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**Assessing the Impact of Monetary Policy Dynamics on Economic
Growth in Australia:
An Autoregressive Distributed Lag (ARDL) Method**

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Abstract: This study explores the impact of monetary policy (MP) on economic growth in Australia using the autoregressive distribution lag (ARD) approach and error correction model (ECM). Time series data were retrieved from World Development Indicators from 1989-2019, with diagnostic tests confirming the model's validity. Findings reveal that in the short-term, broad money supply (BMS), and deposit interest rates (DIR) positively and significantly impact GDP growth; conversely lending interest rates (LIR), real interest rates (RIR), and reserve and related items (RES) negatively and significantly impact GDP growth. In the long-term, BMS, DIR, and RIR have positive influence on GDP growth; conversely, RES, and LIR has adverse and relevant impact on GDP growth. The research highlights the importance of adopting restrictive monetary policies for short-term stabilization. It underscores the role of progressive policies for sustainable long-term growth. Policymakers should balance contractionary and growth-oriented strategies for Australia's economy.

Keywords: Economic Growth, Macroeconomic Policy, ARDL, ECM, Australia

Introduction

The need for this study originates from the inconsistencies and gaps in previous literature in relation to the interaction of monetary policy and economic growth. While, many studies have been undertaken on monetary policy and economic growth in Australia providing limited perspective, neglecting the cumulative impact of additional monetary policy tools. Most of these studies do not distinguish between the short-term and long-term impacts of (MP) constraining their capacity to offer thorough insights. For example (Hsing, 2019) concluded that monetary expansion does inflate output. (Dungey & Fry, 2010) provide more insights into policy in the Global economic turmoil. (Hossain, 2014) discovered that inflation was persistent in Australia. (Gross & Leigh, 2022) pointed out the importance of (MP) in

preventing stagnation in 2001. In addition, further constraint of current research is the empirical methodologies used. For instance, (Fraser et al., 2014; Guo & Zhang, 2023) used a conventional econometric model, such as the Ordinary Least Squares (OLS) and Vector Autoregressive (VAR) method, which fail to adequately handle variables. These strategies also neglect to account for the long-term equilibrium linkages and short-term dynamic adjustments for comprehending the complete impact of (MP) on GDP growth. This research aims to address this gap by providing empirical evidence on the impact of monetary policy on economic growth in Australia.

Monetary policy (MP) is fundamental to macroeconomic, acting as a crucial tool for controlling economic activities. Monetary policy encompassing various financial instruments by central banks, significantly impacts economic performance (Paramanik & Kamaiah, 2014). Monetary policy dynamics refer to shifting interactions between policy instruments--like interest rates, reserve targets, and money stock--and their effects on the real economy through credit, spending, and investment mechanisms (Bernanke, 2020). The temporally dynamic nature of monetary policy means that short-run and long-run effects can both importantly differ from each other. In the short term, for instance, contractionary policies can stabilize inflation and depreciation, but they can harm growth whenever they prevail for long horizons, whereas expansionary policies can have short-run gains in output but risks of inefficiencies in the long run.

The Australian macroeconomic climate puts the relevance of this study in perspective. The nation has been exposed to periodic shifts in interest rates, inflationary impulses from international commodity cycles, and escalating household leverage that drives responsiveness towards monetary tightening (RBA, 2022). In addition, the COVID-19 pandemic, supply chain dislocations, and subsequent increases inflation which entrenched monetary policy as a feature of economic stabilizing measures. These circumstances render it essential that Australia's short-run and long-run growth is open to an examination of monetary policy impacts, so that policymakers can achieve an appropriate balance between stability and sustainability in economic growth. The Reserve Bank of Australia (RBA), the entity assigned with the formulation and execution of (MP), employs its tools to attain economic prosperity, price stability, and full employment (Nyasha & Odhiambo, 2016). As of November 2019, Australia's monetary policy adopts a prudent strategy to combat inflation while also safeguarding economic development. The (RBA) has sustained the current rate at 4.35%, inflation 2.8%, subsequent to a succession of rate increases commencing in May 2022. This restrictive policy aims to reduce inflation (Beggs, 2024) and (Tsiaplias & Wang, 2022).

Several papers have been written on the impact of monetary policy on economic growth in different perspectives, studies include the work of (Abdulkadr et al., 2024; Chisom, 2016; Golpe et al., 2023; Mehar, 2023; Twinoburyo & Odhiambo, 2018; Wang et al., 2023; Younsi & Nafla, 2019), but to the best of the authors' knowledge, the impact of monetary policy dynamic on economic growth in Australia has been ignored. This is the first empirical research to explore the relationship between monetary policy dynamic and economic growth in Australia, using (ARDL) approach to unveil the short-run and long-run links between (MP) instruments and GDP growth. This paper aimed to close the gap in previous studies by providing empirical evidence on what impact does monetary policy dynamics have on economic growth in Australia. Moreover, this research integrates wider scope of (MP) variables, like; broad money supply, deposit interest rate, real interest rate, reserves and related items, and lending interest rate, on economic growth. And also control for the

important macroeconomic indicators; gross capital formation, trade, and final consumption expenditure to enhance the robustness of our findings.

