



The oil price shock of 2014

Drivers, impacts and policy implications

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Abstract

The price of oil halved from June 2014 to March 2015, owing mainly to increased oil supply in the US and elsewhere and to reductions in global demand.

An oil price drop has both **direct effects** through trade and **indirect effects** through growth and investment and changes in inflation. For example, a 30% drop in oil prices (IMF and WB forecast this as the approximate drop between 2014 and 2015) is expected to **directly** reduce the value of oil exports in sub-Saharan Africa by \$63 billion (major losers include Nigeria, Angola, Equatorial Guinea, Congo, Gabon, Sudan), and reduce imports by an estimated \$15 billion (major gainers include in South Africa, Tanzania, Kenya, Ethiopia). The trade effects feed through to economies including through current accounts, fiscal positions, stock markets, investment and inflation. African countries are expected to gain **indirectly** from higher global growth, estimated to increase African growth by between 0.1 and 0.5%.

We review **actual impacts**. The value of African oil exports to the major developed countries (EU, US, Japan) and China fell by \$25 billion or 13% in 2014. Exports to the US fell by 44%, to the EU by 10%, but increased by 4% to China. The drop in the value of sub-Saharan African oil exports to these countries was particularly noticeable, as there was a 17% drop in the year to the last quarter of 2014. The value of Nigeria's oil exports fell by 14% in the half year to the last quarter of 2014. On the other hand, the value of Tanzania's oil imports dropped by 20% over the year to January 2015. Furthermore, between June 2014 and February 2015, **inflation dropped by 2 percentage points** in Tanzania, South Africa and Kenya. If inflation is 1-2 percentage points lower, real disposable incomes will be 1-2% higher, **increasing consumption by around \$10 billion in sub-Saharan Africa**.

In terms of **policy implications**, countries can (1) enhance the positive effects of oil prices in reducing inflation by speeding up price pass through; (2) put in place instruments to smooth the effects of price changes; (3) reduce oil price subsidies or increase taxes – which is good in economic and environmental terms; (4) reduce fiscal deficits; (5) introduce less monetary tightening than would have been the case without the oil price decline; (6) reduce energy intensity or diversify trade and production to reduce the economy's dependence on volatile oil prices; and (7) foster cooperation amongst gainers and losers of oil price.

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Abbreviations

AfDB	African Development Bank
AsDB	Asian Development Bank
CBN	Central Bank of Nigeria
ECA	Excess Crude Account
ECB	European Central Bank
EIA	US Energy Information Administration
FDI	Foreign direct investment
FGN	Federal Government of Nigeria
GDP	Gross domestic product
GFC	Global financial crisis
GNI	Gross national income
IEA	International Energy Agency
IMF	International Monetary Fund
LDC	Least Developed Country
NISA	Nigeria Sovereign Investment Authority
OPEC	Organization of the Petroleum Exporting Countries
SURE-P	Subsidy Reinvestment and Empowerment Programme
UNECA	United Nations Economic Commission for Africa

Executive summary

This report examines the recent oil price decline and the expected and actual effects on African exporters and importers. As background, it reviews the drivers of oil prices and argues that most of the evidence points to important supply effects (US oil production increased in 2014 by the largest volume increase since records began in 1900).

We then establish the expected pathways through which oil prices affect economies, distinguishing between (1) direct effects through trade and (2) indirect effects through growth and the level of change in inflation. The 30% drop in oil prices in 2014 implies a decline of the value of oil imports by \$15 billion in sub-Saharan Africa (this is price decline multiplied by volume whilst short-term price elasticity is low). On the other hand, African exporters see a fall of \$63 billion in export revenues.

Furthermore, all African countries are expected to gain *indirectly* from higher global growth. The recent drop in oil prices may increase global growth by some 0.5-1.0%. Spillovers from developed-country growth to African growth range from a quarter to a half (IMF), which means African growth should rise by around 0.1-0.5%.

Other potential medium-term effects include the possible consequences if high-cost producers are put out of business and oil prices rebound. Over time, the strategy of OPEC (driven primarily by Saudi Arabia) may be to maintain market share. Alternatively, the price fall might prompt further tax breaks for the oil sector and greater investments in technology and efficiency improvements (as has occurred in the UK recently), leading to further falls in the price.

Actual impacts

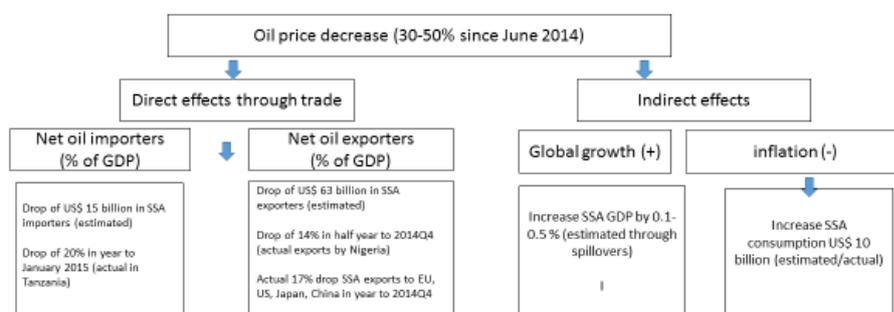
The value of African oil exports to the major developed countries (EU, US, Japan) and China fell by \$25 billion or 13% in 2014. Exports to the US fell by 44%, to the EU by 10%, but increased by 4% to China. The drop in the value of sub-Saharan African oil exports was particularly noticeable, as there was a 17% drop in the year to the last quarter of 2014.

We examine the actual effects of the oil price decline within specific countries. The cases of Nigeria and Tanzania show the contrasting fortunes of exporters and importers. Nigeria's oil exports fell by 14% in the half year to 2014Q4, worsening the current account, whilst Tanzania's imports of oil dropped by 20% in the year to February 2015, improving the current account. The government in Nigeria presented a transition budget and announced a cut in expenditure of 8%. Nigeria's exchange rate devalued rapidly in the latter part of 2014, coinciding with reduced (net) capital inflows.

Most countries have had lower inflation. Nigeria's inflation rate has not decreased, but it remained in check despite upward pressures owing to the depreciation. In the case of Tanzania, inflation dropped by 2 percentage points (over June 2014 – February 2015), similar to the declines in South Africa and Kenya over the same period. This is significant for consumers – if inflation is on average 1-2% lower than it would otherwise have been (and this is a reasonable estimate based on the data in

this section), it would increase real disposable incomes by 1-2%, which could boost the value of consumption (assuming a unit increase in incomes leads to an increase of consumption by three-quarters of a unit), a change worth around \$10 billion in sub-Saharan Africa in real terms.

The main effects are summarised in the figure below:



Policy responses

Countries can

- enhance the positive effects of oil prices on lower inflation by speeding up price pass through by importers
- put in place financial/budgetary instruments to smooth the effects of the price fall
- reduce oil price subsidies or increase taxes, which is efficient in economic and environmental terms
- reduce fiscal deficits
- introduce less monetary tightening than would have been the case without an oil price decline
- reduce energy intensity or diversify trade and production to reduce the economy's dependence on changing oil prices
- foster cooperation amongst major gainers and losers from oil price changes so they are able to jointly manage upturns and downturns.

1 The oil price shock of 2014

The oil price shock in the last quarter of 2014 has been the most remarkable macroeconomic shock since the last Shockwatch Bulletin half a year ago. This Bulletin examines the extent, drivers, pathways of effects, and initial impacts of oil prices on African countries. Section 1 examines the oil price shock, its drivers and its pathways of impact. Section 2 identifies a number of countries that are expected to see major impacts. Section 3 looks at two of these countries in further detail. Section 4 concludes.

Oil prices halved between June 2014 and March 2015, with the main fall after September. Recent trends in oil prices are driven more by supply than by demand considerations, given the rapid increase in supply especially in the US. Whilst oil demand has fallen as growth in the emerging markets (e.g. China, Brazil) has slowed down, the supply of oil has risen 5% since 2008. The effects of fracking (especially in the US) on energy markets are now being felt (Hou et al., 2014). The recent appreciation of the US dollar following the end of the US quantitative easing programme has also contributed to the fall in dollar prices (World Bank, 2015).

1.1 Recent developments in the price of oil

The price of oil began to rise more slowly during the second quarter of 2014, and it has fallen since into the first quarter of 2015. The price of crude oil (Brent) fell from \$112 a barrel in June 2014 to \$48 a barrel in January 2015, its lowest month, a drop of more than 50%. This development took place as the Organization of the Petroleum Exporting Countries (OPEC) lowered forecasts for global demand to their lowest level in a decade. The price at the end of March is \$56 per barrel.

Table 1: World oil prices: recent developments

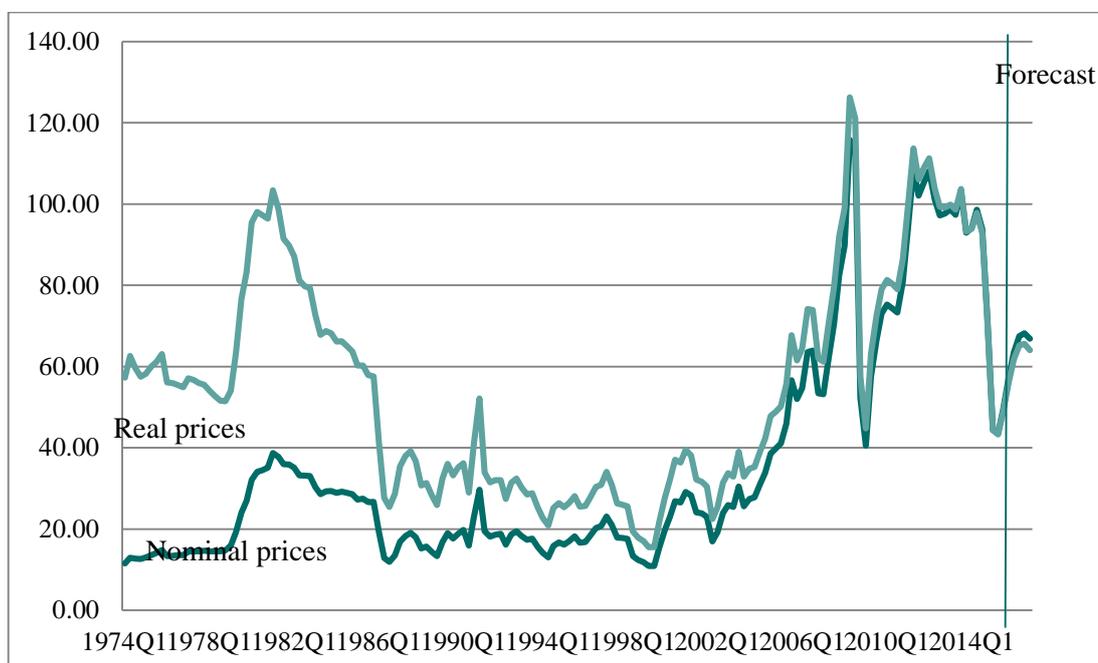
Month	Crude oil, average	Crude oil, Brent	Crude oil, Dubai	Crude oil, WTI
	(\$/bbl)	(\$/bbl)	(\$/bbl)	(\$/bbl)
2014M01	102.10	107.42	104.01	94.86
2014M02	104.83	108.81	104.94	100.73
2014M03	104.04	107.40	104.15	100.57
2014M04	104.87	107.79	104.73	102.08
2014M05	105.71	109.68	105.60	101.86

2014M06	108.37	111.87	108.01	105.24
2014M07	105.23	106.98	105.76	102.94
2014M08	100.05	101.92	101.85	96.38
2014M09	95.85	97.34	96.99	93.22
2014M10	86.08	87.27	86.57	84.40
2014M11	76.99	78.44	76.73	75.81
2014M12	60.70	62.33	60.52	59.26
2015M01	47.11	48.07	45.98	47.27
2015M02	54.79	57.93	55.83	50.61

Note: Crude oil, average spot price of Brent, Dubai and West Texas Intermediate, equally weighted.

