



Munich Personal RePEc Archive

Macroeconomic effects of falling commodity price: Evidence from Democratic Republic of the Congo

PINSHI, Christian P.

University of Kinshasa

May 2018

Online at <https://mpra.ub.uni-muenchen.de/101068/>
MPRA Paper No. 101068, posted 14 Jun 2020 18:40 UTC

Macroeconomic effects of falling commodity price: Evidence from Democratic Republic of the Congo

Christian P. Pinshi¹

Abstract

This paper assesses the shock impact of commodity prices on the macroeconomic framework in the Democratic Republic of the Congo. Using a Vector autoregressive (VAR) model, we determine the impulses of each macroeconomic sector to lower prices. The results indicate that this shock leads to complex effects that can lead to systemic risks and crises. We suggest that it would be important for governments, given such shocks, to learn from and take immediate action to strengthen the resilience of the economy and the financial system to future shocks in based.

JEL Classification: Q02, F41, E60

Keywords: Commodity prices, macroeconomic behavior

¹ University of Kinshasa, Christian.pinshi@unikin.ac.cd

1. Introduction

Commodities are the economic preserve of many developing countries. They are of systemic importance in these countries, so that their economic growth is stimulated by soaring commodity prices (Helbling et al., 2008) and the dynamics of capital inflows and sovereign wealth funds. is fueled by commodity revenues.

Between 2012 and 2016, there was a sharp downward shift in the prices of several commodities (Table 1). Many sub-Saharan countries exporting commodities have seen their economies enter a crisis (Banque de France, 2015) following the collapse in commodity prices. This tumble of prices is caused on the one hand by the distortion between supply and demand on the international market. The strong geopolitical tensions, as well as the economic slowdown of large emerging countries like China have indeed weighed on the demand for commodities. However, the main factor behind this sharp drop remains the increase in the volume of production which overloads the supply on the market (Albert and Gillet, 2016). And on the other hand, by the appreciation of the dollar which encourages the decline in commodity prices.

The decline in commodity prices is affecting the macroeconomic framework of African economies, as much of the continent is heavily dependent on commodities (Christensen, 2016). In fact, the existing literature states that the boom and / or bust of commodity prices has a direct impact on the macroeconomic framework and feeds distortions that could trigger a large-scale crisis in all economic sectors. economic crisis, a twin crisis (a banking crisis combined with a currency crisis), a fiscal crisis and finally a sovereign debt crisis. On this point, researchers stress the importance of assessing the macroeconomic effects of the commodity price shock and of exposing the reactions of each macroeconomic variable, as this shock should enter into line with the formulation of economic policy (Blanchard et al. Gali 2007, Arezki and Blanchard 2014, Anand and Prasad 2012, Kenkouo 2014 and Shousha 2016).

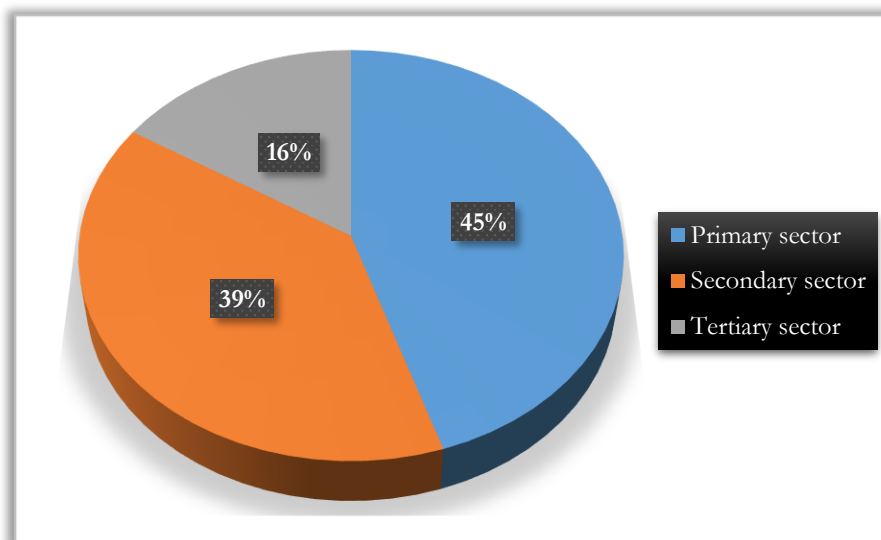
The Democratic Republic of the Congo (DRC) is one of the countries heavily dependent on commodities, with the primary sector being the backbone of the economic system (Figure 1 illustrates the “sectoral pie of the Congolese economy” by exposing the contribution of each GDP sector, which clearly shows the systemic weight of the primary sector and in particular the extractive industry, which shows how important is the impact of a commodity shock on the Congolese economy.

As part of this work, we assess the effects of falling commodity prices on the macroeconomic framework. Given that commodities remain the engine of the Congolese economy, it is important the macroeconomic consequences of fluctuations in the prices of these products on international markets. The behaviors of macroeconomic variables change through the exogenous impulse of rising or falling commodities. In this work, we consider the case of a price shock.

The main contribution of this paper is to provide an empirical assessment of the price effects of commodities on macroeconomic variables, finally to measure the issues and risks and take into account the dynamics of the macroeconomic framework in order to respond and resolve this imbalance. Especially we analyze, the effect of a shock of falling commodity prices on the real, external, public, monetary and financial sector. To this end, we estimate a Vector autoregressive (VAR) model for the Congolese economy and identify the effect of falling commodity prices on the macroeconomic framework.

DRC is well suited for such a study: first, products are the central lung of the Congolese economy since the colonial era. Secondly, the fall seems sustainable and the distortions are prolonged. As a result, downward price movements may have persistent effects on the macroeconomic framework.

