Monetary policy and economic growth in Jordan: Evidence from time series models

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Abstract
The current research paper analyses the equilibrium relationship between monetary policy and economic growth using autoregressive distributed lag approach over the period (1990 – 2020). The results showed that monetary policy instruments significantly influenced economic growth in Jordan. The present paper provides the following policy implications: (1) the growth of the economy should be the topmost consideration when implementing monetary policy. Strong macroeconomic policies (i.e., Jordan economic growth plan 2018-2022) should be pursued to stabilize the economy at large, (2) the regulatory and supervisory framework for the financial sector should be strengthened in order to assist the effectiveness of monetary policies of the government, (3) the central bank of Jordan should make more use of the cash reserve ratio in regulating the operations of commercial banks, and interest rate policy should be such that banks can efficiently intermediate funds in the economy.

1. Introduction
Different studies have investigated the impact of monetary policy tools on economic growth. Havi and Enu (2014) [7] examined the impact of monetary policy and fiscal policy on economic growth in Ghana over the period (1980-2012). The results revealed that money supply as a measure monetary policy had a positive significant impact on the Ghanaian economy. Kamaan (2014) [8] used VAR model in Kenya and found that monetary policy did not have an impact on economic growth. Kareem *et al*. (2013) [9] examined the impact of fiscal and monetary policies on economic growth of Nigeria, with particular reference to the period between (1998 and 2008). They found that monetary variables of narrow money and broad money are significant policy variables that positively affect economic growth in Nigeria. Vinayagathasan (2013) [38] estimated the impact of monetary policy on the real economy using a structural VAR model. The study found that interest rate shocks had a significant impact on output in accordance with the economic theory. Montiel *et al*. (2012) estimated the monetary transmission mechanisms in Tanzania covering the period (2002-2010). The results showed that monetary variables affected economic growth. Lashkary and Kashani (2011) [10] studied the impact of monetary variables on economic growth in Iran during the period (1959-2008) and found no significant relationship between monetary variables and real economic growth.

The effectiveness and efficiency of monetary policy is a product of a vibrant financial system. The larger the financial system, the more sensitive interest rate of production and aggregate demand will be in an economy. Thus, economic growth stability is based on monetary policy instruments (i.e., interest rate, money supply, and inflation rate). The main contribution of this study differs from other studies because in this study, effects of the monetary policy on economic growth are investigated. The results of this research give rise to some issues, of which money supply growth does not explain a whole lot of the economic expansion in Jordan and monetary stability can contribute toward price stability. In this study, after the introduction and review of literature, data and empirical model are presented. Following methodology and results estimates, conclusions and policy implications are explained.

2. Review of literature
Different studies have been done to establish the impact of monetary policy instruments on economic growth, yet with little consensus to date. Some studies have confirmed limited or no impact of monetary policy. Kamaan (2014) [8] used vector autoregressive model in Kenya and found that monetary policy did not have an impact on economic growth. The results were corroborated by Montiel *et al*. (2012) who estimated the monetary transmission mechanisms in Tanzania covering the period 2002m1-2010m9.

Lashkary and Kashani (2011) [10] studied the impact of monetary variables on economic growth in Iran during the period 1959 to 2008 and found no significant relationship between monetary variables and real economic growth. However, a number of empirical studies confirmed that monetary policy is crucial for economic growth. Havi and Enu (2014) [7] examined the relative importance of monetary policy and fiscal policy on economic growth in Ghana over the period of 1980 to 2012. The results revealed that money supply as a measure monetary policy had a positive significant impact on the Ghanaian economy. Vinayagathasan (2013) [38] estimated the impact of monetary policy on the real economy using a structural vector autoregressive model. The study found that interest rate shocks had a significant impact on output in accordance with the economic theory. Kareem *et al*. (2013) [9] examined the impact of fiscal and monetary policies on economic growth of Nigeria, with particular reference to the period between 1998 and 2008. They found that monetary variables of narrow money and broad money are significant policy variables that positively affect economic growth in Nigeria.

