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Modelling the Spillover Effects of Volatility in International Commodity Prices on Financial Stability in Zimbabwe

by

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Abstract

This paper examines volatility spillover effects of commodity prices on financial sector stability in Zimbabwe. Utilising a multivariate GARCH model on Zimbabwean monthly financials data for the period 2009m1 – 2017m12, the study empirical results reveals that a negative shock in international commodity prices results in increases in non-performing loans, impacting negatively on financial sector stability. The results also suggest that increases in volatility in commodity prices increases volatility in non-performing loans. This underscores the need for countries to put in place appropriate macro prudential policies to mitigate potential systemic risk from commodity price shocks.

Key Words: Financial Stability, macro-prudential policy, commodity prices, capital buffers

JEL Classification: E30, E51

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I: Introduction

The volatility of commodity prices has significant implications for many African countries, such as Zimbabwe, which depend on commodity exports. Zimbabwe dollarized in 2009, as such mineral exports are a major source of liquidity in the economy. Mineral commodity exports accounted for about 60% of Zimbabwe's total export earnings for the period 2009 to 2017. Since the country's export basket largely consist of primary commodities, price volatility of mineral commodities remains a major challenge for economic management in general and financial stability in particular for Zimbabwe.

Financial stability became prominent in the aftermath of the 2008/9 Global Financial Crisis. The financial crisis revealed the strong interconnectedness between real and financial sectors of the economy. As a result, the economic and financial health of commodity rich countries such as Zimbabwe are largely linked to volatility in commodity prices. Commodity price volatility impact bank balance sheets through several channels. On the upswing, commodity prices result in higher economic growth, increased domestic savings, higher government spending, stronger fiscal and balance of payments positions. Naturally, this improves corporate profits, increase equity prices and strengthens bank balance sheets (Callen, *et al.*, 2015). This seemingly positive and optimistic outlook can, however, give rise to a build-up of systemic vulnerabilities in the financial sector.

On the contrary, a downswing in commodity prices reduces government revenue and cause official payment delays or even arrears. This causes liquidity problems along the chain, notably among government suppliers and creates higher non-performing loans (NPLs) to those companies (Miyajima, *et al.*, 2017). Lower commodity prices also force the government to cutback public investment projects, which has negative impact on the construction sector, among others. The spending cuts by commodity exporting companies and government causes delinquency in loans to households as unemployment rises in the public and private sectors. Moreover, lower commodity prices could also increase the government's bond yield reflecting higher financing needs. Lower commodity prices lead to depreciations of the domestic currency, and depending on the official exchange regime could cause direct and indirect losses to banks. Besides, lower commodity earnings weaken the bottom line in most banks that depend on the huge deposits of the mining business for deposits and related activities (Kinda, *et al.*, 2016).

The IMF (2016) argued that the decline in commodity prices posed serious challenges for most SSA countries by weakening economic activity, lowering output, and fiscal revenues and worsening external accounts. The negative macroeconomic effects induced by falling commodity prices can also spillover into the financial sector. Thus, declining commodity prices can also impact negatively on financial stability.

Notable studies include IMF (2015) and Kinda *et al* (2016). The IMF (2015) shows that a 1% decline in oil price lead to 0.02% in NPLs, a decline of 0.25 in real credit growth and 0.18% in real deposit growth for Gulf Cooperation Council (GCC). Kinda *et al* (2016) examined the effects of commodity shocks on financial stability in 71 commodity exporters among emerging and developing economies using a panel regression framework. The study showed that negative shocks to commodity prices weakened financial sector, through increased NPLs and reduced bank profits.

The mining sector is important in Zimbabwe contributing 60% of exports and accounting for 7% of total loans and advances in the financial sector. In this regard, it is important to analyse the impact of commodity price volatility on the financial sector stability in Zimbabwe. Precisely, this study examines the effects of commodity price volatility spillover on financial stability in

Zimbabwe. Financial stability is important to ensure sustainable growth and it is, thus, critical to ensure that resource rich countries put in place appropriate policies that ensure stable financial system in the face of international commodity price volatility. This research seeks to fill the gap in the empirical literature on the impact of mineral commodity price volatility on financial stability in Zimbabwe.

The rest of the paper is organized as follows: Section II discusses importance of mineral commodities and provides some stylized facts on the commodity prices and financial sector indicators in Zimbabwe. Section III presents the literature review, while in Sections IV and V is the methodology and analysis of results, respectively. The conclusion and policy recommendations are given in Section VI.