Figure 1. Sectoral pie of the Congolese economy



Source: Author's calculations, BCC Annual Report (2014)

Section 2 reviews the literature and Section 3 examines the behavior of macroeconomic frameworks. Section 4 presents the methodology of the study. The main findings are presented in section 5. The implications and answers are presented in section 6. Section 7 concludes.

2. Literature

The theoretical literature on the macroeconomic effects of commodities has long been of interest to analysts. Indeed commodities have been the cause of several crises in the world. In 1973, the oil shock led to a crisis characterized by stagflation (a combination of a recession and high inflation) (Boyer, 2012). Destais (2012) points out, on the one hand, that falling commodity prices have exacerbated the debt crisis in Latin America in the 1980s. This crisis had resulted in a structural deficiency in domestic and foreign savings, an increased outflow of capital. These have increased the burden of debt and triggered a debt crisis. On the other hand, he pointed out that the fall in raw materials was one of the triggering factors of the Russian crisis of 1998, which had significant macroeconomic effects: insufficient economic growth, budget deficit, sharp devaluation of the ruble, defaults on Russian debt, volatility of capital flows.

The first transmission channel of falling commodity prices is macroeconomic. Indeed, Christensen (2016) identifies the channels of macroeconomic transmission of a decline in commodity prices. We synthesize them into three channels :

- **Fiscal transmission channel**

Decrease in exports → decline in production and government revenue
→ cut in public expenditure

Since fiscal policy is pro-cyclical with commodities, it accentuates the impact of the commodity price cycle on economic growth by increasing expenditures during upswings and decreasing expenditures during downturns

- **Monetary and exchange transmission channel**

Decline in foreign exchange reserves and capital inflows → depreciation of the exchange rate
→ Increase in inflation

Declining commodity prices deteriorate foreign exchange reserves and cause capital outflows and exchange rate depreciation. This in turn fuels an increase in inflation. This disrupts the conduct of monetary policy.

- **Financial system transmission channel**

Massive withdrawal of deposits → decrease in credits → disruption of the financial system

A fall in commodity prices leads to a massive withdrawal of deposits as the sudden loss of revenue often forces the state and commodity-dependent firms to tap into their bank deposits and this liquidity shock forces banks to lowering credits, resulting in a disruption of the financial system.

In recent years, several empirical studies have looked at the macroeconomic effects of commodity prices. While much of the literature over the past decade has focused on the impact of high commodity prices on resource-rich countries, renewed attention is now being given to the negative effects of declining prices commodity prices on the economies exporting them.

Gruss (2014) studies the growth response in Latin America and the Caribbean after soaring commodity prices. Using the GVAR (Global VAR) model, it projects low growth in the coming years for exporting countries. It finds a lingering effect of the shock and believes that these countries will struggle to regain their growth even in the event of a rebound in commodity prices. He warns of any policy aimed at stimulating demand to boost growth, while stressing the need for ambitious structural reforms to ensure strong growth in the medium term

Shousha (2009) estimates by a VAR Panel the macroeconomic effects of commodity boom / bust in the context of financial frictions. He finds that the commodity price shock has a strong impact on the economic cycle of low-income and emerging-exporting countries. The lower performance of the financial system (especially the banking sector) of these countries accentuates the shock and the heterogeneity of the responses.

Gangelhoff (2015) analyzes the implications of falling commodity prices. Using a bivariate regression model, he concludes that declining prices affect prospects for economic growth and has a significant impact on government revenues and macroeconomic management in commodity exporting countries.

Bejarano et al. (2016) assess, through the Dynamic General Equilibrium model, the macroeconomic impact of the commodity price collapse on resource-rich small economies. They find that fluctuations in commodity prices affect not only global patterns of consumption and savings, but also incentives for the private sector to exploit natural resources intertemporally. And they find that these fluctuations will result in larger external borrowing cycles.

Kamber et al. (2016) estimate by a Structural VAR model, the macroeconomic effects of commodity price developments on the New Zealand economy. Their analysis suggests that an increase in commodity prices has similar characteristics to require driven macroeconomic fluctuations. Consumption and investment tend to increase in response to the commodity price

shock. With higher demand pressures, inflation is expected to increase persistently and the real exchange rate appreciates. Moreover, they show that, in the very short term, the key interest rate does not respond to rising inflation, but should increase in the longer term.

The International Monetary Fund (2016) measures, with several econometric models, the macroeconomic effects of the collapse of commodity prices in sub-Saharan Africa. Their results suggest that the magnitude of the commodity price shock is important, and its impact is stronger in the event of a collapse in export prices, as a 1% decrease in the terms of trade of commodity products. base is accompanied by a loss of growth of about one-quarter point in each of the three years following the shock. In addition to the loss on growth, their estimate shows that this fall in commodity prices has important effects on other macroeconomic variables, notably the rise in inflation, the nominal depreciation of the exchange rate, the fall in international reserves, the deterioration of the external position and the widening of the budget deficit.

Kinda et al. (2016) analyze the impact of commodity prices on the fragility of the financial sector. They use Panel's econometric data model on several emerging and developed commodity exporting countries. They find that the negative shock of commodity prices weakens the financial sector, increases the likelihood of a banking crisis. In addition, they find a strong correlation between poor banking performance and falling commodity prices. They identify a persistent effect of the shock in countries where there is poor governance, little fiscal space. Their results also show that this shock is accelerating more in countries where there is no macroprudential policy and a policy of export diversification.

Agarwal et al. (2017) estimate by a Panel the sensitivity of bank loans to falling commodity prices. They find that the decline in commodity prices is accompanied by a contraction of credits. They draw a transmission channel from the drop in commodity prices on bank loans: this channel shows that a decline in commodity prices is accompanied by a decline in corporate profits and government revenues. the latter cause, on the one hand, a fall in the demand for loans and on the other hand, a liquidity shock and a deterioration of banking health, and ultimately a rationing of loans, which undermines financial stability.

