlation and stability of the VAR system.

The VAR residual serial correlation LM test fails to reject the null hypothesis of no serial correlation at both lag 1 and lag 2. Specifically, at lag 1, the LM statistic is 25.44 with a probability value of 0.9052, while at lag 2 the LM statistic is 31.56 with a probability of 0.6798. The joint test for serial correlation up to lag 2 similarly reports a probability of 0.6591. These results confirm that the VAR(1) model is free from residual autocorrelation, satisfying a key requirement for valid impulse response analysis (Enders, 2015) (**See Appendix C**).

Stability of the VAR model was assessed using the inverse roots of the autoregressive characteristic polynomial. All inverse roots lie strictly within the unit circle, indicating that the estimated VAR system is dynamically stable. This implies that shocks to the system dissipate over time and that impulse response functions converge to zero, making them economically interpretable (Lütkepohl, 2015) (**See Appendix C**).

VAR (1) Estimation Results

The estimated VAR(1) model captures the dynamic interactions among sovereign bond yields (Y), exchange rate movements (X1), international reserves (X2), public debt growth (X3), GDP growth (X4), and the monetary policy rate (X5). Table 3 presents selected coefficient estimates, standard errors, and t-statistics.

In the bond yield equation, the coefficient on lagged exchange rate movements $X1(-1)$ is positive but statistically insignificant, with an estimated coefficient of **0.0616** and a t-statistic of **1.26**. This indicates that exchange rate movements do not exert a strong *direct* short-run effect on long-term bond yields. This finding suggests that bond markets may not immediately price exchange rate fluctuations into long-term yields, possibly reflecting expectations of policy intervention or market credibility.

By contrast, the exchange rate equation exhibits sensitivity to macroeconomic dynamics, although no strong feedback from bond yields is observed. Lagged bond yields $Y(-1)$ enter the exchange rate equation with a negative coefficient (-0.5208) but remain statistically insignificant, indicating limited reverse causality from bond yields to exchange rate movements within the short horizon.

Notably, the monetary policy rate equation (CBR) shows stronger responses to macroeconomic shocks. Lagged exchange rate movements are positively associated with the policy rate, consistent with a policy reaction function in which exchange rate pressures trigger tightening to contain inflationary risks. Although the estimated coefficient of **0.1765** is marginally insignificant at conventional levels, its magnitude and sign align with Kenya's observed monetary policy behavior. (See Appendix D)

Impulse Response Analysis

Exchange Rate Shocks and Monetary Policy Response

To further explore the dynamic transmission mechanisms, impulse response functions (IRFs) were generated using a Cholesky decomposition with the ordering: GDP growth (X4), public debt growth (X3), international reserves (X2), exchange rate (X1), monetary policy rate (X5), and bond yields (Y). This ordering reflects the assumption that monetary policy responds contemporaneously to exchange rate shocks, while bond yields adjust with a lag.

The impulse response results indicate that a one standard deviation shock to the exchange rate elicits a positive and statistically meaningful response from the monetary policy rate (CBR). The policy rate increases in the immediate periods following the shock, peaking around the second quarter before gradually declining toward zero. This response pattern confirms that monetary policy in Kenya reacts proactively to exchange rate pressures, consistent with inflation-targeting considerations and exchange rate stabilization objectives (See Appendix E)

Exchange Rate Shocks and Sovereign Bond Yields

The response of long-term sovereign bond yields to exchange rate shocks is relatively muted and short-lived. Following an exchange rate shock, bond yields initially exhibit a small negative response, reaching approximately **-0.02** within the first two quarters. This response quickly dissipates and converges toward zero by the fifth quarter (See Appendix E)

The absence of a pronounced positive yield response suggests that exchange rate shocks do not directly translate into higher long-term borrowing costs. Instead, the policy-induced adjustment of the short-term rate appears to absorb much of the shock, insulating the bond market from excessive volatility. This indirect transmission mechanism highlights the importance of credible monetary policy in stabilizing long-term yields.