This research provides several contributions. First, it contributes to the ongoing debate on the direction and magnitude of monetary transmission mechanisms by shedding light on the contribution of specific instruments, such as lending rates, lending stock, and reserve requirements, to GDP growth. This type of disaggregation enhances our understanding of how individual policy instruments operates in the Australian environment. Second, this research contributes to the understanding of monetary policy dynamic by distinguishing between the immediate short-term stabilizing impacts of contractionary measures and the long-run growth effects associated with expansionary actions. Third, it reveals the importance of institutional and structural features of the Australian economy, represented by financial sector depth and openness, in shaping monetary transmission mechanisms, a dimension roughly neglected in earlier cross-country analyses. Lastly, the findings of this study will provide insight for policymakers by broaching a harmonized policy framework that balances short-run stabilization efforts and long-run growth objectives and thereby advances current literature on the optimal design of monetary policy in advanced, small open economies.

Literature Review

There have been various studies conducted to establish the interplay among monetary policy and GDP growth, and the findings are diversified in the literature. Economic activity in the long term is thus determined by other factors such as the structural transformation of the economy (Laidler, 2010). They focus on the ability of the (MP) to impact aggregate demand perspective and subsequent economic growth.

Monetarists understands that (MP) modulates economic behavior in the short period, but point out that stability in the growth rate of income is what is important for the long-term stability of economies and their growth (Lothian et al., 2018). In addition, the endogenous growth theories state that monetary policy may affect growth in the long-run by changing the investments in human capital, innovation, and infrastructure (Amador, 2022).

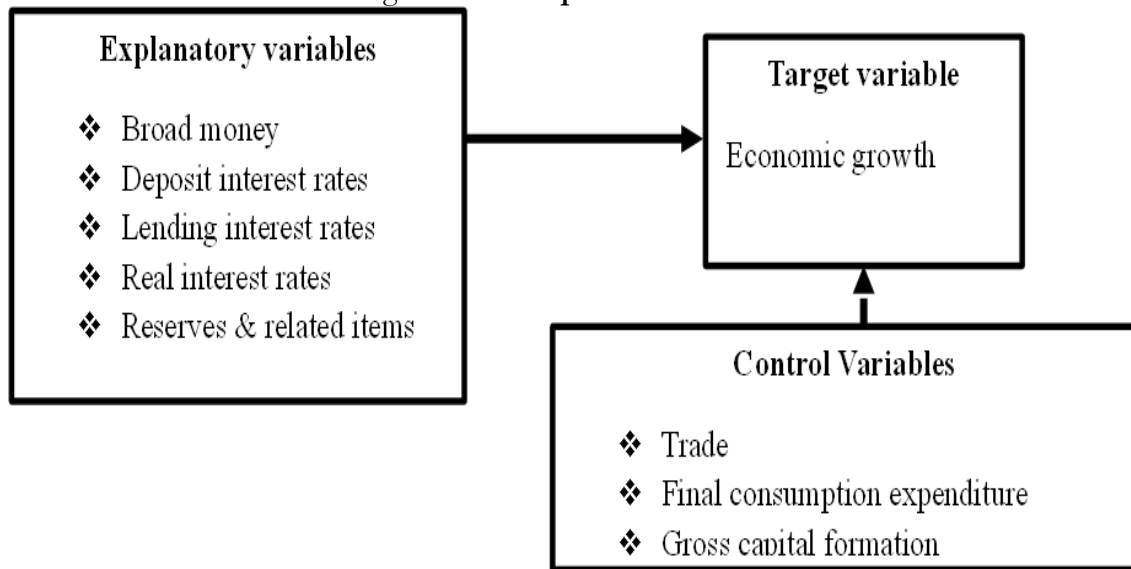
Previous research in developed nations like United States, New Zealand, and the Eurozone indicates that (MP) instruments—especially interest rates and inflation targeting—are essential for fostering economic stability and growth (Brancaccio et al., 2015; Buckle et al., 2004; Twinoburyo & Odhiambo, 2018). Again, (Inchauspe, 2021) examined the impacts of business cycle and monetary policies and thus makes possible accurate evaluation of fiscal responses and multipliers for Australia. It identifies the highest spending and tax multipliers as 0.73 and 0.54, respectively, with their relative effects changing over time. Hence the research indicates that by looking at fiscal shocks, raise-up expenditures and taxes together seem to energize short-to-medium-term effects of low debt. Conversely, research in emerging economies highlights the significance of money supply expansion and reserve mandates as vital factors influencing economic performance, due to the structural constraints of their financial systems (Abdulkadr et al., 2024; Al Kharusi & Ada, 2018; Precious & Palesa, 2014; Tarawalie & Kargbo, 2020). Also, (Debelle, 2003) carried out research that showed that inflation targeting is really effective for expectations stabilization as well as for stable long-term growth. In these studies, monetary policy effects become visible at the macroeconomic level in open economies. (Ramos, 2012) addressed the complexity of implementing monetary