II: Stylised Facts on Importance of Mineral Commodities, Commodity Price Volatility and Financial Stability

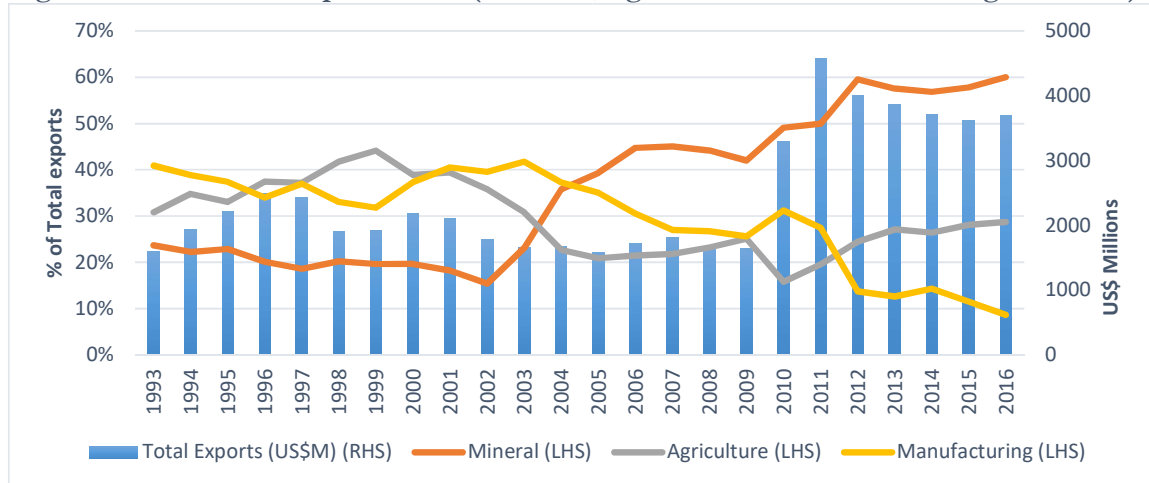
This section discusses the importance of mineral commodities in Zimbabwe. In addition, the section also highlights recent developments in international mineral commodity prices relevant for the country. The section also provides a preliminary analysis of the relationship between commodity price volatility and financial stability.

2.1 Mineral Commodity Output and Exports

Zimbabwe is endowed with vast mineral resources and at least 40 of the minerals found in the country can be exploited commercially. The mining sector contribution to GDP averaged 10% between 2009 and 2017, up from 4% in the decade 1990 to 2000. Major minerals in the country include gold, platinum, nickel, diamond, chrome, granite and coal.

The contribution of the mining sector to total exports in Zimbabwe significantly increased from 38% in 2004 to 50% in 2008. It averaged 60% for the period 2009 to 2017. The increase was explained mainly by increases in exports of major mineral commodity, which include gold, platinum and nickel. This in part reflected both increases in volume and prices of mineral commodity prices. As a result of the high exports ratio of mineral commodities, Zimbabwe can be classified as a commodity depended exporting country. IMF (2016) asserts that for a country to be included as a commodity depended exporting country, it should be a net exporter of the given commodity and exports of the commodities should be at least 25 percent of the country's total goods exported during the base year. Figure 1 shows evolution of exports for Zimbabwe since 1993.

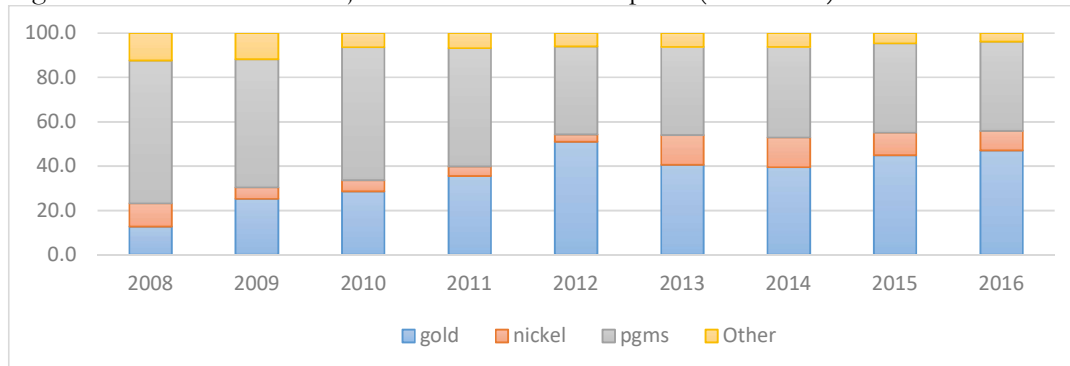
Figure 1: Evolution of Export Shares (Minerals, Agriculture and Manufacturing-1990-2016)