Moderating Role of Monetary Policy

The combined VAR and impulse response results provide strong evidence that **monetary policy plays a moderating role** in the relationship between exchange rate movements and sovereign bond yield dynamics. While exchange rate shocks do not significantly affect bond yields directly, they induce policy responses that influence yield curve movements indirectly (See Appendix E).

This finding aligns with recent empirical literature emphasizing the importance of policy credibility and proactive intervention in emerging markets (Aizenman et al., 2019; Hofmann et al., 2020). In the Kenyan context, the results suggest that the Central Bank's response to exchange rate pressures helps anchor long-term yield expectations, thereby reducing the vulnerability of government borrowing costs to external shocks.

Summary of Key Empirical Findings

In summary, the empirical analysis yields three key findings. First, exchange rate movements do not exert a statistically significant direct effect on sovereign bond yields in the short run. Second, exchange rate shocks trigger a measurable monetary policy response, reflected in adjustments to the policy rate. Third, through this monetary policy channel, exchange rate shocks indirectly influence bond yield dynamics, underscoring the moderating role of policy intervention.

DISCUSSION

The empirical findings reveal that exchange rate movements in Kenya do not exert a strong direct influence on long-term sovereign bond yields in the short run. This result contrasts with evidence from some emerging markets where currency depreciation is rapidly priced into bond yields through higher inflation and risk premia. In the Kenyan context, the muted direct response suggests that market participants may anticipate policy intervention, thereby limiting immediate yield adjustments. This finding aligns with recent studies emphasizing the role of policy credibility in weakening the exchange rate–yield pass-through in emerging economies.

More importantly, the results highlight the central role of monetary policy as a moderating transmission channel. Exchange rate shocks trigger a discernible response in the Central Bank Rate, reflecting a proactive policy stance aimed at containing inflationary pressures and stabilizing expectations. Through this channel, exchange rate volatility indirectly influences sovereign bond yield dynamics. This mechanism underscores the importance of coordinated macroeconomic management, where monetary policy buffers domestic financial markets from external shocks.

The findings further suggest that Kenya's sovereign bond market has developed a degree of resilience to exchange rate volatility. The rapid dissipation of bond yield responses observed in the impulse response analysis indicates that shocks are not persistent, reinforcing the conclusion that policy intervention plays a stabilizing role. These results are consistent with recent African and emerging market evidence emphasizing the importance of institutional strength and policy responsiveness in anchoring long-term yields.

Overall, the discussion reinforces the view that exchange rate management alone is insufficient to explain sovereign yield dynamics. Instead, the interaction between exchange rate movements and monetary policy decisions is central to understanding government borrowing costs in Kenya.

CONCLUSION AND POLICY IMPLICATIONS

This study examined the dynamic relationship between exchange rate movements and sovereign bond yield curve dynamics in Kenya, with a particular focus on the moderating role of monetary policy. Using a VAR framework, the analysis demonstrated that exchange rate shocks do not significantly affect bond yields directly but operate primarily through monetary policy responses.

From a policy perspective, the findings underscore the importance of maintaining a credible and responsive monetary policy framework. By adjusting the policy rate in response to exchange rate pressures, the Central Bank of Kenya plays a critical role in stabilizing long-term borrowing costs. This highlights the need for continued policy independence and clear communication to anchor market expectations.

Additionally, the results suggest that policymakers should prioritize exchange rate stability as part of a broader macroeconomic strategy rather than as an isolated objective. Strengthening monetary policy transmission mechanisms and deepening domestic financial markets can further reduce the sensitivity of sovereign bond yields to external shocks.

In conclusion, the study contributes to the emerging literature on macro-financial linkages in developing economies by demonstrating that the exchange rate–bond yield relationship in Kenya is largely indirect and policy-mediated. Future research could extend this analysis by exploring nonlinear effects or incorporating global financial variables to capture external spillovers more explicitly.