Empirical studies have spread the macroeconomic effects that result from a commodity price shock. These have a negative and lasting effect on macroeconomic sectors especially for commodity-dependent countries. Thus, in Section 5 we will assess the macroeconomic impact of falling commodity prices.

3. Macroeconomic frameworks

Commodities retain an important place in DRC, the fall of these products has a domino effect on the Congolese economy, especially since the latter fluctuates pro-cyclically with regard to commodities. Thus a negative change in commodities would result in a series of (negative) developments in each macroeconomic sector.

Table 1 provides an overview of commodity prices. Since 2012 a decrease in metal prices and a slowdown in oil prices have been observed. However, this table reveals that the drastic drop in commodity prices was particularly felt in 2015 with a variation of -23% for metals and -45% for oil.

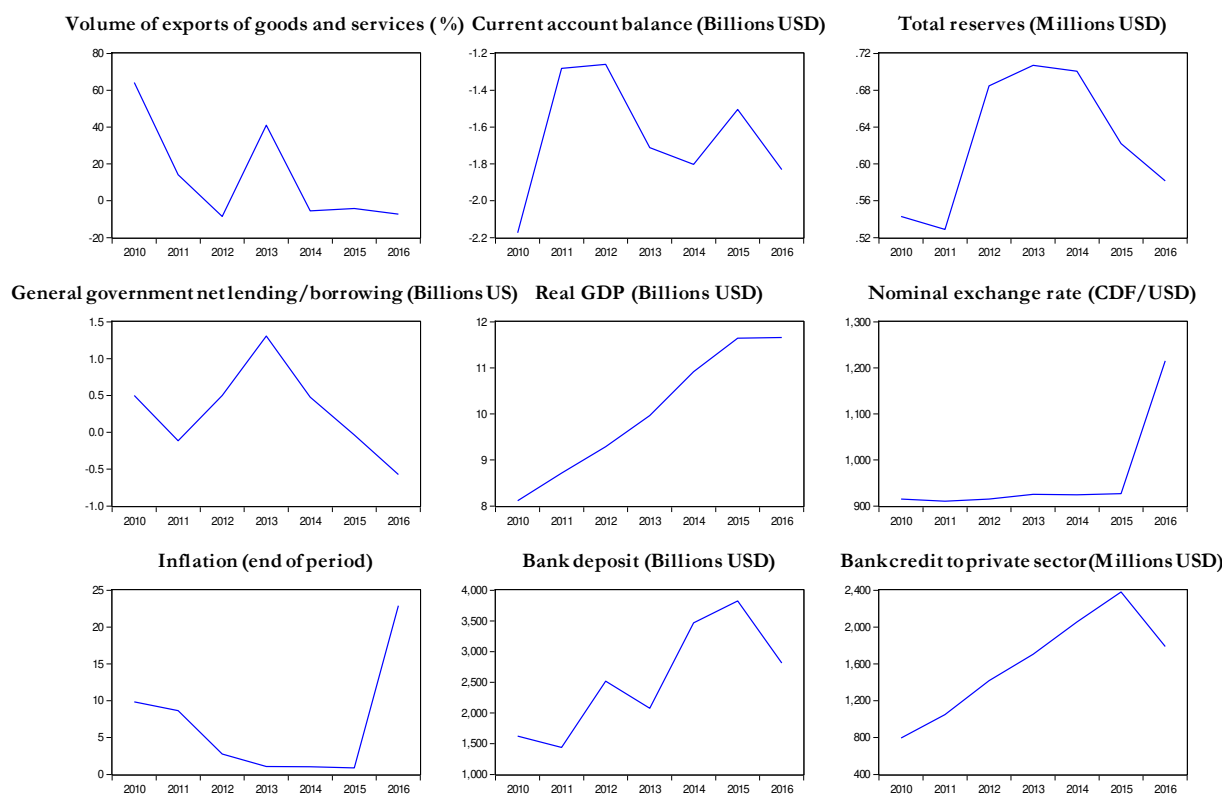
Table 1. International commodity prices

	Commodity metals price index	Percent change	Commodity fuel (oil) index	Percent change
2010	202		147	
2011	230	14	193	32
2012	191	-17	194	1
2013	183	-4	191	-2
2014	164	-10	177	-7
2015	127	-23	98	-45
2016	120	-5	82	-16

Source : IMF, *World economic outlook (april 2017)*

The close relationship between commodities and the Congolese economy, as well as the strong downward price variations of products, is an incentive to trace the behavior of the macroeconomic framework.

Figure 2. Macroeconomic variables in DRC, 2010-2016



Sources: IMF, *International Financial Statistics (2016)* and *World economic outlook (april 2017)*

The visual examination of figure 2 shows that the macroeconomic variables are experiencing a common break in 2015. The sharp decline in commodities has sharply affected all macroeconomic sectors. The current account, international reserves and the budget balance deteriorated further. Indeed, the decline in exports of goods (although goods exports fluctuated well before 2015) is the main item of the current account, has widened the current account (this hollow deficit directly affects the balance of payments) and the foreign currencies that enter through Exports have an impact on official reserves and drastically reduce them. As goods exports are the key fiscal variable that drives government revenues through export earnings, the downward trend in exports directly

transmits this effect to government revenues and increases the budget deficit. The decline in commodity exports led to a sharp halt in the production dynamics that had marked the Congolese economy over the past decade.

In a context of declining currency supply due to the decline in exports and the swelling of the government's net position to finance fiscal deficits, the exchange rate depreciates sharply and there follows high inflation caused by the effects changes in the exchange rate² (pass-through) (Pinshi and Sungani, 2018).

This collapse in commodity prices tends to disrupt the financial system. On the one hand, the decline in output of commodity exporting firms has affected banks. Companies that have received bank loans have found themselves struggling to fulfill the term of the contract, this results in an accumulation of cases of defaults, an increase in provisions and the deterioration of the conditions of profitability of banks. The deterioration of bank liquidity has led banks to ration credit. On the other hand, banks saw their deposits drop as both the sudden loss of government revenues and commodity-dependent businesses forced them to draw on their bank deposits (Christensen, 2016) and the depreciation of the exchange rate and the rise in prices led households to withdraw their bank deposits.