Because of the US dollar appreciation (around 20% over April 2014 to March 2015), the dollar oil price fall expressed in Euros is less pronounced. Even in dollars the price decline, although sharp, is still not as dramatic as the 70% drop experienced in 2008-2009 as shown by Figure 1.

Figure 1: World oil prices (US\$), 1974Q1-2016Q4, 1982-1984=100



Source: US Energy Information Administration (EIA) – US imported oil prices.

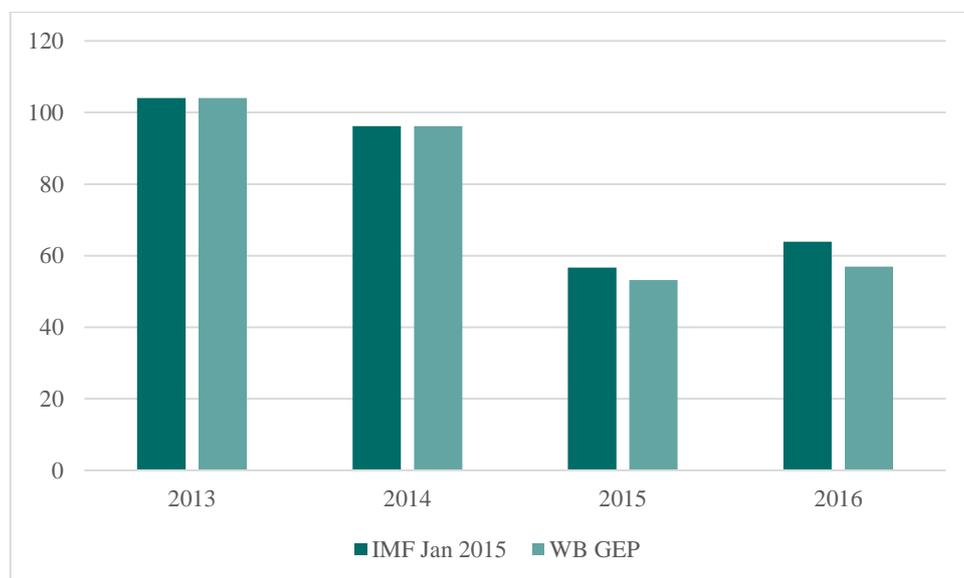
Nevertheless, oil prices have reached similar levels to those in 2009. The price of Brent crude halved from June 2014 to December 2014, which represents the second-biggest annual loss since trading started in the 1980s.

Figure 1 presents the real and nominal oil price movements. The long-term decline in real prices is now closely resembling that in nominal prices. In general, long-term price changes requires analysis of the

- trend in (real) prices lasting ten years or more
- structural shift in demand
- supply with long lags
- price elasticities.

Some commentators suggest that 2008 itself marked the end of a commodity supercycle, others that the China driven supercycle was over in 2011 (Jessop, 2015). Cycles may become shorter in the future. For example, an enhanced Indian growth take-off could generate new and sustained demand for some types of commodities, but there are a number of reasons why the India effect is likely to be far less pronounced than the China effect.¹ In addition to the forecast above by the International Energy Agency (IEA), forecasts by the World Bank and the International Monetary Fund (IMF) are for oil prices to go up slightly.

Figure 2: Oil prices (US\$), 2013-2016 (forecasts for 2015/2016)



*Note: Sample average of prices of UK Brent, Dubai Fateh, and West Texas Intermediate crude oil.
Source: IMF and World Bank.*

1.2 What drives the price of oil

1.2.1 Supply drivers

As anticipated in our previous Shockwatch, Hou et al. (2014), the effects of fracking have begun to be felt on global markets. This unconventional supply of oil has been offered further support by the Obama administration, including approval to export ultralight (or oil condensate) which follows the lifting of a four-decade ban. Total US oil output is now at its highest level since the 1970s due to fracking. The IEA notes that US oil production increased during 2014 by 1.2 million barrels per day (which

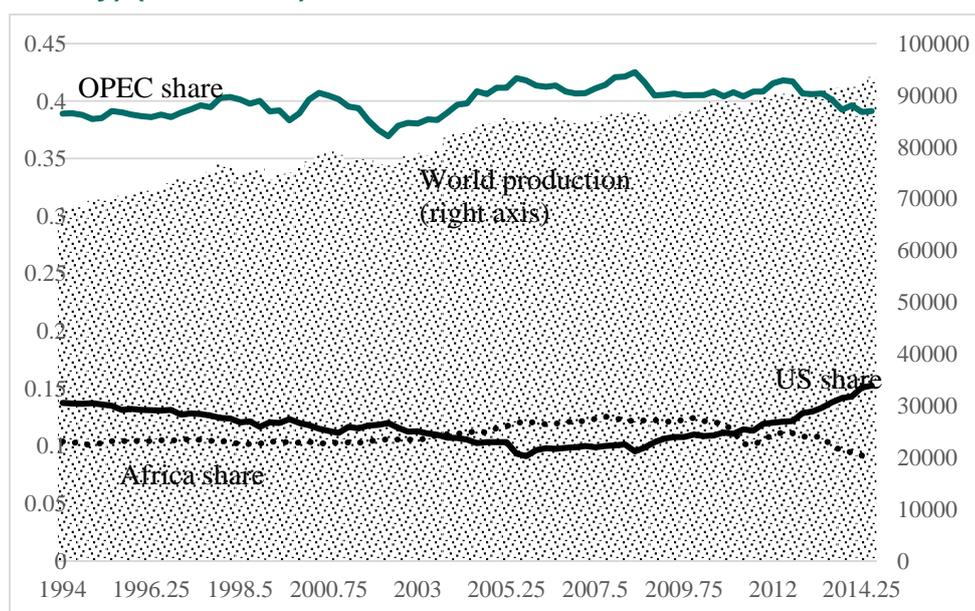
¹ See Bain (2015).

is 1.5% of world supply) (16.2% increase) to 8.7 million bbl/d, the largest volume increase since 1900. Most increase during 2014 came from tight oil or fracking.²

Other sources of supply have also remained high, so that global production has been higher than anticipated for 2014. For example, the World Bank's (2015) analysis notes that the oil exports of Iraq, OPEC's second-largest producer, hit their highest level since 1980, averaging 2.9 million barrels a day, while output in Russia, the largest exporter outside OPEC, was also high. This record output comes in spite of sanctions that resulted from heightened post-cold war tensions. Figure 3 shows the volume of world oil supply, which has grown steadily from 70 million barrels in 1994 to 80 million barrels in 2004 and 90 million in 2014 (fracking is responsible for around 5 million, which explains half of the increase, see Hou et al, 2014). The share of OPEC and Africa in world production has declined slightly, and that of the US rose sharply from 9.5% in 2008 to 15.3% in 2014 (see data on shares in Figure 3 below).

In spite of these trends, OPEC agreed in late 2014 that it would not restrain supply amongst members in order to defend the price of crude. This non-action marked a critical juncture for the organisation and a major change from the decision of 2008-2009 when deep production cuts were made to prevent prices from falling further. On the one hand, OPEC's decision to maintain output may be a strategic one, intended to drive high-cost producers out of the market (including US frackers) and maintain market share. Saudi Arabia has said it will not cut production irrespective of price levels, 'be it \$40, \$30 or \$20 per barrel', as it battles to retain market share (Hume, 2015). On the other hand, OPEC may simply have been caught off guard (Pugh, 2015). Or OPEC may believe that the past has shown that it cannot control output effectively: in the past (e.g. over 1979-1980) when OPEC acted to reduce production and thus influence prices, non-OPEC members' output continued to grow, along with prices.

Figure 3: Oil production, total and shares (thousand barrels per day) (1994-2014)



Source: EIA

<http://www.eia.gov/cfapps/ipdbproject/iedindex3.cfm?tid=50&pid=53&aid=1&cid=ww,r1,r6,CG9,&sid=1994&eyid=2014&freq=Q&unit=TBD>

² <http://www.eia.gov/todayinenergy/detail.cfm?id=20572>

Moreover, the organisation rarely sets a minimum price floor rather than a ceiling. Should the shale gas revolution experienced in the US be repeated elsewhere, of course an adjustment to a medium- to long-term price decline in oil will be required (compared to a short-term price shock). The World Bank (2015) further draws attention to alternative sources such as the growing role of global production of biofuels.³ This is not further explored in this bulletin.

1.2.2 Demand drivers

Global growth projections have already been slashed;⁴ this is despite any effect from the recent oil price declines. Many organisations, such as the IEA (2014), also give weight to the role of demand considerations. IEA's annual report emphasises how the global economy remains weak, with stunted wage growth and little consumer spending, and deflation becoming a major concern; Hamilton (2014) argues that around two-fifths of the decline in oil prices in the second half of 2014 are thought to result from weak global demand, particularly in the Eurozone economies, with the rest attributable to increases in oil supply.⁵

Although a reduction in oil prices increases real incomes, which helps consumers – by some estimates a \$40 price cut shifts some \$1.3 trillion from producers to consumers⁶ – there are risks of a negative inflation in European economies. In the US, the decline in oil prices comes at a time of repeated undershooting of its inflation target. Inflation had declined to zero in the UK by the end of March. Some banks are already charging negative rates on holding Euros. More recently, the volume of negative-yielding Eurozone government debt has swollen to a record €1.2 trillion – equivalent to a quarter of all outstanding Eurozone debt – up from €500 billion in October 2014, as the European Central Bank (ECB) seeks to prompt investments into riskier activities and shift resources into the real sector (Thompson, 2015).

In order to avoid deflationary effects and maintain current levels of demand, there have been suggestions to raise government spending, possibly financed by raising taxes on oil. For example, Summers (2015) estimated that a \$25 tonne tax on carbon would raise over \$1 trillion during the next decade and raise petrol prices by only about 25 cents and these amounts could be spent. Instead the recent UK budget increased subsidies for oil and gas exploration. However, as discussed by the World Bank (2015), with policy interest rates of major central banks already at or near zero, there is limited room for additional monetary policy easing to raise demand; this in turn could prompt the use of alternative fiscal rather than monetary measures.

Monetary policies in the United States, Euro Area, and Japan have played an important role in the general decline of commodity prices and US dollar appreciation (Frankel, 2014).⁷ Banks are pulling out of commodities, as part of a broader portfolio reform programme. According to Hume (2014) almost \$9 billion was withdrawn from commodity investments between September and October 2014 prompted by price declines in key sectors such as crude oil, agriculture and gold. According to Citigroup, net withdrawals from commodities in the third quarter of 2014 totaled \$8.2 billion, flipping the 2014 cumulative net investment from a large inflow of \$7.5 billion in the first quarter to a small outflow of \$600,000 by the end of 2014

³ IEA (2014) suggest most biofuels are accounted for by maize-based ethanol in the United States, sugar cane-based ethanol in Brazil, and edible oil-based bio diesel in Europe.

⁴ The World Bank predicted 3.4% growth for 2015 at the end of 2014, and decreased to 3% in the most recent Global Economic Prospects in 2015.