Source: RBZ and Zimstats

The gold, Platinum group of Metals (PGMS) and nickel consists about 90% of the total mineral exports since 2009. In this regard, movements in prices of these commodities have significant impact on the economy. Zimbabwe witnessed significant platinum (PGMs) investment since 2000 and platinum related exports reached US\$1 billion in 2016. Zimbabwe has always been a gold country, with gold being one of the chief currency earners in the country. At its peak in 1999, gold exports reached 29 tonnes, but output fell to its lowest at 4 tonnes in 2008. This was at the height of economic challenges in Zimbabwe which resulted in one of the worst hyperinflation in the world. Figure 2 shows composition of the main mineral commodity exports for Zimbabwe, which are gold, nickel and PGMS.

Figure 2: Contribution of Major Minerals to Total Exports (2008-2016)



Source: ZIMSTAT and RBZ (2017)

As shown in Figure 2, the major mineral commodity exports for Zimbabwe remains gold, platinum and nickel. Other mineral commodity exports include copper, diamonds, granite and cobalt. Thus, the developments in the price of gold, platinum and nickel have a bearing on developments in the country's macro economy and financial stability.

2.2 Developments in International Commodity prices

The international prices of gold, platinum and nickel have been very volatile like all other commodity prices with major swings during the 2008 Global Financial crisis.

Figure 3: Commodity Price Developments (2000-2017).



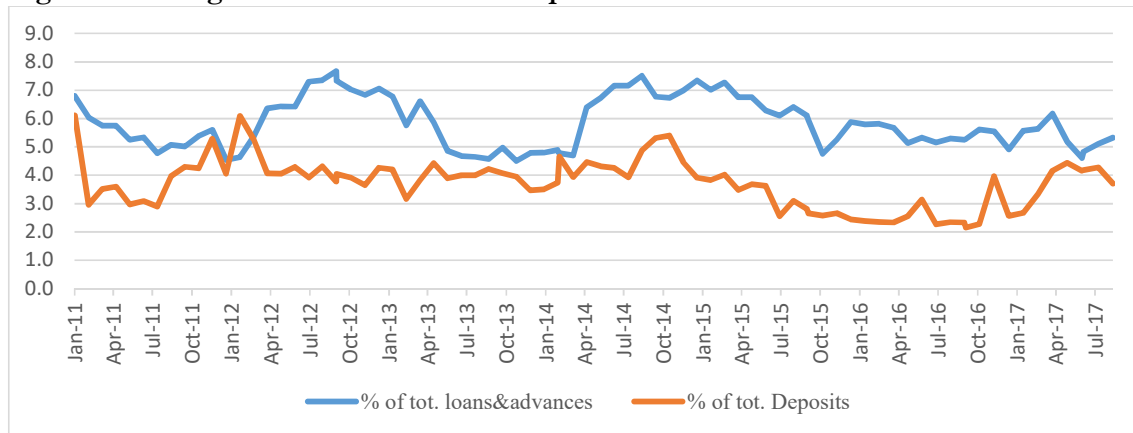
Source: World Bank Database, 2017

As shown in Figure 3, there has been general co-movement in prices of the three major commodities from 2000 and 2017. This may imply global economy has been the driver

2.3 Financial Sector

The mining sector contributes significantly to the financial sector in terms of both deposits, and loans and advances. Figure 4 shows developments in mining deposits as well as loans and advances.

Figure 3: Mining Contribution to Total Deposits and Loans and Advances-2009 to 2017



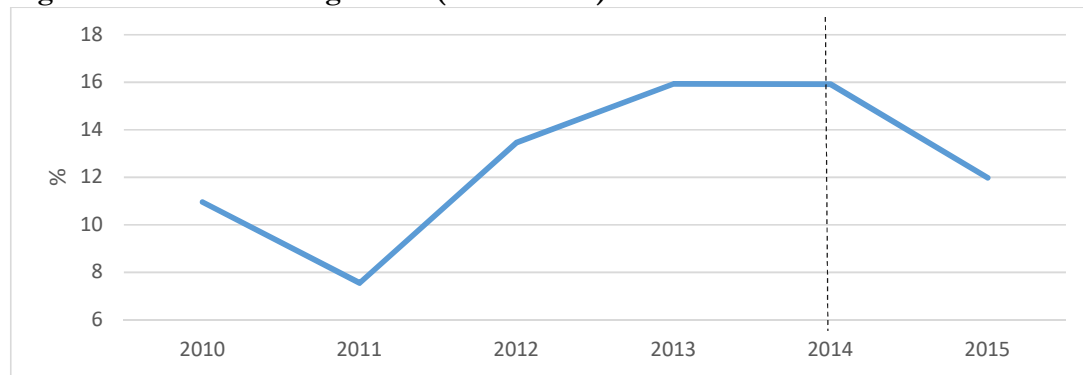
Source: Reserve Bank of Zimbabwe

Total mining deposits in the financial sector averaged 5% of total deposits while loans and advances account for about 6% to total loans and advances for the period January 2011 to July 2017. The low contribution of mining to total deposits in the financial sector may partly point to the use of earned funds.

