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MAY 2018



RESEARCH AND FINANCIAL STABILITY DEPARTMENT
BANK OF BOTSWANA

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Contents

2018 Monetary Policy Statement	1
The Importance of Communication in Macroeconomic Policy Management	19
<i>Moses D Pelaelo, Governor, Bank of Botswana</i>	
Public Investment and Private Capital Formation in Botswana	23
<i>Thobo Ratsebe and Lesego Molefhe</i>	
Government Spending and Economic Growth in Botswana: is there a Causal Relationship?	35
<i>Baby Mogapi and Thato Mokoti</i>	

2018 Monetary Policy Statement

1. INTRODUCTION

The Monetary Policy Statement (MPS) is the main medium through which the Bank of Botswana informs stakeholders about the framework for the formulation and implementation of monetary policy. Through the MPS, the Bank reports inflation trends, policy performance and the Bank's policy choices for the ensuing year. The Statement also serves to fulfil the public's expectation of a transparent and accountable central bank in implementing the monetary policy mandate as set out in the Bank of Botswana Act (Cap 55:01).

The 2018 MPS reviews the previous year's economic and policy developments and also evaluates the determinants of changes in the level of prices and their impact on inflation in Botswana. In turn, there is an assessment of economic and financial developments that are likely to influence the inflation path in the medium term and the Bank's policy choices in 2018. Price developments and policy options are evaluated in the context of a forward-looking monetary policy framework, the Bank's medium-term inflation objective range of 3 – 6 percent and the financial stability objective. In this respect, the MPS promotes an understanding of the conduct of monetary policy in order to anchor public expectations to the objective of a low, predictable and sustainable level of inflation.

Global GDP is estimated to have increased by 3.7 percent in 2017, higher than the growth of 3.2 percent in 2016; the improvement was broad-based. In advanced economies, output in the United States of America (USA) increased by 2.3 percent in 2017 compared to the 1.5 percent growth in 2016, supported by buoyant consumer and business spending, improved financial conditions and stronger global demand. For the euro area and Japan, GDP growth estimates for 2017 were revised upwards from 2.1 percent and 1.5 percent to 2.4 percent and 1.8 percent, respectively, against the backdrop of improved investment and trade, together with stronger business and consumer confidence. In emerging market economies, output growth was strong at 4.7 percent in 2017, reflecting higher export commodity prices, and led by robust economic performance in China and India.

Inflation was subdued, globally, in 2017, albeit increasing slightly due to the rise in fuel prices, but moderated by restrained global demand and

slow wage growth. Consequently, some of the major central banks maintained low policy interest rates and continued to provide liquidity support to the financial sector. However, policy rates were increased in the USA and United Kingdom (UK) during 2017 in a continuing move towards policy normalisation with respect to the former and in a bid to get inflation back down to target for the latter. In emerging market economies, monetary policy was eased to boost economic activity as inflationary pressures dissipated. In addition, improved monetary policy frameworks in emerging market economies helped to lower core inflation, thereby providing scope for using monetary policy to support demand should activity weaken.

In Botswana, real GDP expanded by 1.8 percent in the twelve months to September 2017, underpinned by growth in non-mining output. Inflation remained close to the lower bound of the Bank's medium-term objective range of 3 – 6 percent during 2017, and was 3.2 percent in December 2017.¹ Price developments were in the context of moderate domestic demand pressures, restrained growth in personal incomes and benign external price pressures.

Given projected low inflation in the medium term, the Bank maintained an accommodative monetary policy stance and the Bank Rate was reduced by 50 basis points to 5 percent in October 2017. The Bank also implemented an upward 0.26 percent annual rate of crawl of the nominal effective exchange rate (NEER) of the Pula effective January 2017, as inflation in Botswana was expected to be lower than the forecast inflation for trading partner countries. Bilaterally, the Pula appreciated by a modest 0.9 percent against the SDR,² while depreciating by 1.8 percent against the South African rand.³ The appreciation of the Pula against SDR currencies is due to a combination of the strengthening of the rand and depreciation of the US dollar in 2017. Given the Pula basket mechanism and the weight of the rand in the basket, as the rand appreciates against the SDR currencies, so does the Pula.

1 There was a breach of the lower bound of the objective range in November 2017 when inflation was 2.9 percent.

2 The SDR is the unit of account of the International Monetary Fund (IMF) that comprises the United States dollar, euro, Chinese renminbi (yuan), Japanese yen and British pound. Effective October 1, 2016, the respective weights were 41.73 percent, 30.93 percent, 10.92 percent, 8.33 percent and 8.09 percent.

3 Pula basket weights for 2017 were 45 percent for the rand and 55 percent for the SDR and have been maintained for 2018.

The real effective exchange rate (REER) appreciated by 0.35 percent year-on-year to December 2017, reflecting a positive inflation differential between Botswana and trading partner countries, as well as the 0.26 percent upward rate of crawl implemented during 2017.

Inflation is forecast to be within the 3 – 6 percent objective range in the medium-term. Upside risks to the outlook relate to any substantial upward adjustment in administered prices and government levies and/or taxes, as well as any increase in international oil and food prices beyond current forecasts. However, there are downside risks associated with modest global economic activity and the potential decline in commodity prices.

2. MONETARY POLICY FRAMEWORK

The primary objective of the Bank's monetary policy is to achieve price stability, which is defined as a sustainable level of inflation that is within the medium-term objective range of 3 – 6 percent. The policy is also formulated with a view to safeguarding the stability of the financial system. A low and predictable level of inflation and a conducive financial environment foster savings mobilisation, productive investment and international competitiveness of domestic producers which, in turn, contribute towards the broader national objectives of sustainable economic development and employment creation.

The monetary policy framework is forecast based, with a medium-term outlook that primarily guides the Bank's response to projected movements in inflation, while taking into account prospects for economic growth and developments relating to stability of the financial system. To this end, in formulating an appropriate policy stance, the Bank factors in projections of real monetary conditions⁴ in the context of other relevant domestic and international economic and financial developments, and their impact on the output gap⁵ and, ultimately, inflation. The policy framework recognises the importance of communication in an

⁴ The real monetary conditions index (RMCI), which reflects the state of real monetary conditions, measures the relative looseness or tightness of monetary conditions and gauges the likely effect that monetary policy has on the economy through changes in the exchange rate and interest rates. The RMCI combines, through a weighted average, the deviations of the real exchange rate and real interest rate from their respective trend values.

⁵ The output gap refers to the difference between actual output and long-term trend output (as an indicator of the productive capacity of the economy). A negative output gap means the actual level of output for a given period is below the trend level for that period, thus indicating that the economy is operating below its estimated potential.

effort to maintain transparency, predictability and accountability with respect to the policy framework and actions; thus foster market involvement and influence expectations. In this regard, in addition to the MPS, the Governor delivers a statement at a press briefing after each meeting of the Monetary Policy Committee (MPC) to allow for interaction with the media and dissemination of the Bank's policy stance. Moreover, the Bank publishes, in advance, MPC meeting dates for the year.

3. IMPLEMENTATION OF MONETARY POLICY AND RELATED ECONOMIC DEVELOPMENTS IN 2017

(a) External Developments

At the global level, monetary policy implementation varied in response to mixed economic performance across countries and regions. Policymakers continued to focus on the need to achieve sustainable economic growth through facilitating access to finance in a stable environment. Monetary policy was accommodative in advanced economies, with low levels of interest rates and liquidity support to the financial sector. Policy interest rates remained low in the euro area, while negative interest rates were maintained by the Bank of Japan and asset purchase programmes were maintained in both jurisdictions.

The Bank of England increased interest rates by 25 basis points to 0.5 percent in order to move inflation back down towards the 2 percent target. In the USA, the target range for the federal funds rate was increased three times by a cumulative 75 basis points in 2017 to reach 1.25 – 1.5 percent in December 2017 in a move towards policy normalisation, but remains relatively low and accommodative by historical standards. In the emerging market economies, monetary policy was predominantly accommodative as central banks eased monetary policy to support economic activity as inflationary pressures remained low.⁶

GDP growth in advanced countries improved in 2017 against the backdrop of strengthening demand, favourable global financial conditions, improving labour market conditions, increasing commodity prices, as well as the related resurgence in world trade. These developments were also positive for economic performance in the emerging market economies with robust growth overall, albeit mixed across countries. In the circumstances, global GDP growth is estimated at 3.7 percent in 2017, higher than the 3.2 percent in 2016 (Table 1).

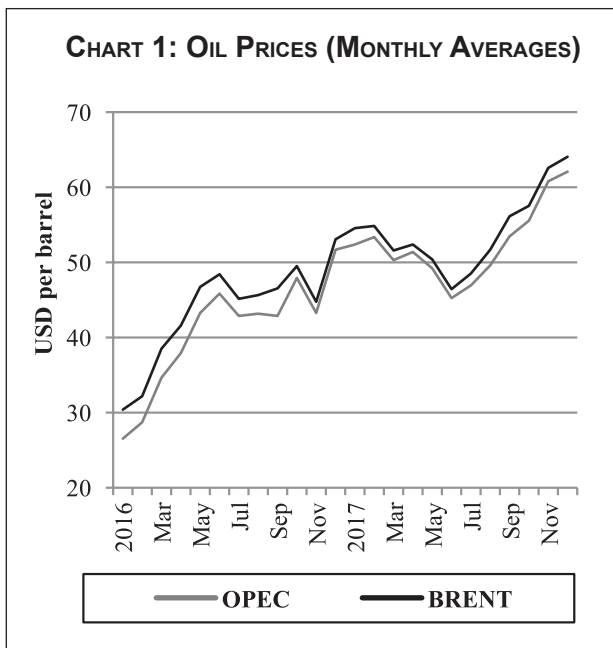
⁶ Policy rates were cut by 0.25 percent each in South Africa and India, and by 6.75 percent and 2.25 percent in Brazil and Russia, respectively, during 2017.

TABLE 1: REAL GDP GROWTH RATES (PERCENT)

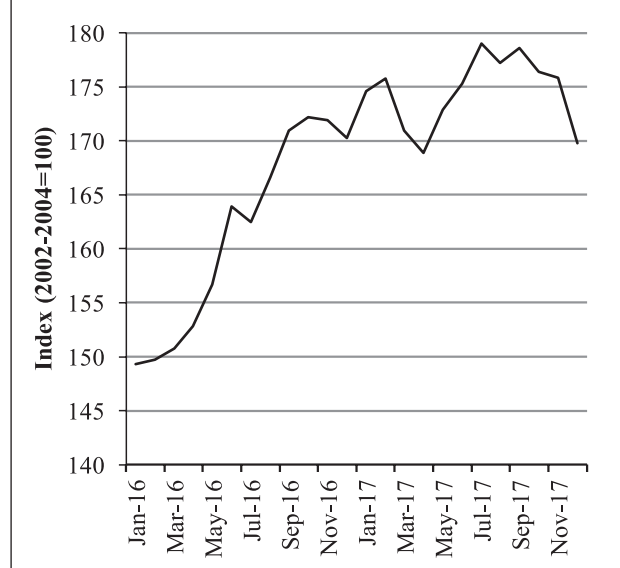
	Estimates		Projections
	2016	2017	2018
World	3.2	3.7	3.9
Advanced economies	1.7	2.3	2.3
United States of America	1.5	2.3	2.7
Euro Area	1.8	2.4	2.2
United Kingdom	1.9	1.7	1.5
Japan	0.9	1.8	1.2
Emerging market and developing economies	4.4	4.7	4.9
China	6.7	6.8	6.6
Brazil	-3.5	1.1	1.9
India	7.1	6.7	7.4
Russia	-0.2	1.8	1.7
South Africa	0.3	0.9	0.9
Botswana	4.3	4.7	5.3

Source: IMF, January 2018 World Economic Outlook (WEO) Update and 2018 Budget Speech, Botswana.

Global inflation was subdued in 2017, mainly due to restrained global demand, slow wage growth and the impact of globalisation and enhanced international trade. However, the increase in commodity prices (especially crude oil prices) contributed to the modest increase in inflation. International oil prices generally increased in 2017. For example, the Brent crude price increased



Source: OPEC and US Energy Information Administration.

CHART 2: MONTHLY FOOD PRICES

Source: Food and Agricultural Organisation

by 20.6 percent between December 2016 and December 2017 (Chart 1).⁷ The recovery in oil prices was mainly sustained by adherence by some of the large producers to agreed production cuts, while geopolitical tensions also posed risks to supply. Meanwhile, international food prices decreased by 0.3 percent in 2017 compared to an increase of 11 percent in 2016 (Chart 2), driven by a decrease in prices of vegetable oils and sugar. Generally, international oil and food prices exerted marginal upward pressure on domestic inflation in 2017.

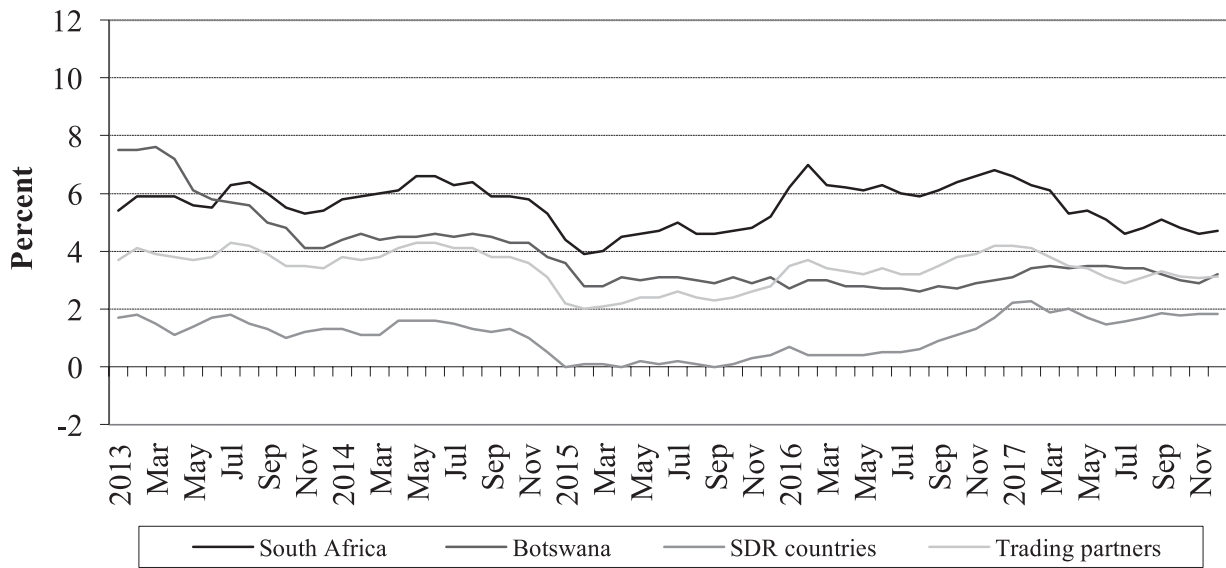
For Botswana's trading partner countries, trade-weighted average inflation decreased from 4.2 percent in December 2016 to 3.1 percent in December 2017.⁸ Average inflation was subdued in the SDR countries increasing slightly from 1.7 percent in December 2016 to 1.8 percent in December 2017, while in South Africa,⁹ inflation decreased from 6.8 percent to 4.7 percent in the same period (Chart 3).

⁷ Oil prices reached USD70 in January 2018.

⁸ The trade-weighted average inflation comprises South Africa's headline inflation and average SDR countries' inflation.

⁹ Inflation remained within the country's medium-term target range of 3 – 6 percent throughout 2017.

CHART 3: BOTSWANA AND INTERNATIONAL INFLATION (JANUARY 2013 - DECEMBER 2017)



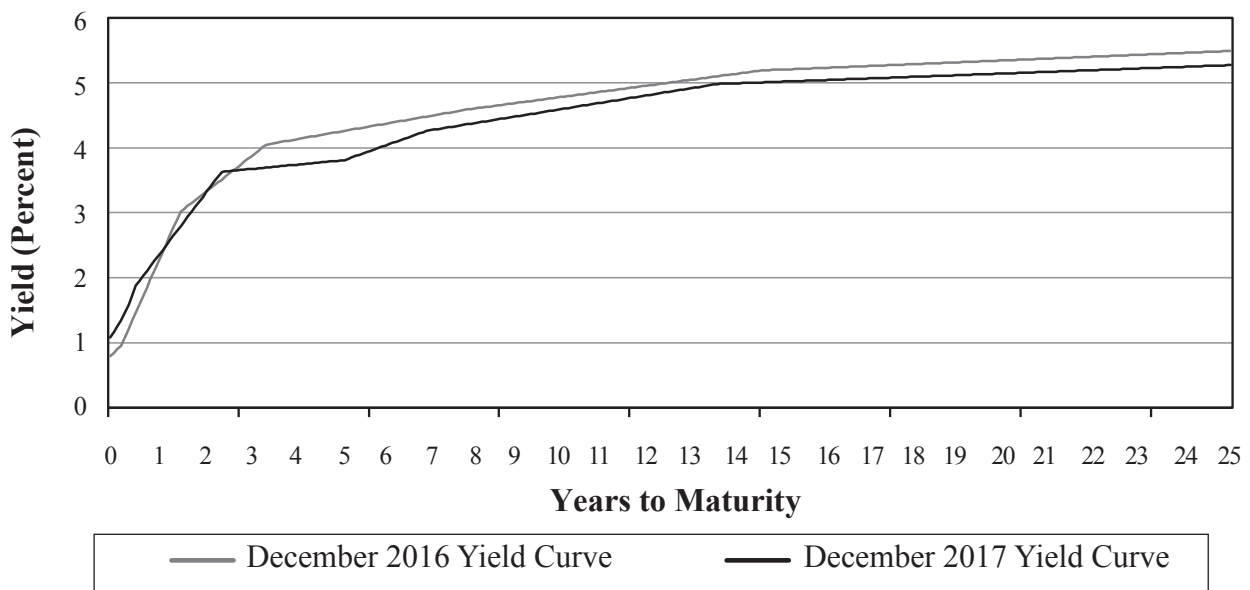
Source: Statistics Botswana and Bloomberg.