⁵ World Bank (2015).

⁶ See Wolf (2014)

⁷ See World Bank (2015).

(Terazono and Meyer, 2014).⁸ Drivers of the liquidation process include concerns about a rising US dollar and tighter future US monetary policy. The rationale for a higher allocation to commodities is by now familiar to many investors: diversification, inflation-matching and liquidity. However, the role of commodities in portfolio strategies is being questioned, not least given the Chinese economic growth slowdown and realisation that the decade-long rally experienced within commodities is unlikely to be repeated. Herd behaviour within financial markets can amplify price trends.

Considering the above, the recent decline in prices tends to be driven by structural and cyclical factors rather than by shareholders' concerns and nervousness about financialisation in commodity markets. As investment banks have retreated from the sector, trading companies themselves have often picked up the slack, and this process is likely to continue.

1.2.3 Geopolitical and other considerations

Oil prices are always vulnerable to short-term disruption caused by the weather, strikes or conflict. For example, the combination of the Iranian revolution and the Iran-Iraq War more than doubled crude oil prices from \$14 per barrel in 1978 to \$35 in 1981. Thirty-five years later, Iran's production is only two-thirds of that achieved under the Shah. When Iraq invaded Kuwait in 1991, oil cost \$21 per barrel. Five months later, it peaked at \$44. The average price during the conflict increased one-third to \$28. Before the 2002-2003 Iraq war, the price of oil had fallen to around \$17 per barrel – thanks to slow economic growth following the 9/11 terrorist attacks. But it rose by 40% to \$26 per barrel during the war in Afghanistan. Since then there have been major effects from Libya's crisis and more recently in relation to Yemen. There have been major crises that, because of their location, have not had direct effects on oil prices.

1.3 Mapping the effects of oil price changes

This section outlines the pathways through which lower oil prices affect developing countries. The main difference in effects depends on whether a country is a net oil exporter or net oil importer, but there are also other factors. Te Velde (2011)⁹ presents an oil vulnerability index that includes three factors: (1) level of net oil imports as % of GDP, (2) the oil share in energy mix, and (3) energy efficiency of production. The index¹⁰ shows that some of the poorest countries, such as Mauritania, Moldova, Nicaragua, Sierra Leone and Togo, are amongst the most oil vulnerable economies, but other countries, such as Bangladesh, Kenya, Rwanda and Zambia, are also at risk.

The World Bank (2015) finds that oil-importing countries such as India, Indonesia and South Africa would benefit from the oil price falls: growth accelerates and current account deficits narrow. However, it urges caution because households and corporations may choose to use any gains from the oil price decline to repay debts rather than increase expenditures.

⁸ For example, Hermes, one of Europe's largest commodity managers, is now looking to reduce exposure. This investment manager entered commodities in 2008 (the build up to the GFC being a period in which there was a rush towards commodities as a specific investment class). Citigroup estimates that net withdrawals from commodities in the third quarter of 2014 totaled \$8.2 billion, flipping the 2014 cumulative net investment from a large inflow of \$7.5 billion in the first quarter to a small outflow of \$600,000 in the year to date (Terazono and Meyer, 2014).

⁹ <http://www.odi.org/comment/5673-oil-prices-poor-countries-policy-responses>

¹⁰ Spreadsheet available from <http://www.odi.org.uk/publications/download/5670-oil-price-vulnerability.xlsx>

We summarise the initial effects in Table 2 below. Section 1.3.1 focuses on India as an example of an oil importer, and Section 1.3.2 focused on Venezuela as an oil exporter.

Table 2: Winners and losers from oil price declines

Winners - Effects for oil importers	Losers - Effects for oil exporters
Lower consumer prices and costs of production	Reduction in export revenues and deterioration in current account
Reduced import bill, which improves the current account	Consumers gain from lower prices
Exchange rate appreciation	Reduced inward investment in oil sector
Consumers gain further when governments increase spending	Exchange rate depreciation and imported inflation
Positive growth spillovers from international growth effects	Reduced government revenues and potential difficulty to service or roll over international debt
	Negative growth effects, from (above) domestic sources, but positive effects from global growth effects

We explore growth and financial effects aspects in more detail in section 1.3.3. These may change the arithmetic winners and losers from the oil price decline. Section 1.3.4 considers the distributional effects within country. Section 1.3.5 brings the pathways together into one figure.

1.3.1 An example of an oil importer (India)

Because India depends on oil imports, a price decline is associated with positive developments in the economy, especially as India is emerging from its worst slump in decades (Bundhun, 2015). Oil accounts for around one-third of India's imports, and in 2013 India was the world's fourth-largest consumer and importer of crude oil (Bundhun, 2013). The reduction in India's import bill reduces the country's current account deficit. It also eases inflation, which has already fallen from over 10% in early 2013 to 6.5%; this should lead to lower interest rates, which could help to boost investment.

There are other important political economy considerations. As India subsidises fuel use, a decline in oil prices will reduce its budget deficit by reducing expenditures on fuel and fertiliser subsidies. India's food and fuel subsidies account for around 2.5% of gross domestic product (GDP). Although the government has been phasing out some fuel subsidies, as discussed by Agarwal (2015), the oil price decline provides a unique opportunity to market-link diesel prices (assuming the rupee stays stable). This may all help to make Modi's reform process easier, as well as help make resources available to kick-start growth in other sectors of the economy.

1.3.2 An example of an oil exporter (Venezuela)

There has been a lot of analysis of the effects of the oil price decline on major exporters such as Russia and Norway, but in this section we focus on Venezuela and its role as a major oil exporter.

The oil price decline comes at a challenging time for Venezuela. Oil accounts for almost 100% of export earnings, and hence a decline in its price will severely affect

its ability to import or to meet its debt-servicing obligations.¹¹ \$11 billion in bond payments are due this year (Schipani and Rathbone, 2015).

As a result of the price decline there was a 20% reduction in government spending in 2014 (Schipani and Rathbone, 2014). It was estimated that, overall, the oil price decline of 2014 would lead to a 3% reduction in GDP in 2014 (Giles, 2014). There are food shortages, and inflation was running at over 60% in 2014 (Ibid.).

Venezuela supplies other Caribbean economies with subsidised oil. According to Schipani and Rathbone (2015) the Petrocaribe arrangement costs 3% of Venezuela's GDP and has cost an estimated \$44 billion in forgone revenue: around 500,000 barrels per day of highly-subsidised refined oil is consumed in Venezuela, and another 500,000 bpd is sent to China to service \$50 billion of past oil-backed loans, while 200,000 bpd is devoted to Petrocaribe, of which 100,000 bpd goes to Cuba. That leaves around 1.3 million bpd to sell on world markets, worth just \$20 billion a year at current prices. This potential revenue stands in stark contrast to an import bill, almost four times as high.

To overcome these challenges, Venezuela could consider an increase in oil supply, but faces constraints. It would require investment, and that takes time. There is therefore no easy resolution: it is estimated that in order to balance its budget (given a level of spending), Venezuela needs an oil price closer to \$130 a barrel (Giles, 2014). It lobbied hard for a cut in oil production by OPEC to no avail.

The expected lower growth of oil-exporting countries has contributed to capital outflows, reserve losses, and sharp depreciations in many oil-exporting countries (World Bank, 2015).¹² Generally, oil-exporting countries that have depended on high oil prices are being forced to sell assets in their investment portfolios to raise cash. The World Bank (2015) sees a risk that falling currencies and equities in these countries could have adverse contagion effects on other emerging markets, increasing the risk of a full-blown crisis.

1.3.3 Indirect effects and second-round demand and supply interactions

In addition to the immediate effects of the oil price decline on exporters and importers, there are important second-round and indirect effects to consider, on both the demand and supply side.

Global growth and finance effects

The impact that oil price changes have on growth has decreased over time because oil's share of world income has fallen.

The effects of the **first oil price shock in the 1970s** cut the industrialised countries' GDP by 2-3%. However, the impact of an oil price increase on economic growth is expected to be less now. General equilibrium models provide useful global estimates of the effects of oil price shocks, including indirect effects.

When oil prices were low for some time in the period prior to 2006, several simulations were done to examine the impact of an **oil price increase in 2006/2007**. The World Bank's Global Economic Prospects 2006 simulated a disruption in supply of 2 million barrels per day, suggesting that this would lead to an oil price increase of one-third. Such an oil price shock would lead to a 1.5% decline in world GDP in

¹¹ Spreads on Venezuelan debt have risen to over 2,000 basis points over US Treasuries — comparable to Russian spreads before its 1998 default (Schipani and Rathbone, 2014).

¹² World Bank specifically mentions Russia, Venezuela, Colombia, Nigeria and Angola.

part because of the increased inflation. It was assumed that interest rates were flexible and would increase to offset some of the inflationary effects. Developing countries would be hit hardest because of higher energy intensities and greater inflationary effects. The poorer countries tend to be current account constrained and in these countries domestic demand would decline by 2.7% to compensate for the rise in the value of oil imports. The World Bank argued that a drop in domestic demand will have serious effects on poverty.

IMF (2005) used the MULTIMOD model to simulate an oil price rise to \$80 per barrel (from \$45 per barrel, the level it was then, a change of three-quarters). They estimated that this would reduce industrial country growth by between 0.5 and 0.75 percentage points. The effects on developing countries would be double that by around 1% to 1.5%, but for some countries, it could be close to 3%. This would be the case if external financing was an issue, the shocks were persistent, or confidence was adversely affected. According to an analysis by the International Energy Agency, the effect of a \$10 per barrel increase in oil prices would reduce world GDP, other things being equal, by at least 0.5% in the following year. IMF models suggest that a 10% rise in the price of oil reduces growth by 0.1-0.2 percentage points.

IMF (2015) suggests a 10% drop in the oil price leads to an increase of 0.2% in global GDP.¹³ According to estimates made by the World Bank (2015), a 10% decrease in oil prices would raise growth in oil-importing economies by some 0.1-0.5 percentage points, depending on the share of oil imports in GDP.¹⁴ Output in Russia, as well as some states in the Middle East and North Africa, could contract by 0.8-2.5 percentage points on the back of a 10% decline in the annual average price of oil (World Bank, 2015). Further estimates by the World Bank (2015) suggest that a 30% oil price decline between 2014 and 2015 driven by a supply shock would be associated with an increase in world GDP of about 0.5% in the medium term.

Thus the recent halving of oil prices may increase global growth by some 0.5-1.0%. Focusing on Africa, spillovers from developed-country growth to Africa growth are often found to range from a quarter to a half, which means Africa should benefit from that global growth by around 0.1-0.5% (multiplying the global growth effects by the spillover factor). The United Nations Economic Commission for Africa (UNECA) (2015) estimates the effects of the recent oil price decline on Africa as marginal at 0.03% of GDP (and this presumably includes global effects as well as direct and indirect effects).

There can also be **indirect financial effects**. Should non-OPEC sources of supply remain at current levels and prices increase, this could lead to an increase in petrol dollars into global financial markets. The combination of OPEC petrol dollars and portfolio flows from developed countries has boosted liquidity and helped to keep interest rates low in developing countries (in addition to monetary policy). As oil prices fall, the liquidity delivered to global markets may decline (when world savings fall because oil price declines shift liquidity to countries with lower propensity to save), and this could reduce the prices of US Treasuries, high-grade corporate bonds and equities. The World Bank (2015) also notes that if oil prices remain low, repatriation of foreign assets could generate capital outflows, and potential financial strains, for countries that have become reliant on 'petrodollar' inflows.