2.4 Financial sector stability

The Zimbabwe financial sector has been generally safe and sound. Since the dollarization of the economy in 2009, some companies have been facing operational viability resulting from lack of export competitiveness against the background of an overvalued exchange rate. As a result, there were increased incidents of loan defaults and consequent rise in NPLs at banking institutions. The NPLs increased from 1.6% in 2009, to a peak of 20.1% in September 2014. NPLs fell to 10.82% partly due to Zimbabwe Asset Management Company (ZAMCO), a special purpose vehicle company put in place to hive off NPLs amounting to \$525 million by September 2015 (RBZ, 2016). Figure 6 shows trends in NPLs.

Figure 4: Non Performing Loans (2009 to 2017)



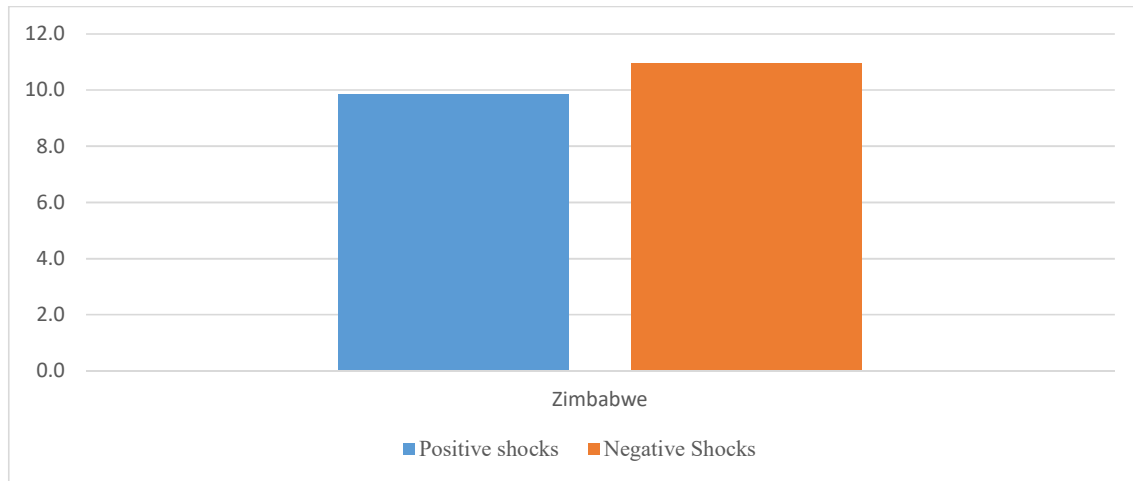
Source: RBZ 2016

The banking sector also witnessed 10 bank failures (though mainly small banks) in the multicurrency era, mergers and acquisitions, disinvestments, and re-licencing in different classes of banking. Banking models such as discount houses and finance houses ceased to exist as these had become unviable. In 2010, there were 16 commercial banks operating in Zimbabwe, and this number rose to 17 as at 31 December 2011 (RBZ 2011). This number then progressively declined to 13 by 31 December 2015.

The banking sector has generally been profitable during the review period, with the profitability levels somewhat volatile. As measured by the average return on assets, profitability was on a declining trend from 2011 to 2013 on the back of a more than proportional growth in assets compared to net income. The significant dip in profitability in 2013 was mainly attributable to a decrease in noninterest income following a reduction in bank charges in terms of a Memorandum of Understanding between the Bankers' Association of Zimbabwe and the Reserve Bank of Zimbabwe.