(b) Monetary Policy Implementation in Botswana

Domestically, monetary policy was conducted against the background of below-trend economic activity (a non-inflationary output gap) and a positive medium-term inflation outlook. These developments provided scope for an accommodative

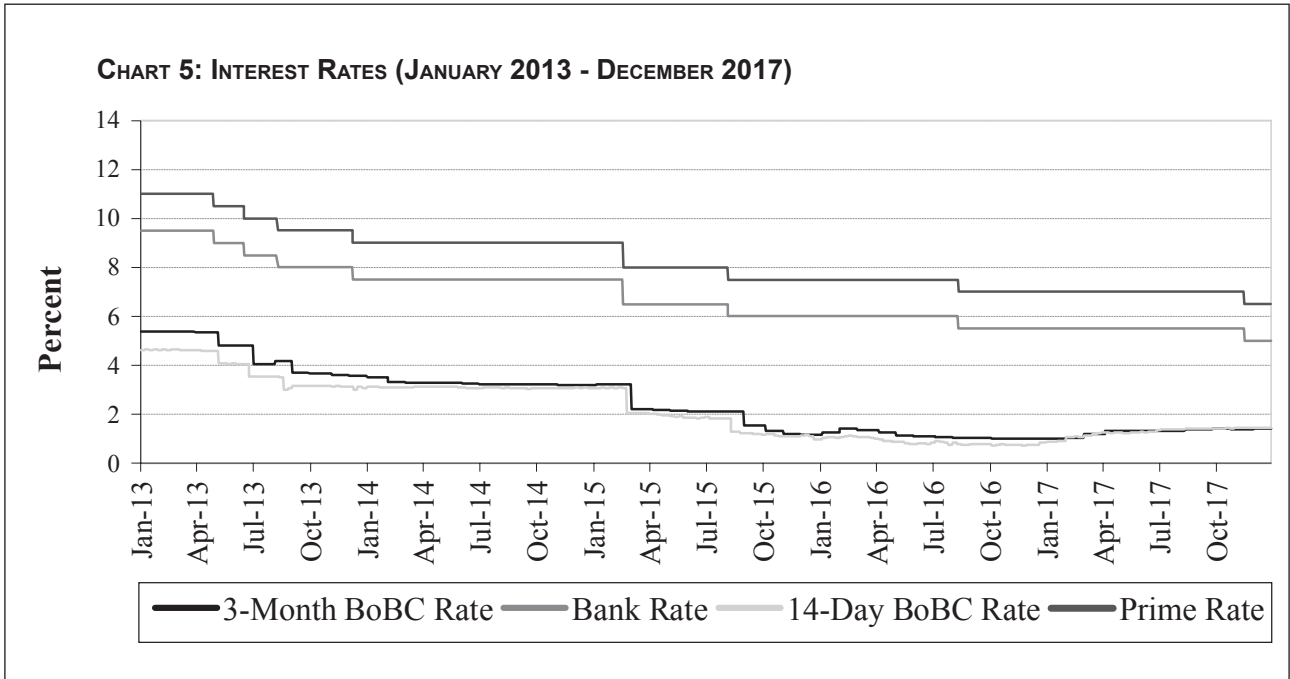
monetary policy stance in support of stronger output growth. Thus, the Bank Rate was reduced by 50 basis points in October 2017 to 5 percent, and consequently the prime lending rate of commercial banks decreased from 7 percent to 6.5 percent (Chart 5).¹⁰ Deposit interest rates also fell in line with the reduction in the Bank Rate (Chart 6).

CHART 4: YIELD CURVES FOR DECEMBER 2016 AND DECEMBER 2017

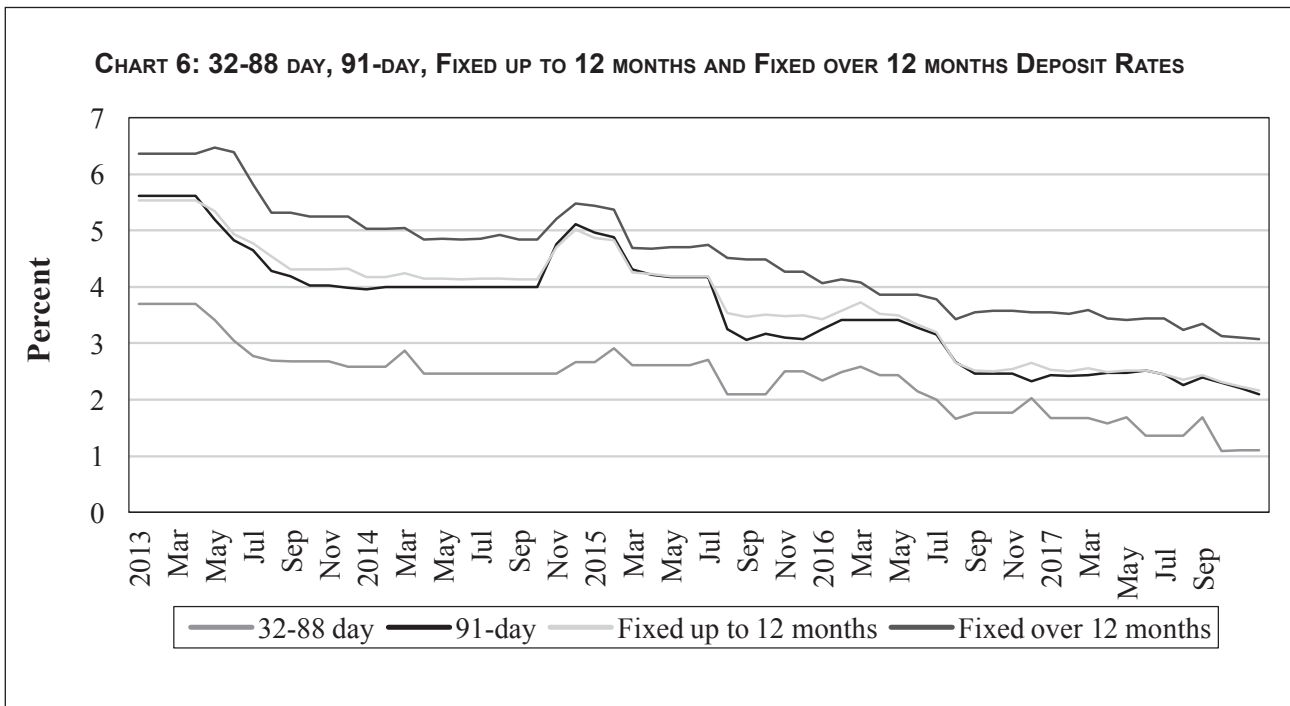


Source: Bank of Botswana.

¹⁰ The MPC maintained the Bank Rate at 5.5 percent at its meetings in February, April, June, and August 2017. After the reduction in the Bank Rate to 5 percent in October, the rate was maintained in December 2017 and February 2018.



Source: Bank of Botswana and commercial banks.



Source: Commercial banks.

Monetary policy implementation entailed the use of Bank of Botswana Certificates (BoBCs) to mop-up excess liquidity¹¹ in an effort to maintain interest rates that are consistent with the monetary policy stance. The Bank introduced measures to improve market efficiency and effectiveness of monetary operations, in particular to better align market interest rates to the policy stance. Notably, relaxation on the amount of BoBCs used to mop up excess liquidity helped to alleviate downward pressure on interest rates and misalignment with the policy stance. In addition, the range of securities eligible for use by commercial banks as collateral when accessing the Bank's credit facility were broadened to include all government securities, regardless of maturity.¹² Commercial banks were, therefore, able to manage liquid assets more efficiently, with less reliance on BoBCs for collateral purposes. In turn, this further reduced the cost of monetary policy implementation. Outstanding BoBCs amounted to P6.3 billion in December 2017, a decrease from P7.9 billion in December 2016.

BoBC yields increased modestly in 2017, reflecting a process of normalisation in money market rates. Thus, the 14-day BoBC yield increased from 0.84 percent in December 2016 to 1.45 percent in December 2017, while the 3-month BoBC yield increased from 1.01 percent to 1.41 percent in the same period.¹³ Consequent to the larger increase in nominal interest rates compared to inflation between December 2016 and December 2017, the real 14-day BoBC rate increased from -2.10 percent in December 2016 to -1.7 percent in December 2017, while the real 3-month BoBC yield increased from -1.93 percent to -1.73 percent in the same period (Chart 7).¹⁴

(c) Implementation of Exchange Rate Policy

Implementation of the exchange rate policy was in line with the objective of maintaining a stable inflation-adjusted trade-weighted exchange rate

11 Excess liquidity is money balances in excess of what is needed by commercial banks for investment and daily flows, with no credit extension obligation and, hence, can be invested temporarily. Importantly, each commercial bank holds a specific level of excess liquidity that reflects its asset-liability management policy.

12 Bonds issued by the International Finance Corporation, a member of the World Bank Group, are also acceptable as collateral for the Bank's credit facility.

13 The 14-day and 3-months BoBC yields quoted here are weighted averages of winning bids at auction.

14 Internationally, the real 3-months money market interest rates were 2.66 percent, -0.71 percent and -2.06 percent in December 2017 for South Africa, USA and the euro area, respectively.

of the Pula. This involved a 0.26 percent upward rate of crawl of the NEER during 2017 as domestic inflation was forecast to be close to the lower end of the medium-term inflation objective range and lower than the expected average inflation for trading partner countries. Consequently, the trade-weighted NEER of the Pula appreciated by 0.26 percent in 2017. Meanwhile, the REER appreciated by 0.35 percent in the twelve months to December 2017 (Chart 8), reflecting a small positive inflation differential between Botswana and trading partner countries, as well as the 0.26 percent upward rate of crawl implemented during 2017.

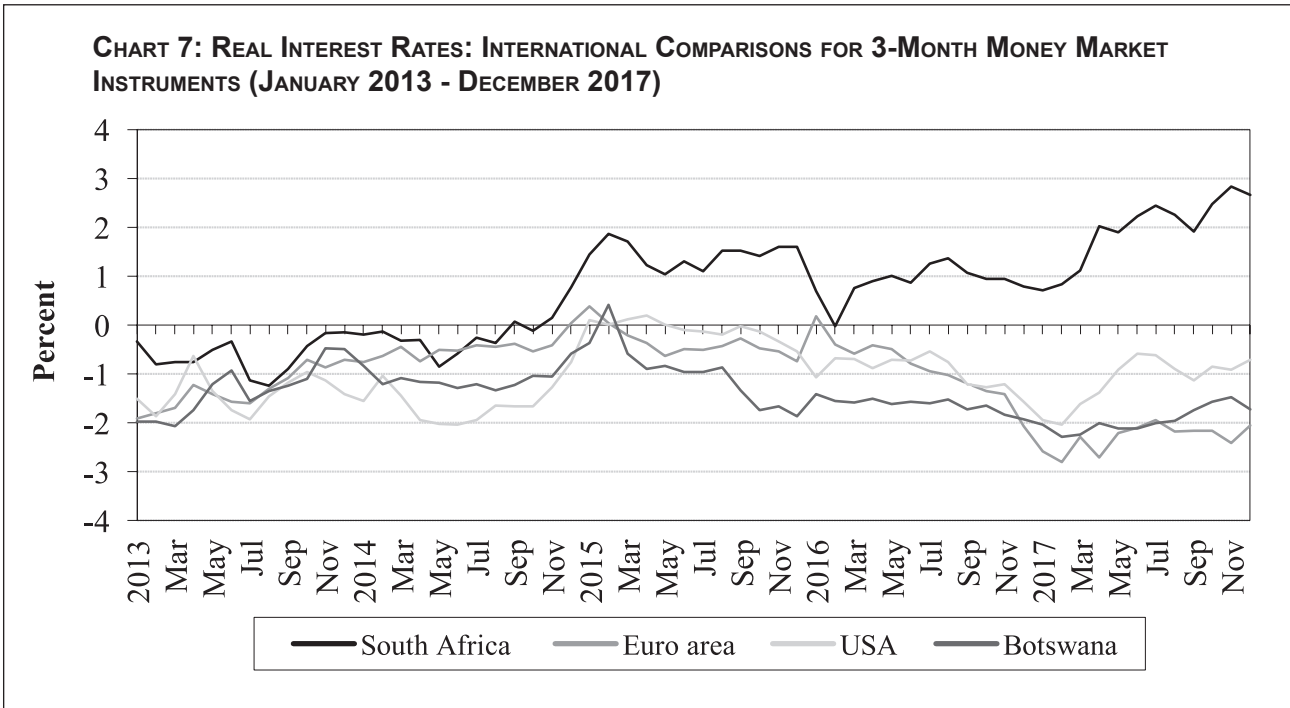
(d) Government Expenditure and Credit Growth

Monetary policy was conducted against the backdrop of a restrained fiscal policy environment as government expenditure contracted by 3.6 percent in 2017 compared to 9.7 percent growth in 2016. Development expenditure contracted by 11 percent, while recurrent expenditure decreased by 0.7 percent in the same period. Within recurrent expenditure, average public sector wages increased by 7.7 percent in the nine months to September 2017. Private sector wages increased by 0.2 percent in the same period. Meanwhile, national wages increased by 2.9 percent in the nine months to September 2017,¹⁵ the impact of which was not significant enough on aggregate demand to generate notable inflationary pressures.

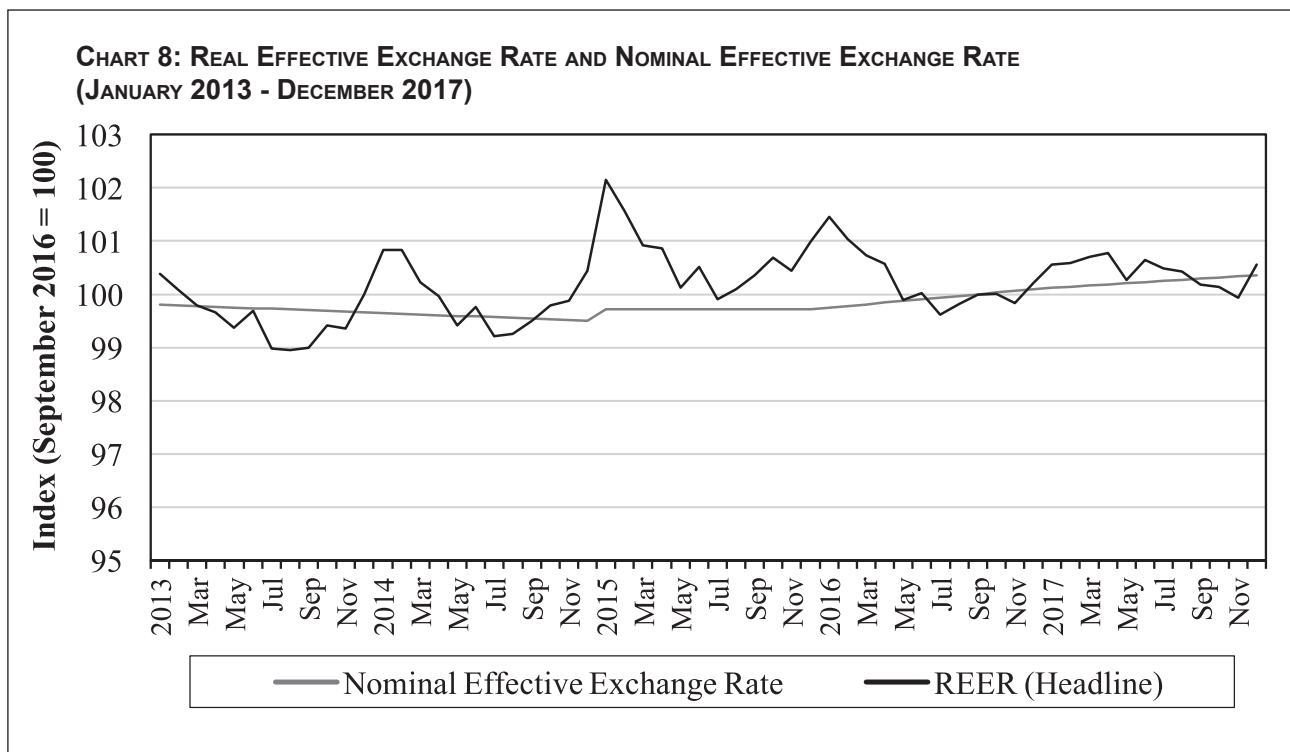
Annual growth in commercial bank credit decreased from 6.2 percent in 2016 to 5.6 percent in 2017. The slowdown in annual credit expansion was mostly associated with a decrease in growth of lending to businesses from 4.2 percent in December 2016 to 3.2 percent in December 2017. This was mostly due to loan repayments by parastatals and some diamond manufacturing companies. Lending to businesses excluding parastatals increased by 5.2 percent in 2017, with different economic sectors benefiting from the extension of credit (Chart 10).

For households, annual credit growth decreased from 7.6 percent in December 2016 to 7.2 percent in December 2017. The lower rate of increase in lending to households was mostly due to the slowdown in the yearly rate of expansion in mortgage lending to households, which decreased from 6.3 percent in December 2016 to 4.8 percent in December 2017. The lower growth of mortgage lending is consistent with the weak residential property market, especially at the upper-end, and also the 'pro-cyclical' behaviour of lenders (lending to the sector becoming more stringent as a result

15 Data sourced from Statistics Botswana's Formal Sector Employment Survey, September 2017. Data for December 2017 not available.



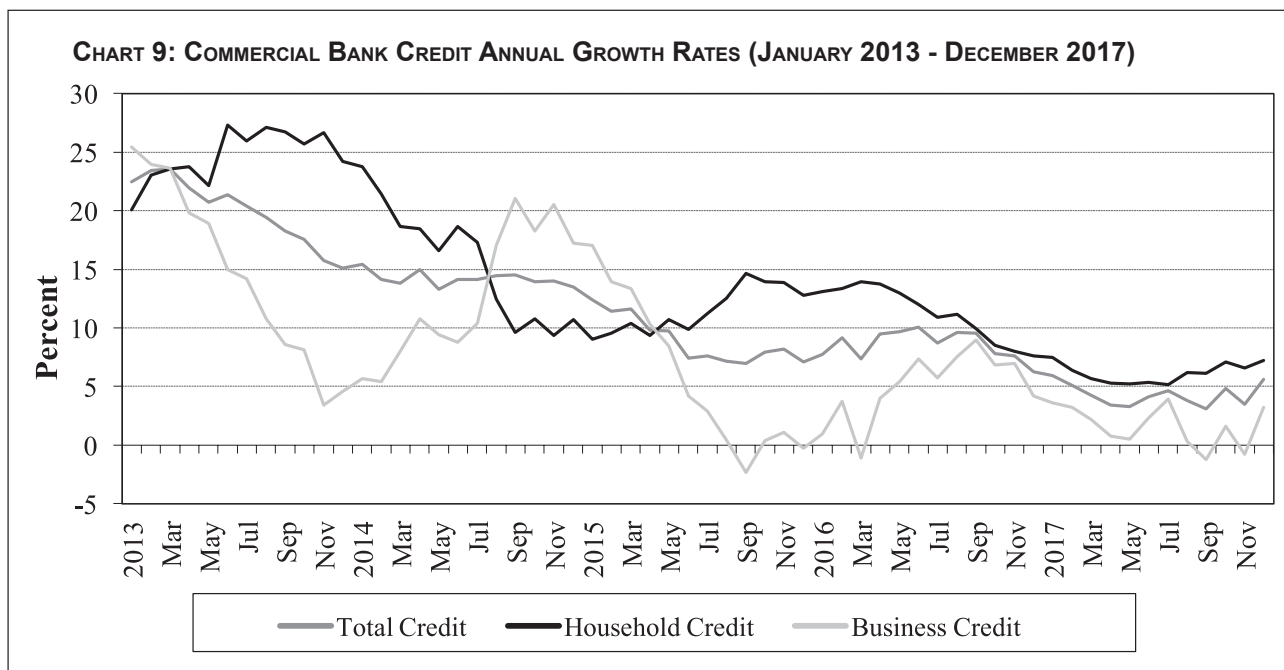
Source: Bank of Botswana, South African Reserve Bank and Bloomberg.



