Research Paper

The Effects of Global Financial Conditions on Asset Prices in African Countries

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ABSTRACT
The 2008 global crises have shown that financial shocks in the advanced economies may influence asset prices in emerging markets economies. This paper examines the impact of global financial conditions on asset prices in five African frontier countries. Using monthly data, we estimate a structural VAR model with block exogeneity procedure. We also employ cross-regression equation to evaluate the role of macroeconomic fundamentals in the propagation of the global financial conditions. Our findings suggest that (i) global financial conditions significantly influence asset prices in Africa economies (ii) equity prices and the short-term interest rates are the asset prices mostly affected by global financial conditions. (iii) global risk aversion, the U.S. monetary policy and the global long-term interest rates are the most important global financial conditions impacting asset prices. (iv) macroeconomic fundamentals determine the vulnerability of asset prices to the change in global financial conditions.
JEL classification: C32, G15, G32
KEYWORDS: *Global financial conditions; Asset prices; U.S. monetary policy; Macroeconomic fundamentals; African countries*

I. INTRODUCTION

The global financial crisis of 2008 has shown that the advanced economies' financial conditions and its accompanying monetary policy reactions can have significant spillover effects on emerging market economies (EMEs) and developing countries. In particular, the U.S. monetary policy responses influence global risk aversion, capital flows, credit growth, and bank leverage in EMEs. For example, Ananchoticul and Zhang (2014) find that the US quantitative easing (QE) program or unconventional monetary policy (UMP) results in a rise in portfolio flows into EMEs and decline in the global risk aversion. Tillman (2016) and Anaya et al. (2017) show that the U.S. UMP leads to rise in capital flows and equity prices and a decline in the bond spread and the exchange rate in EMEs. The subsequent policy tapering has also been found to lead to portfolio outflows, exchange rate depreciation and a fall in equity prices in EMEs (see Eichengreen and Gupta, 2014). Bowman et al. (2015), however, find that the U.S. UMP only influences sovereign bond yields but has negligible impact on equity prices and exchange rate in EMEs.

In this paper, we empirically assess the impact of global financial conditions on asset prices in African economies. The increasing financial integration and financial openness between African countries and the rest of the world have made African economies vulnerable to external shocks. For instance, Essers (2013) shows that global financial shocks lead to capital flow reversal, a slowdown in remittances and bilateral aid, and output volatility in developing countries. The 2008 global financial crisis resulted in growth decline in Sub-Saharan African countries from 7.1% in 2007 to 5.6% in 2008 and 2.8% in 2009 respectively (IMF, 2011). Moreover, stock markets in Nigeria and South Africa plunged by more than 50% following the 2008 global financial crisis.

The study is significant in many aspects. First, it will assist policy makers in African countries to understand how financial conditions in the advanced economies impact asset markets in their economies so that they could adopt pre-emptive measures. For example, Ananchotikul and Zhang (2014) and Yildrim (2016) show

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that global financial risk shocks affect movements in asset prices in EMEs through capital flows. Second, the study will assist the policy-makers to identify the most important global financial shocks affecting asset prices in African economies. Third, it will assist policy makers to formulate policies that will strengthen macroeconomic fundamentals, improve policy credibility and deepen financial markets so as to mitigate the susceptibility of African economies to exogenous financial shocks

The gap that this study seeks to fill is that existing studies on the impact of external shocks in Africa have largely examined the effects of terms of trade and foreign interest rate shocks on macroeconomic fluctuations in African countries. For instance, Kose and Riezman (2001) calibrate a DSGE model to evaluate the effects of terms of trade and foreign interest rate shocks on economic fluctuations in Africa. Muhanji and Ojah (2011) estimate a DSGE model to evaluate the impact of commodity price and world interest rate shocks on external debt accumulation in African countries. Others have consider the impact of global commodities on African equity markets (see Boako and Alagidede, 2016). Empirical evidence on the impact of global financial conditions on asset prices in African countries is rather scarce. Notable exception is the work by Giovannetti and Velucchi (2013) who apply the multiplicative approach error to examine the spillover effects of financial shocks from the US, UK and China on stock market volatility in Africa. They, however, only focus on the impact of external financial shocks on stock prices.