policy in a globalized economy, where exogenous factors like capital flows and fluctuations in the exchange rate are involved which further complicate internal policy decisions.

Nevertheless, (Daboh & Jackson, 2023; Swaray, 2023), showed that deposit interest rates have a short-term favorable influence on income; however, they would be of very little long-term importance. On the other hand, lending rates carry a negative and not much beneficial long-run effect. Increasing economic openness reduced the effect of (MP) on production and exchange rates while strengthening its influence on inflation.

The ARDL model, as compared to traditional co-integration methods like as Engle-Granger and Johansen approach, enables the incorporation of I(0) and I(1) variables, firmly placing it ideal in analyzing economic data with structural breaks and non-stationary behavior (Samoon Safiullah, 2021; Steve Dodds, 2007). A number of studies employed the ARDL methodology to explore the association between (MP) and GDP growth. (Okonkwo & Adiele 2024; Orji et al., 2022) applied the ARDL method to analyze the implication of (MP) on GDP growth. Similarly, studies done by (Ali et al., 2009; Chakraborty, 2024) have also demonstrated how the ARDL framework can be used to further understand the dynamic interactions of (MP) variables and economic growth in developing or emerging economies.

Figure 1. **Conceptual Framework**



Methods

This paper used statistical approach. A statistical method is an empirical investigation of an economic problems using numerical information (Turato, 2005). This research used secondary time series data. The study population comprises selected economic indicators of Australia from 1989 to 2019. The data were extracted from the World Bank Indicator (WBI). GDP growth (GDP) reflects overall economy performance and is calculated based on constant prices that factor in inflation (Abdulkadr et al., 2024). In this study, GDP was entered into the model in the form of % of GDP. Broad money supply (BMS) is the amount of income that is present in the economy. It is measure in units of national currency or as percentage of GDP (Tarawalie & Kargbo, 2020). In this study, BMS was recorded in the form of Annual % growth. Deposit interest rate (DIR) is the form of interest rates that

financial institutions provide to people who conserve their amounts with the bank as their time deposits or savings. Cost of depository custody appears as annual percentage terms (Tarawalie & Kargbo, 2020). In this study, DIR was recorded as Annual %. Lending interest rate (LIR) is the rate at which financial institutions lend money to usually individuals or corporations. It usually denotes an annual percentage (Abdulkadr et al., 2024). In this study, LIR was entered into the model in the form of Annual %. Real interest rate (RIR) is the rate modified for inflation. It is determined by subtracting the inflation rate from the nominal interest rate (Udoka & Roland, 2012). In this study, RIR was recorded as Annual % growth. Reserves and related items (RES) are financial assets that the central bank or monetary authority retains in reserve to maintain effective control and financial stability (Awoderu et al., 2017). RES is quantified in dollars or their equal value in the local currency of the country. The measurement of RES in this study is documented as BoP, current US\$. Trade (TRD) refers to a nation exports and imports of goods and services; the net fund of exports and imports are defined monetarily in national currency, or its percent of GDP (Makki & Somwaru, 2004). In this study, TRD was entered into the model in the form of Annual % of GDP. Gross capital formation (GCF) represents the total investment in an economy. It can be represented either in monetary terms as a % of GDP or in constant prices adjusted for inflation (Ntamwiza & Masengesho, 2022). This study incorporates the % of GDP from GCF into the model. Final consumption expenditure (FCE) is the aggregate worth of products and services utilized by both residence and the head of state. Measured usually in relation to GDP or annual percent of growth (Abdulkadr et al., 2024). In this study, FCE was recorded as % of annual growth.

The time series data were analyzed using statistical software such as Eviews 10. The paper employed (ARDL) method and the (ECM) to unravel the short run and long run impacts of (MP) on GDP growth in Australia. The autoregressive distributed lag (ARDL) and error correction model (ECM) specifications is essential for this study as it provide a robust framework for estimating both short-run and long-run monetary policy effects, and at the same time addressing issues associated with non-stationarity and endogeneity. We select Australia due to the fact that, Australia economy is experiencing a period of subdued growth, having adopted a stringent monetary policy aiming to restore financial stability and stimulate long-term growth. Therefore, Australia offers a perfect ground to examine the impact of monetary policy dynamic on economic growth.