Table 2. Behavior of macroeconomic frameworks

Sector	Variables	2014	2016	Change (%)
Real	Consumer Price (end of period)	1196,6	1483,7	23,9
	GDP, constant price (billions USD)	10,9	11,0	1,3
Public	Government revenue (billions USD)	5,2	4,1	-21,2
	Government expenditure (billions USD)	4,5	4,0	-11,1
	Government gross debt (billions USD)	6,0	7,9	30,8
External	Exports of good (millions USD)	12,3	10,2*	-17,1
	Total reserves (millions USD)	0,701	0,6	-17,0
	Nominal exchange rate CDF/USD	924,5	1215,0	31,4
Financial	Bank credit to private sector (millions USD)	2,1	1,9	-7,3
	Bank deposit (millions USD)	4,8	2,5	-47,9

Source : IMF, International Financial Statistics (2017) and World economic outlook (april 2017)

(*) 2015

Table 2 shows the behavior of some indicators in each sector :

- The real sector has profound changes in the rate of inflation and economic growth. From 2014 to 2015, macroeconomic instability was pronounced with an inflation rate rising to 23.9%. Likewise, economic growth has slowed down by 1.3%, which is on the brink of a recession.

² Pinshi and Sungani (2018) measured the degree of pass-through on the DRC; they found a high sensitivity of inflation as a result of changes in the exchange rate. This shows the causality of the exchange rate on inflation.

- The public sector shows a sharp decline in general government revenues of 21.2% and these also affect general government expenditure downward. This inflates the public debt to 30.8%. In a context of budget squeeze, especially as the need for financing is important, the country is getting into debt with donors to cover its expenses and this accumulated deficit accumulation and inflates the debt.
- The external sector is directly affected as it is the source. Exports of goods and international reserves fell sharply to 17%.
- The financial and monetary sector is in turbulence. The exchange rate varied widely, showing a 31.4% depreciation. The bank loan is down 7.3%, however, bank deposits (by a weak run effect) have fallen sharply. This can undermine the stability of the financial system and set the stage for a financial crisis.

This panel exposes the sudden macroeconomic turmoil through the fall in commodity prices. All these sectors are out of balance, the domino effect and contagion from commodities is of great importance and above all expectation. This can be interpreted as the super dependence of the Congolese economy on commodities. An orderly quick adjustment is required, including the simultaneous implementation of demand management measures (adjustment and stabilization, smoothing fluctuations in production with respect to commodities) and supply management (structural reforms, stimulating sustainable economic growth).

4. Methodology and data

We measure the macroeconomic effects of falling commodity prices by the dynamics of the VAR (Autoregressive Vector) model, more precisely by the impulse response function. The latter analyzes shock dynamics, which consists in evaluating, through simulation, the effect of a shock on contemporary and future variables.

Our sample includes the monthly data covering the period of 2010: 01 to 2016: 12. We choose the prices of precious metals given their importance in the Congolese economy, finally we take the macroeconomic variables in each sector: real sector: the GDP and the rate of inflation; monetary and financial sector: bank deposit and bank credit to the private sector; public finance sector: public expenditure and government revenue; external sector: the exchange rate, the current account, exports of goods, the financial account (capital flows) and international reserves.

4.1 Measurement of the shock of commodities

For measuring the shock of falling commodity prices, it is important to turn the VAR process into a VMA (Mobile Average Vector) process.

Consider a stationary VAR process with uncorrelated white noise:

$$Y_t = \sum_{i=1}^p \Phi_i Y_{t-i} + \varepsilon_t \quad (1)$$

Where Y_t represents macroeconomic variables.

This process VAR (p) can admit a representation in the form of moving average vector VMA (∞) according to the theorem of Wold (Gossé and Guillaume, 2011) :

$$Y_t = \sum_{j=0}^{\infty} \Psi_j \varepsilon_{t-j} = \Psi(L) \varepsilon_t \quad (2)$$

Où $\Psi(L) = \sum_{j \geq 0} \Psi_j L^j$ et $\Psi_0 = I$

The term ε_t of equation (2) is the vector of shocks of commodities prices.

This equation (2) allows, through the dynamics of the VAR process, to measure the macroeconomic effect of falling commodity prices on macroeconomic frameworks through multipliers :

$$\Psi_{ij,s} = \frac{\delta Y_{i,t+s}}{\delta \varepsilon_{j,s}} \quad (3)$$

Où $Y_{i,t+s}$ Represents the future behavior of macroeconomic variables

This function is called "impulse response function". It describes the response of $Y_{i,t+s}$ to a single impulse in $Y_{i,t}$ following the impact of commodity shocks, with all other contemporary variables held constant (Hamilton, 1994).

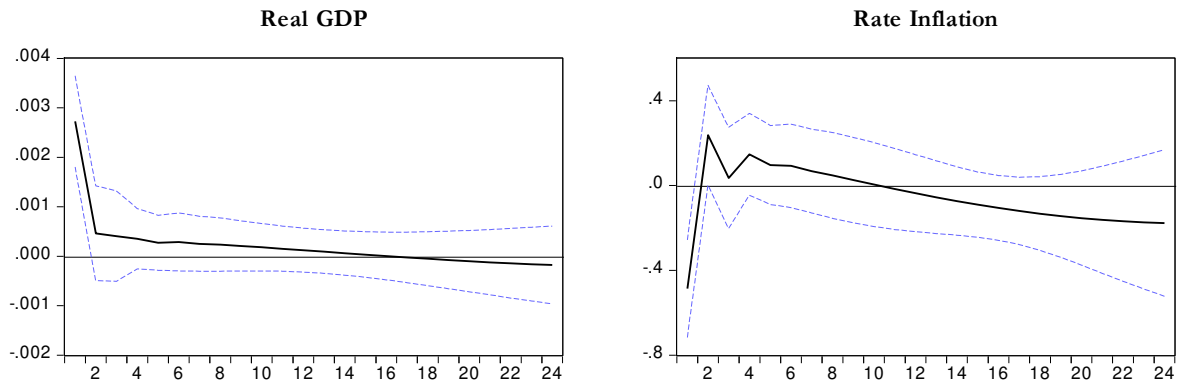
5. Results

The following section discusses the dynamics of macroeconomic frameworks as a result of the commodity price shock. Confidence intervals are provided at the 95% threshold