The contribution of this study is to empirically examine the effects of global financial conditions on asset prices for 5 African frontier economies- Ghana, Kenya, Nigeria, South Africa and Zambia. These countries were the first to be hit by the 2008 financial crisis (see IMF, 2009). Through their financial links with the rest of the world, they experienced a high degree of falling equity prices, capital flow reversal, deterioration in their current account deficits and exchange rate pressure (see World Bank, 2009). Following the works of Sousa (2014) and Yildrim (2016), we investigate the impact of 5 global financial shocks on asset prices in African economies. Our study, however, differs from the works of Sousa (2014) and Yildrim (2016) as we examine the impact of a broader set of global financial variables on asset prices in African countries. We investigate the effects of 5 global financial conditions- global risk aversion, global short-term interest rate, the U.S. monetary policy, global long-term interest rate and the global rate of return on equity- on asset prices in African countries. We employ a structural VAR model with block exogeneity to show the contributions of global financial conditions to movements in three asset prices. Given the marked differences in the severity of global financial conditions on asset prices in each of the five countries, we employ cross-section regression to evaluate the role of macroeconomic fundamentals in the transmission of these shocks to African economies (see Bowman et al., 2015; Yildrim, 2016),

II.   LITERATURE REVIEW

There have been various studies on the impact of external shocks on economic fluctuations in EMEs and developing countries. For example, Kose and Riezman (2001) find that external shocks account for significant output fluctuations in African countries. Similarly, Sousa and Cashin (2009) show that external shocks play important role in output fluctuations in the Caribbean. Related studies have examined the impact of US monetary policy shocks on EMEs. For instance, Canova (2005) shows that the U.S. monetary policy shocks significantly influence the Latin American economies. Mackowiak (2007) finds that the U.S. monetary policy shocks exert strong impact on price and output variations in EMEs. Bi and Anwar (2017) find that the U.S. monetary policy shocks influence output variations in China.

In contrast, other studies have concluded that external shocks play negligible role in EMEs' macroeconomic fluctuations. For instance, Hoffmaister and Roldos (2001) find that external shocks only account for limited output fluctuations in developing countries. Ahmed (2003) finds that external shocks play limited role in driving output fluctuations in Latin American countries. Dibooğlu and Aleisa (2004) find that terms of trade shocks explain limited fluctuations in output for Saudi Arabia. Moreover, Raddatz (2007) shows that external shocks only explain a small portion of output variations in low income countries.

The recent global financial crisis has led to the re-emergence of literature examining the effects of exogenous financial shocks on asset prices in EMEs and developing economies. For example, Anachoticul and Zhang (2014) show that global risk aversion has a strong impact on the volatility of asset prices in EMEs. Bowman et al. (2015) find that the U.S. UMP shocks significantly impact sovereign bond yields in EMEs but has a negligible effect on stock prices and exchange rates. Aizenman et al. (2016) find that policy rates and real exchange rates in the periphery countries are influenced by monetary policy shocks in the center countries. Anaya et al. (2017) conclude that the U.S. UMP shocks affect real and financial conditions in the EMEs resulting in the appreciation of the real exchange rate, rise in equity returns, growth in real output and decrease in the lending rate. Tran and Pham (2020) show that the US UMP shocks lead to a rise in equity price, a fall in long term interest rate and an appreciation of exchange rate in Asian developing economies. Dahlhaus and Vasishtha (2021) find that US monetary policy news shocks significantly affect capital flows in emerging economies.

A number of studies have investigated the role played macroeconomic fundamentals in the transmission of global financial shocks to the EMEs. Chen et al. (2015) show that stronger economic fundamentals mitigate the impact of U.S. UMP in emerging markets. Similarly, Mishra et al. (2014) find that greater financial depth and tighter macro-prudential policies minimized the impact of tapering in emerging markets. Moreover, Ahmed et al. (2017) find that countries with stronger economic fundamentals suffered less deterioration during the global financial crisis while countries that had earlier recorded much capital inflows deteriorated more. In contrast, Eichengreen and Gupta (2015) find that macroeconomic fundamentals play limited role in insulating EMEs from the effects of U.S. Fed tapering.