Figure 6 shows the average Non –performing loans (NPLs) ratio during periods of negative and positive shocks for Zimbabwe for the period 2000 to 2017

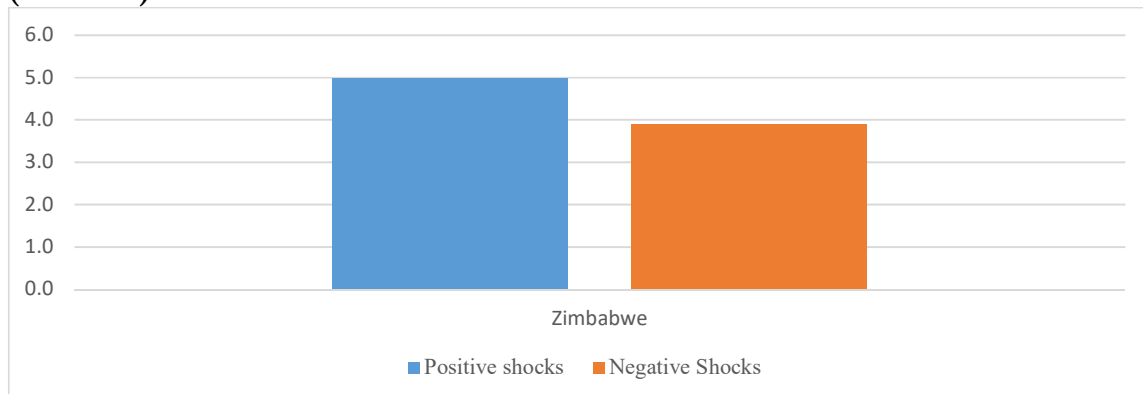
Figure 5: Average Non-Performing Loans for Zimbabwe during Positive and Negative Shocks-Annual data from 2009 to 2017



International Monetary Fund Financial Sector Indicator (IMF, FSI) & Researchers Own Calculations

Figure 6 on average NPLs are more during negative commodity price shocks compared to positive shocks. This implies that commodity shocks impact negatively on financial stability. The same pattern is also discernible when examining return on assets (ROA).

Figure 6: Average Return on Assets¹ for Zimbabwe during Positive and Negative Shock (2009-2017)



IMF FSI & Researchers Own Calculations

As shown in Figure 7, negative commodity price shocks tend to adversely affect financial sector profitability as shown by the falling return on assets. The extent to which commodity price volatility spillover into financial stability as measures by NPLs and other indicators is however, yet to be established.

Given the importance of the mining sector in the Zimbabwean economy and the preliminary negative impact of commodity price declines on financial stability, there is need to empirically check the spillover effects of the commodity price volatility on financial stability.

¹ Details on how all the Financial Sector Indicators are obtained and calculated are found in Appendix 1

III: LITERATURE REVIEW

This section gives a brief review of literature on the impact of commodity price shocks on financial stability. The section reviews the transmission channels through which commodity prices impact on financial stability and related empirics on the effect of commodity prices on financial stability.

3.1 Transmission Channels

Several transmission channels exist through which commodity price shocks affect the financial sector. The four main channels include the through economic growth and employment; fiscal; exchange rate; and savings and deposit channels (Kinda *et al*, 2016).

Economic growth and unemployment is the most prominent channel through, which commodity price shocks affect financial stability. The decline in commodity prices results in reduced export earnings, dampening economic growth, dwindling the of companies' ability to meet debt obligations, resulting in weak bank balance sheets (Deaton and Miller,1995; Deaton 1999, Reinhart, 1999). The studies showed that commodity price shocks impact negatively on economic growth rates and therefore financial stability.

Fiscal Performance -The second important channel is through fiscal performance. In general, fiscal performance in commodity exporting countries is tied to changes in commodity prices (Alesina *et al*, 2008 and Gangelhof, 2015). El Anshasy (2003) also argued that fiscal policy is the main propagation mechanism that transmits the oil price shocks to the economy. The fall in commodity prices reduces the government fiscal space as a result of declining revenues. The adjustments by governments to cope with the decline in fiscal space, may have significant negative impact on banking sector.

As highlighted by Gangelhof (2015) that export commodity countries, relies heavily on royalties and resource-related taxes for revenue. In this regard, significant decline in commodity prices worsen the fiscal position in the absence of fiscal buffers such as Sovereign Wealth Fund. In addition, Ehrhart and Guérineau (2013) using data from 90 developing countries for the period 1980-2008, found that tax revenues in developing countries increases with the rise of commodity prices. Volatility of commodity prices, however, negatively affect tax revenues and financial sector stability.

Exchange Rates: The third channel is through the exchange rates, the balance of payments and foreign currency debt. In commodity depended countries, the real exchange rate is highly related to the terms of trade. In this regard, the exchange rate linkage can become a source of acute financial instability in a period of falling commodity prices. When the commodity prices are transitory in nature, depreciation be avoided through use of reserves. As reserves run out, government and domestic banks start to borrow offshore, thereby increasing foreign currency-denominated debt. A significant depreciation as a result of a massive decline in commodity prices may result in a fall in net worth of banks, particularly banks with huge foreign currency debt impacting negatively on bank stability.