5.1 Effect on the real sector

The dynamics of output and inflation following a 24-month commodity price shock are shown in Figure 3. The commodity price shock has a marked impact on production, resulting in a sharp contraction in GDP, which decelerated after 16 months before entering an economic recession. The impact of the exogenous shock on inflation is significant and persistent. It reacts with a persistent increase and then negatively follows the behavior of the production. The negative effect is reached after 10 months and remains at this negative level thereafter. In summary, this exercise of the impulse response function in the real sector suggests that it is legitimate for governments to take into account such shocks, given the damage they cause to the real sector.

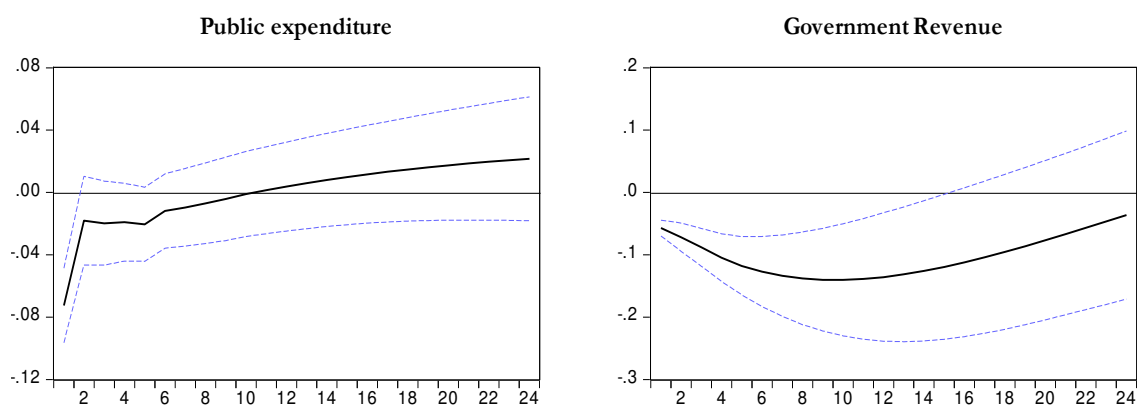
Figure 3. Response of sector real



5.2 Effect on the public sector

The procyclicality of fiscal policy³ with respect to commodities is reflected in this function (figure 4). As a result of a negative commodity price shock, the fiscal situation worsens with a lasting negativity on the part of government revenue that mechanically affects public expenditure after 11 months. These resume their dynamics as a result. However revenues tend after 24 months to return to equilibrium. It should be emphasized between the lines that this trend in the fiscal situation highlights an upward trend in the public debt⁴. Since fiscal policy is procyclical, it is anxiously awaiting a return to equilibrium. This reflects the super budgetary dependence on commodities.

Figure 4. Response of public sector



5.3 Effect on the external sector

The shock was first felt on the external sector (figure 5), then to influence all the other sectors. Indeed, the commodity price shock has had a negative and significant effect on the exports of goods. Exports fall sharply and this variation becomes negative in the 6th month and persists beyond the 24th month. Since commodities constitute the essential of DRC goods exports. The trade balance is the most important part of current account, the drop in exports mechanically causes the deterioration of the current account and increases the deficits.

As for international reserves, they first react negatively and then try to adjust after 4 months. However, the negative effect persists. The effect of the drop in commodity prices is without delay on the exchange rate and directly leads to an imbalance in the foreign exchange market, which fuels the sharp currency depreciation. The imbalance fades after 13 months. Since the sharp depreciation of the exchange rate forces the Central Bank to intervene in the foreign exchange market in order to support the currency and avoid a currency crisis. This phenomenon is reflected in a steady decline in reserves, especially as exports are experiencing a sharp reversal.