Few studies have also examined the channels and impact of global financial shocks on African economies. Allen and Giovannetti (2011) find that trade is the main channel through which external financial crises were transmitted to Sub-Saharan African countries. This is in contrast to Ncube et al.'s (2015) findings for South Africa. Ncube et al. (2015) find that monetary policy stimulus in the U.S. influences the exchange rate, the monetary aggregates and the real interest rate in South Africa through the financial channel. Giovannetti and Velucchi (2013) find that global financial shocks have significant impact in Sub-Saharan African countries. Moreover, Sithole et al. (2017) examine the role of financial conditions in transmitting external shocks to South Africa. The results suggest that external financial condition shocks have a significant but short-lived impact on South African real GDP growth.

III. DATA AND EMPIRICAL METHOD

3.1 Data
The monthly data for the study were sourced from the IFS, FRED database, Bloomberg, and the Central Bank databases of these countries. The data cover the period 2008:M1 to 2017:M10. The sample countries are Ghana, Kenya, Nigeria, South Africa, and Zambia. We collected data on ten macroeconomic variables. The global financial variables are global risk aversion, global short-term interest rate, the U.S monetary policy, global long-term interest rate and the global return on equity while the domestic asset prices are equity prices, exchange rate, and short-term interest rate. The global risk aversion is proxied by the volatility index (VIX). The VIX is from Chicago Board Options Exchange (CBOE) sourced from Bloomberg. The short-term interest rate is proxied by the U.S. Treasury bill rate. The global return on equity is proxied by growth in U.S. stock price. Similar to Yildrim (2016), we proxy the U.S. monetary policy by the Fed funds rate. Also, in line with Ananchoticul and Zhang (2014), we proxy the global long-term interest rate by 10 years U.S. government bonds. The macroeconomic fundamentals are current account, external reserves, inflation and GDP growth. The exchange rates, current account balances, external reserves and CPI are from IMF's International Financial Statistics (IFS). The equity prices indices are partly from Bloomberg and partly from the countries 'Central Bank databases. The Fed funds rate is from the FRED database.

3.2 Empirical methodology
Similar to Mackowiak (2007), Sousa (2014) and Yildrim (2016), we employ the structural vector autoregression (SVAR) model with block exogeneity to investigate the effect of global financial shocks on asset prices in five African countries. This model has become standard in the study of the impact of external shocks on emerging and developing economies. The model allows for the separation of the dynamic systems into domestic and external blocks and thereby excluding the lag coefficient of domestic variables from external block equations. The block exogeneity assumption also implies that the domestic financial markets do not influence the external variables either with lags or contemporaneously (see Mackowiak, 2007). This implies that the African countries have small financial markets. This is line with the various studies on the depth of financial markets in Africa (IMF, 2016). The block exogeneity assumption removes the effects of spurious financial effects, thus we are able to quantitatively assess the impact of global financial shocks on equity prices, real exchange rate, and short term interest rates for each of the African countries. Moreover, the assumption reduces the number of estimated parameters thereby improving the efficiency of the estimation (see Yildrim, 2017).

3.3 The SVAR model
Similar to Mackowiak (2007) and Yildrim (2016), we consider the following SVAR model with block exogeneity:

$$\sum_{s=0}^{\rho} \begin{bmatrix} B_{11}(s) & B_{12}(s) \\ B_{21}(s) & B_{22}(s) \end{bmatrix} \begin{bmatrix} y_{t-s}^d \\ y_{t-s}^f \end{bmatrix} = \begin{bmatrix} \varepsilon_t^d \\ \varepsilon_t^f \end{bmatrix}$$

Where B_{ij} represents the coefficient matrix: $y_t = \begin{bmatrix} y_t^d, y_t^f \end{bmatrix}'$ denotes a vector of variables; and $\varepsilon_t = \begin{bmatrix} \varepsilon_t^d, \varepsilon_t^f \end{bmatrix}'$ represents a vector of structural shocks that satisfies $E[\varepsilon_t | y_{t-s}, s > 0] = 0$ and $E[\varepsilon_t \varepsilon_t' | y_{t-s}, s > 0] = I$. ε_t^p denotes a vector of structural domestic shocks while ε_t^f represents a vector of structural foreign shocks.