Source: Bank of Botswana.

of concerns about the borrower’s ability to repay). Meanwhile, the annual growth in unsecured loans increased from 8.3 percent to 8.8 percent in the same period. The share of mortgages in total bank credit to households decreased from 28.4 percent in December 2016 to 27.8 percent in December 2017.

Overall, the credit-to-GDP ratio increased (Table 2), indicating the steadily growing importance of credit in supporting economic activity, albeit remaining comparatively low by global standards (Appendix Table 1).



Source: Commercial banks.

TABLE 2: COMMERCIAL BANK CREDIT-TO-GDP

	Percent of GDP		
	2015	2016	2017 ³
Total Commercial Bank Credit¹	33.1	30.1	30.6
Business	13.4	12.0	12.1
Parastatals	1.2	0.8	0.6
Agriculture	0.7	0.7	0.7
Mining	0.5	0.2	0.2
Manufacturing	1.7	1.9	1.9
Construction	0.6	0.5	0.6
Trade	4.2	2.5	2.5
Transport and Communications	0.5	0.4	0.3
Finance and Business Services	1.2	0.8	1.1
Real Estate	2.4	2.2	2.2
Households	19.6	18.1	18.5
Retail Credit ²	14.0	12.9	13.3
Mortgage	5.6	5.1	5.2

Source: Commercial banks, Statistics Botswana and Bank of Botswana calculations.

Notes: 1. Although not shown in the table, electricity and water, other and non-resident sub-sectors are included in the business credit to GDP ratio.

2. Includes motor vehicle, personal and credit card loans.

3. Data covering the twelve months to September 2017.

(e) Financial Stability Indicators

Credit default rates rose, with the ratio of non-performing loans (NPLs) to total credit increasing from 4.9 percent in December 2016 to 5.3 percent in December 2017; the NPL ratio for individual

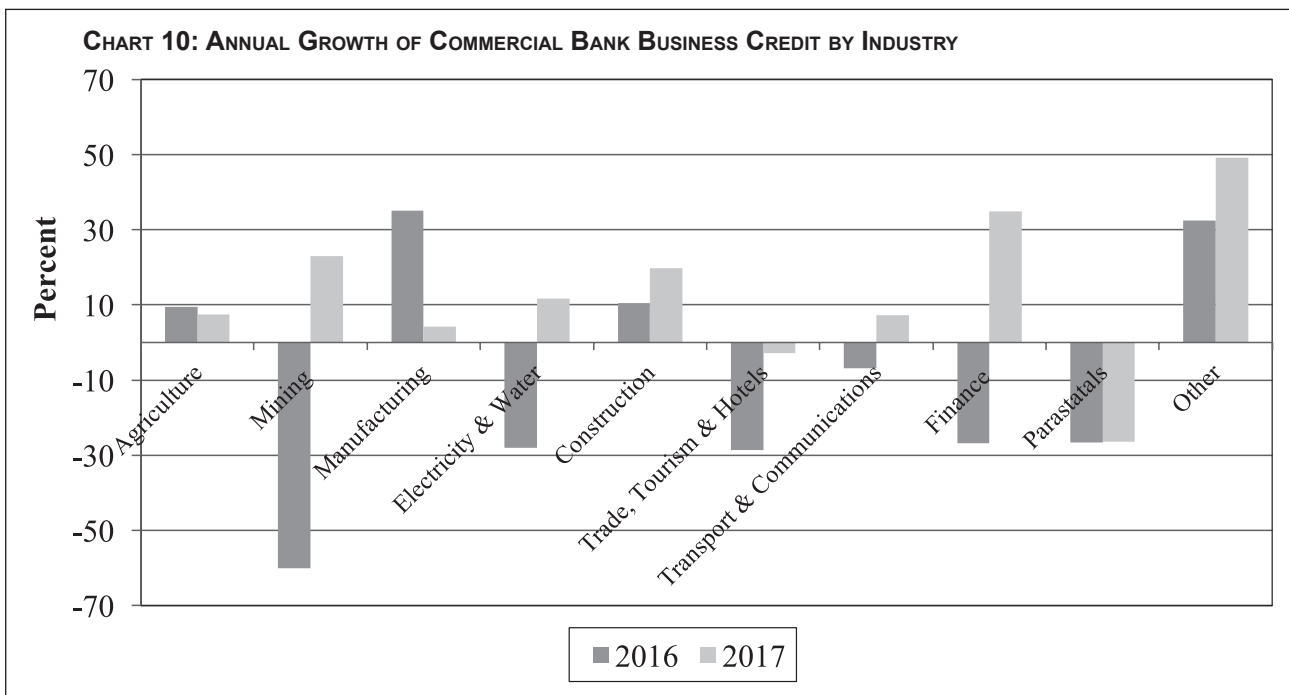
banks ranged from 1.3 percent to 10 percent in December 2017. By sector, the ratio of non-performing loans to total loans for households decreased from 4.9 percent in December 2016 to 4.5 percent in December 2017 while for businesses,

it increased from 4.9 percent to 6.4 percent in the same period.¹⁶ There was, however, sufficient provisioning by banks to cover non-performing loans, with banks remaining profitable. Overall, the capital, asset quality, liquidity and profitability levels that meet prudential requirements for banks indicate a generally sound and stable financial system (Table 3). Overall, current levels of credit continued to be supportive of economic activity.

Household loans, with a share of 61 percent of total loans at the end of 2017, continue to dominate commercial bank credit. It is also observed that household credit is concentrated in unsecured lending (67.1 percent as at December 2017). However, developments with respect to household credit are in line with the slower growth in personal incomes and augur well for maintenance of financial stability. In particular, the reduction in mortgage credit growth in the context of the weaker property market moderates potential risks in this area. Moreover, the risk to financial stability, on account of this credit composition, is moderated by the extent to which unsecured credit is diversified (relatively small amounts spread across many borrowers of differing risk profiles). Furthermore, the bulk of the household credit is to

the concentration of business deposits in their funding structure (75.8 percent of total deposits in December 2017), reflecting an imbalance in the market and the potential increase in the cost of commercial banks' liabilities.¹⁸ Notably, there was a significant decrease in household deposits by 8.4 percent in 2017 following a 3.6 percent fall in 2016. This could reflect potential financial strain on households arising from the sluggish growth in incomes. On the other hand, business deposits increased by 5.1 percent in 2017, after growing by 7.2 percent in 2016. Overall, deposits at commercial banks increased by 1.8 percent in 2017, adding to the 4.1 percent increase in 2016 (Chart 12). Given the lower increase in bank deposits than the growth in bank lending, the financial intermediation ratio increased from 82.2 percent in December 2016 to 85.2 percent in December 2017.¹⁹

A broad perspective of the formal financial sector (short and long-term savings, including pension funds) shows that households are net savers, a position that has progressively increased since the establishment of the Botswana Public Officers Pension Fund in 2001. In the circumstances, the linkages between banks, non-bank financial



Source: Commercial banks.

salaried individuals, which enables proper credit evaluation using ascertained income as the basis for determining repayment capacity.¹⁷ In addition, credit risk is lowered where loans are protected by credit life insurance.

An enduring challenge for commercial banks is

17 There is, nevertheless, some risk relating to borrowing by individuals from multiple institutions and sources, which could lead to excessive debt burdens due to the absence of credit information sharing.

18 Business deposits tend to attract higher interest rates.

19 The financial intermediation ratio is defined as the ratio of total loans to total deposits, thus indicating the proportion of deposits that is intermediated into loans.

16 The sectoral ratios are calculated as the sectors' NPLs divided by the respective sectoral total loans.

TABLE 3: SELECTED PERFORMANCE INDICATORS OF THE BANKING SECTOR

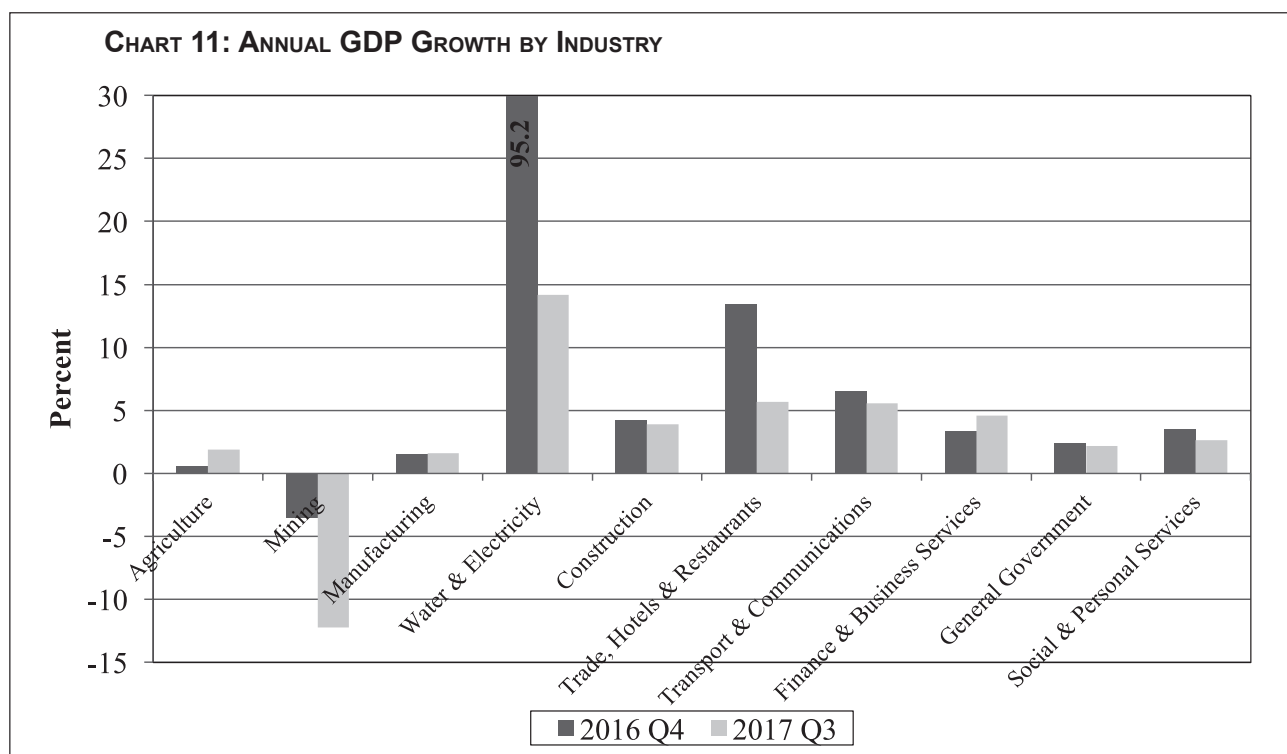
	Sep 2016	Dec 2016	Sep 2017	Dec 2017
Capital Adequacy (Percent)				
Core Capital to Total Capital ¹	68.9	67.8	69.2	68.3
Core Capital to Risk-Weighted Assets ²	12.5	13.3	12.8	13.3
Unimpaired Capital to Risk-Weighted Assets ³	18.0	19.6	18.5	19.4
Asset Quality (Percent)				
Non-performing loans (NPLs) to Total Loans	4.8	4.9	5.6	5.3
NPLs Net of Specific Provisions to Unimpaired Capital	14.3	12.2	13.9	12.3
Specific Provisions to NPLs	44.5	50.5	51.7	53.7
Liquidity (Percent)				
Liquid Assets to Deposits (Liquidity Ratio) ⁴	18.2	21.6	16.4	17.9
Advances to Deposits (Financial Intermediation Ratio)	84.5	82.2	83.5	85.2
Profitability/Efficiency (Percent)				
Return on Average Assets	2.4	1.8	1.7	0.8
Return on Equity	21.6	14.4	14.5	7.0
Cost to Income	57.8	57.0	60.1	63.9

Source: Bank of Botswana

- Notes: 1. Prudential limit is 50 percent.
2. Prudential limit is 7.5 percent (prior to January 2016, it was 4 percent).
3. Prudential limit is 15 percent.
4. Prudential limit is 10 percent.

institutions and household savings are intricate and symbiotic and require comprehensive oversight, involving monitoring of soundness of the relevant financial institutions, safeguarding of depositor-investor funds and protecting the integrity of the financial system (Figure 1). Therefore, the Bank and the Non-Bank Financial Institutions Regulatory Authority provide the regulatory framework, coverage and enforcement mechanisms that

promote sound and productive mobilisation and deployment of financial resources; preservation of value and risk mitigation; proper discharge of fiduciary responsibilities; market discipline; as well as penalise misconduct and enforce restitution as necessary. The regulatory framework also encompasses structures for collaboration among the relevant authorities to achieve comprehensive monitoring and enforcement of legislation and



Source: Statistics Botswana and Bank of Botswana calculations.

Note: The growth rate is calculated as the percentage change in cumulative GDP over four quarters compared to the corresponding period ending in the previous year.

regulations in order to maintain integrity and stability of the financial system. The institutional arrangements for the regulation and supervision of the financial sector continue to be strengthened alongside emerging developments in this regard.

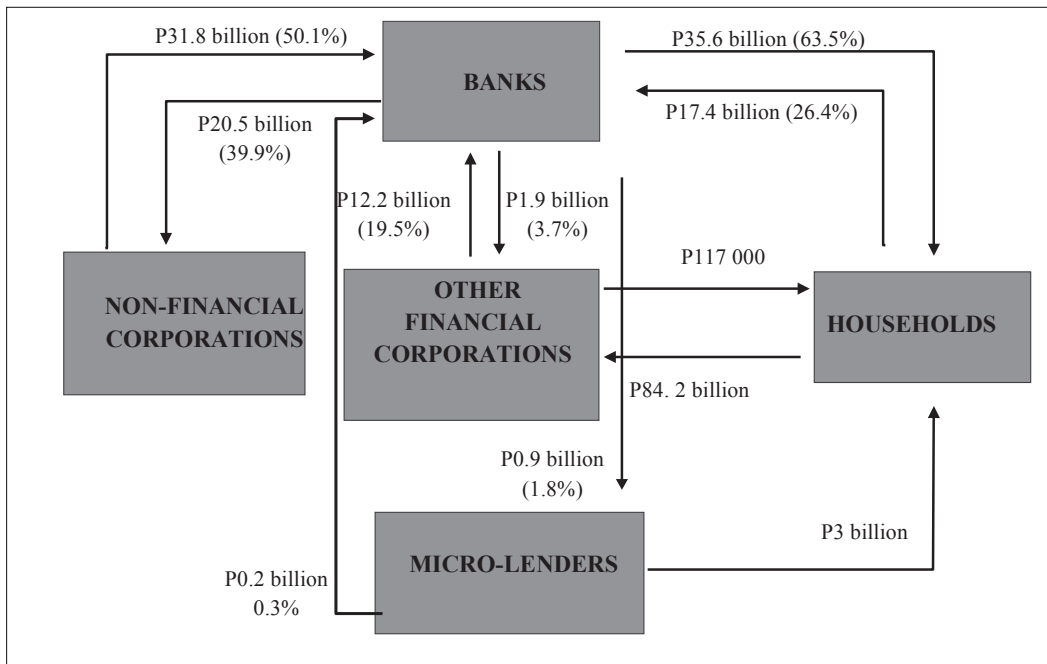
(f) Output and Price Developments

GDP in Botswana increased by 1.8 percent in the twelve months to September 2017 compared to the

administered prices on inflation was similarly modest, adding 1.4 percentage points to inflation in 2017. The relative strength of the Pula exchange rate against the rand moderated the impact of relatively higher inflation in South Africa on domestic prices; therefore, domestic inflation was modest and stable in 2017.

Inflation increased from 3 percent in December 2016 to 3.2 percent in December 2017 and was within the Bank's 3 – 6 percent objective range

FIGURE 1: STRUCTURE OF THE FINANCIAL SYSTEM (DECEMBER 2016)



Source: Bank of Botswana; estimates based on data provided by financial institutions regulated by Bank of Botswana and Non-Bank Financial Institutions Regulatory Authority.