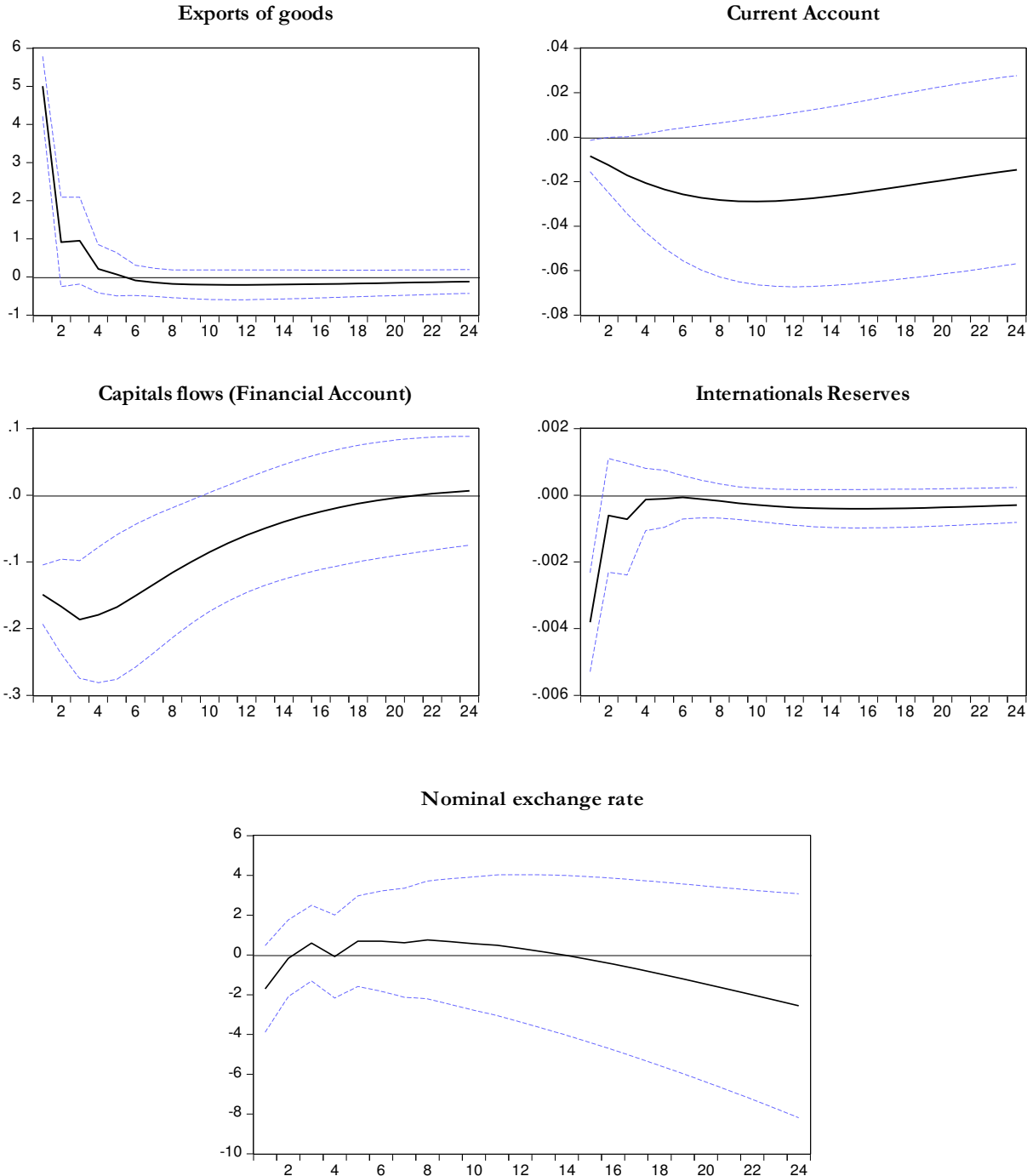
The impact of the shock on capital flows has a fairly important response function. First, the deficit is accentuated by a decline in capital inflows (this is caused on the one hand by the low return on foreign investment following falling prices and on the other hand by the economic uncertainties

³ Fiscal policy accentuates the impact of the commodity price cycle on GDP by increasing spending during a boom and reducing it during a downturn.

⁴ There are several reasons for the use of indebtedness, including elections, payments to employees (professors and civil servants in the public sector) and other current expenses.

and politics related to all political frictions related to the electoral process). However, the effect changes in the 3rd month, where the fluxes adjust after 20 months. Note that capital flows are stimulants for growth. This adjustment to the equilibrium could be beneficial to the future behavior of the Congolese economy.

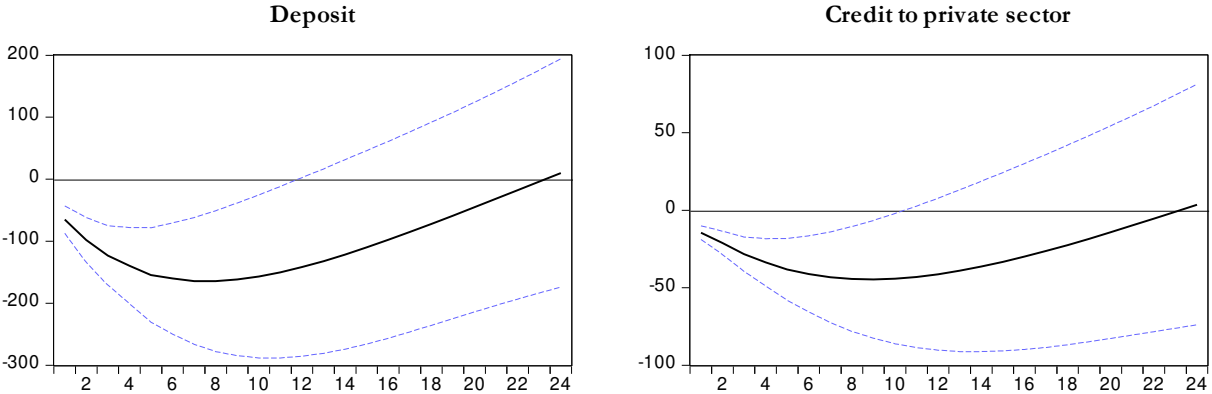
Figure 5. Response of external sector



5.4 Effect on financial and monetary sector

Bank deposits and loans to the private sector respond negatively according to the same behavior. They continue to decline and then gradually return to equilibrium after 24 months. This decline in commodity prices increases banks' exposure to liquidity risk, forces banks to ration credit, and increases the likelihood of a banking crisis. These responses expose the financial system to turbulence shaken by the exogenous shock.

Figure 6. Response of financial and monetary sector



The study provides a relevant and rigorous analysis of the macroeconomic effects of falling commodity prices. The results thus obtained for the macroeconomic effects of a commodity price shock show how the country's high dependence on commodities increases the vulnerability of all macroeconomic sectors. They suggest that it would be legitimate for governments to take into account, measure and learn from such shock to strengthen the resilience of commodity shocks and the resilience of the economic and financial system.