Savings and Deposits - The fourth channel relates to the savings and deposits withdrawals. The decline in commodity prices result in a decrease in mining export revenues, which may trigger massive withdrawal of deposits from domestic banks, impacting negatively on financial stability. Commodity exporters tend to put their savings mainly in the domestic markets during times of increased commodity prices. In the reverse scenario, when commodity prices decline, commodity

exporters withdraw their savings from domestic market to mitigate the negative impact and this can increase vulnerability in the financial sector, Kinda *et al* (2016).

Few studies have explicitly focused on the impact of commodity prices on financial stability. Mishra and Mohan (2012) assessed the impact of the decline in the gold prices on financial instability in India. The results showed that a reduction in gold price would not adversely affect financial stability. On the other hand, a fall in equity prices would have a negative effect on the financial sector stability. This is the case, possibly because, India is not an exporter of gold but rather a buyer and investor in gold.

Alodayni (2015) assessed the effect of the 2014-2015 oil price decline on financial stability in the Gulf Cooperation Council (GCC) region and found that oil price along with GDP growth, interest rate, stock prices and housing prices are major determinants of financial stability. As a result, counter cyclical policies to fluctuation in oil prices will be required to limit the GDP slowdown and potential effects to banking systems.

Callen *et al*, (2015) also in the study in Gulf Cooperation Council (GCC) region also found that oil price declines negatively affect bank balance sheets. Decline in oil price increases ratio of nonperforming loans (NPL) to gross loans, and curtails real growth rates of bank credit and deposits. Precisely, they found out that a 1 percent decline in oil prices leads to a 0.2–0.3 percentage point drop in real credit growth and a 0.1-0.2 percentage point fall in real deposit growth. The NPL ratio would increase by about 0.1 percentage point in the long run.

Laksaci (2016) found that the sharp decline in oil prices led to contraction of oil exports in 2015 resulting in high external current account deficit (-16.4 percent of GDP) and contraction in international reserves in Algeria. In addition, the exchange rate depreciated by 20% against the US dollar and fiscal deficit rose to 16 percent of GDP in 2015. In this regard, as indicated by Laksaci (2016) the slump in oil price negatively affected financial stability in Algeria through impact on the balance of payments and external financial position which weighs on external financial stability even though the country has low external debt.

Kinda *et al* (2016) showed that negative shocks to commodity prices weakened the financial sector in 71 developing commodity exporting countries. Negative commodity price shocks increase non-performing loans and bank costs but reduces bank profits, liquidity, and provisions to non-performing loans. The negative impact is more severe to countries with poor quality of governance, weak fiscal space and less diversified export base. Countries without sovereign wealth fund and do not implement macro-prudential policies are also severely negatively affected.

Most studies on the impact of commodity price shocks focussed on developed countries. The studies on developing countries mainly focused on cross country studies. In this regard, this study assesses the impact of commodity price volatility on financial stability in Zimbabwe. The single country study would allow in-depth analysis of the impact of commodity prices on financial stability.

IV: METHODOLOGY

The study uses the multivariate GARCH methodology to analyse volatility Spillover of commodity prices on financial stability following Engle and Kroner, (1995) and Baillie and Bollerslev (1990), as applied in Bwire (2018) to assess the impact commodity prices on financial stability. Monthly

data on for the period 2009 to 2017 is used and as with Miyajima, *et al.* (2017), non-performing loans is adopted to proxy financial stability.

4.1 Multivariate GARCH

Given the limited observations, the multivariate GARCH will be limited to bivariate equation which include mean equations for change in NPLs and change in commodity price index. The model will be estimated using a diagonal Baba–Engle–Kraft–Kroner (BEKK) and constant conditional correlation (CCC) as in Engle and Kroner (1995). The multivariate GARCH captures spillover effects of volatility in commodity prices since it allows conditional variances of NPLs and commodity prices to be estimated jointly.