3. Data, methodology and results analysis
This paper analyses the equilibrium and dynamic causality relationships between economic growth and monetary policy instruments in Jordan, particularly interest rate, money supply and level of inflation. Due to the availability of data, the scope of the analysis will be annual time-series data for the 1990-2020 period, establishing a small sample size of 31 observations.

$$\text{LogGDP}_t = \beta_0 + \beta_1 \text{LogIR}_t + \beta_2 \text{LogM2}_t + \beta_3 \text{LogIFR}_t + \varepsilon_t \quad (1)$$

Due to the possibility of the mixed nature of stationary for variables of interest, this paper employs the autoregressive distributed lag (ARDL) model proposed by Pesaran *et al*. (2001) [36]. Another advantage of the ARDL model is that it allows the nonlinear relationship among the GDP, the IR, the M2, and the IFR. The null hypothesis of no co-integration is $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$ against alternative $H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0$. The F-statistics is used to test the existence of co-integration among variables. Critical values for F-statistics test are given by Pesaran and Pesaran (2009) [35]. Pesaran *et al*. (2001) [36] argued that if the calculated F-statistics value is higher than the upper bound i.e., I(1), then, the H_0 of no co-integration is rejected and concludes the existence of co-integration. If the calculated F-statistics value is below the lower bound i.e., I(0), then, the H_0 of no co-integration is accepted and concludes that there is no long-run relationships among variables. If the calculated F-statistics value is between lower and upper bounds, then results are inconclusive. Vector autoregressive (VAR) model is used to find maximum lag order that was 2 through Akaike information criterion and Schwarz Bayesian criterion as they are ideal for small sample size. The calculated F-statistics value (6.22) is higher than the upper bound (4.049) at 5% significance level, showing a co-integration phenomenon between economic growth and their determinants. The result of co-integration is consistent with result obtained for Nigeria (Sulaiman & Migiro, 2014) [37].

4. Conclusions and policy implications
In general, numerous developing countries are characterized by weak institutions and financial underdevelopment which ensure that the effectiveness, transmission and implication of policy differ from those of developed countries (Ghatak & Sánchez-Fung, 2007). This invariably means that monetary policy consideration should first be based on the level of development in the economy. Overall, the findings of this paper show that co-integration exists among the series in Jordan.

References
1. Alrhaimi SA, Mugableh MI. Reviewing the role of quality management, creativity innovation, imitating and role of strategic human resources on operational performance. Australasian Journal of Business, Social Science and Information Technology (AJBSSIT). 2017; 3(1):1-6.
2. Bekhet HA, Mugableh MI. Investigating equilibrium relationship between macroeconomic variables and Malaysian stock market index through bounds tests approach. International Journal of Economics and finance. 2012; 4(10):69-81.
3. Bekhet HA, Mugableh MI. Investigating equilibrium relationships between macroeconomic variables and Malaysian stock market index through bounds tests approach. International Journal of Economics and Finance. 2012; 4(10):69-81.
4. Bekhet HA, Mugableh MI. examining the equilibrium relationships between foreign direct investment inflows and employment in manufacturing and services sectors: evidence from Malaysia. Journal of Social and Development Sciences. 2013; 4(1):32-38.
5. Bekhet HA, Mugableh MI. blueprinting the equilibrium relationships between inward FDI and employment in the Malaysian economic sectors: time series models approach. Global Business and Economics Review. 2016; 18(2):136-150.
6. Ghatak S, Sánchez-Fung JR. Is fiscal policy sustainable in developing economies? Review of Development Economics. 2007; 11(3):518-530.
7. Havi EDK, Enu P. The effect of fiscal policy and monetary policy on Ghana's economic growth: which policy is more potent? International Journal of Empirical Finance. 2014; 3(2):61-75.
8. Kamaan CK. The effect of monetary policy on economic growth in Kenya. International Journal of Business and Commerce. 2014; 3(8):11-24.
9. Kareem RO, Afolabi AJ, Raheemand KA, Bashir NO. Analysis of Fiscal and Monetary Policies on Economic Growth: Evidence from Nigerian Democracy. Current Research Journal of Economic Theory. 2013; 5(1):11-19.
10. Lashkary M, Kashani HB. The Impact of Monetary Variables on Economic Growth in Iran: A Monetarists' Approach. World Applied Sciences Journal. 2011; 15(3):449-456.
11. Malkawi EM, Mugableh MI, Abbad JM. Investigating the quality of banking services: evidence from Jordanian commercial banks. International Journal of Academic Research in Business and Social Sciences. 2020; 10(1):224-231.
12. Malkawi EM, Mugableh MI, Bataineh KA, Al-Smadi RW. Reviewing the Weekend Effect on Stock Market Returns: a Theoretical Perspective. Saudi Journal of Business and Management Studies. 2017; 2(11):967-970.