A further effect is that oil **price changes** increase and uncertainty, which lower global investment.

¹³ According to the IMF. See Economist (2015), Arezki and Blanchard (2014) and IMF (2015).

¹⁴ With reference to World Bank (2013), Rasmussen and Roitman (2011).

Effects on energy supply

Some production has become unviable as a result of oil price declines. For example, it is estimated that more than 12% of global oil production would be unviable with a price of \$70 per crude barrel.¹⁵

The break-even prices of high-cost producers include:¹⁶

- Canadian oil sands – \$80 a barrel
- US shale production and other areas of tight oil – \$76 a barrel
- Brazil’s deepwater fields – \$75 a barrel
- Mexican offshore projects – \$70 a barrel
- Overall non-OPEC countries produce at an average of \$60 a barrel

According to the World Bank (2015), oil prices consistent with a government fiscal position in balance range from \$54 per barrel for Kuwait to \$184 for Libya, exceeding current oil prices for most oil exporters. The break-even price of OPEC members is \$35 a barrel.¹⁷

Most recent forecasts obtained from Pugh (2015) suggest that oil prices could fall further, and particularly if shale oil/gas production is increased elsewhere such as China (explored in Hou et al., 2014). The following operating costs have been estimated by Pugh (2015):

- The operating costs of shale oil are estimated to be in the region of \$10-20 per barrel.
- The cost of new shale projects is estimated to be between \$50 and \$80 per barrel.
- The costs for other producers are estimated to be between \$80 and \$100 per barrel.

Clearly, given the low short-term operating costs for US shale and the difference compared to the break-even price of low-cost OPEC producers, there may be scope for prices to fall further. The oil price projections suggested in Pugh (2015) range from \$30 to \$60 a barrel in 2016, and from \$40 to \$100 per barrel by 2020.

Should high-cost producers be put out of business, oil prices might rebound as supply decreases. There are already reports of oil rigs in the US going out of production. Hence, the strategy of OPEC (driven primarily by Saudi Arabia) to maintain market share may succeed. Alternatively, lower oil prices might prompt further tax breaks for the sector (as in the UK experience) and greater investments in technology and efficiency improvements. As discussed by Meyer (2014), the amount of oil purchased by refiners in the US will be an important guide for world oil markets.

Because of lower oil prices, investments in the energy sector in prospective producers such as Uganda, Kenya and Mozambique could be postponed. Structural shifts in the oil market (more suppliers and more types of energy production) could mean that oil prices become more volatile in the future. Raval (2015) describes ‘contango’ in Brent and Dubai crude future trades – a market term for when prices for future delivery exceed spot prices. He notes that the price of Brent crude for delivery in six months

¹⁵ Energy Aspects, a London-based consultancy (Raval, 2014b).

¹⁶ See Raval (2014b).

¹⁷ See Raval (2014b).

stands at almost \$5 a barrel higher than current levels,¹⁸ suggesting that the price of oil is expected to go up.

1.3.4 Distributional impact in-country

The emphasis of this paper is on the macro level, but there will of course be distributional effects for different types of households, sectors, and producers and consumers. Both rich and poor households can gain as a result of oil price falls, but the poor tend to gain more. There are direct effects, with the poor spending a large share of their small incomes on oil and oil products. In Ghana, Guatemala, India, Nepal, South Africa and Vietnam, the poorest households may spend as much as 3-4% of their income on kerosene, compared to the richest households, which spend little more than 1%. There are also indirect effects, with falling transport costs affecting the poor more than the rich.

The IMF (2006) suggests that a 20% increase in oil prices leads to a 1% rise in household expenditures in Mali, 0.85% rise in Pakistan and 3.4% in Ghana. The difference between expenditure effects in Mali and Ghana results from higher oil subsidies and the fact that households in Ghana consume more oil products. For instance, the kerosene budget share is 3.5% in Ghana, compared with 1.45% in Mali. Further reviews are done by World Bank / Energy Sector Management Assistance Program (ESMAP) (2005), and these also argue that a further important effect on households is indirect. An change in the price of oil will affect the cost of living of households through non-fuel expenditures (especially those on transport and food), which are clearly affected by changes in fuel prices.

The micro-level price effects depend on whether governments control such prices, and if they do, whether they decide to pass on all or only some of the fall in imported product prices. When the government passes on less than the full price change, it has to bear the financial burden of the implicit subsidy, and this will have macroeconomic consequences in terms of reduced expenditure on other items that could have benefited the poor. The Asian Development Outlook (AsDB, 2015) examines which countries have recently (over the last year) reduced subsidies or raised taxes. It finds for example that over the past year Indonesia, Bangladesh, Indonesia, Azerbaijan, Kazakhstan and Malaysia have reduced oil subsidies, whilst China, Vietnam, India and Thailand have raised taxes.

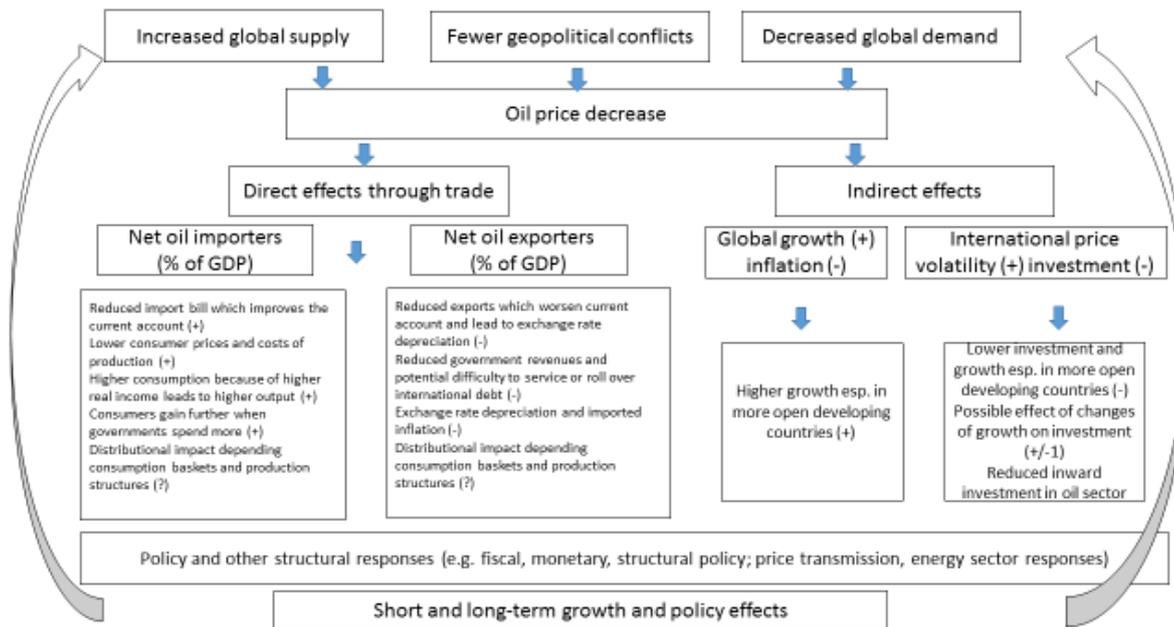
1.3.5 Summarising the impact pathways of oil price changes

The combination of increased global supply, lower demand and fewer major geopolitical conflicts in areas of oil production have led to a drop in oil prices. The above sections show how oil price changes directly affect importers and exporters differently and also that there are indirect growth effects. The magnitude of the effects depends on the exposure (e.g. exports as % of GDP), transmission mechanisms, and policy and structural responses.

We summarise these channels in the figure below.

¹⁸ For example, large commodity trading companies as well as some of the world's biggest banks took on almost risk-free profit from the 'supercontango' of 2008-2009 when they bought crude at cheaper rates, stored it in onshore or offshore facilities, and sold it on at a later date (Ibid.).

Figure 4: Oil price effects (pathways)

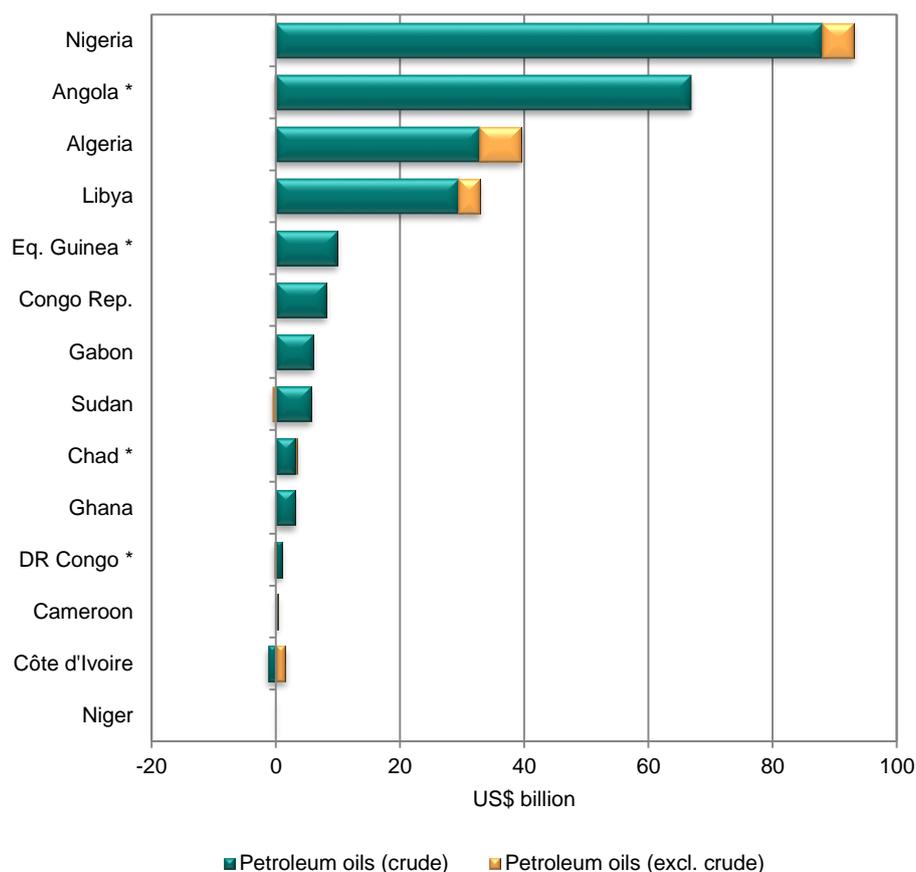


2 Assessing Africa's vulnerability to oil prices

2.1 Exposure – export side

We first examine value of exports before examining exposure (values as % of GDP). Nigeria is the largest African oil exporter, followed by Algeria, and Libya. Most major African exporters of oil export both types (crude and refined) except in the cases of the Democratic Republic of the Congo, Gabon, Sudan, Ghana and Cameroon, which only export crude; South Africa only exports refined petroleum. Nigeria, Libya and Gabon are the major net oil exporters (Figure 5), which takes into account that some countries import processed non-crude oil, but export crude oil.