The ARDL model is as follows:

$$\text{ARDL (p, q): } Y_t = \beta_0 + B_1 Y_{t-1} + \beta_1 X_{t-i} + \beta_2 X_{t-2-i} + \beta_3 X_{t-i} + \varepsilon_t \text{----- (i)}$$

It can also be written in effect structure as:

$$\text{ARDL (p, q): } Y_t = \beta_0 + \sum_{i=1}^p B_i Y_{t-i} + \sum_{i=1}^q B_i X_{t-i} + \sum_{i=1}^q B_i X_{t-i} + \varepsilon_i \text{----- (ii)}$$

Lagged Y comprises of autoregressive part and Lagged X's consist of distribute part. Also, p is autoregressive lags term, and q is the distribute lags term. To analyze the impact of monetary policy on GDP growth, the Keynesian demand pillar acts as the foundation for the empirical model's formulation. Similar researches also used this approach (Abdulkadr et al., 2024; Phiri et al., 2024; Tarawalie & Kargbo, 2020).

Moreover, the restricted ECM representation of the ARDL framework is offered in the below equation:

$$\Delta \ln GDP_t = \beta_0 + \beta_1 \ln GDP_{t-1} + \beta_2 \ln BMS_{t-1} + \beta_3 \ln DIR_{t-1} + \beta_4 \ln LIR_{t-1} + \beta_5 \ln RIR_{t-1} + \beta_6 \ln RES_{t-1} + \beta_7 \ln TRD_{t-1} + \beta_8 \ln GCF_{t-1} + \beta_9 \ln FEC_{t-1} + \sum_{i=1}^p \alpha_{1i} \ln GDP_{t-i} + \sum_{i=1}^p \alpha_{2i} \ln BMS_{t-i} + \sum_{i=1}^p \alpha_{3i} \ln DIR_{t-i} + \sum_{i=1}^p \alpha_{4i} \ln LIR_{t-i} + \sum_{i=1}^p \alpha_{5i} \ln RIR_{t-i} + \sum_{i=1}^p \alpha_{6i} \ln RES_{t-i} + \sum_{i=1}^p \alpha_{7i} \ln TRD_{t-i} + \sum_{i=1}^p \alpha_{8i} \ln GCF_{t-i} + \sum_{i=1}^p \alpha_{9i} \ln FEC_{t-i} + \epsilon_i \text{ ----- (iii)}$$

Δ Indicates the first differencing executor; β_0 is constant in the lag length; ϵ_i is the error term; $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$, and $\beta_8 \beta_9$ are the coefficients of the long run model, and, $\alpha_{1i}, \alpha_{2i}, \alpha_{3i}, \alpha_{4i}, \alpha_{5i}, \alpha_{6i}, \alpha_{7i}$, and $\alpha_{8i} \alpha_{9i}$ are the coefficients that depict the short run association. A bound test was undertaken to evaluate the existence of a long-run link among the variables. Consequently, to evaluate the H_0 of the absence of co-integration link between the variables as stated below:

$$H_0: \beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9$$

In contrast to the alternate hypothesis which suggests the presence of cointegration among variables.

$$H_1: \beta_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq \beta_9$$

Following the execution of the bounds co-integration test to validate the occurrence of co-integrating within the model, the ECM representation of the ARDL is presented as follows:

$$\Delta \ln GDP_t = \beta_0 + \sum_{i=1}^p \alpha_{1i} \ln GDP_{t-i} + \sum_{i=1}^p \alpha_{2i} \ln BMS_{t-i} + \sum_{i=1}^p \alpha_{3i} \ln DIR_{t-i} + \sum_{i=1}^p \alpha_{4i} \ln LIR_{t-i} + \sum_{i=1}^p \alpha_{5i} \ln RIR_{t-i} + \sum_{i=1}^p \alpha_{6i} \ln RES_{t-i} + \sum_{i=1}^p \alpha_{7i} \ln TRD_{t-i} + \sum_{i=1}^p \alpha_{8i} \ln GCF_{t-i} + \sum_{i=1}^p \alpha_{9i} \ln FEC_{t-i} + \epsilon_i \text{ ----- (iv)}$$

Where; ECM_{t-1} is the error correction model indicating the rate of responsiveness is made to reinstate long-run following post-disturbance equilibrium.