In general, in the BEKK model all parameters for conditional variances enter as positive since they are in quadratic form and follows:

$$\mathbf{H}_t = \xi_0' \xi_0 + \sum_{i=1}^q \alpha_i \varepsilon_{t-i} \varepsilon_{t-i}' \alpha_i' + \sum_{i=1}^p \beta_i H_{t-i} \beta_i' \quad (1)$$

The full BEKK model is difficult to model and therefore in practice diagonal BEKK is used. In the diagonal BEKK, there is interaction of the ARCH and GARCH terms in the conditional variance as shown below for N=2 and p=q=1

$$h_{11,t} = (\xi_{11}^2 + \xi_{12}^2) + \alpha_{11}^2 \varepsilon_{1,t-1}^2 + \beta_{11}^2 h_{11,t-1} \quad (2a)$$

$$h_{12,t} = (\xi_{11}^2 + \xi_{22}^2) + \alpha_{11} \alpha_{22} \varepsilon_{1,t-1} \varepsilon_{2,t-1} + \beta_{11} \beta_{22} h_{11,t-1} h_{22,t-1} \quad (2b)$$

$$h_{22,t} = (\xi_{12}^2 + \xi_{22}^2) + \alpha_{22}^2 \varepsilon_{2,t-1}^2 + \beta_{22}^2 h_{22,t-1} \quad (2c)$$

These equations are used to find the conditional variances and the co-variances between the series to get the Spillover effects. The multivariate GARCH was also done using the constant conditional correlation coefficients (CCC). The CCC restricts the conditional correlation coefficients to be equal to correlation coefficients of the variables and this reduces to:

$$h_{1,t} = (\xi_1^2 + \xi_2^2) + \alpha_1^2 \varepsilon_{1,t-1}^2 + \beta_1^2 h_{1,t-1} \quad (3a)$$

$$h_{12,t} = \rho_{12} (h_{1,t} h_{2,t})^{0.5} \quad (3b)$$

$$h_{22,t} = (\xi_1^2 + \xi_2^2) + \alpha_2^2 \varepsilon_{2,t-1}^2 + \beta_2^2 h_{2,t-1} \quad (3c)$$

The model uses the following mean equations:

$$Dnpls = c(1) + c(2) * Dnpls(-1) + c(3) * Dlcom(-1) \quad (4a)$$

$$Dlcom = c(4) + c(5) * Dnpls(-1) + c(6) * Dlcom(-1) \quad (4b)$$

Dnpls – is the change in Non-performing loans and Dlcom is the change in log of commodity prices.

4.2 Data Sources and Coverage

The NPLs is used as a proxy for financial stability. The NPLs statistics are obtained from the Reserve Bank of Zimbabwe. Data for commodity price indices is obtained from the World Bank data bank. As argued by IMF (2011) non-performing loans and liquid assets to short term liabilities are the most prominent indicators of financial sector stability.

V: RESULTS AND ANALYSIS

5.1 Correlation Analysis

The correlation matrix shown in Table 1 shows that adverse commodity price shocks impact negatively on indicators of financial sector stability for the period 2009 to 2017. The results are shown in Table 1.

Table 1 : Correlation Matrix Negative Commodity Price Shocks and Financial Soundness Indicators for Zimbabwe

	NPLS	PI	ROA	ROE
NPLS	1.00	0.03	-0.23	-0.01
PI	0.03	1.00	-0.18	-0.81
ROA	-0.23	-0.18	1.00	0.53
ROE	-0.01	-0.81	0.53	1.00

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PI is the negative price shock index, NPLs-Non Performing Loans, ROA- Return of Assets, ROE-Return on Equity. The correlation results suggest that negative commodity prices shocks are positively related to NPLs. On the other hand, commodity price bursts are negatively correlated to profitability indicators such as return of assets and return on equity. The spillover effects of commodity prices on financial stability are done using a multivariate GARCH.

5.2 Econometric Results

The econometric results analysis pertains to multivariate GARCH model both the diagonal BEKK and the Constant Conditional Correlation (CCC). Firstly, a test for integration of variables is undertaken and the results are as follows:

Table 2: Augmented Dickey Fuller test for Unit root

Variable	Level	First Difference
Commodity Prices	-1.507	-6,184***
NPLs	-1.096	-5.086***
Volatility	-2.800*	-6.082***

Asterisks ***, * indicate significant at 1 and 10% levels, respectively.

Results of unit root tests showed that all the variables of interest are integrated of order one, that is there are I(1) variables. Cointegration, however, showed that there is no cointegration among the variables. Table 3 shows results of the diagonal BEKK.

The results of the mean equation show a negative relationship between commodities prices and NPLs in Zimbabwe. An increase in commodity prices by 1% reduces NPLs by approximately 0.04%. The coefficient is significant at 10% level of significance. The results, may reflect the low contribution of mining sector deposits in the economy. Zimbabwe's mining sector is dominated by foreign owned companies and some of the companies' are put in offshore accounts to cater for foreign acquired loans and imports.