2.3 percent increase in the corresponding period ending in September 2016. This was attributable to the 3.8 percent expansion in non-mining output in the same period (4.5 percent in September 2016). In contrast, mining output contracted by 12.3 percent in the twelve months to September 2017, larger than the decline of 11 percent in the corresponding period ending September 2016 (Chart 13). The larger decline in mining output is due to the closure of the BCL and Tati Nickel mines in October 2016. GDP in the third quarter of 2017 was 1.2 percent higher than the output level for the corresponding quarter in 2016.²⁰ Inflation was restrained by modest growth in personal incomes, the moderate increase in credit and the resultant subdued domestic demand. Moreover, on average, foreign inflation was low with benign pressure on domestic prices. The impact of the change in

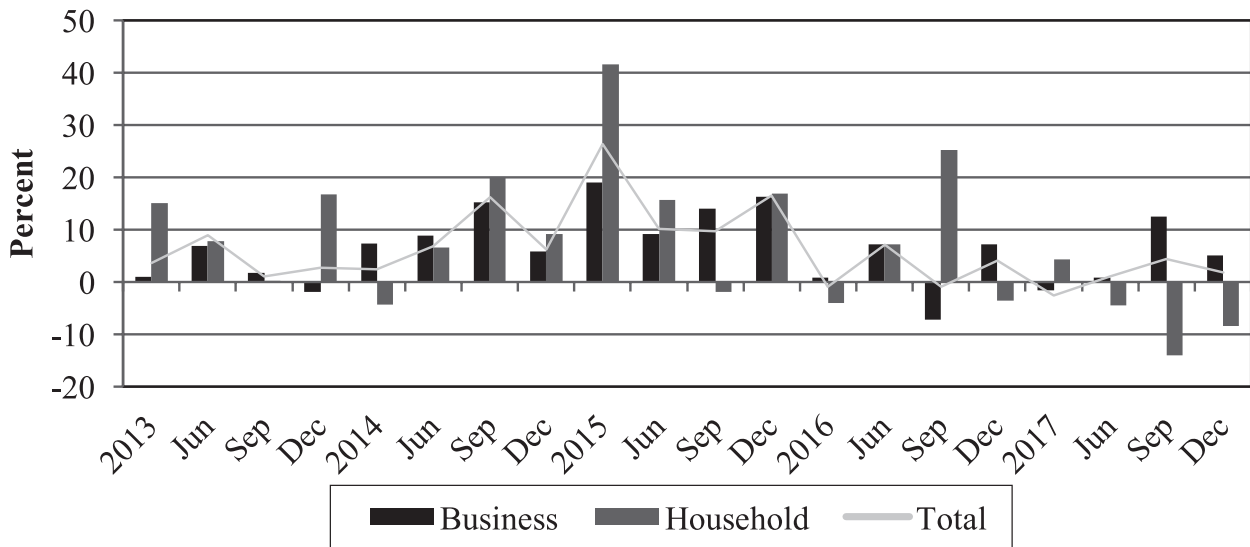
(Chart 14). The rate of increase in prices was modest for most categories of goods and services. In particular, domestic fuel prices increased by 9.5 percent annually in December 2017, reflecting the upward adjustment of fuel prices in November and December, compared to the 3.3 percent decrease in the corresponding period in 2016. However, food price inflation decreased from 3.9 percent in December 2016 to 1.1 percent in December 2017 (Chart 15). Regarding core inflation measures, the 16 percent trimmed mean inflation increased from 2.5 percent in December 2016 to 2.9 percent in December 2017, while inflation excluding administered prices decreased from 3.7 percent to 2.3 percent in the same period.

4. GLOBAL OUTPUT AND INFLATION OUTLOOK

Global GDP growth is forecast to increase to 3.9 percent in 2018, slightly higher than the estimated

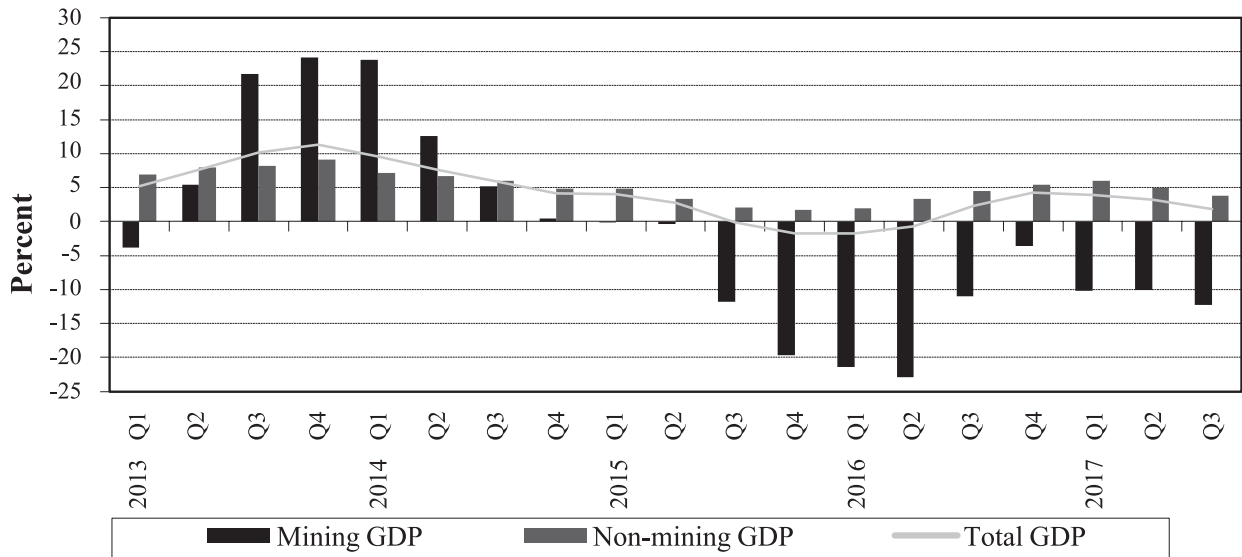
²⁰ The 1.2 percent annual growth reported in the Statistics Botswana (SB)'s economic briefing release is calculated on the basis of quarterly output compared to the corresponding period the previous year. Thus, SB reports year-on-year growth based on quarterly GDP.

CHART 12: ANNUAL GROWTH IN BUSINESS AND HOUSEHOLD DEPOSITS AT COMMERCIAL BANKS



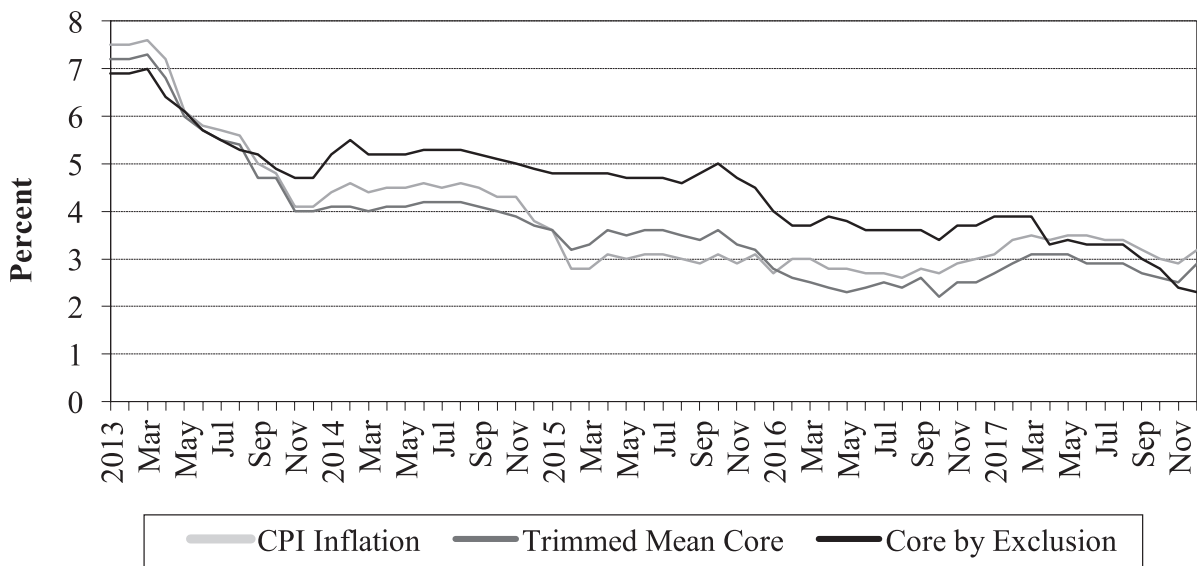
Source: Commercial banks.

CHART 13: ANNUAL GDP GROWTH RATES (2013 Q1 - 2017 Q3)

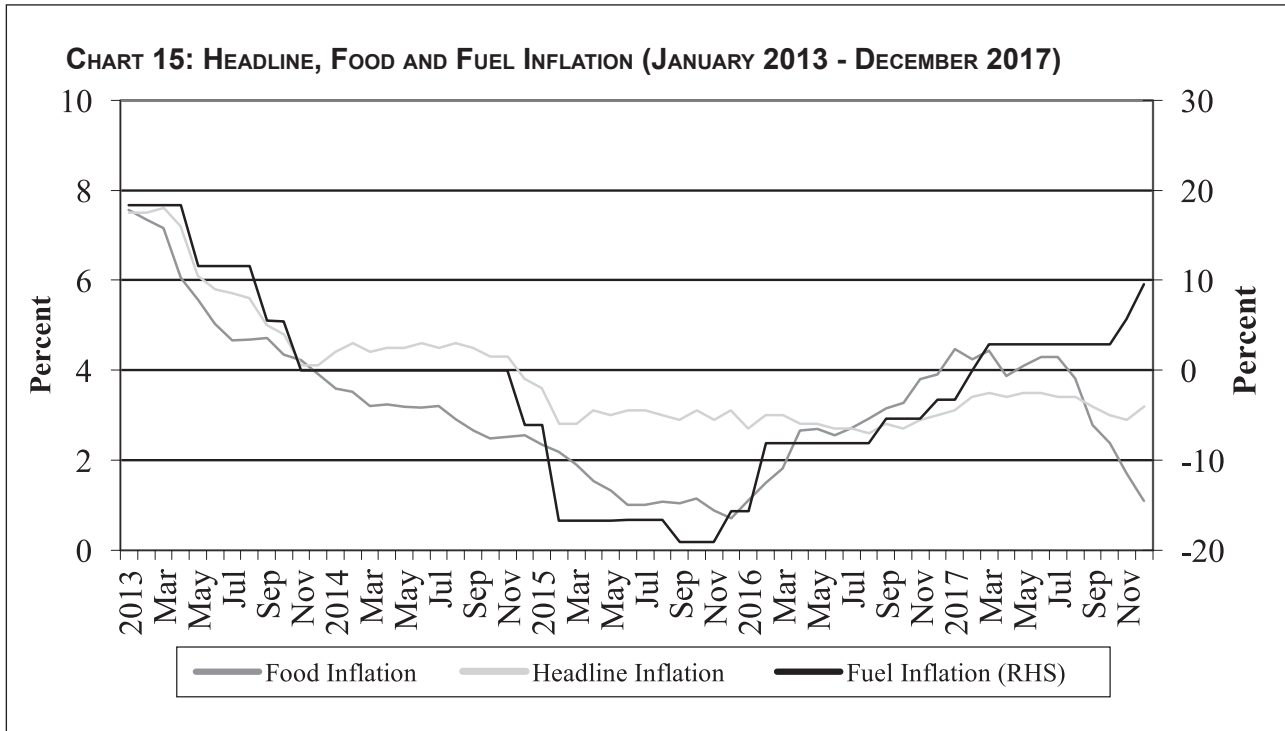


Source: Statistics Botswana and Bank of Botswana calculations.

CHART 14: BOTSWANA INFLATION (JANUARY 2013 - DECEMBER 2017)



Source: Statistics Botswana.



Source: Statistics Botswana.

3.7 percent for 2017. The projected improvement in global economic expansion is broad-based and reflects expected stronger growth in advanced countries, above 2 percent, supported by favourable global financial conditions and acceleration in demand, especially investment. Furthermore, it is expected that the USA tax reforms and the related fiscal stimulus will raise growth in the USA with possible positive spill-overs for trading partners. In emerging market and developing economies, GDP is expected to increase by 4.9 percent in 2018, from the estimate of 4.7 percent in 2017, accounting for half of the global expansion. However, the protectionist trade policies, potential build-up of financial vulnerabilities induced by easy financial conditions, geopolitical tensions, political uncertainty and adverse weather conditions present downside risks to global economic performance.

It is envisaged that, going forward, the focus for policymakers globally would be on implementation of structural and governance reforms to raise potential output through higher productivity and creation of employment, and ensuring a more inclusive growth. In addition, there is need to increase resilience, including through proactive financial regulation to avoid disruptive portfolio adjustments and capital flow reversals and, where needed, balance sheet repair and strengthening of fiscal buffers. This is particularly important in the prevailing environment of low interest rates and low market volatility²¹ (IMF January 2018 WEO Update).

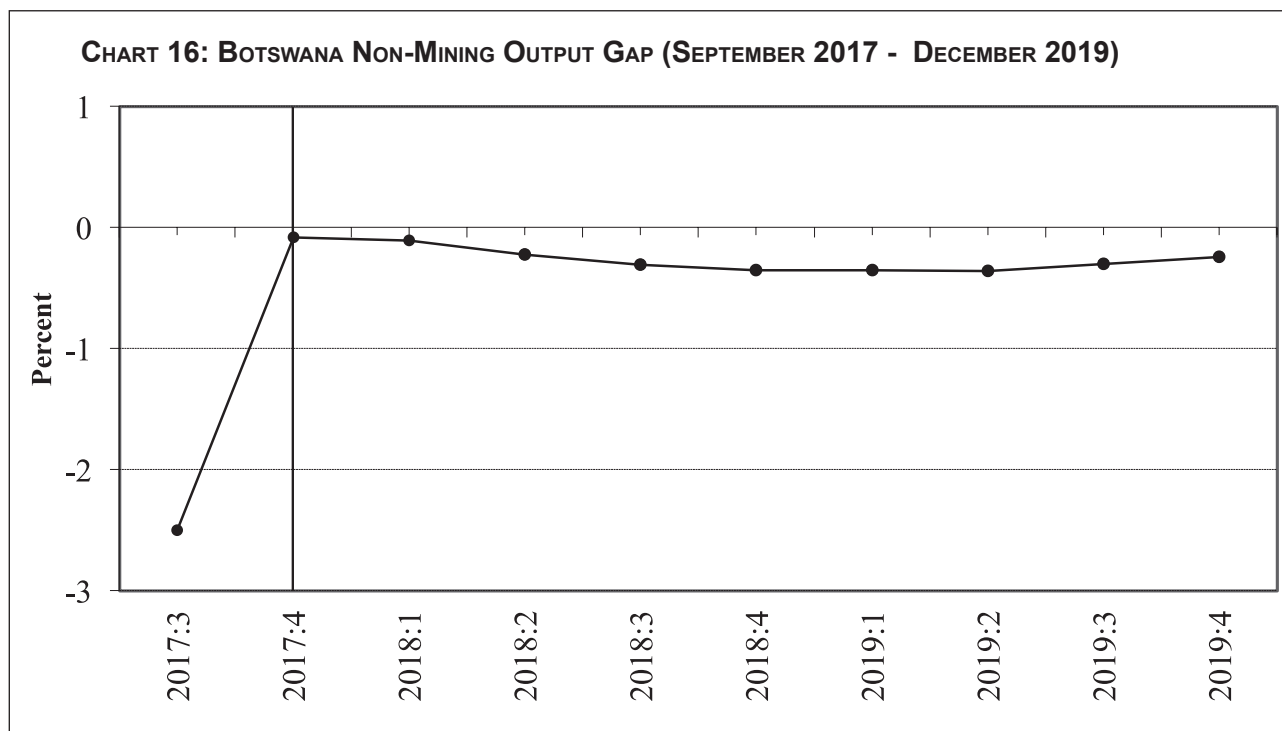
Global inflationary pressures are forecast to be modest in the short-to-medium term, reflecting

below-potential output. There are upward pressures on inflation emanating from the increase in commodity prices, including for oil, strengthening labour markets, as well as the expansionary monetary and fiscal policies. Thus, global inflation is forecast to increase from 3.1 percent in 2017 to 3.3 percent in 2018. Given modest inflation and below-potential output, it is anticipated that monetary policy will remain accommodative in most economies, complemented by measures aimed at facilitating financial intermediation, while fostering resilience of the financial sector, to support economic activity.

Inflation is forecast to be 1.8 percent in 2018 and 2.2 percent in 2019 in the SDR countries, and to decrease in South Africa from an average of 5.8 percent in 2017 to 5.3 percent in 2018 (and 5.5 percent in 2019).²² Thus, average inflation for trading partner countries is forecast to be in the range of 3 – 4 percent. Consistent with the policy objective of maintaining a stable REER of the Pula, an annual downward rate of crawl of the NEER of 0.3 percent will be implemented in 2018, as the projected domestic inflation is close to the lower end of the Bank's medium-term inflation objective and slightly higher than the trading partner countries' forecast average inflation. The Pula

²¹ However, global markets fell in early February 2018 amid concerns that the Federal Reserve could raise interest rates faster than previously anticipated. This view was triggered by the US jobs data that showed higher wage growth and raised fears of higher inflation.

²² These forecasts are obtained from the IMF's WEO Database, October 2017.



Source: Bank of Botswana.

basket weights have been maintained at 45 percent for the South African rand and 55 percent for the SDR. Against this background, it is anticipated that the impact of external price developments on domestic inflation, through imported inflation and changes in the exchange rate, will be modest.

As indicated in the 2018 Budget Speech, domestic output growth is forecast to be 5.3 percent in 2018, higher than the estimate of 4.7 percent for 2017. However, domestic non-mining output will be below trend (Chart 16), influenced mainly by the restrained growth in personal incomes and modest expansion of economic activity in major trading partners. The Bank's September 2017 Business Expectations Survey (BES) indicates a marked improvement in the level of confidence among businesses in 2018, and is premised on the government's projection of improvement in economic performance during 2018.

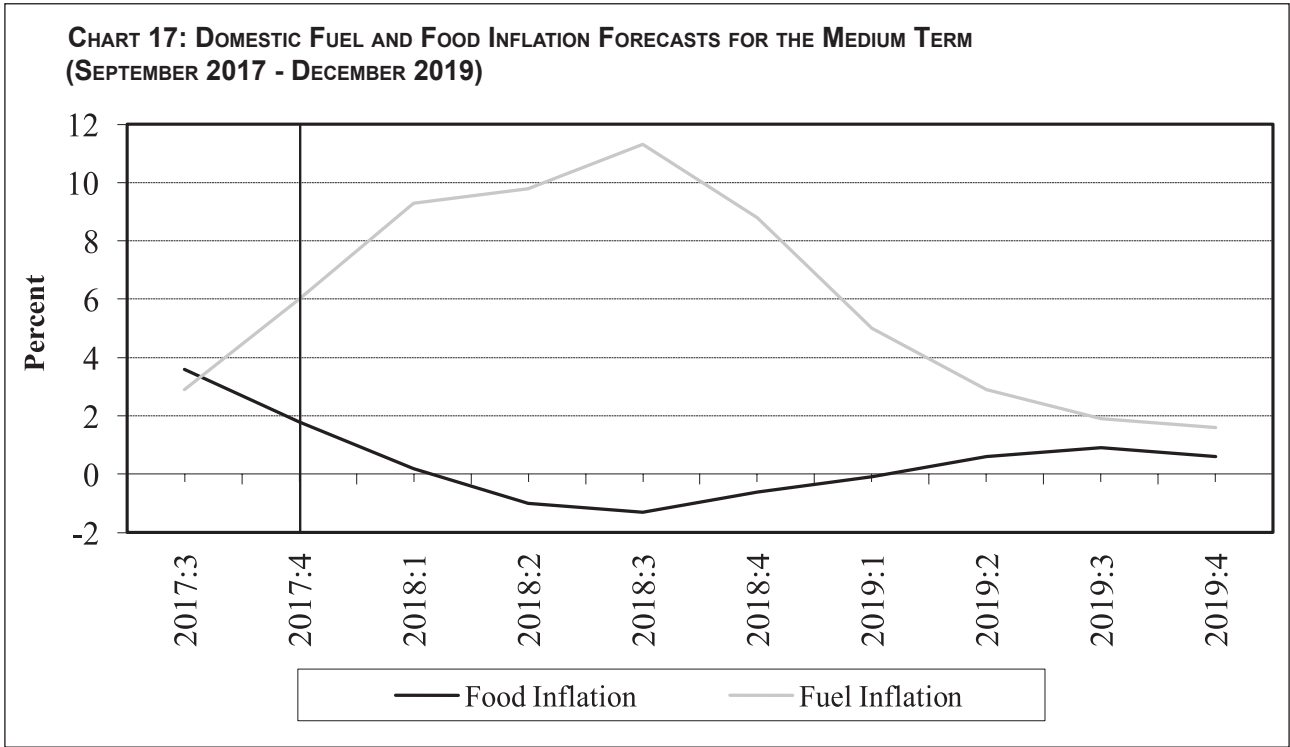
For the 2018/19 fiscal year, total government expenditure is budgeted to increase by 13.9 percent, while revenue and grants are projected to increase by 12.4 percent, resulting in an anticipated budget deficit of P3.6 billion (1.8 percent of GDP). The deficit is expected to be temporary; hence, Government will finance it through a combination of drawing down on existing loans and cash balances at the Bank of Botswana. It is noted that government spending is more effective in supporting demand in cases where expenditure is mainly in the areas that generate a large multiplier effect, such as infrastructure development,²³ improvements in human capital and inputs to production generally, as well as local procurement.