The following diagnostic tests will be performed in the model validation. We conduct unit root test to check for non-stationary in the variables by utilizing the Augmented Dickey-Fuller (ADF); lag selection criteria is resolved by utilizing Akaike Information Criterion (AIC) before estimating.

The following post-testing were conducted: normality test by utilizing the Jarque-Bera normality test; serial correlation test by utilizing the Breusch-Godfrey; heteroscedasticity test by utilizing the Breusch-Pagan-Godfrey test; model stability test by utilizing the cumulative sum square (CUSUMSQ).

Findings

The unit root revealed the (ADF) test of each variable under two options: Alongside intercept, and trend & intercept. The results indicate that all variables demonstrate

level of integration at I(0) or I(1). In the model, GDP, DIR, LIR, RES, FCE exhibit stationarity at level, whereas BMS, GCF, and TRD attain stationarity following first differencing (Table 1).

Table 1. **Test of Unit Root**

Variables	Augmented Dickey-Fuller (ADF) test at level I(0)		Augmented Dickey-Fuller (ADF) test at first differencing I(1)		Level of integration
	With Intercept	With Trend & intercept	With Intercept	With Trend & intercept	
GDP	0.0104	0.0530	0.0000	0.0000	I(0)
BMS	0.9899	0.3118	0.0000	0.0001	I(1)
RES	0.0000	0.0000	0.0000	0.0000	I(0)
LIR	0.0228	0.1400	0.0012	0.0024	I(0)
DIR	0.0000	0.0006	0.0462	0.1287	I(0)
RIR	0.1824	0.0580	0.0000	0.0000	I(1)
TRD	0.3803	0.2350	0.0000	0.0002	I(1)
GCF	0.1084	0.2761	0.0021	0.0124	I(1)
FCE	0.3151	0.0324	0.0000	0.0000	I(0)

Source: Eviews 10

The (AIC) is implemented to identify the best lag order in Table 2. The outcome indicates that the ideal lag length for the variables determine by the choosing of lag length requirement is two (2). Therefore, the study included two (2) lags for each variable.

Table 2. **Lag Option**

Lags	Log likelihood	LR	FPE	AIC	SC	HQ
0	-723.2670	NA	6.92+10	50.50117	50.92550	50.63407
1	-518.0394	268.9188	17159607	41.93375	46.17709	43.26271
2	-324.1003	133.7511*	55736.74*	34.14485*	42.20718*	36.66987*

Source: Eviews 10

The outcome in Table three illustrates the calculated F-statistic for the bound test, 26.39517, which exceeds both the I(0) and I(1) crucial values at all significant levels. This suggests the occurrence of a co-integration or a long-term equilibrium. The H0 is rejected at 1%, 2.5%, 5%, and 10% importance levels. We therefore confirm the presence of co-integrating among the variables.

Table 3. **Bound Co-integration Test of ARDL**

Bound	Crucial values				F-statistics	K
	10%	5%	2.5%	1%		
Lower bounds I(0)	1.85	2.11	2.33	2.62	26.39517	8
Upper bounds I(1)	2.85	3.15	3.42	3.77		

Source: Eviews 10

Table 4 presents the results of the short-run relationship. Since the bounds co-integration test indicates a long-run relationship between the variables, the subsequent stage is to estimate ECM. The coefficient of the ECM, is adverse and relevant, indicates the pace at which the target variable approaches long-run equilibrium, reflecting the resolution of disequilibrium speed.

GDP growth positively and significantly at the 5% level confirming the co-integration with an estimated coefficient of 0.177, indicating a rate of convergence to long-run equilibrium resulting disturbance in the short-run. The significant coefficient indicates a strong and consistent long-term link between GDP growth and the explanatory factors (Enu et al., 2013).

BMS has a favorable and relevant impact GDP growth in Australia in the short-run. This signifies that whenever BMS rise by 1%, GDP growth increases by 0.036% in short run. So, it is good sign because an augmentation in the money supply provides rise in liquidity in the economy and encourages investment and consumption. The evidence is in line with the Keynesian theory that leads towards a heightened money supply as it reduces interest rates, raises aggregate demand, and accelerates output growth (Phelps, 2022). This is also similar to the results of (Krouso et al., 2019; Olulubriggs & Ogbulu, 2015) who demonstrate positive impact of BMS on GDP growth. It is also contrast with (Emmanuel Isaac John & Ogochukwu N. Udoeye, 2018) who found negative impact of BMS.

DIR is favorably and relevantly impact GDP growth in Australia in the short-run. This signifies that a 1% increment in DIR translates into a 2.59% increase in GDP growth in the short run. Higher deposit rates would encourage deposits that raise the pay high much deposit available for lending towards economic activity. indicating that rises in deposit returns drive savings, expand loanable funds, and facilitate productive investments. The finding is aligned with the financial intermediation theory, which holds that effective mobilization of savings increases credit availability and economic growth (Collins et al., 2021). This result is also in supported by (Abdulkadr et al., 2024; Nazmul Haque, 2016) who found positive impact of DIR on economic growth. Contrast with (Adolph, 2016) who display negative impact on economic growth.