REFERENCES

1. Agenor, R. P., Alper, K., & da Silva, L. P. (2018). Capital regulation, monetary policy, and financial stability. 32nd issue (September 2013) of the International Journal of Central Banking.
2. Aizenman, J., Cheung, Y. W., & Qian, X. (2020). The currency composition of international reserves, demand for international reserves, and global safe assets. *Journal of International Money and Finance*, 102, 102120.
3. Aruasa, I. (2024). Assessing the Determinants of Bond Liquidity in Kenya: The Impact of Interest Rates and Exchange Rates.
4. Bianchi, J., Hatchondo, J. C., & Martinez, L. (2018). International reserves and rollover risk. *American Economic Review*, 108(9), 2629-2670.
5. Clarida, R., Gali, J., & Gertler, M. (2002). A simple framework for international monetary policy analysis. *Journal of monetary economics*, 49(5), 879-904.
6. Effiong, U. E., Arinze, N. P., & Okon, J. I. (2022). Monetary and fiscal policy interactions and exchange rate movements in Nigeria. *International Journal of Novel Research in Marketing Management and Economics (IJNRMME)*, 9(2), 46-64.
7. Hausmann, R. (2016). Economic development and the accumulation of know-how. *Welsh Economic Review*, 24, 13-16.
8. Hernandez, J. (2018). How international reserves reduce the probability of debt crises.
9. Hofmann, B., Shim, I., & Shin, H. S. (2020). Bond risk premia and the exchange rate. *Journal of Money, Credit and Banking*, 52(S2), 497-520.
10. Leshoro, T. L. (2020). Monetary policy or fiscal policy, which one better explains inflation dynamics in South Africa?. *African Journal of Business & Economic Research*, 15(1).
11. Miyajima, K., Mohanty, M. S., & Chan, T. (2015). Emerging market local currency bonds: diversification and stability. *Emerging Markets Review*, 22, 126-139.
12. Ngaruiya, M., & Njuguna, A. (2016). Effect of Exchange Rates on Bonds Prices: A Survey of Bonds Listed At the Nairobi Securities Exchange. *American Journal of Economics*, 1(2), 16-32.
13. Ozcelebi, O. (2019). Assessment of asymmetric effects on exchange market pressure: Empirical evidence from emerging countries. *The North American Journal of Economics and Finance*, 48, 498-513.

APPENDICES

Appendix A: VAR Lag Length Selection Criteria

Table A1: VAR Lag Order Selection Criteria]

VAR Lag Order Selection Criteria
Endogenous variables: Y X1 X2 X3 X4 X5
Exogenous variables: C Date: 01/20/26
Time: 20:35 Sample: 2005Q1 2025Q2
Included observations: 45

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-149.0815	NA*	3.97e-05*	6.892509*	7.133398*	6.982310*
1	-123.9654	42.41827	6.54e-05	7.376239	9.062457	8.004844
2	-101.3514	32.16205	0.000129	7.971175	11.10272	9.138585
3	-73.16655	32.56921	0.000232	8.318513	12.89539	10.02473

* Indicates lag order selected by the criterion

Appendix B: Augmented Dickey–Fuller Unit Root Test Results

Table B1: Augmented Dickey–Fuller Unit Root Test Results

Variable	ADF	MacKinnon Critical Value			P-Value	Information
	Statistic	1%	5%	10%		
Bond Yield(y)	-3.504706	-3.600987	-2.935001	-2.605836	0.0128	Stationary
Exchange Rate(x1)	-8.180427	-3.513344	-2.897678	-2.586103	0.0000	Stationary
Public Debt Growth(x3)	-10.84718	-4.098741	-2.777587	-2.457113	0.0001	Stationary
International Reserves(x2)	-8.743999	-3.512341	-2.896679	-2.575103	0.0000	Stationary
GDP Growth	-9.138161	-3.513344	-2.897678	-2.586103	0.0000	Stationary
Monetary policy rate (cbr)	-10.84718	-4.098741	-2.777587	-2.457113	0.0001	stationary