Figure 5: Net oil exporters

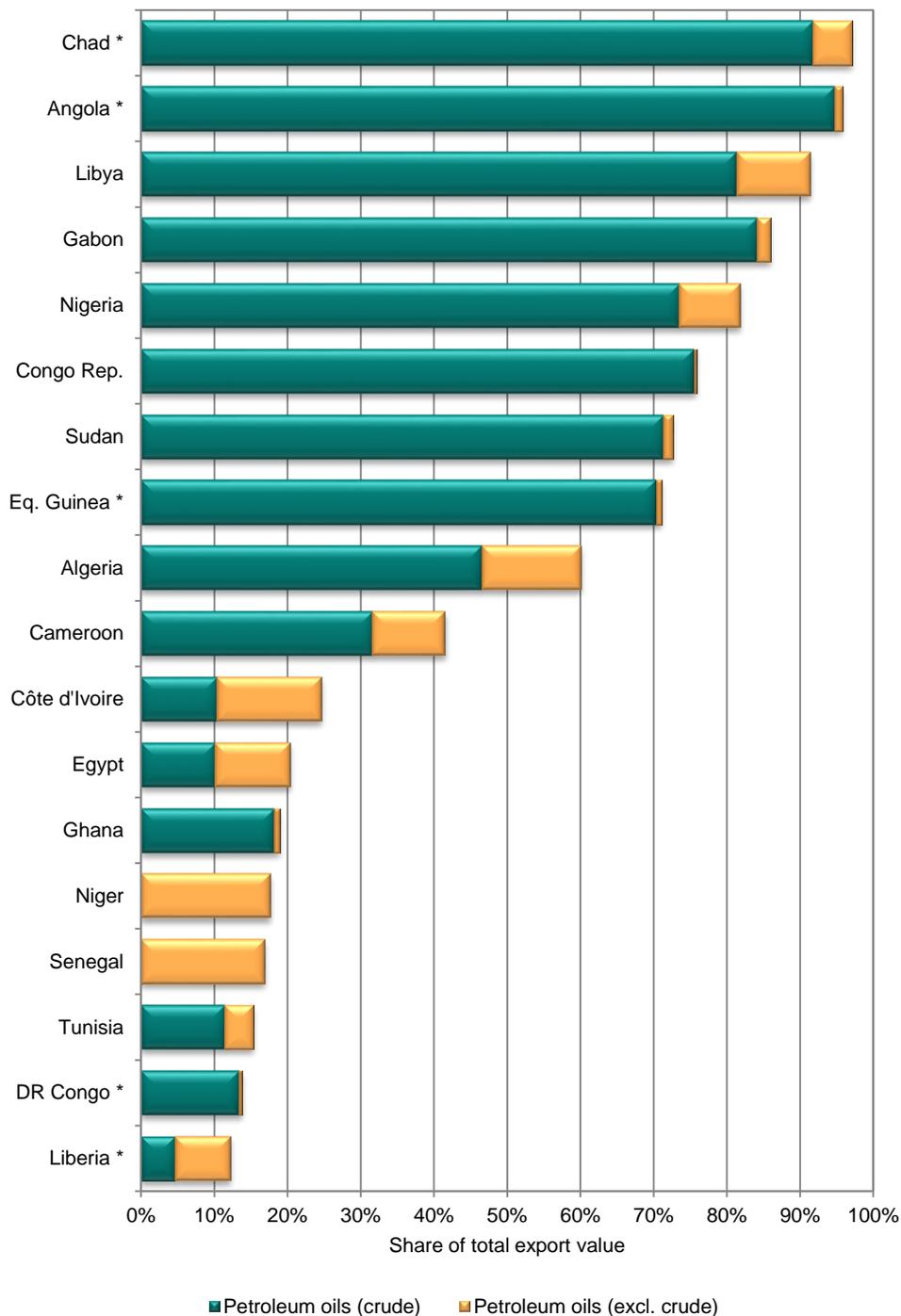


*Note: All reporting countries with average oil exports of \$1 billion or more over the latest 3 years for which data are available (2011-13 for all except: Cameroon and Sudan (2010-12), Libya (2008-10) and Gabon (2007-9)). * denotes that mirror data have been used*

Source: UN Comtrade, 10.12.14.

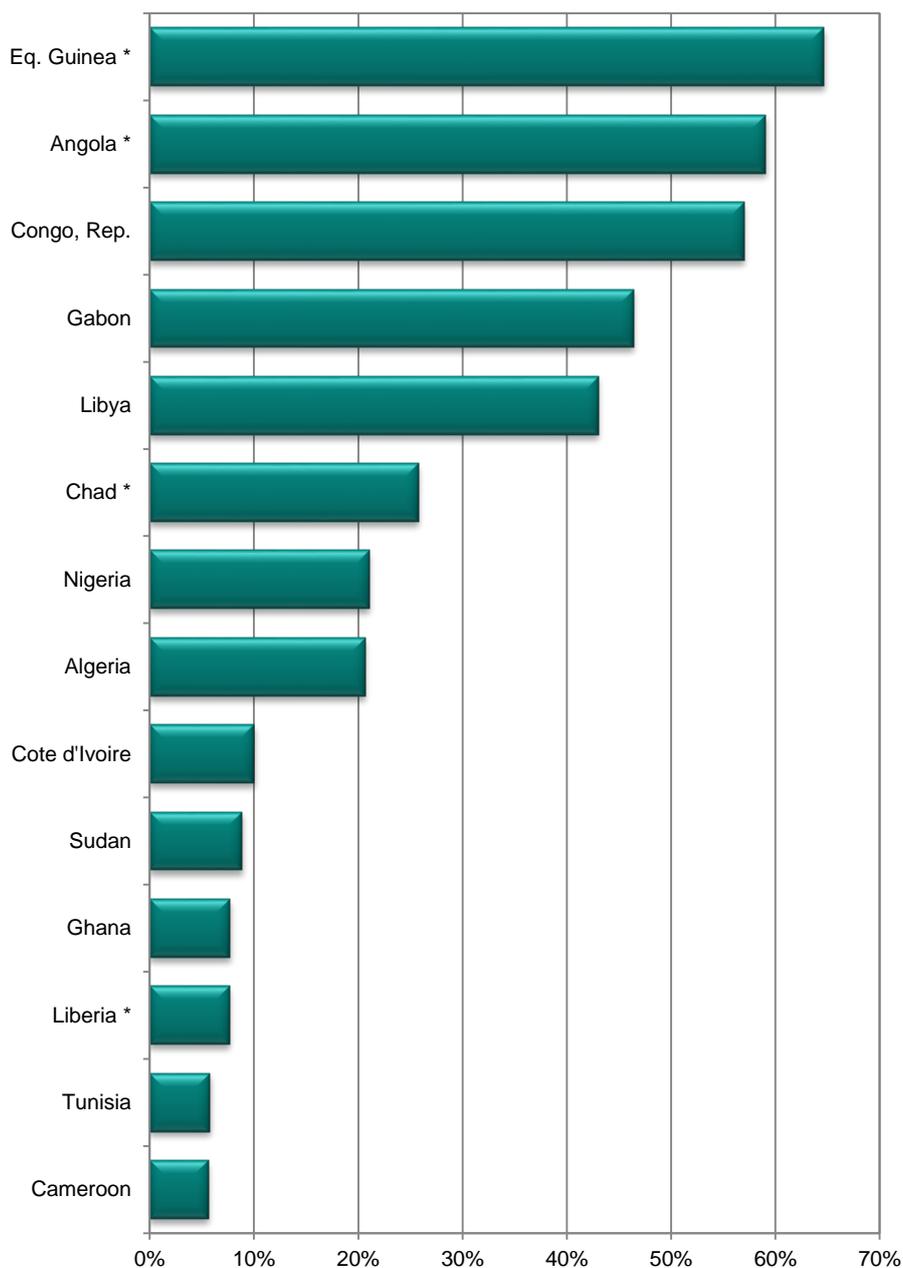
In order to gauge exposure to the oil price shock, we should look first at exports as a share of total export value (Figure 6) and oil exports as a share of GDP (Figure 7). We can see that Libya and Gabon, followed by Nigeria, are the most dependent exporters in terms of the value of total oil exports as share of total exports for which data are available.

Figure 6: Oil export dependency



*Note: All reporting countries whose average oil exports over the latest 3 years for which data are available (2011-13 for all except: Cameroon and Sudan (2010-12), Libya (2008-10) and Gabon (2007-9)) accounted for 10% or more of total export value. * denotes that mirror data have been used. Source: UN Comtrade, 10.12.14.*

Figure 7: Oil exports as share of GDP



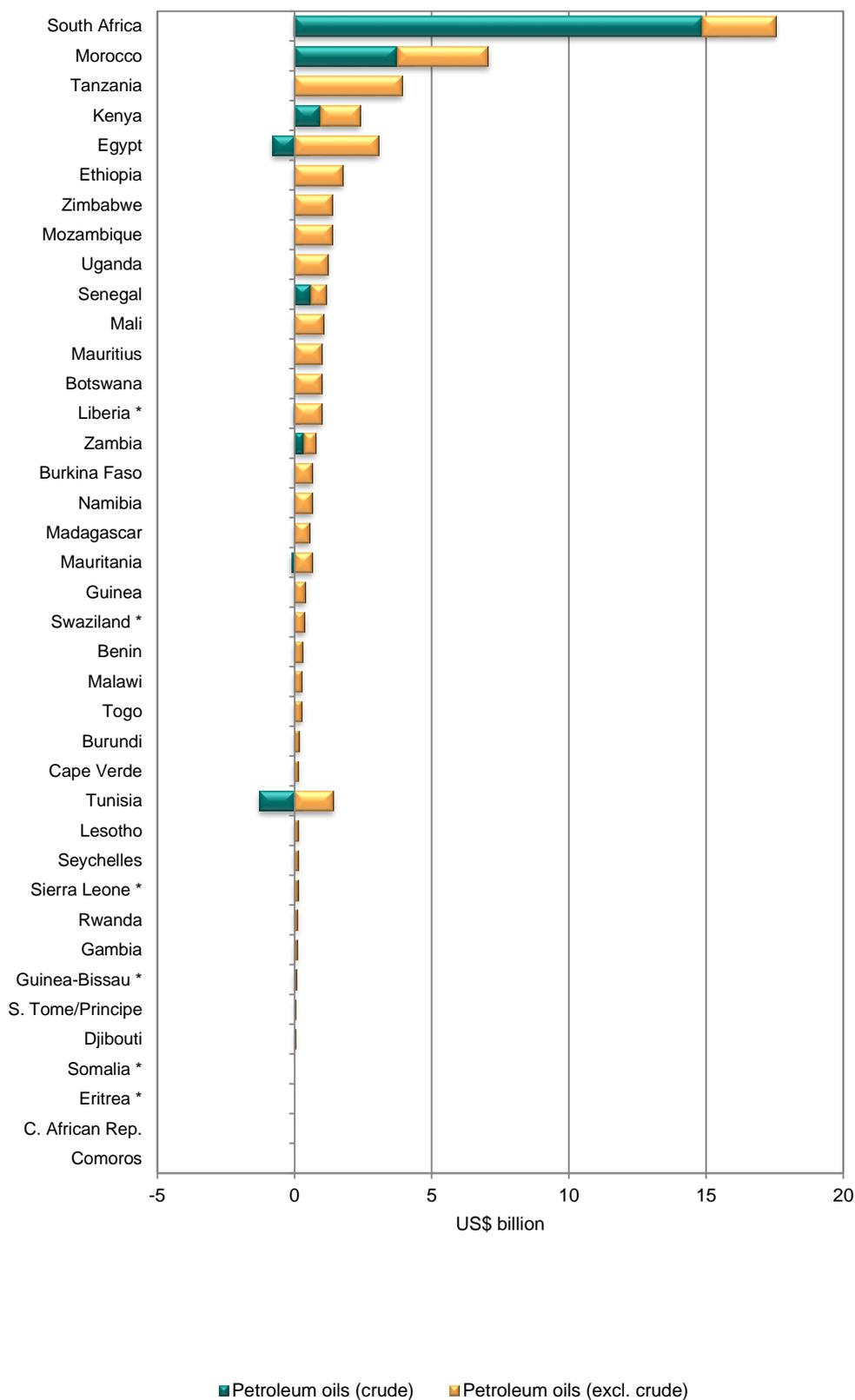
*Note: All reporting countries whose average oil exports over the latest 3 years for which data are available (2011-13 for all except: Cameroon and Sudan (2010-12), Libya (2008-10)). ** denotes that mirror data have been used. No data available for South Sudan, and no GDP data for Somalia.*

Source: UN Comtrade

2.2 Exposure – import side

South Africa, Tanzania and Egypt are the major net oil importers (Figure 8). However, Egypt and Tunisia can both be seen to import non-crude (processed) oil, as well as export crude oil (not processed). We can calculate the immediate effects of a 30% drop in oil prices (in 2014) on import values (in essence it is multiplication, as price elasticities are close to zero in the short term). Such a drop is expected to lead to an immediate decline of the import value of oil by \$20 billion in Africa and \$15 billion in sub-Saharan Africa.