Moreover, y_t^d is a vector of financial variables in the small open African economies and y_t^f is a vector of exogenous variables to small open African economies.

Our model includes five global financial variables and three domestic financial variables. The model vectors of global financial variables include the global risk aversion, global short-term interest rate, the U.S monetary policy, global long-term interest rate and global return on equity. The vectors of domestic financial variables are the equity prices, exchange rate and short-term policy rate.

IV. ESTIMATION RESULTS

4.1 Forecast error variance decomposition

We use variance decomposition to assess the relative contributions of global financial shocks to asset price dynamics in African economies. Table 1 presents the estimates of variation in asset prices caused by global financial shocks- global risk aversion, global short-term interest rate, global long-term interest rate, U.S. monetary policy and the U.S. rate of return on equity. Generally, the results indicate that global financial shocks significantly influence asset prices in African economies. The estimates show that global financial shocks account for more than 20% variations in equity prices in Ghana, Nigeria, South Africa and Zambia. This suggests that the equity markets in these countries are sensitive to global financial conditions. This is in line with the findings by Eichengreen and Gupta (2015) that countries with large financial market experience more pressure during the financial crisis. The global financial shocks, however, explain less than 10% movements in equity prices in Kenya.

Similarly, the global financial conditions explain more than 20% fluctuations in exchange rate in all the countries except in Kenya. This suggests that the global financial shocks have significant impacts on exchange rate movements in African countries. This is similar to the results by Anaya et al. (2017) for emerging market economies. Furthermore, the estimates indicate that global financial shocks contribute more than 30% variation in short-term interest rate in all the 5 countries. This suggests that monetary policy in these countries respond to global financial conditions. This reinforces the findings by Aizenman et al. (2016) on the sensitivity of periphery countries to global financial conditions in the core countries.

Disaggregating the components of global financial conditions shows that global risk aversion and the global long term interest rate seem to have the strongest impact on equity prices in African countries. This suggests that the equity markets in African countries respond strongly to global investors risk aversion and global long-term interest rate. This is in line with the findings by Ananchoticul and Zhang (2014), Furthermore, the estimates indicate that global risk aversion accounts for more than 25% variations in equity prices within the period for Nigeria and Zambia. The exchange rate fluctuations are more influenced by the global risk aversion and the U.S. monetary policy shocks. This is in contrast to the findings by Bowman et al. (2015). The short-term interest rates are mostly impacted by the global long-term rates and the global risk aversion.

Generally, the results indicate that the most important global financial conditions influencing asset prices in African countries are the global risk aversion, U.S monetary policy and the global long-term interest rate. Their effects are more pronounced on the equity prices and the short-term interest rates. The global short-term interest rate and return on equity shocks have limited impacts on asset prices in African countries. Moreover, asset prices in Nigeria, South Africa and Zambia appear to be mostly affected by the global financial conditions. This suggests that these three economies might have received more capital inflows than others and thus prone to capital flow reversal. For example, Ahmed et al. (2017) find that countries that have received large capital inflows deteriorated more than other countries during the global financial crisis.