LIR has an adverse and significance impact on GDP growth in Australia in the short-run during the focus period. An increase of 1% in LIR will cause a decrease in the GDP by 2.17%, which would deter borrowing and resource deployment, and consequently impact economic activities. But, in the subsequent year it increased by 0.16 % respectively. Thus, high lending rates may have negative effects over time, as past lending rates affect the current GDP growth positively, possibly because of delayed investment effects. The negative response is attributed to the delayed investment realization where past credit decisions dictate future output. These

findings are similar to studies by (Damilola Ogunlokun & Oguntuase, 2023; Hameed et al., 2020). Contrast with (Adolph, 2016).

RIR has adverse and relevant effect on GDP growth in the short-term in Australia over time. For an increase of 1% in RIR, there is observed decrease of about 0.16% in GDP in the short term. High RIR add to the borrowing expenses, reduce consumption and investment, and thus result in the reduction of speed in economic growth. But however, in the following year it also decreased by 0.21% concurrently. This statement underlines the continuing impacts of tight (MP) on the economy. These outcomes are similar to the findings of (Hossain, 2016; Omay et al., 2017) who found negative impact of RIR on economic growth.

RES negatively and significantly impacts GDP growth in Australia in the short-term over the period. This indicates that a 1% increase in RES, that amounts again for taking down GDP short-run by an order of 4.11%. Increasing reserves might restrict the liquidity available for lending, thereby limiting investment of the private sector and activity within the economy. The adverse short-run reserve requirement (RES) impact on GDP growth captures that expansion in reserve requirements constrains banking sector liquidity and credit creation, thereby limiting economic expansion. Supported by (Abba et al., 2024; Kashif et al., 2017) who demonstrate negative effect of RES on economic growth.

In relation to the control variables, GCF favorably and relevantly impact GDP growth in Australia in short-run during the focus period. A 1% increase in GCF increases GDP by 0.53% in the short run, and in the next phase it continued to increase by 0.41%, concurrently.

TRD negatively and significantly impact GDP growth in Australia in the short-term over the period. This depicts that a 1% increase in TRD reduces GDP by 0.05% in the short run, and in the following period increased by 0.09% respectively.

FCE positively and insignificantly impact GDP growth in Australia in the short-term period. It indicates that one % increase in FCE increases GDP growth by 0.03% in the short-run, and in the following phase decreased by 0.10% concurrently.

Table 4. **ECM Model of Short-run**

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Standard Error	t-Statistics	P-value
D(GDP(-1))	0.177787	0.030619	5.806370	0.0021
D(BMS)	0.035852	0.007305	4.907830	0.0044
D(DIR)	2.587618	0.094021	27.52158	0.0000
D(LIR)	-2.168278	0.084292	-25.72348	0.0000
D(LIR(-1))	0.166117	0.037570	4.421520	0.0069

ECM Regression				
Case 2: Restricted Constant and No Trend				
D(RIR)	-0.155677	0.022816	-6.823232	0.0010
D(RIR(-1))	-0.214271	0.021692	-9.878064	0.0002
D(RES)	-4.110011	2.213012	-1.857202	0.0000
D(GCF)	0.528718	0.031844	16.60361	0.0001
D(GCF(-1))	0.418941	0.039497	10.60702	0.0001
D(TRD)	-0.048477	0.018382	-2.637218	0.0461
D(TRD(-1))	0.092957	0.017582	5.287153	0.0032
D(FCE)	0.032597	0.031538	1.033578	0.3487
D(FCE(-1))	-0.100530	0.035815	2.806896	0.0377
CointEq(-1)*	-0.933800	0.071133	13.127522	0.0000
R-squared	0.996567			
Adjusted R-squared	0.993135			

Source: Eviews 10

The findings of the long run are illustrated in table five which captures (MP) and GDP growth in Australia. The F-statistic result showing long-run co-integrating between the variables, validate the necessity to estimate the model's long -run coefficients.

BMS is positively an insignificantly impact GDP growth in the long-run in Australia. It signifies that a 1 percent increase in BMS can lead to 0.004% increases in GDP growth in the long-run in Australia. The effect is so small, however not significantly different at the 5% level, that it suggests the possibility that it might improve liquidity in the economy and also encourage loan generation and long-term investment. The small effect may also suggest that an increase in money supply alone may not be sufficient to promote economic growth in Australia, lacking additional policies or a very robust financial system. Similar conclusions have been reported by some studies done by (Osman et al., 2019; Tolasa et al., 2022) who found positive influence of BMS.