Figure 8: African net oil importers

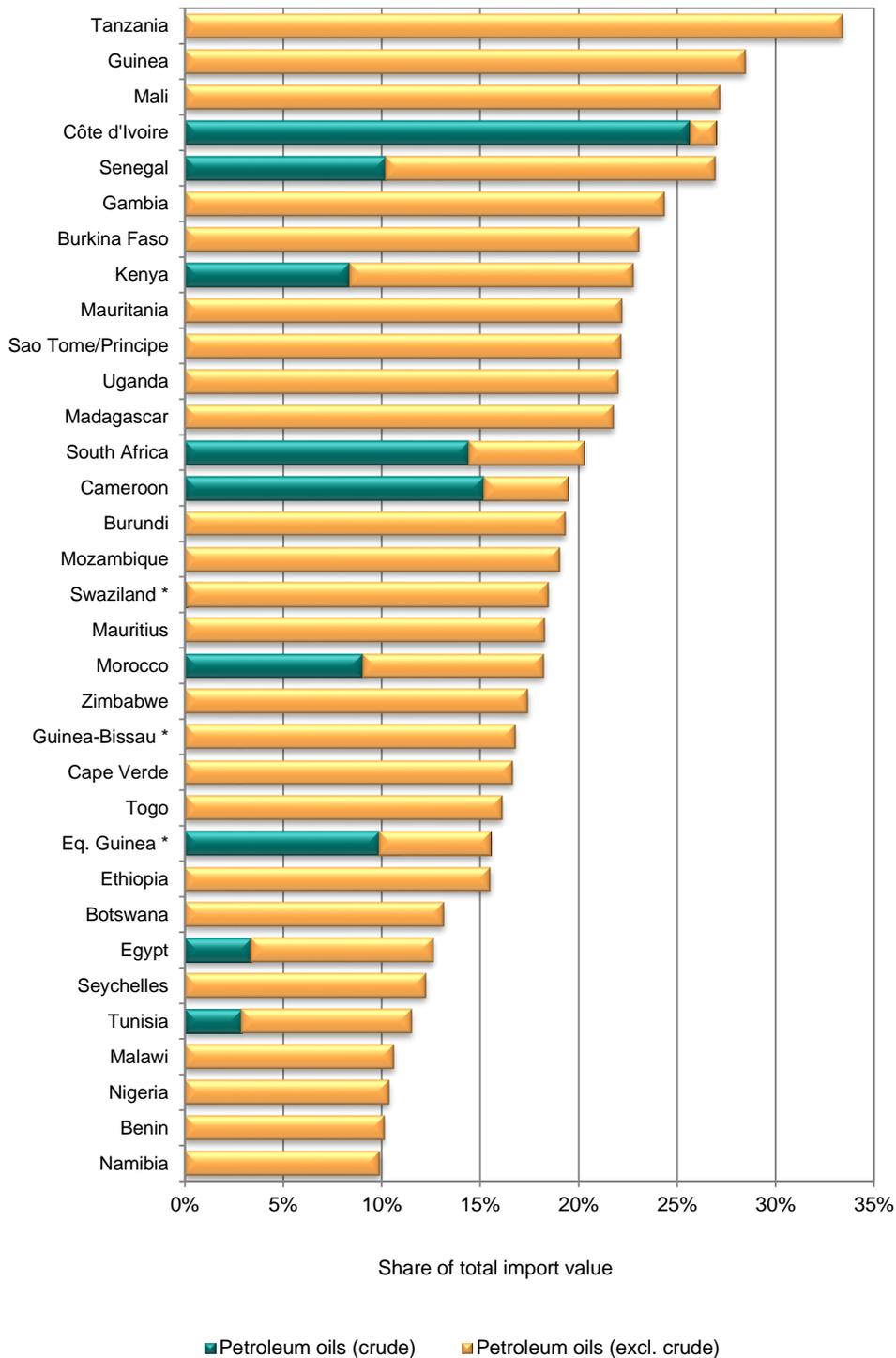


*Note: All reporting countries with average oil imports of \$1 billion or more over the latest 3 years for which data are available (2011-13 for all except: Cameroon and Sudan (2010-12), Libya (2008-10) and Gabon (2007-9)). No data available for South Sudan. * denotes that mirror data have been used. No data available for South Sudan.*

Source: UN Comtrade, 10.12.14.

In terms of relative dependence on oil imports, as shown by Figure 9, Tanzania, Guinea and Mali feature. South Africa does not appear, though Egypt and Morocco do.

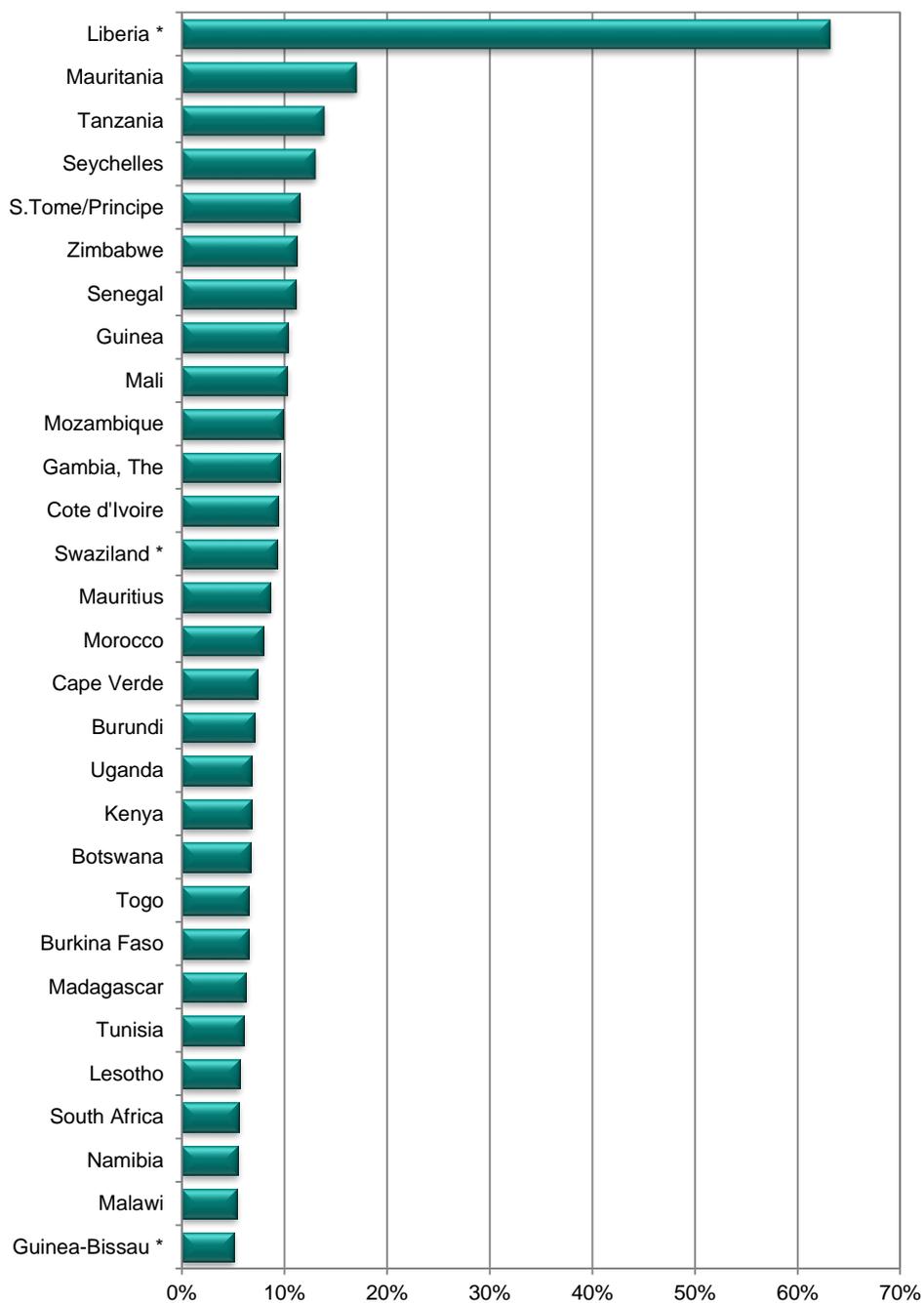
Figure 9: Oil import dependency



Note: All reporting countries whose average oil imports over the latest 3 years for which data are available (2011-13 for all except: Cameroon and Sudan (2010-12), Libya (2008-10) and Gabon (2007-9)) accounted for 10% or more of total import value. * denotes that mirror data have been used. No data available for South Sudan.

Source: UN Comtrade, 10.12.14.

Figure 10: Oil imports as a share of GDP



Note: All reporting countries whose average oil imports over the latest 3 years for which data are available (2011-13 for all except: Cameroon and Sudan (2010-12), Libya (2008-10) and Gabon (2007-9)) accounted for 5% or more of average GDP in the same years.

* denotes that mirror data have been used. No data available for South Sudan, and no GDP data for Somalia.

Source: UN Comtrade

2.3 Most exposed African economies

In order to explore trade and growth effects of the drop in oil prices, we further need to identify a price elasticity for oil demand. There are a number of estimates in the literature (see Box 1). Oil demand and supply are considered in the literature to be relatively price inelastic in the short term, although not in the long term. For supply, this is because companies can only respond to higher or lower oil prices by increasing or decreasing planned investments in new production capacity. A low price elasticity of supply makes inter-temporal comparisons of the economic impacts of oil supply shocks more difficult.

Box 1: Estimates of price elasticity of demand

Cooper estimates G7 countries to have a short-term elasticity of demand for crude oil from -0.024 to -0.069 and, for all 23 countries studied, the range expands to 0.0 to -0.11 .

Gately and Huntington estimated a short-run demand elasticity for crude oil of -0.05 for OECD countries and -0.03 for non-OECD countries. They estimated a long-run income elasticity of oil demand of 0.56 for OECD countries and 0.53 for non-OECD countries.

Baumeister and Peersman report that the elasticity of demand for crude oil sharply decreased from 1970 to 2008. They find that 'the price elasticity has decreased [in absolute value] from -0.05 to -0.15 during the 1970s and early 1980s to as small as -0.01 to -0.02 since the mid-1980s'.

Source: adapted from Difiglio (2014).