Table 1: Variance decomposition of asset prices

Variables		GFS	Hor.	Ghana	Kenya	Nigeria	SA	Zambia	Aver.
	Equity price	VIX	6	1.67	1.74	12.09	1.78	11.89	5.83
			12	2.21	1.52	14.48	3.06	14.14	7.08
		USTB	6	0.09	0.06	0.20	0.23	0.19	0.15
			12	0.85	0.64	1.03	2.04	1.08	1.13
		USMP	6	0.05	0.09	1.58	1.09	1.54	0.87
			12	0.16	0.19	1.30	1.66	1.27	0.92
		USLR	6	10.36	1.28	5.97	1.63	6.04	5.06
			12	18.30	1.11	7.99	7.37	8.06	8.57
		USRE	6	0.07	0.39	0.90	1.35	1.15	0.77
			12	0.34	0.39	2.04	2.62	2.40	1.56
Exchange rate		VIX	6	8.85	1.99	2.36	1.50	2.33	3.41
			12	8.61	2.70	9.31	1.46	9.17	6.25
			6	2.25	0.86	1.45	0.76	1.51	1.37
		USTB							
			12	1.77	0.84	1.24	3.32	1.30	1.69
		USMP	6	6.09	0.01	6.63	6.30	6.45	5.10

	Variables	Horizon	Ghana	Kenya	Nigeria	S. Africa	Zambia	Average
Short-term rate		12	7.75	0.07	9.57	7.98	9.31	6.94
	USLR	6	1.31	0.25	2.00	0.38	2.01	1.19
		12	2.85	0.94	2.87	2.74	2.84	2.45
	USRE	6	0.31	2.72	0.10	1.96	0.12	1.04
		12	0.23	2.69	1.04	6.85	1.14	2.39
	VIX	6	7.31	10.81	8.49	0.19	8.33	7.03
		12	12.05	11.62	7.37	0.11	7.21	7.67
	USTB	6	0.64	0.24	0.37	1.70	0.38	0.67
		12	1.35	5.39	0.71	2.00	0.72	2.03
	USMP	6	3.16	1.76	0.19	11.20	0.20	3.30
		12	4.11	1.74	2.15	17.11	2.21	5.46
	USLR	6	2.79	0.58	18.95	6.47	18.58	9.47
		12	9.54	3.15	29.21	4.70	28.88	15.1
	USRE	6	0.27	0.23	0.37	0.37	0.57	0.36
		12	1.21	0.20	0.66	0.20	3.03	0.61

Note: VIX=Global risk aversion; USTB=US short-term interest rate; USMP= U.S Fed rate; USLR= US long-term interest rate; USRE= US rate of return on equity

2 Impulse response functions of asset prices to external financial conditions

Tables 2-6 present the estimates of responses of asset prices in the 5 African countries to a 1- standard deviation increase in global financial conditions. Starting from Table 2, the estimates show that global risk aversion significantly affects asset prices in African countries. A rise in global risk aversion results in the decline in equity prices in African countries except in South Africa. This implies that an increase in global risk aversion results in capital withdrawal by global investors leading to capital outflow and fall in equity prices. This is line with the findings by Ananchoticul and Zhang (2014) on the impact of global risk aversion on asset prices in EMEs. In South Africa, the effect is positive and short-lived as the equity prices increase after the fourth period. Furthermore, the estimates indicate positive shocks to the global risk aversion leads to an increase (depreciation) in exchange rate in all the countries except in Kenya. Moreover, in response to a rise in global risk aversion, short-term interest rate rises in all the countries.

Table 3 shows the responses of asset prices to the global short term interest rates shocks. U.S. monetary policy shocks. A positive shock to the global short term interest rate leads to a rise in equity prices in African countries except Kenya. The exchange rate in African countries decreases (appreciates) following an increase in the global short term rate. The short-term rate respond positively within 6 month and negatively within 12 months. Table 4 estimates suggest that an expansionary monetary policy in the U.S results in a decline in equity prices within 6 months and an increase within 12 months. This suggests that positive U.S. monetary policy shocks increases the capital outflow to African countries and thereby driving up equity prices. This is in line with the findings by Anaya et al. (2017). In Ghana and South Africa, U.S. expansionary policy leads to a decline in asset prices in the two periods. The exchange rate and the short term interest rates rise in response to the U.S expansionary monetary policy.