Headline inflation is projected to increase modestly in 2018, although remaining within the 3 – 6 percent objective range. It is anticipated that below-potential economic activity will dampen domestic inflationary pressures. The forecast also factors in a possible increase in some administered prices and the increase in school fees.²⁴ Meanwhile, as indicated in the September 2017 BES, businesses expect inflation to be 3.6 percent in 2018, which is within the Bank's medium-term inflation objective range. Any additional substantial upward adjustment in administered prices and government levies and/or taxes, as well as any increase in international food²⁵ and oil prices beyond current forecasts, present upside risks to the inflation outlook. However, there are downside risks associated with modest global economic activity, technological progress and the potential fall in commodity prices.

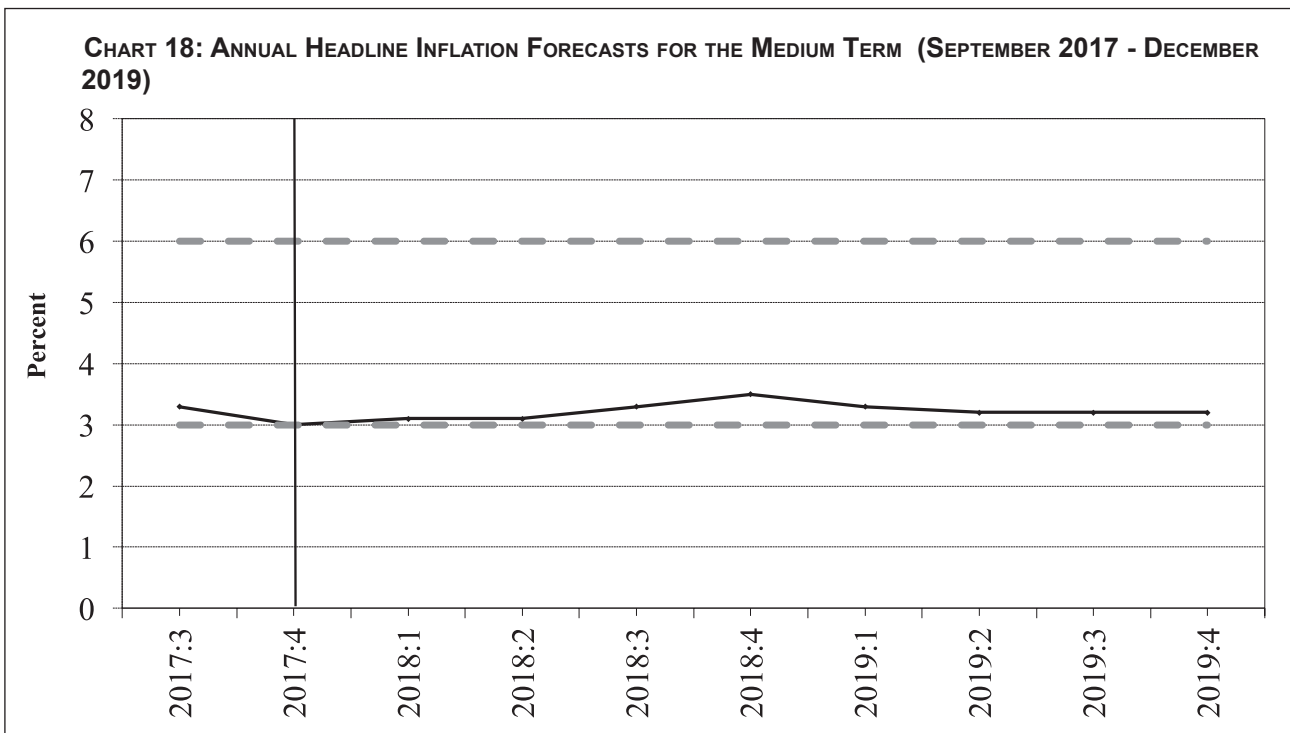
23 It is recognised, nevertheless, that there are leakages in the short-term because of the high import content of infrastructure development.

24 It is estimated that fees for private schools have increased on average by 8.2 percent in 2018 compared to 8.5 percent in 2017, contributing 0.11 percentage points to inflation in the first quarter of 2018. The fees used are for schools surveyed by Statistics Botswana.

25 Poor rainfall, adverse weather, and persistence of the crop-eating army fallworm infestations in southern Africa are expected to result in below average crop and livestock production, which could result in higher food prices than currently anticipated.



Source: Bank of Botswana.



Source: Bank of Botswana.

5. 2018 MONETARY POLICY STANCE

An evaluation of the determinants of inflation and financial stability suggests continuation of low inflation into the medium term, within a stable financial system. The current levels of growth in credit to both businesses and households are considered to be sustainable. Thus, the recent and prospective developments (positive inflation outlook and a stable financial environment) augur well for an accommodative monetary policy that supports productive lending to businesses and households. The Bank will continue to respond appropriately to changes in banking system liquidity conditions through relevant instruments. Overall, the Bank encourages prudent management, investment and productive allocation of financial resources, to promote effective and growth supporting intermediation and durable financial stability. In this regard, for effective policy transmission, the Bank guides the determination of market interest rates that are consistent with the monetary policy stance, with respect to both the level and direction. The Bank also promotes effectiveness of the interbank market to address liquidity positions of individual banks. In addition, the Bank contributes to financial stability through prudential supervision of commercial banks and statutory banks and promotes, as well as participates in coordinated regulation of the broader financial system.

In 2018, the Bank's implementation of the exchange rate policy will entail a 0.3 percent downward rate of crawl of the NEER to stabilise the REER, given that inflation is projected to be around the lower end of the medium-term objective range of 3 – 6 percent. The crawling band exchange rate policy supports international competitiveness of domestic industries and contributes towards macroeconomic stability and economic diversification. Notionally, relatively high interest rates in South Africa and appreciation of the rand would induce related capital outflows. However, short-term capital movements are constrained by the paucity of listed securities (bonds and equities), relative illiquidity of financial instruments in the Botswana market, as well as uncertainty associated with a volatile rand exchange rate and higher South African inflation. Moreover, on its own, Botswana represents a stable macroeconomic environment with developmental and business opportunities for inward investment by expanding regional entities.

6. CONCLUSION

Domestic inflation was mostly within, but close to the lower end of the Bank's objective range of 3 – 6 percent in 2017, against the background of benign domestic demand pressures, modest wage growth and favourable foreign price developments. Meanwhile, global inflation is forecast to increase slightly as international oil prices rise modestly and economic activity expands.

It is projected that inflation in Botswana will remain low and stable in the medium term, consistent with the Bank's objective range. The Bank's formulation and implementation of monetary policy will focus on entrenching expectations of low and sustainable inflation, through timely response to price developments, while ensuring that credit and other market developments are in line with durable stability of the financial system. The Bank remains committed to monitoring economic and financial developments with a view to ensuring price and financial stability, without undermining sustainable economic growth.

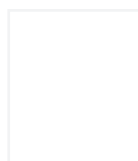
APPENDIX

TABLE 1: CREDIT TO PRIVATE SECTOR BY BANKS (PERCENT OF GDP)

	2014	2015	2016
United States of America	50.2	51.6	53.0
United Kingdom	137.4	132.7	134.2
India	52.0	52.2	49.8
China	140.1	152.5	156.7
Singapore	130.9	127.0	132.9
Chile	78.5	81.1	80.8
Rwanda	20.5	20.9	21.0
Mauritius	98.7	102.7	96.3
Namibia	49.9	53.4	53.1
Kenya	34.1	34.3	32.8
South Africa	67.0	68.2	66.8
Botswana	31.0	33.8	31.6

Source: World Bank's World Development Indicators

- Notes:
1. Domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises.
 2. Data for 2017 is not available.



The Importance of Communication in Macroeconomic Policy Management

Moses D Pelaelo, Governor, Bank of Botswana

The Bank of Botswana, like other central banks, has a desire to contribute to the development of informed financial and economic journalism as a means of improving transmission of market information, as well as incisive commentary on policy analysis and decisions. For a number of reasons, a central bank needs to continually interact and disseminate information to stakeholders. Such interactions and communication clarify the Bank's role and, therefore, reinforces the effectiveness with which it discharges its mandate of ensuring price stability, sound financial and well-functioning payments systems and, more broadly, financial stability.

Therefore, the subject of this Brief is **'The Importance of Communication in Macroeconomic Policy Management.'** For this purpose, it is important to distil macroeconomic policy into three distinct elements, namely fiscal policy, monetary policy and exchange rate policy; and for convenience add financial sector policies in order to complete the interactive and inherent relationships involved. Individually and together, these policies are intended to affect the behaviour of economic agents, which is, their response in terms of the supply and demand factors of economic activity. At a broad level, this entails decisions to invest, save, consume, and/or trade across borders. In this regard, the relative incentives across sectors and industries engendered by the various policies and instruments will have an impact on the rate of economic growth, in other words, the pace of increase in national wealth and living standards. Evidence from the 2007/08 global financial and economic crisis indicates that if not well managed and coordinated, macroeconomic and financial policies also have the potential to undermine economic growth.

Each of these policies and related instruments influence real economic activity in different ways:

(a) Fiscal Policy – In a situation of slow economic growth, fiscal policy might involve an increase in expenditure or reduction in taxes by government to stimulate activity. A rise in spending by government and lower taxes generate an increase in demand, including consumption, providing an incentive for businesses to invest and expand operations to meet the higher demand; thus

making a positive contribution to economic growth.

(b) Monetary Policy – With regard to monetary policy, again assuming a need to support economic growth, a reduction of interest rates by the central bank, in the right doses, will lower the cost of finance, therefore, potentially leading to higher demand by consumers and investment by businesses, and ultimately raising the overall rate of economic growth.

(c) Exchange Rate Policy – A discretionary devaluation or maintenance of an undervalued exchange rate could be undertaken in order to enhance the competitiveness of the domestic industry in external markets and against imports. This is relevant for supporting sustainable industrialisation and diversifying sources of growth, and may similarly raise the overall rate of economic growth.

(d) Financial Policies – In this area, a sound, stable and inclusive financial sector not only facilitates the conduct of transactions and payments, but it is also the conduit through which macroeconomic policies are transmitted to real economic activity. Thus, there is need for continuous attention to ensure the developmental aspects, as well as integrity, safety, stability and a well-functioning financial sector to support sustainable and inclusive economic growth.

Communication is also important in ensuring ultimate efficacy of the various policies or actions and decisions. Efficacy or potency in this regard would mean policy action having the desired or intended outcome. In the examples given above, this would mean higher rates of economic growth with respect to fiscal and monetary policies and a faster pace of industrialisation arising from the exchange rate policy.

Going back in history, there was a time when policymaking was shrouded in secrecy, with policy framework and actions designed to surprise the market; the language of policy makers was coloured by obfuscation and ambiguity in order to generate uncertainty. In particular, a mystique surrounded central banks. The former Chairman of the US Federal Reserve Bank (FED) Allan Greenspan even said in 1987, *"Since I have become a central banker, I have learned to mumble with great incoherence. If I seem unduly clear to you, you must have misunderstood what I said."*

Indeed, in a Speech in 2014, the President of the European Central Bank, Mario Draghi, pointed out that there was a time when the FED would not even publish its interest rate decisions. At the time the FED would let the outside world derive the interest decisions from the market reaction; it was only in 1994 that the FED decided to make its interest rate decisions public in real time.

No doubt things have changed and economic policy making now involves phrases such as “forward guidance” as a real policy tool designed to enable markets and the public to anticipate the direction, magnitude and timing of policy action. And in this regard, the manner and wording of communication becomes crucial.

Therefore, communication is an instrument of macroeconomic policy, without which the desired outcomes would not be realised or would be realised only sluggishly. There are two related dimensions to this. First is, economic and policy awareness that helps the public and economic agents to anticipate policy action; the so called expectations. Second is the direct relaying of information on policy action and the intended outcome.

In both these cases, three pillars support effective communication. On one side are the policy institutions, in the middle, a vibrant and knowledgeable media, while an economically aware, participative and responsive market and economic agents are the third pillar. That said, in order for the communication tool to be effective in macroeconomic policy formulation, the institutions and frameworks for policy need to have sufficient integrity. In turn, integrity is derived from clarity with respect to governance, policy setting, operational and accountability frameworks, as well as transparency and consistency.

Regarding general awareness and understanding of economic and financial matters, we need to appreciate that, generally, economies are characterised by business cycles of varying lengths and intensity, driven by various factors. While this Brief does not go into details, the message it is relaying is that the various macroeconomic policies are programmed to respond to such cycles. Therefore, economic awareness entails understanding the state of the economy, the current cycle, the direction or momentum, and, therefore, anticipate policy direction. Thus, in terms of macroeconomic indicators, an up-cycle is normally characterised by acceleration in economic growth and credit demand, and an increase in inflation. In this instance, a well-informed market and public will anticipate that the next set of policies would be contractionary. The converse is true, where sustained low and falling inflation, depressed economic growth and credit demand should engender expectations of expansionary or accommodative monetary policies.

Therefore, in this environment of well-informed expectations and trust in the stabilising capacity and potency of instruments arsenal of the authorities, there is less risk of market overreaction to the path of economic indicators. Indeed, economic agents might take stabilising and

policy reinforcing decisions. Consequently, once a policy-setting institution has built up integrity and reputation, markets and economic agents generate belief and respond accordingly because the institution consistently does what it says it will do in given circumstances.

Communication is evolving with respect to two areas of macroeconomic policy formulation in Botswana. It will be appreciated that in the areas of monetary policy and exchange rate policy, there is ongoing improvements and clarity relating to institutional setting, policy framework and parameters, instruments and decision-making cycles and dissemination platforms. Such developments have greatly improved understanding and efficacy of these policies.

Regarding monetary policy, the Bank of Botswana has now entrenched a price stability objective of 3 – 6 percent, where the institutional set-up entails six pre-announced meetings in a year, of the Monetary Policy Committee that assesses developments, the economic outlook and makes a policy decision. A media briefing and a Statement announcing the policy decision and related background information follow each meeting. The annual Monetary Policy Statement and its Mid-term Review serve as the anchor for dissemination of the monetary policy framework, policy analysis and guide for expectations on economic and policy outcomes.

In this regard, awareness of the policy framework, institutional arrangements for decision-making and consistency, promote the necessary integrity and transparency that foster efficacy of monetary policy. In essence, economic agents are able to anticipate, as well as respond to policy action. In addition, markets are more aligned to the policy stance. The Bank, therefore, views the maintenance of a transparent and accountable monetary policy and the related communication strategies, as contributing to sustained attainment of the inflation objective.

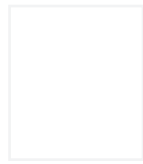
The exchange rate policy is also much more transparent. It is now clear to the market that we have a fixed exchange rate, albeit in a crawling band arrangement, pegged 55 percent to the SDR and 45 percent to the South African rand. It is also known that the exchange rate is continuously adjusted using an annual rate of crawl based on the difference in the projected inflation of the trading partner countries and Botswana’s inflation objective; this rate of crawl is public knowledge, typically announced at the beginning of the year. Such transparency has removed uncertainty in the management of the exchange rate. Thus, economic agents can use market information and forecasts with respect to the freely traded currencies (that constitute the Pula basket) and inflation, to

anticipate the Pula exchange rate. In this regard, certainty about the policy path helps to anchor economic decisions in a manner desired by policy action, and that is supportive of industrialisation and economic growth objectives.

Effective communication also entails common understanding and usage of language. In this regard, there is need, on the part of policy-setting institutions, for consistency in definitions, in the meanings of adjectives attributed to magnitudes of changes and movements in economic indicators, as well as the wording/interpretation of policy action (or non-action). To the extent that such common language is accepted and used by the media, policy analysts and commentators, it becomes a tool in policy formulation that has an intended impact on economic decision making. However, on the other hand, misreporting, either deliberately or due to lack of understanding of some key concepts, could cause unnecessary confusion in the market and, therefore, be detrimental to the implementation of these macroeconomic policies.

Communication also entails proper identification of spokespersons for the policy setting institution and matters on which they are responsible. A proper arrangement in this regard, promotes credibility and effectiveness of policy communication. For example, the Governor of the central bank is normally and appropriately the singular voice on monetary policy, while the Minister responsible for finance or treasury, is the singular voice on fiscal policy.

To conclude, it should be pointed out that dissemination platforms are also an important component of policy effectiveness, and determine the reach and credibility of macroeconomic policy. For the Bank, we find high-level gatherings such as the launch of the Monetary Policy Statement, Economic Briefings following publication of the Annual report, as well as media briefings following Monetary Policy Committee meetings, to be very important. These facilitate both information dissemination, exchange of ideas, as well as feedback and evaluation of their performance. Extensive use of the website also allows for wider and continuous access to information and external contributions and commentary. The Bank also finds that research and publications, as well as participation in workshops and seminars, help to project the quality and content of the Bank's work, which also engenders credibility and integrity of the sources of policy analysis and decisions.