The World Bank (2013:11) in its *Africa Pulse* publication predicts almost 4% decline in Nigeria's GDP as a result of a one standard deviation decline in oil prices.¹⁹ The African Development Bank (AfDB, 2007) summarises the results of previous studies as follows:

- Nicholson et al. (2003) find that a 100% increase of oil prices lead to 2% increase of the average household's expenditure in Mozambique.
- Ayadi (2005) uses a standard vector autoregression to analyse the effects of oil price shocks for Nigeria over the 1980-2004 period. The contributions of the oil price shock to the variance of output are 1% at impact and about 7% after a year.²⁰

We translate the decline in the price of oil into GDP effects, via the price transmission effect as applied to the value of net exports (assuming that the volume of oil trade remains largely the same, as based on estimates of the price elasticity to demand described above). A price decline of one-third as witnessed in 2014 is applied to the value of exports in 2014, and translated into GDP effects. This static approach is similar to that applied in Hou et al. (2014). We present the results in Table 3 for our main African exporters.

¹⁹ http://www.worldbank.org/content/dam/Worldbank/document/Africa/Report/Africas-Pulse-brochure_Vol8.pdf

²⁰ This VAR process includes the same set of variables as in Ayadi, Chatterjee and Obi (2000), except that the oil production variable is replaced by oil prices.

Table 3: Loss in oil export revenues in 2014 – main African exporters

Country	Oil Export Value Loss (US\$1000)	GDP Equiv. (share of GDP)
Cameroon	- 427,549	-0.002
Tunisia	- 795,304	-0.002
Côte d'Ivoire	- 835,815	-0.300
Chad *	- 994,199	-0.774
Ghana	- 996,145	-0.231
South Africa	- 1,002,787	-0.0003
Sudan	- 1,733,358	-0.265
Gabon	- 1,823,707	-0.014
Egypt	- 1,830,270	-0.001
Congo Rep.	- 2,404,960	-0.017
Eq. Guinea *	- 3,089,956	-0.019
Libya	- 9,904,713	-0.013
Algeria	- 12,704,879	-0.006
Angola *	- 20,297,610	-0.018
Nigeria	- 29,400,858	-0.006

*Note: All reporting countries with average oil exports of \$1 billion or more over the latest 3 years. * denotes that mirror data have been used. No data available for South Sudan; and All reporting countries whose average oil exports over the latest 3 years for which data are available (2011-13).*

Source: UN Comtrade, 10.12.14; GDP data from World Development Indicators. We estimate the GDP loss from the oil price decline of 2014 to be most severe in the case of Côte D'Ivoire and Chad, and this is a result of the decline in the value of oil exports, expressed in GDP terms.

The sum of effects for African exporters amounts to \$88.2 billion and for sub-Saharan Africa \$63.0 billion losses in export revenues.

The most exposed African economies, as summarised in the Table above, might not necessarily be the least resilient or the most vulnerable. We therefore move onto analysis of our resilience indicators in the next section.

2.4 Resilience assessment

We assess resilience to the oil price shock of 2014 through use of three indicators: total reserves, current account balance, and external debt levels. We only look at African economies and review indicators from 2008 to date. We briefly run through what each of the indicators tells us currently.

Because fiscal space has shrunk since the financial crisis and has not returned to pre-crisis levels,²¹ some countries may have less resilience to the oil price shock than they had to the falls in demand in 2008-2009, even though the extent of the oil price shock has not been as severe. Many exporters are highly dependent on the sector. The continent also includes 34 Least Developed Countries (LDC), and given their economic structure, the oil price decline may have amplified effects.

There are also political economy considerations, including incentive structures. For example, it is known that some oil exporters (e.g. Nigeria) have introduced new initiatives since the crisis in order to build up their reserves during oil price boom times and thus increase their resilience to price shocks.

Generally, there is a lack of recent data for total reserves cover within multilateral databases. The most recent data available for most countries is from 2012, and even then availability across countries is patchy. However, it is the comparison from 2008 to 2012 that provides the most insights. Egypt, Nigeria and Sudan are countries for which total reserve cover is lower in 2012 compared to 2008. Further more-detailed analysis is required to examine the extent to which reserves continued to fall in 2013 and 2014.

Table 4: Total reserves in months of imports

Country	2008	2009	2010	2011	2012
Algeria	31.99	33.75	36.69	34.84	34.20
Angola	3.74	3.36	5.43	6.42	7.09
Cameroon	4.44	6.45	6.53	4.44	4.61
Chad	-	-	-	-	-
Congo, Rep.	-	-	-	-	-
Côte d'Ivoire	2.49	3.61	3.65	-	-
Egypt, Arab Rep.	5.97	7.36	6.70	3.29	2.49
Equatorial Guinea	-	-	-	-	-
Gabon	-	-	-	-	-
Ghana	1.90	3.78	4.25	3.41	2.90
Libya	38.68	43.01	38.56	79.24	40.53
Nigeria	7.88	8.43	4.88	3.96	5.67

²¹ World Bank (2015).

South Africa	3.33	5.21	4.64	4.29	4.45
Sudan	1.04	0.90	0.80	0.18	0.20
Tunisia	3.71	5.81	4.41	3.31	3.67

Note: The selected African economies are those with average oil exports of \$1 billion or more over the last 3 years for which data are available. The data are until 2012, but we know that for some countries, such as Libya, major breaks have occurred since then.

Source: International Monetary Fund, International Financial Statistics and data files.

With regards to current account balance data, IMF projections are available for 2014 compared to actual figures for 2008. For a number of the main African oil exporters there has been movement from a positive balance in 2008 towards a negative one. The oil price change could be one factor in this.

Table 5: Current account balance (% GDP), actual and forecasts

Country	2008	2009	2010	2011	2012	2013	2014	2015
Algeria	20.146	0.3	7.541	9.931	5.914	0.356	-2.991	-2.932
Angola	8.546	-10.03	8.103	12.567	11.638	5.486	4.107	2.021
Cameroon	-1.193	-3.052	-2.76	-2.722	-3.613	-3.668	-3.467	-3.438
Chad	3.724	-9.167	-8.955	-5.635	-8.691	-9.454	-7.183	-7.097
Republic of Congo	-0.55	-5.884	3.869	5.986	-1.224	-3.397	-3.225	-3.193
Côte d'Ivoire	2.004	6.34	1.87	11.076	-0.235	-2.096	-3.015	-3.132
Egypt	0.547	-2.346	-1.974	-2.584	-3.869	-2.736	-0.441	-3.96
Equatorial Guinea	12.344	-7.697	-9.583	-0.518	-4.485	-12.099	-10.517	-10.289
Gabon	23.361	7.542	8.746	13.228	13.98	12.117	12.233	5.978
Ghana	-11.92	-5.379	-8.608	-8.961	-11.772	-11.926	-9.932	-8.469
Libya	42.509	14.873	19.488	9.142	29.098	13.577	-27.114	-20.857
Nigeria	9.057	5.156	3.868	2.997	4.357	3.969	3.668	2.241
South Africa	-7.174	-4.031	-1.968	-2.322	-5.242	-5.824	-5.736	-5.64
Sudan	-1.57	-9.63	-2.054	-0.428	-9.245	-8.648	-6.275	-6.303
Tunisia	-3.816	-2.83	-4.777	-7.402	-8.191	-8.429	-7.654	-6.593

Note: Shaded cells indicate IMF staff estimates or forecasts.

Source: International Monetary Fund, World Economic Outlook Database, October 2014 (downloaded 14.1.2015); <https://www.imf.org/external/pubs/ft/weo/2014/02/weodata/index.aspx>.

Running a persistent deficit when external macroeconomic conditions adversely change can become problematic. One other more recent concern relates to balance sheet vulnerabilities and the extent to which companies hold their liabilities in dollars

(repayments of foreign currency loans become expensive when currencies devalue) as well as the extent to which these exceed their assets. Based on this review, Egypt is an example of a country with low foreign exchange reserves and a persistent current account deficit.

Moving on to look at external debt stocks as a percentage of Gross National Income (GNI) and comparing positions between 2008 to the nearest year available (2013), we can see that the following countries increased their external debt stocks by 5 percentage points of GNI or more between 2008 and 2012: Cameroon, Gabon, Ghana, South Africa, Sudan and Tunisia.

Table 6: External debt stocks (% of GNI)

Country	2008	2009	2010	2011	2012	2013	2013-2008
South Africa	26.76	29.28	29.93	29.42	38.79	40.74	13.98
Ghana	19.99	27.75	29.39	29.45	31.74	33.83	13.84
Gabon	15.56	21.09	19.61	16.89	17.89	24.95	9.39
Sudan	40.24	43.27	37.23	34.53	38.68	47.93	7.69
Cameroon	12.12	14.68	14.37	12.35	14.41	17.14	5.02
Tunisia	50.61	54.84	53.76	51.89	57.23	55.46	4.85
Nigeria	2.1	4.37	2.06	2.31	2.28	2.76	0.66
Angola	22	24.78	22.79	20.44	19.57	21.97	-0.03
Chad	17.87	21.05	20.93	18.28	17.72	17.19	-0.68
Algeria	3.68	5.45	4.51	3.07	2.74	2.55	-1.13
Egypt, Arab Rep.	20.27	18.34	16.78	15.32	15.6	16.69	-3.58
Côte d'Ivoire	53.56	60.9	48.65	53.55	38.71	37.88	-15.68
Congo, Rep.	62.59	70.77	26.66	24.63	26.12	30.4	-32.19
Equatorial Guinea	-	-	-	-	-	-	
Libya	-	-	-	-	-	-	

Note: Total external debt stocks to gross national income.

Source: Data from database: World Development Indicators; last updated: 12/19/2014 (extracted 14.1.2015); <http://databank.worldbank.org/data/views/reports/tableview.aspx>

In comparison, the following countries experienced a decline in external debt stocks of 5 percentage points of GNI or more over the same period: Congo, Côte D'Ivoire and Egypt. Additional indicators related to the debt service ratio would be required to explore the extent to which stocks remained within a manageable level. However, the level of foreign exchange reserves to total debt is often analysed as an indicator

of manageability. Egypt features as a country that has considerably reduced its external debt stocks, along with foreign exchange reserves and an increase in its current account deficit.

2.5 Vulnerability assessment

Because of a lack of up to date information regarding fiscal space, external reserves and external debt,²² we have to selectively incorporate these indicators into our overall assessment of vulnerability to the oil price shock of 2014. We could use a simple framework to assess economic vulnerability. One major shortcoming of this approach is that it excludes any consideration of governance. We cannot easily assign quantitative indicators towards assessing this aspect of economic vulnerability. Instead, we prefer to use the country case studies, introduced in the next section of this report, to elaborate upon these points further. We present countries for which there are available data, and thus gauge the extent of economic vulnerability to the oil price shock of 2014 (see Table 7 below). We focus on the main African exporters only in order to undertake our vulnerability assessment.

Table 7: Country exposure and resilience to 2014 oil price shock

Country	Expected Oil Export Value Loss in case of 30% drop in oil price (US\$1000)	% GDP Equiv. (current US\$)	Reserves (months cover)	CA Balance (% GDP)
Cameroon	- 427,549	-0.002	4.61	-3.4
Tunisia	- 795,304	-0.002	3.67	-6.6
Côte d'Ivoire	- 835,815	-0.300	-	-3.1
Chad *	- 994,199	-0.774	-	-7.1
Ghana	- 996,145	-0.231	2.90	-8.5
South Africa	- 1,002,787	-0.0003	4.45	-5.6
Sudan	- 1,733,358	-0.265	0.20	-6.3
Gabon	- 1,823,707	-0.014	-	6.0
Egypt	- 1,830,270	-0.001	2.49	-4.0
Congo Rep.	- 2,404,960	-0.017	-	-3.2
Eq. Guinea *	- 3,089,956	-0.019	-	-10.3
Libya	- 9,904,713	-0.013	40.53	-20.9
Algeria	- 12,704,879	-0.006	34.20	-3.0
Angola *	- 20,297,610	-0.018	7.09	2.0
Nigeria	- 29,400,858	-0.006	5.67	2.2

Source: calculations and data in this section

²² All indicators used in previous Shockwatch bulletins.