Tables 4 and 5 show the estimates of asset prices to increase in global long term interest rate and U.S return on equity shocks. The results indicate that equity prices increase within 6 months but decline within 12 months in response to a rise in global long term interest rates. This implies that a rise in global interest rate deteriorates equity markets in African countries thereby leading to a fall in equity prices. This is in line with the findings by Ananchoticul and Zhang (2014). The exchange rate depreciates as the increase in global interest rates results in capital outflows and exchange rate depreciation. The short term rates decline in response to the rise in global long term rates.

Table 2: the impulse responses to the global risk aversion shock

Variables	Horizon	Ghana	Kenya	Nigeria	S. Africa	Zambia	Average
Equity price	6	-0.04	-0.007	-0.03	0.008	-0.03	-0.02
	12	-0.02	-0.005	-0.02	0.002	-0.02	-0.01
Exchange rate	6	0.01	-0.01	0.02	0.00	0.01	0.01
	12	0.01	-0.001	0.01	0.004	0.01	0.01
Short-term rate	6	0.006	0.005	0.003	0.00	0.003	0.003
	12	0.005	0.001	0.001	0.00	0.001	0.002

Table 3: the impulse responses to the global short-term interest rate shock

Variables	Horizon	Ghana	Kenya	Nigeria	S. Africa	Zambia	Average
Equity price	6	-0.01	0.003	0.003	0.004	0.003	0.001
	12	-0.03	0.01	0.01	0.008	0.01	0.002
Exchange rate	6	0.005	0.001	-0.006	-0.004	-0.006	-0.002
	12	0.00	-0.001	0.001	-0.01	-0.002	-0.002
Short-term rate	6	0.001	-0.001	0.001	0.00	0.001	0.00
	12	-0.003	-0.005	0.001	0.00	0.001	-0.001

Table 4: the impulse responses to the U.S. monetary policy shock

Variables	Horizon	Ghana	Kenya	Nigeria	S. Africa	Zambia	Average
Equity price	6	-0.003	0.002	-0.007	-0.005	-0.007	-0.004
	12	-0.01	0.004	0.005	-0.002	0.005	0.00
Exchange rate	6	-0.01	0.00	0.02	0.01	0.02	0.01
	12	-0.008	-0.001	0.01	0.004	0.01	0.003
Short-term rate	6	0.003	0.001	0.001	0.001	0.001	0.001
	12	0.002	-0.001	0.002	0.001	0.002	0.001

Table 5: the impulse responses to the global long-term interest rate shock

Variables	Horizon	Ghana	Kenya	Nigeria	S. Africa	Zambia	Average
Equity price	6	-0.10	-0.01	-0.02	0.008	-0.02	-0.03
	12	-0.07	-0.002	-0.01	0.01	-0.01	-0.02
Exchange rate	6	-0.006	0.002	0.002	-0.004	0.002	-0.001
	12	-0.006	0.002	-0.009	-0.007	-0.01	-0.001
Short-term rate	6	-0.004	-0.002	-0.005	0.00	-0.005	-0.003
	12	-0.006	-0.003	-0.004	0.00	-0.004	-0.003

Table 6: the impulse responses to the U.S. return on equity shock

Variables	Horizon	Ghana	Kenya	Nigeria	S. Africa	Zambia	Average
Equity price	6	0.01	0.004	0.01	-0.007	0.01	0.005
	12	0.02	0.004	0.01	-0.003	0.01	0.01
Exchange rate	6	0.00	-0.003	-0.004	0.01	-0.004	-0.002
	12	0.001	-0.001	-0.004	0.01	-0.01	-0.001
Short-term rate	6	-0.001	-0.001	0.00	0.00	-0.001	0.00
	12	-0.002	0.00	0.001	0.00	0.001	0.00

4.3. Regression analysis

Our findings reveal that the global financial shocks have different impacts on asset prices in the five African countries. This raises the issue of what could be the forces driving the diverse responses of asset prices to global financial conditions in these economies. In line with the recent literature on the spillover effects of global financial shocks on asset prices in EMEs (see Yildrim, 2016), we examine the role played by country characteristics especially the macroeconomic fundamentals in the propagation of global financial shocks to asset prices. We consider four macroeconomic fundamentals based on the availability of monthly data for the variables[2].