Public Investment and Private Capital Formation in Botswana

Thobo Ratsebe and Lesego Molefhe¹

ABSTRACT

This paper examines the short- and long-run relationships between public investment and private capital formation in Botswana. This has important implications for the size, management and efficiency of government investment projects and policies. The study follows Barth and Cordes (1980) and adopts the cointegration technique of vector error correction model (VECM) using annual time series data from 1985 to 2015. The results indicate a negative impact of public investment on private capital formation in the long run. However, in the short run, the impact is positive but insignificant. This implies that public policy should, therefore, focus on improving efficiency in implementation and coordination of government investment projects and business support initiatives, as well as creating an enabling environment for the development, sustenance and growth of private entities.

1. INTRODUCTION

Public investment remains a crucial catalyst for employment creation and economic growth in both developing and developed economies (Atukeren, 2006; Straub, 2008; World Bank, 2009; and Estache *et al.*, 2012). However, harnessing the macroeconomic dividends of public investment depends largely on the capacity and efficacy of the available public capital stock to promote or crowd-in private investment. Therefore, economic research on growth models across different countries is increasingly focusing on attempts to understand the nature of the relationship between public and private investment (Hatano, 2010; World Bank, 2009; Straub, 2008; Erden, 2005; Ramirez, 2006). Immense interest lies in establishing, in each country of study, whether public investment crowds in private investment as asserted by the endogenous growth model or whether the reverse

dynamic claimed by the classical theorists prevails.²

The nexus between these two economic fundamentals remain a contentious subject in economic literature, primarily because there are multifarious crucial factors that influence the link (Erden, 2005 and Atukeren, 2006). In the theoretical space, increasing public investment in social services and in both physical and human capital is enough to crowd in private investment or motivate decisions by economic agents to invest and/or expand existing investment ventures. Public investments of this nature, including, *inter alia*, expenditure on health care services, infrastructure development and human capital formation, crowds in private investment by raising the marginal productivity of the private capital stock (Barth and Cordes, 1980 and Aschauer, 1988).

However, there is an argument that, in relative terms, the crowding-in of private investment is heavily dependent on aligning public investment with the specific needs of the private sector, rather than just mere expansion of the public capital stock (Handjiski, 2009). For this reason, public policy intervention in developing countries, including Botswana, is increasingly (in recent years) inclined towards addressing specific challenges faced by the private sector, rather than focusing solely on substantial accumulation of public capital stock. For Botswana, in line with the country's broader national objective of economic diversification and sustainable economic development, the government has put in place a number of policy packages and programmes whose primary objectives are to create a conducive business environment and mitigate constraints that impede the development and growth of both domestic and foreign-owned private enterprises. Public institutions, such as the Local Enterprise Authority (LEA), Botswana Development Corporation (BDC), Citizen Entrepreneurial Development Agency (CEDA) and Botswana Investment and Trade Centre (BITC), have been established specifically to address challenges relating to limited access to finance, entrepreneurial capacity constraints and difficulties in accessing foreign markets.

Therefore, in view of the support rendered to the private sector by the Government of Botswana, a rational inference can be drawn that the endogenous growth ideology that public investment crowds in private investment may actually be true in the case of Botswana. However, there are several factors that may disrupt the hypothesised nexus, and possibly lead to the reverse dynamic, where

1 Economists, National Economics and Modelling and Forecasting Units, respectively, Research and Financial Stability Department, Bank of Botswana. The views expressed in this paper are those of the authors and do not necessarily reflect those of the Bank of Botswana.

2 Economic theory holds diverging views on the impact of public investment on private capital formation. According to the endogenous growth theory, public investment crowds in private investment, while classical economists argue that public investment crowds out private investment.

public investment is inimical to private capital formation. For example, the Investment Matters report by the World Bank (2009) identifies efficiency of public investment as a principal condition necessary for the crowd-in effect to manifest. According to the report, if the public sector can carry out its investment projects and programmes more efficiently, thus, restrain overall expenditure by cutting back on wastage and focus attention on quality investment portfolios, the return on private investment will grow, providing an incentive and opportunity for private sector growth.

However, empirical evidence on the efficiency of public investment in Botswana casts doubt on the country's capacity to efficiently implement its investment projects and programmes to the benefit of private sector growth. Setlhare and Feger (2013), in their assessment report to the Ministry of Finance and Development Planning (MFDP)³ on the Impact of Macroeconomic Policy on Growth and Employment, found public investment in Botswana to be inefficient. The results of the study show that government investment, specifically in infrastructure development (approximated by construction of roads) and the energy sector is grossly inefficient; on average, approximately 12 percent of the investment undertaken in these sectors neither contributes nor adds any value to private sector growth or aggregate economic growth. Recent publications by the IMF on the quality of public investment in Botswana (Public Investment Management Assessment Report 2017 and the 2015 Article IV IMF Consultation to the Government of Botswana) also highlights the capacity challenges faced by the country in implementing its investment projects. According to these reports, while Botswana generally performs better than its peers in access to social infrastructure (i.e., education and health care facilities), service delivery of economic infrastructure, particularly in the electricity sector, is quite poor. The IMF, in their assessment of Botswana's Public Investment Management, found that, despite Botswana's relatively high investment levels in economic infrastructure, the country has a significant public investment efficiency gap. The country's public investment efficiency gap is estimated at 37 percent compared to an average of 27 percent for the world and Emerging Market Economies (EMEs). The estimated gap suggests that, about one third of Botswana's public investment does not result in maximum quality of infrastructure assets.

3 Now the Ministry of Finance and Economic Development (MFED).

Therefore, in the context of inefficiency⁴ in government investment, it is highly probable that the inference on the *crowding-in effect* may be rejected in the case of Botswana. In other words, it is unclear whether public investment affects private investment negatively or positively in Botswana, and the literature on this subject does not offer enough guidance either.⁵ The objective of this study is therefore to establish how public investment has affected private capital formation over the past 30 years, amidst the country's challenges in efficiently implementing its investment projects. The rest of the paper is structured as follows; Section 2 presents a review of the relevant literature. An overview of investment in Botswana is discussed in Section 3, with Section 4 dedicated to methodology, while Section 5 describes the data used. The results are presented in Section 6 and Section 7 concludes.

2. LITERATURE REVIEW

Economic theory holds diverging views regarding the impact of public investment on private capital formation, with two predominant schools of thought on the subject (Aschauer, 1989). One school of thought (comprising mostly endogenous growth theorists) is of the view that public investment in infrastructure, human capital development and innovation crowds in private investment by raising the productivity of private capital. In other words, private sector growth depends largely on public policy measures. For example, subsidies for research and development and/or human capital training promote private investment by increasing the incentive for innovation.

The opposing school of thought (mainly classical economists) contends that public investment requires financing and, therefore, could crowd out private investment by reducing the amount of savings available for private investment. In addition, the crowding-out effect may occur in an

4 The efficiency of public investment is the relationship between the value of the public capital stock and the measured coverage and quality of infrastructure assets. The level of efficiency in a given country is calculated as the distance from an efficiency frontier, which is defined by the countries with the highest coverage and quality of infrastructure (output) for a given level of public capital stock (input) [IMF staff Report (2015)].

5 A number of studies have been conducted on public and private investment dynamics in Botswana. However, none of the studies deals explicitly with nor provides empirical evidence on the nexus between these two fundamentals. For example, Lesotho (2006) assessed the determinants of private investment in Botswana. However, the study did not consider the possible effect of public investment on private investment; attention was narrowly restricted to the influence of monetary phenomenon and aggregates on private investment. Several Bank of Botswana publications (Annual Reports; 1993, 2003, 2012, 2015; Research Bulletin; Mokoti and Sediakgotla, 2014) have also examined total factor productivity and growth determinants, subjects that have direct implications for and linkages to public and private investment dynamics.

economy where, there exists fierce public-private sector competition for scarce human capital.

Other strands of economic theory are, however, impartial on this subject. For example, the neoclassical growth theory holds that crowding-in effect would only prevail under certain conditions; precisely when public investment is efficient and complements the existing private capital stock. By implication, if the investment endeavours of the public sector fail to meet these conditions, then relentless scaling-up of public investment may be detrimental to private investment in the long run. The most recent research findings on the subject also seem to be inclined towards the neoclassical ideological stance. According to the Investment Matters report by World Bank (2009), if the public sector fails to carry out its investment projects and programmes more efficiently, thus, fails to cut wastage of public resources and ignores the need for quality investment portfolios, the return on private investment will be suppressed and so will the incentive for private investment and overall growth in the private sector.

Empirically, studies have also been conducted on the subject and evidence of both the crowding-in effect and crowding-out effect of public investment on private capital formation has been established across different economies. Erenburg and Wohar (1995), using Tobin's q model of private investment, found evidence of the crowding-out effect in the United States. However, the study failed to establish a definitive direction of influence of public investment on private capital formation using the accelerator investment model.

Lee and Suruga (2005) found the same results from a panel of 105 developed and developing countries. The study assessed the impact of public investment on foreign direct investment (FDI) and found evidence that excessive public expenditures retard FDI.

Evidence from Acosta and Loza (2005) supports both crowding-out and crowding-in effects in the short and long run, respectively, in the Argentinean economy. According to the study, the "crowding-in effect" reflects the long-run positive externalities emanating from investment in infrastructure and human capital development. On the other hand, adverse effects of public investment expansions prevail when such expansions lead to fierce competition for scarce resources, particularly the limited supply of capital.

A study on determinants of private investment in Fiji by Seruvatu and Jayaraman (2001) and (Bayraktar 2003) found that crowding-in private investment is not only dependent upon the stock of public capital, but is largely dependent on the quality of that stock of capital; thus, the efficiency of public investment is crucial as asserted in the

Investment Matters report of the World Bank (*ibid*). Seruvatu and Jayaraman (2001) show that the success of private investment depends largely on the ability of the public sector to provide a business environment supportive of cost reductions in power, transport and communication services.

Oshikoya (1994) explored the relationship between public infrastructure and private investment for a panel of selected African countries, and found that public infrastructure has a positive impact on private domestic investment, while non-infrastructure investment exerts a negative influence.

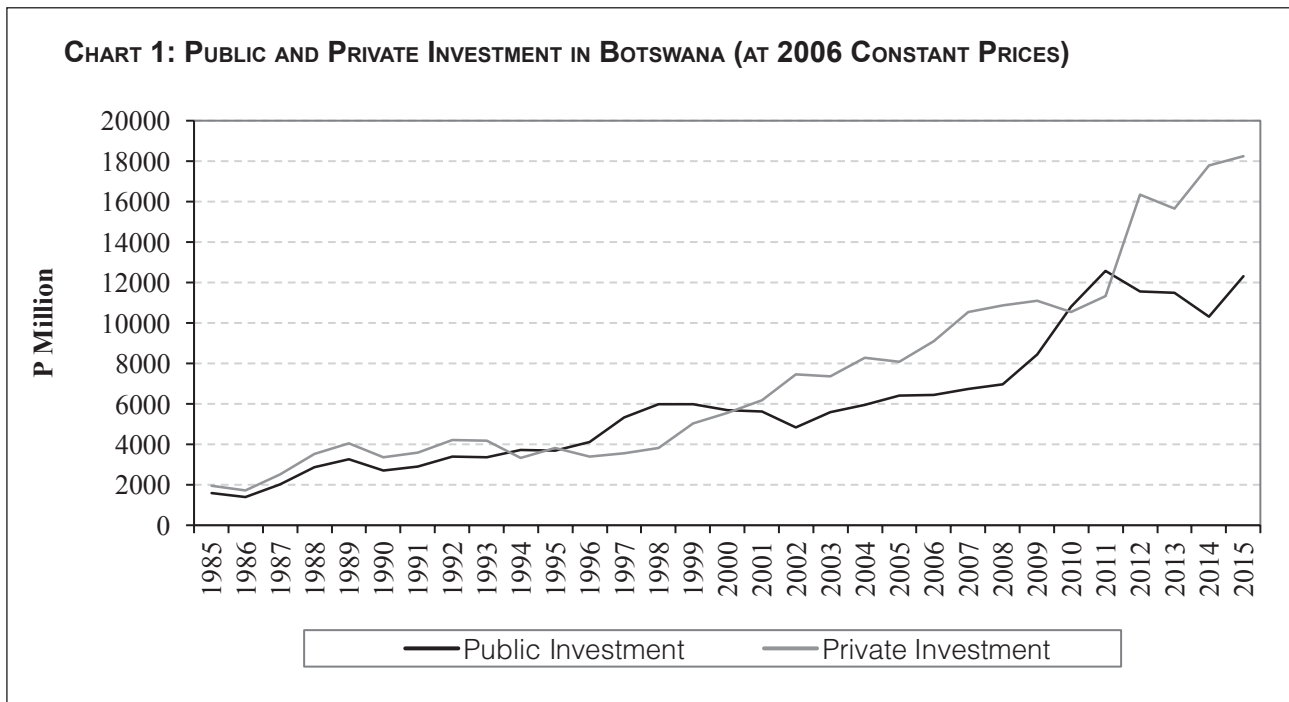
Ghali (1998) also explored the impact of public investment on private investment and economic growth in Tunisia for the period 1963-93. The results show that, in the long run, public investment has a negative impact on growth and private investment, whereas, in the short run, public investment impacts negatively on private investment and has no effect on economic growth.

The most recent study on this subject is by Estache *et al.* (2012), using a computable general equilibrium (CGE) model approach. The study examined the impact of infrastructure spending on private investment and economic growth in six sub-Saharan Africa countries. The model results show that scaling up infrastructural development spending produces varying outcomes in the countries of study. Based on the specific economic structure of each country, scaling up infrastructural investment can either crowd-in or crowd-out private investment. According to the study, outcomes of the crowding-in effect dominated in countries where expansion in infrastructural development was aligned with the specific needs of the private sector and the economy at large.

Overall, empirical literature indicates that the question of whether public investment crowds-in or crowds-out private domestic investment remains ambiguous and heavily dependent on a variety of mediating factors that include, but are not limited to, efficiency of public investment, the size or scale of the investment and the structure of the economy.

3. OVERVIEW OF PUBLIC AND PRIVATE SECTOR RELATIONSHIP IN BOTSWANA

The Government of Botswana has undertaken a number of measures and adopted several Industrial Development Policies (IDP, 1984, 1998 and 2014) to promote private investment, employment creation and economic diversification through targeted business development incentives and support mechanisms. From the 1980s to the late 1990s, the fundamental strategy of public policy was promotion of tradeable goods, imports



Source: Statistics Botswana and Bank of Botswana

substitution; but, more importantly, exports growth to help diversify the economy, reduce vulnerability and create productive economic and employment opportunities for Botswana.

However, increasing the need for reduction in trade barriers, necessitated mainly by economic globalisation and trade agreements of the time,⁶ diminished the potency of this strategy, particularly the import substitution part of the strategy. The Government, therefore, revised its strategy in 1998, and directed its focus on providing efficient supporting services to export-oriented industries through the IDP of 1998. In addition, the policy recognised the crucial role played by Small, Medium and Micro Enterprises (SMMEs) in expediting the industrialisation process. In this regard, the policy set out strategies to address direct challenges impeding the development and growth of these enterprises, through establishment of business support institutions, including LEA, CEDA and Botswana Export Development and Investment Authority (BEDIA), which was merged with the International Financial Services Centre to form BITC. The 1998 IDP, however, as was the case with the IDP of 1984, did not reach its envisaged level of private investment, economic diversification and employment creation, mainly on account of inefficient coordination of the policy initiatives (implementation capacity constraints), poor resource mobilisation to the private sector and inadequate infrastructure and energy supply for industrial development (IDP, 2014).

The most recent focus for the Government of Botswana's fiscal policy strategy is to align public

investment with the needs of the private sector through direct spending on business supportive infrastructural development and training towards the specific needs of the business sector (Botswana Budget Strategy Paper, 2013; National Development Plan 10; IDP, 2014). Furthermore, as a way to improve public sector efficiency in service delivery and overcome fiscal constraints, the government intends to create space for the private sector in public infrastructure projects through Public Private Partnerships (PPPs). The initiative is intended to assist government in its investment projects through formation of synergistic relations, which offers complementary human and capital resources, with private entities.⁷

The Government clearly recognises the vital role played by private sector investment in economic progress and supports the idea of promoting private investment through expanding both the size and quality of public sector investment. Chart 1 shows trends for both public and private investment over the past 3 decades (1985 – 2015), which are largely similar except for the latter years.

The relationship between these two variables is ambiguous, characterised by long periods of positive correlation (example, 2000-2010) and short periods of negative correlation (2011-2015). This ambiguity necessitates application of more robust

⁷ It should be noted however, that there are shortcomings associated with PPP ventures, for example, the study by Van Herpen (2002) on the strength and weaknesses of PPP in Netherlands, found that, PPP contracts are much more complicated to negotiate and administer than traditional contracts, particularly because there are many actors involved. According to Van Herpen (2002), PPP contracts usually require more time, effort, complexity of contract forms and additional expertise (which are usually paid for by the government) than conventional contracts in projects singly undertaken by the public or private sector.

⁶ Example, WTO agreement and the 1996 SADC Protocol on Trade Cooperation.

estimation techniques to determine the nature of the relationship between these two fundamentals in Botswana. For the purpose of this study, estimations will only be restricted to assessment of the impact of public investment on private capital formation. Empirical literature (across countries at the same stage of economic development with Botswana) on this subject provides diverging views, with evidence of both the crowding-in and crowding-out response of private capital formation to expansion in public investment (Hatono, 2011; Hyder, 2002; Narayan, 2004 and Acosta and Loza, 2005).

According to Erden (2005), Atukeren (2006) and Ramirez (2006), there are mediating variables or factors affecting the nexus. For example, Atukeren (2006) shows that private investment is not only crowded in by the volume or endowment of public capital stock, but also, to a significant degree, by the quality and efficiency of the stock of that capital. Robust estimation techniques are employed in the subsequent section to establish the nature of the relationship in the case of Botswana.