6. Implications and Responses

The fall in commodity prices affected all macroeconomic sectors through the transmission mechanisms shown in Chart 7 and resulted in a battery of systemic risks and crises. This tragedy draws our attention to rethink the Congolese economy and to list some implications and how economic policy should react :

- (i) Urgent structural reforms :

It is now clear that governments can no longer ignore the volatility of commodity prices that can fuel a crisis of a very large scale (Chart 7). Macroeconomic policies (monetary and fiscal policy) should support structural policies and reduce the fragility of the economy. Indeed, monetary policy does not have the necessary means to absorb this shock, just as fiscal policy alone cannot absorb this shock. The real problem should be solved at the source, immediate structural reforms should be introduced to reduce the vulnerability of the economy;

- (ii) Sound cooperation and coordination of fiscal and monetary policies :

The transmission mechanisms of commodity prices on macroeconomic variables are of great importance (Chart 7). In order to respond effectively to the shock, fiscal and monetary policy must

be closely co-operative and co-ordinated while preserving their respective autonomy: mobilizing in a sound manner (budgetary adjustment and adoption of budgetary rules) domestic revenues; by rethinking for a fiscal space and constituting a steering wheel of countercyclical stabilization reserves during the expansion period to use them in the fallback phases often due to the fall of commodities; abolishing fiscal dominance to consolidate the credibility of monetary policy and its independence. A budget consolidation policy is required;

(iii) Macprudential orientation to limit systemic risk :

As the impact of the exogenous shock is important, the financial system must be robust and resilient. Macprudential guidance is proving to be better financial regulation by reducing systemic risk. The major contribution of this approach is its ability to be preventive (Pinshi, 2017) to carry out the defensive and / or the corrective in the face of a shock. Banks should also be called upon to form countercyclical buffer;

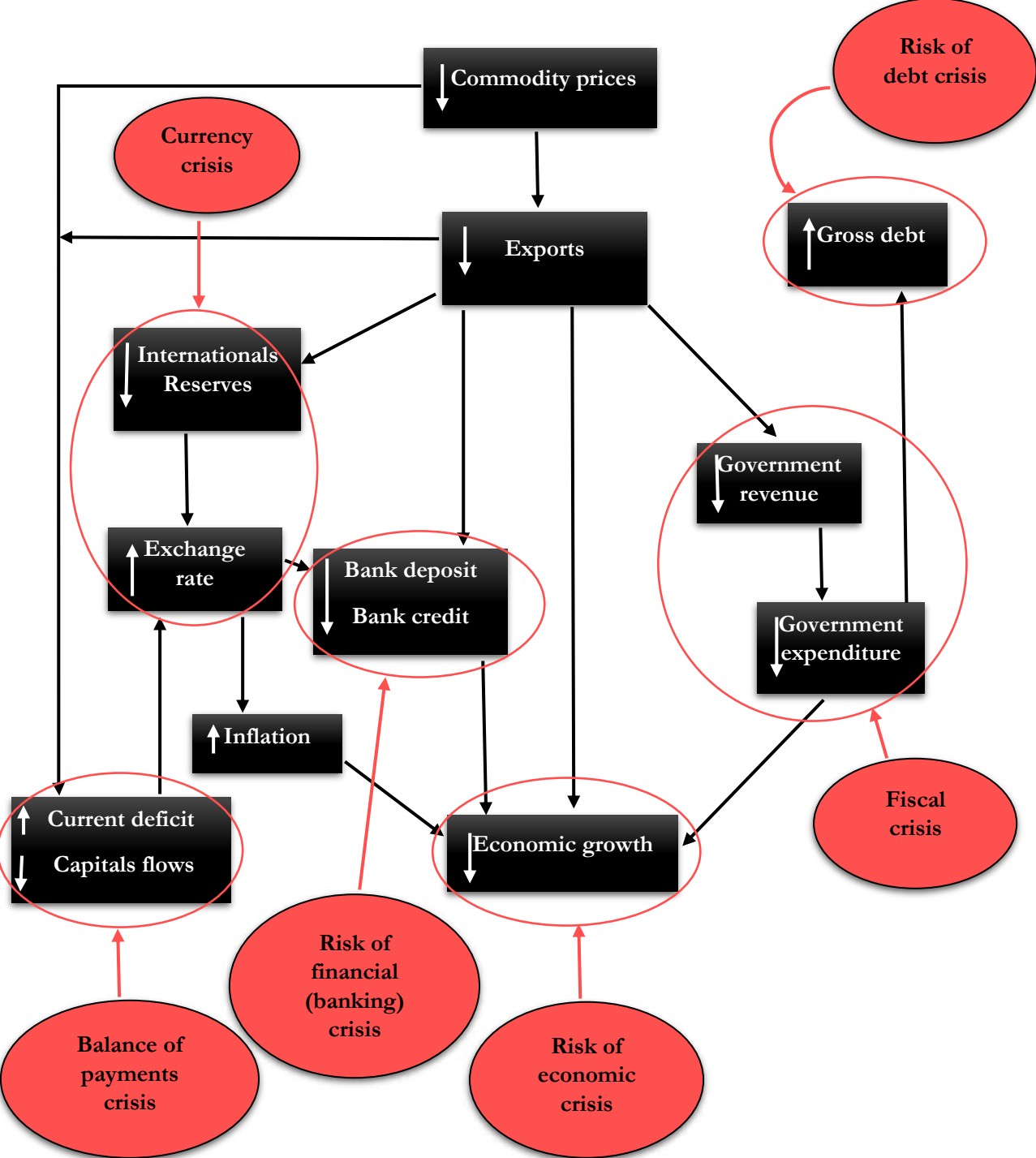
(iv) Accelerate the Investment in Investment Phase :

Increase the ability to invest productively by reorienting priorities towards building long-term investment capacity (Collier, 2009) and boosting domestic demand that will affect economic diversification because, without massive investment strategy the DRC's heavy reliance on commodities will increase further and vulnerability to external shocks will also increase ;

(v) Create different sovereign wealth funds :

In order to arrive at good prospects for the viability of the Congolese economy, it is necessary to promote the creation of the various sovereign wealth funds during periods of expansion: stabilization funds; infrastructure investment funds, and other sectors. These funds will help against the DRC's super-procyclicality towards commodities

Chart 7. Channels of macroeconomic transmission of falling commodity prices



Source : Author (based on evaluation and results found)

7. Conclusion

This article proposes to evaluate the macroeconomic effects of falling commodities prices in the DRC. This quantitative evaluation is conducted by estimating a VAR model. Our results indicate that this shock leads to incommensurable effects and must be remedied without delay to avoid a battery of crises likely to tilt the country permanently into political and social instability.