Table 3: Diagonal BEKK results for Bi-variant GARCH (1, 1)

Estimated System mean Equations							
Endogenous Variable	Constant		$\Delta npls (-1)$	Δ commodity Price (-1)			
$\Delta npls$	0.00179 (0.80)		0.093** (0.022)	-0.041* (0.08)			
Δ Commodity Price	0.004258 (0.19)		-0.0554 (0.22)	0.0623 (0.047)**			
Variance and Covariance							
Variable	Constant	Resid1 (-1)^2	Resid2 (-1)^2	GARCH1(-1)	GARCH2(-1)	Resid1(-1)*Resid2(-1)	Cov1_2(-1)
GARCH1	0.000 (0.74)	0.01 (0.32)		0.7968*** (0.000)			
COV1_2	0.000 (0.676)					0.00023 (0.16)	0.5465*** (0.000)
GARCH2	0.0012 (0.63)		0.023 (0.13)		0.6859 (0.0)***		

Numbers in parentheses are p-values. * Significant at 10%, ** Significant at 5% and *** Significant at 1%.

With regards to the conditional variance, the coefficients are positive and very high. This reflects, high volatility persistence in both NPLs and commodity prices. However, only GARCH2 (-1) is significant. The spillover is estimated from the parameters of the conditional covariance given by RESID1 (-1)*RESID2(-1) and COV1-2(-1) parameters. This gives parameters 0.00023 and 0.5465, of which are quite high and significantly different from zero. The results were corroborated by results from the Constant Conditional Correlation (CCC). The results of the CCC are shown in Table 4.

Table 4: CCC estimates for Bi-Variant GARCH (1,1)

Estimated System mean Equations						
Endogenous Variable	Constant	$\Delta npls (-1)$	Δ commodity Price (-1)			
$\Delta npls$	0.0003 (0.6817)	0.1462* (0.0649)	-0.0057 (0.7591)			
Δ Commodity Price	0.0054 (0.11)	-0.6867 (0.33)	0.092 (0.13)			
Variance and Covariance Equations						
Variable	Constant	Resid1 (-1)^2	Resid2 (-1)^2	GARCH1(-1)	GARCH2(-1)	SQRT (GARCH1*GARCH2)
GARCH1	0.00*** (0.00)	0.3527** (0.03)		0.095 (0.54)		
COV1_2						0.2548* (0.09)
GARCH2	0.0286 (0.62)		0.0002 (0.46)		0.8422*** (0.00)	

Numbers in parentheses are P-Values. * Significant at 10%, ** Significant at 5% and *** Significant at 1%.

VI: Conclusion and Policy Recommendations

The paper analysed the volatility spill-overs of international commodity prices on financial sector stability in Zimbabwe. The econometric models used include multivariate GARCH for the period, 2009 to 2017.

Despite the data challenges, the results showed that indeed there are volatility Spillover effects on financial stability in Zimbabwe. Precisely, increases in volatility of commodity prices also results in increased volatility in NPLs. In addition, though the study did not specifically focus on the channels of the impact of commodity volatility on financial stability, the negative relationship between economic growth and NPLs is instructive. It may point to the commodity price volatility –GDP growth – financial stability as an important channel for commodity dependent countries such as Zimbabwe.

In a broader sense, given the commodity price volatility Spillover on financial stability in Zimbabwe, it is recommended that the country increase its exports diversification. The circumstance Zimbabwe find itself in is worrying given that the economy used to have a diversified export basket, with mining sector contributing below 20% in the 1990s. The contribution of the mining sector to exports has since risen to around 60%. The low diversification exposes the country to negative commodity price developments, with adverse effects on macroeconomic and financial sector stability.

The results also underscore the need for resource rich countries such as Zimbabwe to implement structural macro prudential measures to limit systemic risk. These structural systemic risks can be addressed by macro prudential policies that control structural vulnerabilities within the financial system. The exposure of the financial sector to volatile commodity prices suggests an important role for countercyclical macro prudential policies to mitigate systemic risks. Commodity price shocks cause of feedback loops between asset prices, government spending, credit, and non-commodity GDP. In such circumstances, countercyclical macro-prudential policies can help reduce the build-up of systemic risks in the financial sector during commodity price upswings, and to cushion against disruptions to financial services during commodity price downswings.

The study used NPLs as a proxy for financial stability, for further research there may be need to construct a financial stability index which include several financial soundness indicators. This makes the analysis to give a broader analysis of the financial stability of the country. In addition, for policy analysis there is also need to analyse the transmission mechanism through which volatility in commodity prices impact on the financial stability in Zimbabwe.

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