4. METHODOLOGY

This study follows the methodological approach of Barth and Cordes (1980), Aschauer (1988), Ramirez (1994) and Ghali (1998) in investigating the impact of public investment on private capital formation. The econometric model applied derives specification from the neoclassical production function, which disaggregates total capital stock into private and public capital stock, as shown in the following formal representation of the function:

$$Y = F(L, K_p, K_G) + E_Y \dots \dots \dots (1)$$

$$F_1 = \frac{dY}{dL} > 0, F_2 = \frac{dY}{dK_p} > 0; F_3 = \frac{dY}{dK_G} > 0, F_4 = \frac{dY}{dK_G} < 0; F_{23} = \frac{dK_p}{dK_G} > 0, F_{23} = \frac{dK_p}{dK_G} < 0$$

Where Y is the level of real output, L is employment level, K_p is private capital stock, K_G is the stock of public capital and E_Y is the shift parameter of the model. F_1 , F_2 , F_3 and F_{23} are relational dynamics between: employment and output; private capital stock and output; public capital stock and output; and public capital stock and private capital stock, respectively, as postulated by the neoclassical theory. According to the theory and empirical findings of Barth and Cordes (1980), Aschauer (1988), Ramirez (1994) and Ghali (1998), if public investment is efficient and complements the available private capital stock, then an increase in public investment, ceteris paribus, directly increases output ($F_3 > 0$) and indirectly crowds in private investment ($F_{23} > 0$) by increasing the marginal efficiency of private investment.⁸ By

implication, if public investment is inefficient and competes for scarce resources with the private sector, then an increase in public investment, ceteris paribus, would have a detrimental impact on private investment, thus ($F_{23} < 0$).

The neoclassical production theory is preferred over all other theoretical models of production primarily because it provides room for analysis of the interaction between private and public capital stocks and their respective impact on the level of output and employment. However, in line with the objectives of this study, empirical analysis in this paper is restricted to F_{23} (the relationship between public and private investment) while other relational dynamics (F_1 , F_2 and F_3) asserted by the theory are not explored. To test the short and long-run dynamic properties of F_{23} in Botswana, this study employs a vector error correction model (VECM). The structure of the theoretical approach adopted in this paper (Equation 1) warrants a VECM approach (equations 2 to 5), which captures both the short- and long-run causation and the direction thereof, among all the model variables.

$$\Delta I p_t = \delta_0 + \delta_{11} \Delta Y_{t-1} + \dots + \delta_{1p} \Delta Y_{t-(p-1)} + \delta_{21} \Delta I p_{t-1} + \dots + \delta_{2p} \Delta I p_{t-(p-1)} + \delta_{31} \Delta I g_{t-1} + \dots + \delta_{3p} \Delta I g_{t-(p-1)} + \delta_{41} \Delta L_{t-1} + \dots + \delta_{4p} \Delta L_{t-(p-1)} + \gamma_1 ECT1_{t-1} + \varepsilon_{1,it} \quad (2)$$

$$\Delta Y_t = \delta_0 + \delta_{51} \Delta Y_{t-1} + \dots + \delta_{5p} \Delta Y_{t-(p-1)} + \delta_{61} \Delta I p_{t-1} + \dots + \delta_{6p} \Delta I p_{t-(p-1)} + \delta_{71} \Delta I g_{t-1} + \dots + \delta_{7p} \Delta I g_{t-(p-1)} + \delta_{81} \Delta L_{t-1} + \dots + \delta_{8p} \Delta L_{t-(p-1)} + \gamma_1 ECT1_{t-1} + \varepsilon_{2,it} \quad (3)$$

$$\Delta I g_t = \delta_0 + \delta_{91} \Delta Y_{t-1} + \dots + \delta_{9p} \Delta Y_{t-(p-1)} + \delta_{101} \Delta I p_{t-1} + \dots + \delta_{10p} \Delta I p_{t-(p-1)} + \delta_{111} \Delta I g_{t-1} + \dots + \delta_{11p} \Delta I g_{t-(p-1)} + \delta_{121} \Delta L_{t-1} + \dots + \delta_{12p} \Delta L_{t-(p-1)} + \gamma_1 ECT1_{t-1} + \varepsilon_{3,it} \quad (4)$$

$$\Delta L_t = \delta_0 + \delta_{131} \Delta Y_{t-1} + \dots + \delta_{13p} \Delta Y_{t-(p-1)} + \delta_{141} \Delta I p_{t-1} + \dots + \delta_{14p} \Delta I p_{t-(p-1)} + \delta_{151} \Delta I g_{t-1} + \dots + \delta_{15p} \Delta I g_{t-(p-1)} + \delta_{161} \Delta L_{t-1} + \dots + \delta_{16p} \Delta L_{t-(p-1)} + \gamma_1 ECT1_{t-1} + \varepsilon_{4,it} \quad (5)$$

Where δ 's are the model parameters, ECT's are the residuals from the long-run cointegrating relationship and γ represent the speed of adjustment to equilibrium. Equation (2) is the relationship of interest in this study (the relationship between public and private investment); and as such, only the estimation results of Equation (2) are presented and discussed going forward. In principle, a long-run causality from public investment to private investment exists if γ_1 is negative (less than 0, but greater than -1) and statistically significant, while short-run causality from public investment to private investment exists if $\delta_{31}, \dots, \delta_{3p}$ are statistically significant.

⁸ $F_1 > 0$ and $F_2 > 0$ indicates that, expansions in employment size and private capital stock, respectively, have a positive impact on aggregate output.

5. DATA DESCRIPTION

This study uses annual time series data of real GDP (Y), employment level (L), as well as public (I_g) and private capital formation (I_p) over the period 1985 to 2015, sourced from Statistics Botswana. Private capital formation is measured as outlays or additions of new durable goods to the stock of fixed private assets less net sales of similar second-hand and scrapped goods. This study did not approximate public investment by government development spending (a custom in studies of this nature) as this measurement includes several major items that are not properly classified as investment. Public investment is rather captured as, outlays or additions of new durable goods to the stock of fixed public assets less net sales of similar second-hand and scrapped goods. Logarithmic transformations were employed for all the variables to mitigate volatility observed in each individual series. In addition, with logarithm transformations, the model estimates the elasticity or sensitivity of private investment to marginal changes in the fitted regressors (most importantly, public investment).

6. ESTIMATION OF RESULTS AND FINDINGS

Test for unit root

The Augmented Dickey Fuller (ADF) test was used to determine the order of integration of the model variables. The test indicates that all the variables are integrated of order one (Table 1).

TABLE 1: UNIT ROOT TEST RESULTS

	Stationarity (Levels)	Stationarity (First Difference)
Variables	ADF (P-Values)	ADF (P-Values)
Y	0.3240	0.0035***
I _p	0.8330	0.0001***
I _g	0.5972	0.0031***
L	0.3193	0.0469***

Note: *** denotes the rejection of the null hypothesis of unit root at 5 percent level of significance.

Cointegration Test

The unit root test results in Table 1 indicate that all the variables of interest become stationary after the first difference. It is therefore imperative to estimate any relationship between these variables in first difference, to avoid spurious results. Furthermore, a cointegration test was conducted to establish whether there may be co-movements of these variables and possibilities that they will trend together towards a long-run equilibrium

state. Using the Johansen cointegration test, there is evidence to suggest the existence of a long-run relationship between aggregate output, employment, public investment and private investment at the 5 percent significance level. The test results are presented in Table 2.

TABLE 2: JOHANSEN COINTEGRATION TEST RESULTS

Hypothesised Number of Cointegrating Equation(s)	Prob. (Trace Test)	Prob. (Max-eigenvalue Test)
None *	0.0000	0.0000
At most 1	0.0978	0.0989
At most 2	0.2802	0.2802

Note: Trace and max-eigenvalue tests indicate 1 cointegrating equation at the 0.05 level

Results of the VECM

The coefficient of ECT (Y₁) in Table 3(a) is negative and statistically significant at the 10 percent level of significance, indicating the existence of a long-run causality from public investment to private capital formation, while short-run causality does not exist. The exact nature of this long-run relationship is presented in Table 3(b), which indicates that private capital formation responds negatively to changes in public investment. The results suggest that a one percent increase in public investment lowers private capital formation by approximately 1.5 percent in the long run. This results suggest that there is either fierce competition between the government and the private sector for productive resources or the government's limited capacity to efficiently implement its investment projects negates the benefits (to the private sector) associated with increases in public investment. However, in light of other evidence (IMF, 2015 and 2017; BOB, 2016; and MFDP, 2013) it is more likely that the latter is the main reason behind the observed phenomenon. Thus, inefficiencies in public sector investments that relates to deficiency in public investment management systems, under provision of basic infrastructure, inadequate coverage and unreliable supply of principal resource inputs (mainly water, electricity, telecommunication and internet services connectivity) and bureaucracy in business registration and licensing, as well as stringent immigration laws suppress the potency of government investment to foster private sector development.

TABLE 3(A): VECM ESTIMATION RESULTS

Variable	Constant	ECT	ΔI_{t-1}	ΔY_{t-1}	ΔI_{t-1}	ΔL_{t-1}
Coefficients	-0.002	-0.21	0.10	0.172	0.284	1.426
Probability Value	[0.96]	[0.08*]	[0.96]	[0.82]	[0.24]	[0.13]

Note: * Indicates statistical significance at 10 percent level.

TABLE 3(B): NORMALISED LONG-RUN RELATIONSHIP OR COINTEGRATING EQUATION

Variable	I_{t-1}	Y_{t-1}	L_{t-1}
Coefficients	-1.486	3.431	0.085
t-statistics	[4.22***]	[6.43***]	[1.27]

Note: *** Indicates statistical significance at 1 percent level.

The diagnostic test results on adherence of the residual of the estimated VECM to the standard assumptions are presented in Appendix. According to the test results, the estimated model does not depart from the standard assumptions of homoscedastic and uncorrelated stochastic terms and stable and normally distributed model estimates. Intuitively, the size, sign and significance of parameter estimates of this model are valid and reliable.

7. IMPACT OF PUBLIC SPENDING ON THE PRIVATE SECTOR

The results of the estimation appear counter-intuitive in a developing country and ostensibly free market environment, where government infrastructure spending and entrepreneurial capacity building should foster enhanced private sector investment and participation in the economy. Furthermore, Government policy and specific programmes in Botswana are targeted at promoting business development, entrepreneurship and private sector growth. Indeed, there is limited evidence to suggest that traditional factors explaining the phenomenon of crowding-out effect are at play in the case of Botswana. For example, the extent of unemployment of productive resources across many economic sectors of the country, particularly unemployment of both skilled and unskilled labour (even though it's a relatively recent problem) rule out public-private sector competition for scarce human capital as a probable cause of

the crowding-out effect.⁹

In addition, substantive grounds cannot be established to suggest that there is competition for capital (financial) resources, particularly given the magnitude of government financial support to the private sector through public institutions such as BDC, CEDA and National Development Bank.

However, there is significant evidence that points directly and indirectly to inefficiencies in public sector investments; weak project implementation and bureaucratic constraints, as well as under provision of basic infrastructure and utilities, as the main factors behind the observed crowding-out effect (IMF, 2015 and 2017; Global Competitiveness Report 2015-2016; BOB, 2016; and MFDP, 2013). For example, in its Annual Report for 2016, the Bank of Botswana assessed Botswana's trade patterns, investment and regional economic integration strategies and cited deficiencies in public investment management systems and persistent inadequate provision of basic infrastructure as the country's main constraints on entrepreneurship, business development and attraction of FDI inflows. According to the Report, a lack of proper management systems and unreliable transport, electricity, water, telecommunication and internet services, continues to weigh down on business appetite and productivity of enterprises. For example, the report highlights that, despite the country's substantial investment in telecommunication and internet connectivity, the cost of internet services in Botswana remains relatively high, internet speed is slow and highly unreliable.

Furthermore, research on business development (Okurut and Ama 2013, BIDPA 2011, OECD 2003), indicates that, even though the Government has, over the years, invested heavily in business development and support institutions to mitigate challenges pertaining to limited access to business credit and entrepreneurial capacity constraints that predominates among SMMEs, the envisaged socio-economic gains of these government programmes remain elusive. According to Okurut and Ama (2013), accessibility to public business support structures remains a big challenge in Botswana, particularly for Micro and Small enterprises operating in the informal sector. There is also evidence of waste and leakage of resources for some of the enterprises that access assistance

⁹ It is important to note that this argument may not necessarily hold at a micro-scale analysis, for example, the 2008 and 2010 Attraction and Retention Policy for the Public Service provides a list of skills, mainly under the science profession, regarded to be in short supply in the country. However, there are cogent reasons that support the validity of the argument in a macro-scale context. The 2015/16 Budget Speech has a commentary that implicitly concurs with this point. According to the report, the prevailing national rate of unemployment (estimated at over 20 percent in 2015) represents a disturbingly high underutilisation of the country's human capital.

in government support programmes. One such programme is the Financial Assistance Policy (FAP), which was terminated in 2001 after recording high failure rates among the businesses assisted, as well as wide spread abuse of the scheme by some beneficiaries (OECD, 2003).

Two crucial implications can, therefore, be drawn from these examples. First, there is a persistent problem of sub-standard management of public investment projects (deficiencies in project appraisal, selection, implementation and evaluation), a phenomenon that ultimately leads to an insufficient supply of business input resources, disruptions in the production process, and high cost of doing business.

The second implication is that, there may be problems of adverse selection in choosing appropriate business community groups for direct public institutional support (funding, capacity building, mentoring and incubation). It is possible that substantial government support (notably, financial assistance) is channelled to the 'wrong business community groups' that are incapable of driving both employment creation and private sector growth at the expense of 'appropriate business community groups'. Therefore, to the extent that this assessment is true, there are grounds for sustaining the belief that public institutional assistance to the private sector is not preceded by in-depth assessment of the most appropriate cohort of entrepreneurs for each proposed nature of support. Such an assessment is crucial to ensure that public resources are channelled to their best and most effective use.

Another form of public sector inefficiency emanates from business institutional regulatory frameworks and controls. According to the World Bank (Doing Business Report, 2014), entrepreneurs in Botswana face a number of discouraging bureaucratic and legal hurdles in their endeavour to incorporate and license their entities, register for corporate tax return with the Botswana Unified Revenue Service (BURS) and enlist in procurement and supply of public goods with the Public Procurement and Asset Disposal Board (PPADB). These inflexible and bureaucratic procedures contribute to increased cost of doing business, create a negative perception in the population at large (precisely regarding the ease of doing business) and suppress appetite for entrepreneurship.

8. CONCLUSION

A VECM was estimated to assess the short- and long-run impact of public investment on private capital formation in Botswana (controlling the relationship for expansions in aggregate output

and employment level), and a 'crowding-out effect' was observed. This could be due to inefficiency in the implementation of public investment project that retards progress in government's efforts to promote private investment. Therefore, in addition to layouts on public infrastructure and social programmes, there is need to pay greater attention to enhancing the efficiency of public investment as part of private sector growth strategy. The Government should expedite adoption of public investment complementary reforms that could, over time, build implementation capacity, prevent wastage of public resources and ensure higher investment efficiency. This entails strengthening public investment management systems (i.e., project appraisal, selection, implementation and evaluation), undertake reforms aimed at improving the quality and efficiency of business support institutions, as well as creating an enabling environment for business development, survival and growth. Scaling-up of public investment through programmes such as the Economic Stimulus Programme (ESP) should be accompanied by prudent public investment management measures and a sound institutional environment in order to reap the envisaged growth dividends of such programmes.

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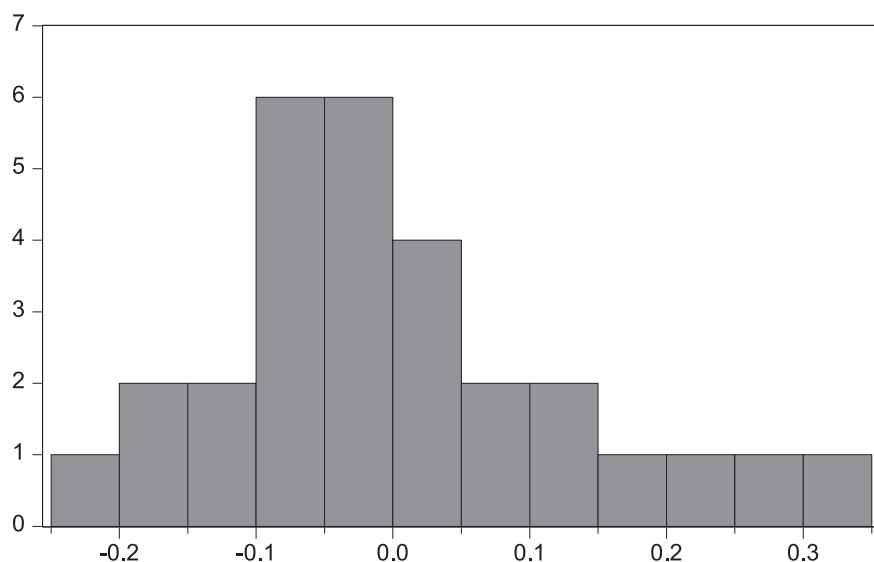
APPENDIX

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.149394	Prob. F(1,22)	0.2953
Obs*R-squared	1.439884	Prob. Chi-Square(1)	0.2302

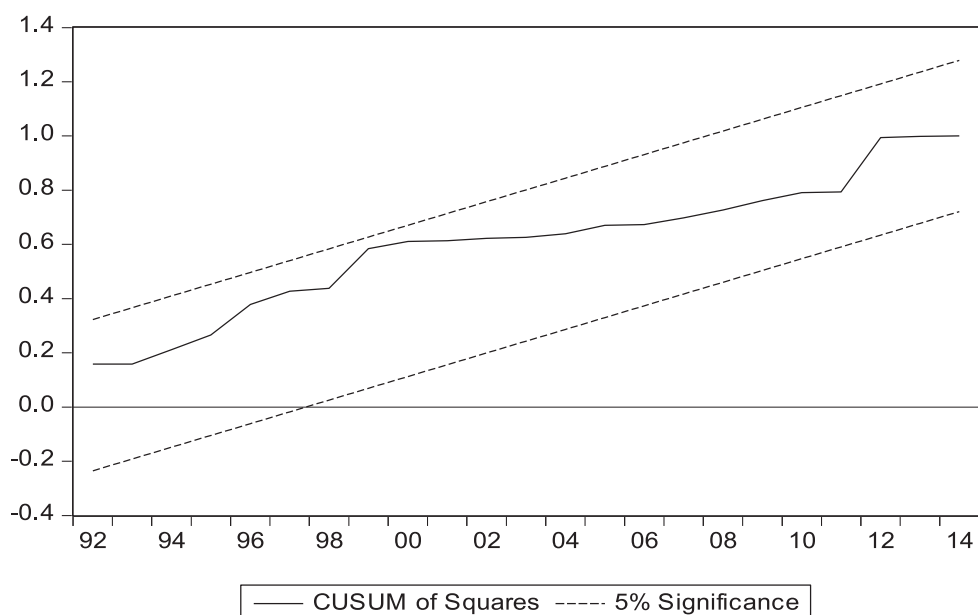
Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.924191	Prob. F(8,20)	0.5178
Obs*R-squared	7.827114	Prob. Chi-Square(8)	0.4505
Scaled explained SS	5.749205	Prob. Chi-Square(8)	0.6753



Series: Residuals
Sample 1986 2014
Observations 29

Mean	-2.23e-15
Median	-0.032433
Maximum	0.326275
Minimum	-0.219653
Std. Dev.	0.133682
Skewness	0.857950
Kurtosis	3.335482
Jarque-Bera	3.693708
Probability	0.157733



— CUSUM of Squares - - - - 5% Significance



Government Spending and Economic Growth in Botswana: Is there a Causal Relationship?