Appendix C: Inverse Roots of the AR Characteristic Polynomial and VAR Diagnostic Tests (Serial Correlation and Stability)

Figure C1: Inverse Roots of the AR Characteristic Polynomial

Inverse Roots of AR Characteristic Polynomial

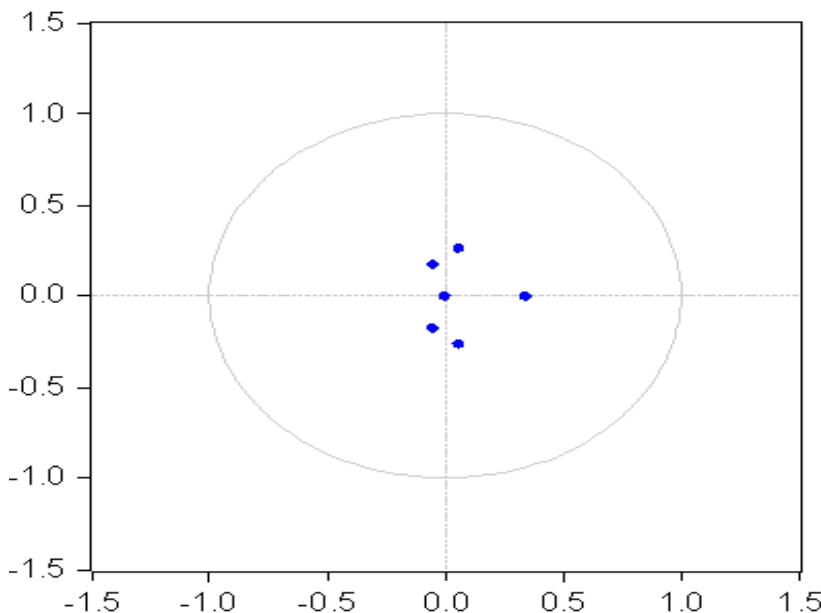


Table C2: VAR residual serial correlation LM test

VAR Residual Serial Correlation LM Tests Date: 01/20/26 Time: 21:45

Sample: 2005Q1 2025Q2

Included observations: 47

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	25.44010	36	0.9052	0.682303	(36, 130.1)	0.9078
2	31.55874	36	0.6798	0.864772	(36, 130.1)	0.6864
Null hypothesis: No serial correlation at lags 1 to h						
Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	25.44010	36	0.9052	0.682303	(36, 130.1)	0.9078
2	66.55363	72	0.6591	0.897343	(72, 130.9)	0.6907

*Edgeworth expansion corrected likelihood ratio statistic.

Appendix D: Full VAR (1) Estimation Output

Table D1: Selected VAR (1) Estimation Results

Vector Autoregression Estimates Date: 01/20/26 Time: 21:16 Sample (adjusted): 2005Q2 2016Q4

Included observations: 47 after adjustments Standard errors in () & t-statistics in []

Y	X1	X2	X3	X4	X5
Y(-1) 0.199741	-0.520774	0.801386	0.085370	-0.476840	-0.831759
(0.15236)	(0.48066)	(0.40305)	(0.50688)	(1.04789)	(0.55052)
[1.31097]	[-1.08346]	[1.98828]	[0.16842]	[-0.45505]	[-1.51087]
X1(-1) 0.061583	0.220588	0.051183	0.139091	0.185970	0.176486
(0.04886)	(0.15414)	(0.12925)	(0.16255)	(0.33604)	(0.17654)
[1.26043]	[1.43111]	[0.39600]	[0.85570]	[0.55342]	[0.99970]
X2(-1) -0.052290	0.307866	0.196491	-0.012258	-0.089442	-0.572360
(0.05211)	(0.16440)	(0.13786)	(0.17337)	(0.35841)	(0.18829)
[-1.00342]	[1.87266]	[1.42533]	[-0.07070]	[-0.24955]	[-3.03972]
X3(-1) -0.023128	0.110367	-0.110915	-0.067594	-0.129462	-0.076927
(0.04724)	(0.14902)	(0.12496)	(0.15715)	(0.32489)	(0.17068)
[-0.48961]	[0.74060]	[-0.88758]	[-0.43011]	[-0.39848]	[-0.45070]
X4(-1) 0.006198	0.030376	-0.149617	-0.082794	0.075656	-0.003127
(0.02528)	(0.07975)	(0.06687)	(0.08410)	(0.17385)	(0.09134)
[0.24519]	[0.38092]	[-2.23742]	[-0.98450]	[0.43517]	[-0.03424]