References

Agarwal (I.), Duttagupta (R.) and Presbitero (A. P.) (2017), “International commodity prices and domestic bank lending in developing countries”, International Monetary Fonds, *IFM Working Paper* 17/279, december.

Albert (M.) and Gillet (T.) (2016), “Émergents : les conséquences de la baisse du prix du pétrole”, *Problèmes économiques*, no. 3132, april.

Anand (R.) and Prasad (E.) (2012), “How should emerging market and low-income country central banks respond to commodity price shocks?”, International Monetary Fonds, *Commodity price volatility and inclusive growth in low-income countries*, Washington D.C.

Azerki (R.) and Blanchard (O.) (2014), “Sept questions sur la chute récente de cours du pétrole”, International Monetary Fonds, *IMF direct*, december.

Bajerano (J.), Hamann (F.), Mendoza (E.) and Rodriguez (D.) (2016), “Commodity price beliefs, financial frictions and business cycles” Bank of the Republic Colombia, *working Paper*, august.

Banque de France (2015), *Rapport annuel de la Zone Franc*.

Blanchard (O.) and Gali (J.) (2007), “The Macroeconomic Effects of Oil Price Shocks: Why are the 2000s so different from the 1970s?”, *International Dimensions of Monetary Policy*.

Boyer (R.) (2012), “Comment les théories économiques expliquent-elles les crises ?”, *Problèmes économiques*, Hors-série numéro 2, november.

Christensen (B. V.) (2016), “Challenges of low commodity prices in Africa”, Bank for International settlements, *Bis paper* no. 87, *Monetary and economic department*, September.

Collier (P) (2009), “People in economics : Still the bottom billion”, *Finance and Development*, june.

Destais (C.) (2012), “Une brève histoire des crises financières dans les pays émergents (1982-2002)”, *Problèmes économiques*, Hors-série numéro 2, november.

Gangelhoff (G.) (2015), “The end of the commodity super-cycle? Implications for Usaid presence countries”, *economics brief*, december.

Gossé (J.B.) and Guillaumin (C.) (2011), “Christopher A. Sims et la représentation Var”, *Hal-00642920*, november.

Gruss (B) (2014), “After the boom—commodity prices and economic growth in Latin america and the Caribbean”, International Monetary Fonds, *IFM Working Paper* 14/154, august.

Hamilton (J.D) (1994), “Time series analysis”, *Princeton University Press*.

Helbling (T.), Mercer-Blackman (V.) and Cheng (K) (2008), “Commodity Boom : Riding a wave”, *Finance et Development*, march.

International Monetary Fund (2016), “Sub-Saharan Africa : Time for a policy reset”, *Regional Economic Outlook*, april.

Kamber (G.), Nodari (G.) and Wong (B.) (2016), “The impact of commodity price movements on the New Zealand economy”, Reserve Bank of New Zealand *Analytical Note Series*, may.

Kenkouo (G. A.) (2014), “Dynamique du prix du pétrole et inflation”, Banque des Etats de l’Afrique Centrale, *BEAC Working Paper* no. 08/15, february.

Kinda (T.), Mlachila (M.) and Ouedraogo (R.) (2016), “Commodity price shocks and financial sector fragility”, International Monetary Fonds, *IFM Working Paper* 16/12, february.

Pinshi (C.P.) (2017), “A macroprudential perspective on financial stability”, *Global Journal of Management and Business Research : C Finance*.

Pinshi (C.P.) et Sungani (E.) (2018), “the relevance of pass-through effect: should we revisit monetary policy regime ?”, *International Journal of Economics, Business and Management Research*, february.

Shousha (S.) (2016), “Macroeconomic effects of commodity booms and busts : the role of financial frictions”, *Job Market Paper*, january.

Appendix 1 : Stationary test

Table 3. Stationary test (Augmented Dickey-Fuller)

Variables	ADF	VCM at the 5% threshold 5% and 10%	Integration order
Commodity Price	-3,23	-3,15	I(0)
Government expenditure	-9,99	-3,46	I(1)
Bank deposit	-3,54	-3,46	I(1)
Nominal exchange rate	-8,80	-3,46	I(2)
Exports of good	-6,38	-3,46	I(1)
Financial account	-10,71	-3,46	I(0)
Consumer Price	-6,03	-3,46	I(1)
Total reserves	-5,11	-3,46	I(1)

Appendix 2 : Serial correlation tests

The estimation of time series often of the serial correlation problem of disruptions. We perform the Lagrange multiplier (LM) test proposed by Breusch and Godfrey. The null hypothesis (H_0) is that of the absence of serial correlation.

These results show an absence of the autocorrelation of perturbations of our VAR model (2).

Results of serial correlation tests

VAR Residual Serial Correlation LM Tests
 Null Hypothesis: no serial correlation at lag order h
 Included observations: 81

Lags	LM-Stat	Prob
1	29.71397	0.0195
2	11.74619	0.7613
3	2.082792	1.0000
4	1.680317	1.0000
5	1.472924	1.0000
6	1.421242	1.0000
7	1.480758	1.0000
8	1.605637	1.0000
9	1.753502	1.0000
10	3.206845	0.9997

Probs from chi-square with 16 df.