Baby Mogapi and Thato Mokoti¹

ABSTRACT

This paper examines the causal relationship between government development spending and economic growth in Botswana over the period 1994-2016. The study estimates a vector error correction model (VECM) and employs the Granger causality test to determine the direction of causality between government development expenditure and economic growth in Botswana. The results suggest the existence of a long-run relationship between development spending and economic growth as well as confirm both long-run and short-run causality from economic growth to development spending. However, the causality from development spending to economic growth in either the long run or short run could not be confirmed. The study shows that development spending is dependent on economic growth, suggesting that spending should be channelled towards highly productive and demand driven investments that can encourage private sector growth and boost economic growth. This should also be coupled with proper project management and monitoring to ensure quality spending. Furthermore, the results are driven by the fact that in Botswana, mining sector is the main source of government development expenditure.

1. INTRODUCTION

The analysis of government expenditure² and economic growth has over decades become an important subject for debate among researchers and policymakers, primarily because of the belief that government spending can be used to stimulate economic performance. Literature reveals two conflicting views about causality between government spending and economic growth. According to Wagner (1983), an increase in economic activity leads to increased government undertakings, hence injection of capital in various

economic sectors. In other words, causality runs from economic growth to government spending. Therefore, according to Wagner's law, government spending has no significant impact on economic growth. In contrast to Wagner's proposition, the Keynesian view (1936) argues that, for an economy to grow and be stable, government spending is required. It postulates that an increase in total government expenditure stimulates economic growth.

As in other countries, the Botswana Government is continuously making efforts to raise the standard of living through various strategies and policies. For example, the Government of Botswana has, over the years, where necessary and resources permitting, increased fiscal spending and targeting various sectors of the economy to boost economic growth. Notably, in response to the declining economic growth and greater uncertainty faced by the Botswana economy following the global financial crisis of 2007/08 and the subsequent global economic slowdown, the Government maintained high expenditure levels even as revenue growth slowed, in order to support sustained growth. Subsequently, in 2015, the Government introduced the Economic Stimulus Programme (ESP), which aimed at stimulating and diversifying the economy, as well as to accelerate job creation. Spending under the ESP targeted development projects in the various sectors of the economy beyond mining. Given the foregoing, it is worth investigating whether government spending has had the anticipated impact on economic growth in Botswana.

Government expenditure is categorised into development and recurrent spending. Development spending covers capital spending aimed at expanding the productive capacity of the economy. In other words, development expenditure caters for physical assets such as buildings and equipment, which are long-term investments and may include aspects of spending on human development, such as education and health. Conversely, recurrent expenditure is of a consumption nature, mainly on administration expenses, such as compensation of employees, interest on loans, purchase of consumable goods and services as well as maintenance.³ Over the period 1994-2016, recurrent spending has accounted for an average of about 70 percent of total government expenditure. This paper, however, investigates the relationship between government development expenditure and economic growth in Botswana. The use of government development spending in this study is

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² Government spending refers to payments, transfers, subsidies and payments of capital assets. Examples include: compensation of employees, payments for goods and services, as well as interest and rent on land (Mohr Philip, 2000).

³ However, in practice, there is no such clear distinction between development spending and recurrent expenditure. For example, Ipelegeng and HIV/AIDS programmes are classified under development spending even though they are not investment in physical assets.

based on the assumption/belief that development spending enhances economic activity. The paper also attempts to determine the nature and direction of causality between development spending and economic growth.

Section 2 of this paper reviews the relevant empirical literature. Section 3 specifies the methodology, while Section 4 covers data description. Section 5 presents the results of the study and Section 6 concludes.

2. EMPIRICAL LITERATURE

Government expenditure has been on an upward trend in both developed and developing nations since World War II, and the quest for understanding its effect on economic growth (or vice versa), has produced a vast literature seeking to explain the relationship and, in particular, causality (Loizides and Vamvoukas, 2004). Okoro (2013) set out to investigate the relationship between government expenditure and economic growth in Nigeria, employing the Johansen cointegration test, error correction mechanism and Granger causality test for the period 1980 to 2011. He examined the relationship between real gross domestic product (GDP), government capital expenditure and government recurrent expenditure. The results suggest a long-run relationship between government capital expenditure and economic growth in Nigeria, with unidirectional causality from government capital expenditure to real GDP. Similar results were found in relation to government recurrent expenditure and real GDP. The study confirmed the Keynesian theory which states that economic growth is a function of government expenditure.

Salih (2012) tested the relevance of Wagner's hypothesis for Sudan using time series data for the period 1970-2010. The study used cointegration analysis, an error correction model and causality tests. Variables used included government expenditure and real GDP. The results suggested the existence of a long-run relationship between government spending and economic growth, with causality running from economic growth to government spending. There was no evidence to suggest a reverse causality. Hence, the results supported Wagner's hypothesis for the period under consideration.

Lin *et al.* (2010) examined the causal relationship between total government expenditure and economic growth by conducting Panel Granger causality test on 182 countries, covering the period 1950 to 2004. Data on real GDP and real government spending were used and the results supported both Wagner's law and Keynes'

hypothesis, suggesting a bi-directional effect between government spending and economic growth. The study further revealed that, when the countries are disaggregated by income level and the degree of corruption, the results also confirmed the bi-directional causality between government activities and economic growth for the different sub-samples of countries, with the exception of the low-income countries. Lin *et al.* (2010) argued that the distinct feature of the low-income countries is a result of their inefficient governments and inferior institutions.

Using the Johansen cointegration technique and Granger causality model, Chipaumire *et al.* (2010) examined the causal relationship between government expenditure and economic growth in South Africa from 1990 to 2010. The results confirmed the existence of a long-run relationship between total government spending and economic growth in South Africa with a negative causal relationship, suggesting that an increase in government spending had led to a decline in economic growth. Thus, the expansion of public spending did not lead to any meaningful contribution to the South African economy, possibly due to existence of inefficiencies in public programmes resulting in wastages and losses.

Mulamba (2009) also tested the validity of Wagner's law and the Keynesian perspective of a long-run relationship and causality between government expenditure and economic growth in Southern African Development Community (SADC) countries using data from 1988 to 2004. The variables considered were real GDP and total government expenditure, with the latter proxied by general government final consumption and per capita general government final consumption. Using panel cointegration and the estimation of a dynamic error correction model, the results confirmed a long-run relationship between government expenditure and economic growth in SADC countries. Moreover, the study indicated that economic growth leads to high government expenditure in both the long run and short run, which is consistent with Wagner's law.

Using annual data for the UK, Greece and Ireland, Loizides and Vamvoukas (2004) investigated the relationship between the size of government and national income. The data set used consists real income, measured as real per capita gross national product (GNP) and government expenditure measured as public spending on goods and services; together with unemployment rate and inflation. The last two variables were added to validate causality inference based on the simple bivariate system. For the UK and Ireland, the annual time series was from 1960 to 1995 and 1948 to 1995 for Greece. The study used

cointegration analysis, an error correction model and Granger causality test. The results indicated that, for UK and Greece, public expenditure causes growth in national income in both the short run and long run, hence supporting the Keynesian theory. However, for Greece, the results validated Wagner's hypothesis that economic growth leads government expenditure.

3. METHODOLOGY

This paper closely follows the specification employed by Mulamba (2009). The study estimates a vector error correction model (VECM) and applies the Granger causality test in order to determine the direction of causality between government development expenditure and economic growth in Botswana. The VECM is an appropriate approach to use where the variables are cointegrated. This is because in the short term, there are deviations from the long-run equilibrium that can be adjusted through the error correction term in the VECM. Furthermore, the VECM allows economic theory to define the long-run relationship, while data determines the short-run dynamics. Therefore, a vector error correction model for government development spending and economic growth can be written as follows:

$$\Delta DE_t = \varphi_{10} + \varphi_{11}\Delta DE_{t-1} + \varphi_{12}\Delta DE_{t-2} + \dots + \varphi_{1p}\Delta DE_{t-(p-1)} + \varphi_{21}\Delta GDPN_{t-1} + \varphi_{22}\Delta GDPN_{t-2} + \dots + \varphi_{2p}\Delta GDPN_{t-(p-1)} + \gamma ECT1_{t-1} + \mu_t \quad (1)$$

$$\Delta GDPN_t = \varphi_{30} + \varphi_{31}\Delta DE_{t-1} + \varphi_{32}\Delta DE_{t-2} + \dots + \varphi_{3p}\Delta DE_{t-(p-1)} + \varphi_{41}\Delta GDPN_{t-1} + \varphi_{42}\Delta GDPN_{t-2} + \dots + \varphi_{4p}\Delta GDPN_{t-(p-1)} + \gamma ECT2_{t-1} + \varepsilon_t \quad (2)$$

Where:

Δ denotes the first difference of a variable, DE and $GDPN$ are variables representing government development spending and economic growth, respectively. $ECT1$ and $ECT2$ are the residuals from the long-run cointegrating relationship, φ 's are parameters in Equation (1) and Equation (2), p indicates the maximum lag order in the VAR which translates into lag of $p-1$ in the VECM, μ_t and ε_t are disturbance terms which are assumed to be uncorrelated, while γ denotes the time it takes for the deviating variable to return to equilibrium.

Economic growth is considered to cause government spending in the short run if all φ_2 's are statistically significant,⁴ and in the long run, if γ_{1t} is negative and statistically significant. Similarly, government spending causes economic growth in the short run if all φ_3 's are statistically significant, and in the long run, if γ_{2t} is negative and statistically significant.

4 This is evaluated using the Wald test based on the Chi-square.

4. DATA DESCRIPTION

The study uses quarterly data series for the period 1994-2016. The choice of the sample period takes into consideration the unavailability of quarterly GDP data in the earlier period. All variables are in log form. Government development expenditure data is sourced from the Ministry of Finance and Economic Development (MFED), while non-mining real GDP is provided by Statistics Botswana.

5. RESULTS

(a) Unit root tests

The standard ADF unit root test indicates that government expenditure and real GDP are integrated of order one. This is consistent with the results found in the other studies, e.g., Mulamba (2009). The null hypothesis of non-stationarity of DE and $GDPN$ is only rejected after first differencing (Table 1), meaning that they are I(1).

TABLE 1: UNIT ROOT TEST (ADF) RESULTS

		Level	1 st Difference
Government	t-statistic	-1.12	-10.06*
Spending (DE)	critical value	-2.89	-2.89
Non-Mining	t-statistic	-2.73	-8.59*
GDP (GDPN)	critical value	-3.46	-3.46

Note: * denotes the rejection of null hypothesis of unit root at 5 percent level of significance.

(b) Cointegration Tests

Since the two series are I(1), a Johansen cointegration approach was applied to check for the existence of a long-run relationship between government development expenditure and economic growth. A VAR model with one lag selected based on the Schwarz information criterion was used in testing for cointegration. Both the Trace test and the Maximum Eigenvalue test results in Table 2 suggest presence of a long-run relationship between government expenditure and economic growth.

TABLE 2: JOHANSEN COINTEGRATION APPROACH RESULTS

	Trace Test		Maximum Eigenvalue	
Hypothesised no of ce's ⁵	Trace Statistic	0.05 critical value	Max-Eigen Statistic	0.05 critical value
None	17.21	15.49	16.91	14.26
At most 1	0.30	3.84	0.30	3.84

5 This denotes hypothesised number of cointegrating equations/vectors.

(c) Granger-Causality Tests

The results from the Granger causality tests are presented in Table 3. The negative coefficient of ECT_{t-1} and its statistical significance at the 5 percent level indicates that economic growth Granger causes development expenditure in the long-run. Furthermore, the reported p-value for the Chi-square from the Wald test for the coefficient of the lagged first differenced explanatory variable is statistically significant at 10 percent, thus implying that economic growth Granger causes government spending in the short run. However, the results in Table 3 do not confirm any causal relationship from development expenditure to economic growth in both the long run and short run. Therefore, these findings indicate a unidirectional causality from economic growth to development expenditure and are in line with the Wagner's law.

TABLE 3: VECM GRANGER CAUSALITY TEST RESULTS

	Long-Run Causation	Short-Run Causation
Dependent Variable	Coefficient of ECT_{t-1}	Chi-square for lagged coefficient(s) of differenced explanatory variable
ΔDE		
$\Delta GDPN$	-0.53 [0.00]	3.35 [0.07]
	0.01 [0.65]	0.03 [0.85]

Note: Figures in [] denote the p-value.

To check the robustness of these results, several diagnostic tests were conducted (see Appendix, Figures 1 and 2). The null hypotheses of no serial correlation, no heteroscedasticity and that the estimated coefficients are stable are not rejected for the model based on Equation (1). However, for the model based on Equation (2), the null hypothesis that the estimated coefficients are stable is not rejected, while the null hypotheses of no serial correlation and no heteroscedasticity are rejected. Thus, the existence of serial correlation in the model based on Equation (2) invalidates the use of t-statistic used to reach a conclusion that government spending does not Granger cause economic growth. Hence, both serial correlation and heteroskedasticity were corrected for the model based on Equation (2) using the HAC Newey-West procedure, most importantly, to ensure the validity of t-statistics. However, even after correcting for serial correlation and heteroskedasticity, the results⁶ still indicate that government expenditure does not Granger cause economic growth.

6. CONCLUSION

The study investigates the relationship between economic growth and government development spending in Botswana by testing for both the Wagner's law and the Keynesian hypothesis. The former states that causality runs from economic growth to government spending, while the latter postulates the reverse. The study does not confirm any causal relationship from government development expenditure to economic growth in both the short and long run. However, results suggest that causality runs from economic growth to government development spending in both the short and long run, hence supporting Wagner's law.

It would appear reasonable that economic growth will lead government expenditure in Botswana, where mining sector performance and revenue is the main financier of government expenditure and projects, and given the fiscal rule that mineral revenue will be used to build capacity i.e., infrastructure and spending on health and education. Furthermore, there appears to be inadequate attention on monitoring implementation of projects as evidenced by the emergence over the years of overall poor quality of infrastructure, project delays and cost overruns. Morupule B project is a typical example of such projects as it resulted in not operating at full capacity following its completion as some units were defective. This lead to cost overruns and insufficient supply of electricity, hence it could not contribute positively to economic growth as was envisaged. Other examples include the airport and stadium projects that failed to meet the target to be ready for World Cup 2010 in South Africa, failing the country to obtain its optimal value from the investments. The Fengyue manufacturing glass project that was abandoned is another unproductive investment that did not contribute to economic growth. Therefore, among other things, policymakers should not only aim to increase development expenditure, but rather focus on ensuring proper project management and monitoring to ensure quality spending that is supportive of growth. Channeling government revenues towards highly productive and demand driven investments cannot be overemphasised as it encourages private sector growth and boost economic growth.

⁶ Some tests results are not presented here. However, the information can be available on request.

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APPENDIX

FIGURE 1: DIAGNOSTIC TESTS FOR MODEL BASED ON EQUATION 1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.651231	Prob. F(2,84)	0.5240
Obs*R-squared	1.374187	Prob. Chi-Square(2)	0.5030

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.465011	Prob. F(4,85)	0.2200
Obs*R-squared	5.804576	Prob. Chi-Square(4)	0.2142
Scaled explained SS	8.506081	Prob. Chi-Square(4)	0.0747

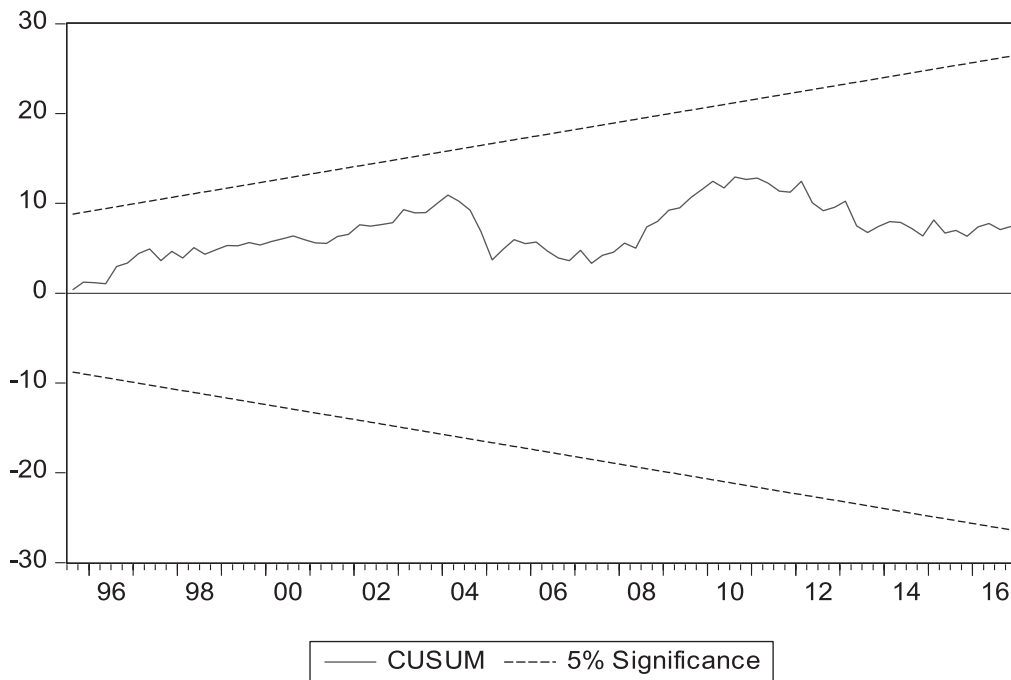


FIGURE 2 : DIAGNOSTIC TESTS FOR MODEL BASED ON EQUATION 2

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	5.037834	Prob. F(2,84)	0.0086
Obs*R-squared	9.639156	Prob. Chi-Square(2)	0.0081

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.934036	Prob. F(4,85)	0.0056
Obs*R-squared	14.05903	Prob. Chi-Square(4)	0.0071
Scaled explained SS	15.12321	Prob. Chi-Square(4)	0.0045