13. Monteil P, Adam C, O'Conell S. Financial architecture and the monetary transmission mechanism in Tanzania. CSAE Working Paper, WPS, 2012, 03.
14. Mugableh MI. Analysing the CO2 emissions function in Malaysia: Autoregressive distributed lag approach. Procedia Economics and Finance. 2013; 5:571-580.
15. Mugableh MI. Analysing the CO_2 emissions function in Malaysia: Autoregressive distributed lag approach. Procedia Economics and Finance. 2013; 5:571-580.
16. Mugableh MI. Economic growth, CO2 emissions, and financial development in Jordan: Equilibrium and dynamic causality analysis. International Journal of Economics and Finance. 2015a; 7(7):98-105.
17. Mugableh MI. Time series analysis of inward foreign direct investment function in Malaysia. Procedia-Social and Behavioral Sciences. 2015a; 172:679-685.
18. Mugableh MI. Estimating elasticity function of Jordanian aggregate import demand. Applied Economics and Finance. 2016; 4(2):33-37.
19. Mugableh MI. World oil price volatility and stock returns fluctuations: evidence from Southeast Asian equity markets. Science International. 2017; 29(4):759-762.
20. Mugableh MI. A homoscedastic co-integration analysis of Malaysian financial market. American Journal of Finance and Accounting. 2018; 5(4):360-370.
21. Mugableh MI. Does Monetary Policy Affect Economic Growth in Jordan? Evidence from Ordinary Least Square Models. International Business Research. 2019a; 12(1):27-34.
22. Mugableh MI. Fiscal Policy Tools and Economic Growth in Jordan: Evidence from Time-Series Models. International Journal of Economics and Finance. 2019b; 11(1):1-7.
23. Mugableh MI. An Empirical Analysis of the Informational Efficiency of Jordanian Equity Market. Journal of Critical Reviews. 2020a; 7(15):1050-1056.
24. Mugableh MI. Co-integration and Causal Relationships: the Case of the Jordanian and Developed Stock Markets. International Journal of Financial Research. 2020b; 11(6):188-195.
25. Mugableh MI. Reviewing the Relationships between Stock Exchange Price Indices and Their Determinants. Journal of Business Administration and Education, 2020c, 12.
26. Mugableh MI. Reviewing the Relationships between Stock Exchange Price Indices and Their Determinants. Journal of Business Administration and Education, 2020d, 12.
27. Mugableh MI. An Examination into the Causal Links among Inward FDI Determinants: Empirical Evidence from Jordan. International Journal of Financial Research. 2021a; 12(2):195-201.
28. Mugableh MI. Investigating the Financial Determinants of Corporate Cash Holdings: Evidence from Fixed Effects Regression Method. Gazi University Journal of Science. 2021b; 34(2):46-53.
29. Mugableh MI. Causal Links among Stock Market Development Determinants: Evidence from Jordan. The Journal of Asian Finance, Economics and Business. 2021c; 8(5):543-549.
30. Mugableh MI. The determinants of carbon dioxide emissions: a review of the literature. International Journal of Multidisciplinary Research and Growth Evaluation. 2021d; 2(4):457-459.
31. Mugableh MI. The determinants of FDI in developed and emerging countries: A review of the literature. International Journal of Multidisciplinary Research and Growth Evaluation. 2021e; 2(2):187-189.
32. Mugableh MI. The determinants of stock prices in developed and emerging countries: A review of the literature. International Journal of Multidisciplinary Research and Growth Evaluation. 2021f; 2(3):417-419.
33. Mugableh MI, Oudat MS. Economic Growth and Financial Development Nexus in Malaysia: Dynamic Simultaneous Equations Models. Asian Journal of Finance & Accounting. 2018a; 10(1):143-161.
34. Mugableh MI, Oudat MS. Modelling the Determinants of Foreign Portfolio Investments: A Bounds Testing and Causality Analysis for Jordan. Academy of Accounting and Financial Studies Journal. 2018b; 22(4):1-8.
35. Pesaran B, Pesaran MH. Time series econometrics using micro fit 5.0. Oxford University Press, UK, 2009.
36. Pesaran MH, Shin Y, Smith RJ. Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics. 2001; 16(3):289-326.
37. Sulaiman LA, Migiro SO. The nexus between monetary policy and economic growth in Nigeria: a causality test. Public and Municipal Finance. 2014; 3(2):35-40.
38. Vinayagathasan T. Monetary policy and the real economy: A Structural VAR Approach for Sri Lanka. National Graduate Institute for Policy Studies. 2013; 13(13):1-31.