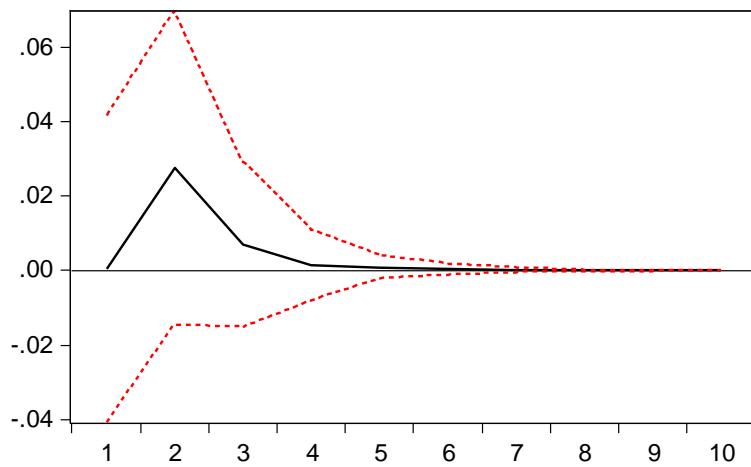
X5(-1) 0.007202	-0.070897	0.192371	-0.001335	-0.051248	-0.292018
(0.03985)	(0.12571)	(0.10541)	(0.13257)	(0.27406)	(0.14398)
[0.18074]	[-0.56397]	[1.82491]	[-0.01007]	[-0.18699]	[-2.02817]
C -0.054183	0.971142	-0.911365	1.037017	1.433769	12.67188
(0.37985)	(1.19833)	(1.00485)	(1.26371)	(2.61249)	(1.37249)
[-0.14264]	[0.81041]	[-0.90696]	[0.82061]	[0.54881]	[9.23275]
R-squared 0.098426	0.172736	0.270598	0.062296	0.018568	0.266329
Adj. R-squared -0.036810	0.048646	0.161188	-0.078359	-0.128646	0.156278
Sum sq. resids 0.818990	8.150904	5.731340	9.064569	38.74004	10.69230
S.E. equation 0.143090	0.451412	0.378528	0.476040	0.984125	0.517018
F-statistic 0.727807	1.392024	2.473246	0.442901	0.126131	2.420060
Log likelihood 28.48093	-25.51767	-17.24145	-28.01441	-62.14818	-31.89545
Akaike AIC -0.914082	1.383731	1.031551	1.489975	2.942476	1.655125
Schwarz SC -0.638528	1.659285	1.307105	1.765529	3.218030	1.930679
Mean dependent 0.009675	0.912340	0.879574	0.994894	0.980426	9.480213
S.D. dependent 0.140527	0.462809	0.413300	0.458418	0.926341	0.562867
Determinant resid covariance (dof adj.)	2.32E-05				
Determinant resid covariance	8.80E-06				
Log likelihood	-126.5745				
Akaike information criterion	7.173384				
Schwarz criterion	8.826707				
Number of coefficients	42				

Appendix E: Impulse Response Functions

Figure E1: Exchange Rate Shocks and Monetary Policy Response

Response to Cholesky One S.D. (d.f. adjusted) Innovations
± 2 analytic asymptotic S.E.s

Response of Y to X1 Innovation



Response of X5 to X1 Innovation