DIR is positively and significantly impact GDP growth in the long-run in Australia. 1% rise in DIR continues to cause a 1.16% growth in the long-term economic development of Australia. The large effect correlates with economic theory, which states that high rates of interest increase deposits, thus increasing the money available for investments. This capital accumulation promotes sustained growth in the economy. The result also suggest that large effect correlates with economic theory, which states that high rates of interest increase deposits, thus increasing the money available for investments. This capital accumulation promotes sustained growth in the economy, as shown in the studies (Kingsley & Stanley, 2020) who demonstrate positive impact of DIR on economic growth in the long run.

LIR is adversely and relevantly impact GDP growth in the long run in Australia. It indicates that 1% rise in the LIR would cause an approximate 1.29% decrease in economic expansion in the long-term in Australia. Such a finding shows adverse growth in investment and economic activity. The negative effect indicates how much growth depends on the accessibility of credit and the costs associated with borrowing.

Balancing affordable credit with inflation management is essential for not negatively affecting the economy of Australia, as reported by (Ngah et al., 2023; Phiri et al., 2024) who show that LIR has negative effect on economic growth.

RES is adversely and relevantly impact GDP growth in the long-run in Australia. It depicts that increasing RES by 1% would cause a contraction of about 5.65% in the overall long-term growth in the economy of Australia. This result could indicate either inefficient reserve management or to steep a reserve buildup at the expense of productive investment. This result also points to an excessive effort on keeping reserves to limit growth. Efforts for policymakers should be directed towards optimizing reserve levels and their deployment for growth-enhancing initiatives, as some studies have indicated negative but significant effect of RES on economic growth (Abdulkadr et al., 2024; Mohammad & Aruna, 2024).

RIR is favorably and relevantly impact GDP growth in the long-run in Australia, which means one % rise in RIR steers to a 0.11% improvement in long-term GDP growth in Australia. This reflects that real interest rates will generate savings and, hence, promote sustainable economic development in Australia. The findings also suggest that the balance between return on savings and cost to borrowers is important for sustainable economic growth; too high or too low real interest rates would disturb this balance, as supported by empirical evidence previously done by (Canarella et al., 2022; Sujianto et al., 2020), who also found positive impact of RIR on economic growth.

In relation to the control variables, TRD is negatively and insignificantly impact GDP growth in the long run in Australia. It displays that 1 % rise in TRD can lead to 0.04% decline in GDP growth in the long run.

FCE is favorably and relevantly impact GDP growth in the long run in Australia. A rise of 1 percent FCE spending leads to an increase of 0.23 percent in long-run economic growth.

GCF is positively and significantly impact GDP growth in the long-run in Australia with 1% increment in GCF increases the long-run GDP growth by 0.09%.

Table 5. **ARDL Model of Long-run**

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variables	Coefficient	Standard Error	t-Statistics	P-value
C	6.368500	1.831253	3.477673	0.0177
BMS	0.004473	0.003085	-1.450096	0.2067
DIR	1.161352	0.112192	10.35151	0.0001
LIR	-1.291351	0.115670	-11.16411	0.0001
RES	-5.650411	0.380212	-14.861212	0.0011

Levels Equation				
Case 2: Restricted Constant and No Trend				
RIR	0.111044	0.035848	3.097618	0.0269
TRD	-0.045788	0.033211	-1.378692	0.2265
FCE	0.225205	0.079482	2.833402	0.0365
GCF	0.093568	0.028469	3.286701	0.0218
EC = GDP - (-0.0045*BMS + 1.1614*DIR -1.2914*LIR -0.0000*RES + 0.1110 *RIR -0.0458*TRD + 0.2252*FCE + 0.0936*GCF + 6.3685)				

Source: Eviews 10

The results stress the significance of considering monetary policy changes over the short term. The findings suggest that expansionary monetary intervention more specifically, boosting the stock of broad money and boosting deposit rates can indeed spur short-run growth within Australia. Conversely, a highly restrictive stance with high lending or reserve requirements can discourage spending and demand aggregation and slow down economic activity. The findings for policymakers point to the importance of reconciling liquidity management with growth targets. In a slowing economic environment, sluggish monetary expansion can spur earlier recovery, and in an inflationary environment, selective tightening can forestall overheating. The findings also contribute towards Keynesian-Monetarist school debate and prove that short-run monetary variable behavior remains context-sensitive and subject to institutions.