Similar to Bowman et al. (2015) and Yildrim (2016), we estimate a cross section regression equation. This allows us to evaluate how a country-specific characteristics influence the impact of global financial shocks on the country asset prices. The regression equation is given as:

$$\Delta Y_{i,t_a}^{afr} = \theta_i + \left(\gamma_1 + \gamma_2 * X_{i,t_{a-1}}\right) * \Delta Y_{vix,t_a}^{w} + \left(\alpha_1 + \alpha_2 * X_{i,t_{a-1}}\right) * \Delta Y_{fdr,t_a}^{w} + \left(\omega_1 + \omega * X_{i,t_{a-1}}\right) * \Delta Y_{gir,t_a}^{w}$$
$$+ H_{t_a} + \epsilon_{i,t_a}$$

Where $\Delta Y_{i,t_a}^{afr}$ denotes the monthly change in equity prices, exchange rate or the short-term interest rate for each of the five African countries. The $X_{i,t_{a-1}}$ is the country-specific monthly macroeconomic variables for each of the countries. $\Delta Y_{vix,t_a}^{w}$, $\Delta Y_{fdr,t_a}^{w}$, and $\Delta Y_{gir,t_a}^{w}$ represent the monthly changes in global risk aversion, fed funds rate representing the U.S. monetary policy, and the global interest rate. H_{t_a} is the set of control variables. Equation (1) can be regarded as a monthly restricted version of VAR employed to identify impulse response functions in section 4.2. The specification of the equation allows the responses in each country's asset prices to change in global financial conditions to depend on country' characteristics $X_{i,t_{a-1}}$. The parameters γ_2, α_2, and ω_2 are the coefficients capturing the responses of each African country's asset price to changes in global financial conditions. We expect that countries with lower GDP growth, higher current account deficit, lower reserves and higher inflation will experience more deterioration in asset prices following positive change in global aversion, US monetary policy and global interest rate.

Table 7 presents the role of macroeconomic fundamentals in the responses of asset prices to change in global finance conditions. The results indicate that country-specific macroeconomic variables are statistically significant in explaining the varied responses of asset prices to global financial shocks. We find that current account to GDP, inflation and foreign reserves are important determinants of the impact of global financial conditions on equity prices. This suggests that equity markets in countries with current account deficit, higher

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[2] The macroeconomic fundamentals that are available monthly are current account, reserves, and inflation. GDP was available at quarterly frequency and was interpolated.

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inflation and lower foreign reserves are more vulnerable to change in global financial conditions. This is line with the findings by findings Yildrim (2016). Specifically, the impact of global risk aversion and the global rate of return on equities on equity prices in African countries depend on the level of current account and external reserves while the effects of global interest rate and the U.S monetary policy depend on external reserves.

Similarly, the results suggest that countries' macroeconomic fundamentals determine the extent of global financial conditions on the exchange rate and short-term interest rate. The estimates indicate that the effects of global risk aversion and global long-term interest rate on the exchange rate depend on the level of current account. In contrast, the impact of global short-term interest rate and the U.S. monetary policy depend on the level of inflation. This indicates that global financial conditions have more severe impacts on exchange rate in African countries with current account deficit and higher inflation rates. In response to global financial conditions, the exchange rate will depreciate more in countries with higher current account deficit and higher inflation rate. Moreover, the influence of global financial conditions on short-term interest rates depend on the current account, inflation and external reserves. We find, however, that economic growth does not affect the impact of global financial conditions on asset prices in African countries.

In general, the findings indicate that macroeconomic fundamentals determine the vulnerability of asset prices in African countries to the change in global financial conditions. The results indicate that countries with higher inflation, higher current account deficits and lower external reserves are more susceptible to the worsening in global financial conditions. This is in line with the findings Chen et al. (2014) and Ahmed et al. (2017) for emerging markets economies.

Table 7: Regression results for the role of macroeconomic fundamentals in the heterogeneous responses in 5 African countries

Variable	Equity prices					Exchange rate					Short term interest rate				
	VIX	USTB	USMP	USLR	USRE	VIX	UST	UMP	USLR	USRE	VIX	USTB	USMP	ULR	USRE
CA/GDP	0.05** (0.02)	0.54 (2.37)	-0.13 (1.79)	1.28 (1.01)	-0.14** (0.04)	-0.01** (0.01)	0.36 (0.77)	0.26 (0.58)	-0.72* (0.33)	0.01 (0.01)	-0.01* (0.00)	0.33 (0.27)	0.11 (0.21)	0.18* (0.11)	0.01** (0.01)
Inflation	1.07 (1.45)	-0.12 (0.87)	-0.55 (0.62)	0.60 (0.76)	-0.07** (0.02)	0.48 (0.43)	0.81* (0.28)	0.52* (0.20)	-0.32 (0.25)	-0.25 (0.72)	0.48* (0.16)	-0.53* (0.10)	-0.42* (0.07)	0.80* (0.08)	-0.01** (0.003)
Reserves	-0.30* (0.15)	0.37* (0.09)	0.32* (0.07)	0.21* (0.08)	0.02** (0.002)	0.04 (0.05)	0.02 (0.03)	0.43 (2.22)	-0.02 (0.03)	-0.29* (0.08)	-0.04* (0.02)	0.06* (0.01)	0.05* (0.01)	0.06* (0.01)	0.12 (0.03)
Growth	-0.09 (0.08)	-0.11 (0.18)	0.11 (0.14)	-0.05 (0.04)	-0.12 (0.12)	0.05 (0.02)	0.05 (0.06)	0.05 (0.04)	0.02 (0.02)	-0.04 (0.04)	0.005 (0.01)	0.03 (0.02)	0.01 (0.02)	-0.62 (0.43)	-0.02 (0.02)

Note: CA/GDP is the current account as a proportion of GDP; VIX is global risk aversion; USTB is US short-term interest rate; USMP is the U.S
Fed rate; USLR is US long-term interest rate; USRE is the US rate of return on equity.
**Significance at 5%
*Significance at 10%

V. CONCLUSION

A number of studies have shown that external financial shocks in the advanced economies may impact emerging markets economies (EMEs) (see Akinci, 2013). External shocks are transmitted to the EMEs through the trade and financial channels. The recent global financial meltdown triggered by the sub-prime mortgage crisis originating from the U.S. has reinforced the financial transmission channel. Monetary policy shocks in the advanced economies impact EMEs through change in global risk aversion, portfolio balance channel, credit growth, capital flows and bank leverages (see Rey, 2013; Aizenman et al., 2016). However, there has been few empirical evidence on the impact of change in global financial conditions on asset prices in African countries. This study fills this gap by investigating the effects of global financial conditions on equity prices, exchange rate and short-term interest rate in African economies.

The findings indicate that the global financial conditions significantly influence asset price movements in the five African countries. Furthermore, the results show that global risk aversion, the U.S monetary policy and global long-term interest rate shocks are the most important global financial conditions impacting asset

prices in African countries. We find that equity prices and the short-term interest rates are the most vulnerable asset prices in the 5 African countries to the global financial shocks. The findings show that global financial shocks have limited effects on the exchange rate.

Moreover, the results indicate heterogeneous responses of asset prices to global financial shocks in the five African economies. Also, the results suggest that macroeconomic fundamentals determine the severity of the impact of global financial conditions on asset prices in African countries. The findings suggest that asset prices in countries with higher inflation, lower higher current account deficits and lower external reserves are more susceptible to the change in global local financial conditions. Moreover, the results indicate suggest that reserves, current account, and inflation are important determinants of the transmission of global financial shocks to equity prices and exchange rate. We find, however, that economic growth has no influence on the transmission of global financial conditions to asset prices in African countries. Given these findings, African countries should formulate and implement policies that would strengthen their economic fundamentals and promote policy credibility so as to dampen the harmful impacts of global financial shocks on asset markets.

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