Moreover, the long-run consequences have some theoretical and policy ramifications. First, the absence of effect of money supply as a whole emphasizes that monetary growth is insufficient in the long term to underpin growth unless supplemented by concurrent efficiency in the financial sector and effective credit allocation. Second, the strong positive effect of deposit interest rates suggests that mobilization of savings is at the center of Australia's long-run growth policy, entailing policies that encourage deposit-taking behavior via competitive real returns. Third, the adverse impact of lending and reserve ratios implies that tightness of credit conditions and over-excessive liquidity restraints can choke productive investment, necessitating careful calibration of monetary tightening measures. Fourth, the favorable effect of real interest rates underscores the importance of maintaining a balance between reward to savers and cost to borrowers in a bid to maximize the use of capital. Eventually, the findings highlight that Australian macroeconomic stability and widely shared growth depend on coordinated fiscal, monetary, and structural reforms that maximize credit access, financial intermediation, and long-term investment.

Table 6 presents the outcomes of the post- estimating tests for LM correlation, heteroskedasticity, and normality, with probability values of 0.1433, 0.1942, and 0.882056, sequentially. This demonstrated that the model was effective for the analysis.

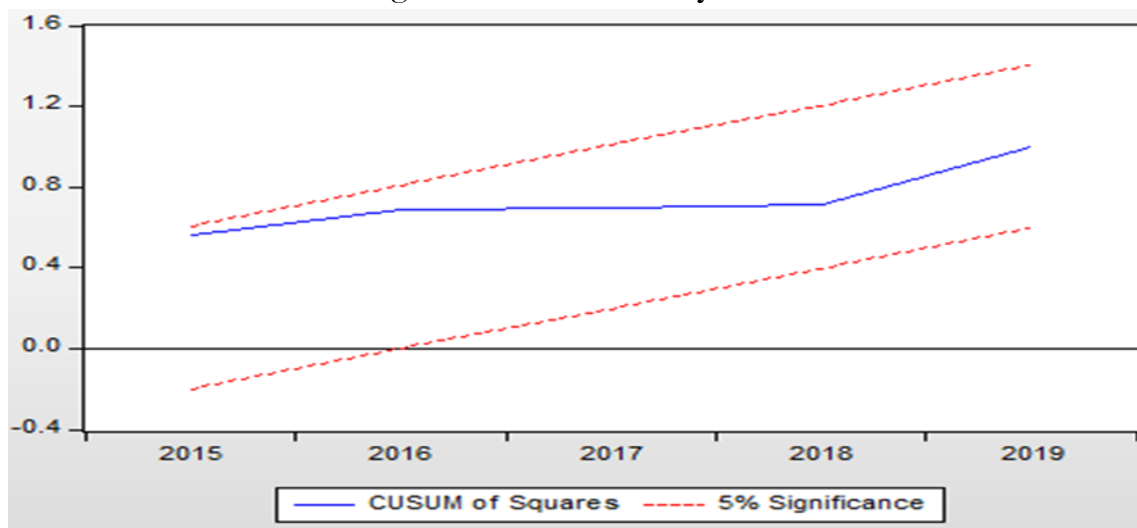
Table 6. **Diagnostic Tests Results of Serial Correlation, Heteroscedasticity, and Normality**

Problem	Test	Prob
LM Correlation	Breusch-Godfrey	0.1433
Heteroscedasticity	Breusch-Pagan-Godfrey	0.1942
Normality	Jarque-Bera	0.882056

Source: Eviews 10

Figure 2 of the stability test is assessed using the cumulative sum of squares (CUSUMSQ). The model exhibits stability as the CUSUMSQ statistic fall within the 5% threshold bounds.

Figure 2. **Model Stability Test**



Conclusion

This research assessed the impact of (MP) on Australia's GDP growth from 1989 to 2019 utilizing ARDL and ECM approaches. Diagnostics tests were applied before and after estimation. These findings presented robust results. In the short-term, it is evident that, BMS and DIR positively and significantly impact GDP growth, while LIR, RIR, and RES seem negative to GDP growth. In the long-run, BMS, DIR, and RIR favorably contributing to the economy as they underscore savings and capital generation into the economy for continued sustainable growth. On the other hand, LIR and RES negatively and significantly impact GDP.

It is recommended that, in the short-run, policymakers should implement contractionary measures to strengthen the economy. In the long-term, policymakers should adopt progressive policies to stimulate sustainable growth. This research has the following limitations; firstly, this research specifically focuses on secondary data obtained from the World Bank Indicators, potentially resulting in insufficient comprehension of the impacts of (MP) on GDP growth. Future research should consider incorporating other countries for more understanding of the literature. Future studies can utilize non-linear models or incorporate financial innovation variables so as to capture dynamic monetary dynamics

better. Finally, improving the sample size, and incorporating other monetary policy tools to explore different economic sectors could provide significant insights for policymakers.

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