3 Case study analysis

This section explores in more detail the cases of Nigeria and Tanzania. These countries have been selected because they feature amongst the main African net exporters and net importers respectively, as measured by trade as % of GDP (although we are well aware that Tanzania is on its way to becoming a major energy producer). This approach also helps us to identify more clearly the transmission mechanisms of the oil price shock within specific country contexts and to provide a picture of actual impacts.

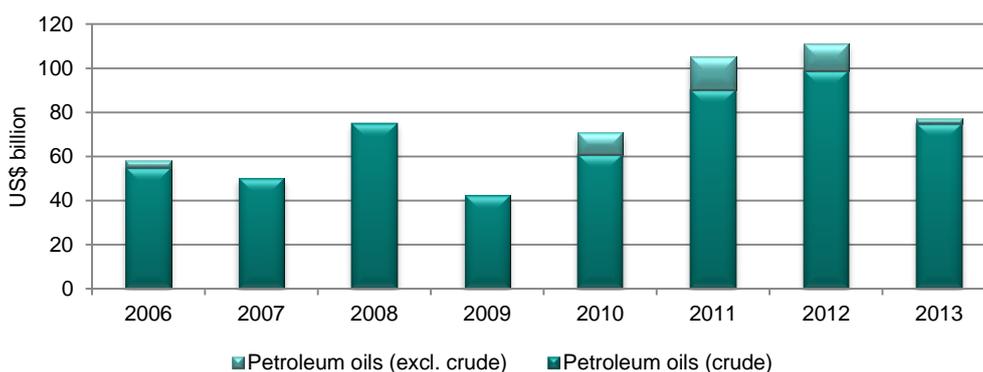
3.1 Effects of oil prices on Nigeria

3.1.1 Exports

According to trade statistics released by Nigeria's National Bureau of Statistics (NBS) in late 2014, 74.4% of Nigeria's exports in 2014 were crude oil.²³ Mineral products altogether accounted for 91.4% of its total exports. The value of Nigeria's exports was 3,854 billion naira in the fourth quarter of 2014, which was a decrease of 843.4 billion naira or 18% from the preceding quarter.

As Figure 11 shows, Nigeria's oil exports suffered a serious drop in value in 2009 due to reduced demand and the steep decline in the price of oil. As the world economy began to recover in 2010, oil prices began to rise, along with demand, and this improved Nigeria's oil export revenues.

Figure 11: Nigeria's total oil exports 2006-2013



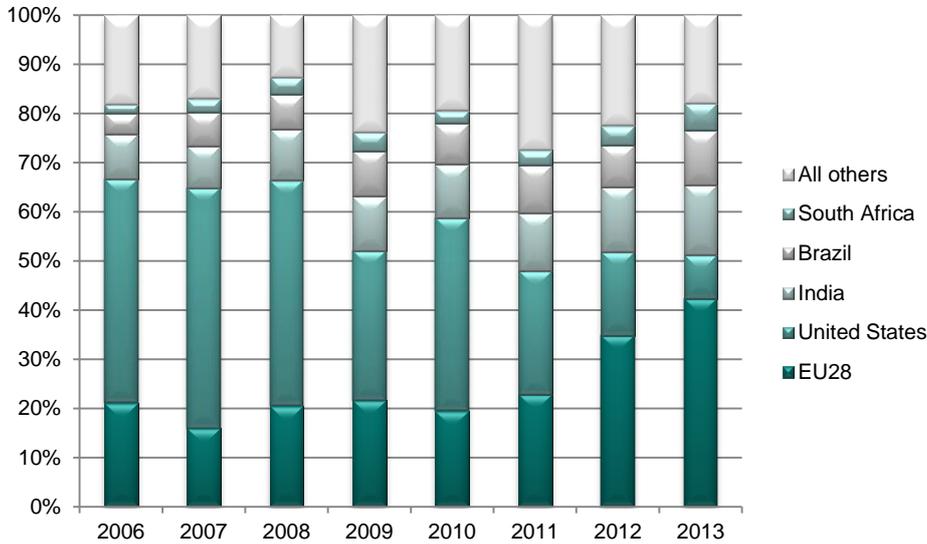
Source: UN Comtrade

Nigeria experienced a large decline in its oil export revenue in 2013 as demand from the United States – traditionally the largest and most important export destination for Nigeria's crude oil – began to fall (as analysed in Hou et al, 2014), and this decline was not offset by other factors in 2013. This can be seen clearly in Figure 12. More

²³ Foreign Trade Statistics, No 513, National Bureau of Statistics, February 2015.

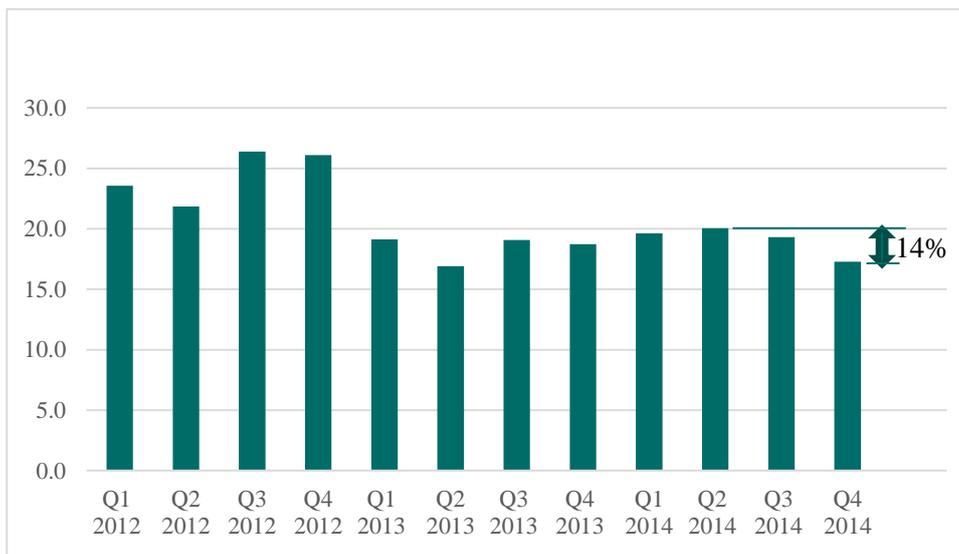
recently Nigeria suffered a further fall in export revenues of 14% (from 2014Q2 to 2014 Q4) or an annualised \$11 billion (see Figure 13).

Figure 12: Top five markets for Nigeria’s oil exports:



Source: UN Comtrade

Figure 13: Nigeria’s oil exports (US\$ billion) decline towards the end of 2014



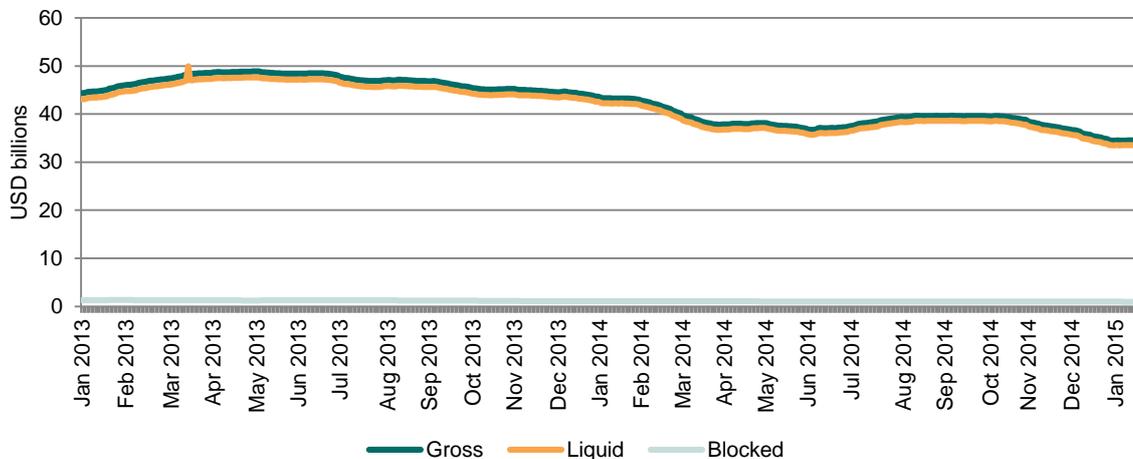
Source: World Bank GEM and Foreign Trade Statistics, Fourth Quarter 2014, National Bureau of Statistics, Nigeria.

3.1.2 Foreign reserves and fiscal position

Declines in oil prices lead to lower export revenues, which deplete Nigeria’s foreign exchange reserves, worsen its fiscal position and exert a downward pressure on the naira’s exchange rate to the US dollar. As a result, global financial markets have become concerned about Nigeria’s ability to defend the naira, which in turn has led to a self-fulfilling cycle of capital outflows, leading to more downward pressure on the exchange rate. As Figure 14 shows, from January 2014 Nigeria’s foreign reserves dropped by 30% to a new low of \$33.5 billion on 19 January 2015, down from \$42.2

billion on 20 January 2014. This represents a sharp fall from over \$60 billion before 2008-09.²⁴

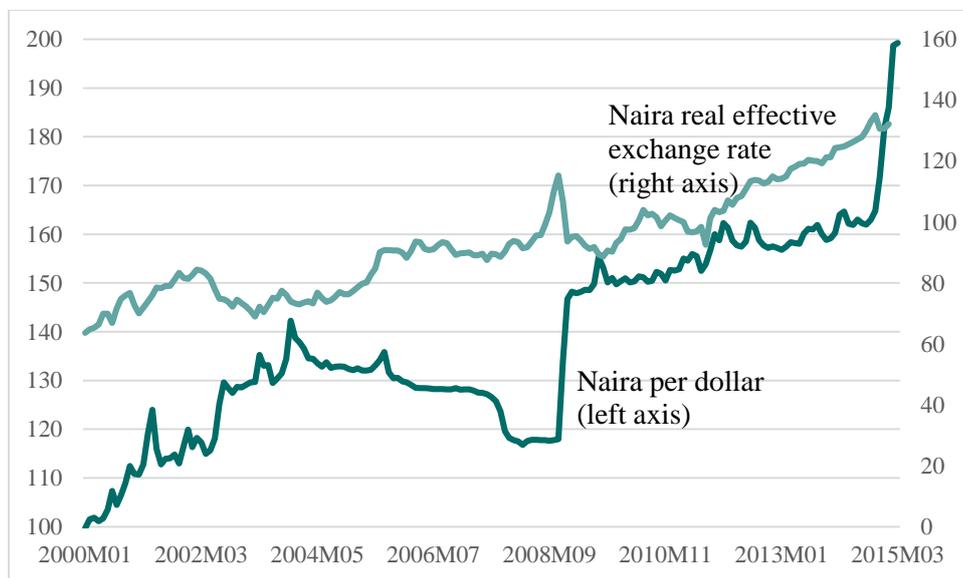
Figure 14: Nigeria’s foreign exchange reserves



Source: Central Bank of Nigeria

Nigeria’s exchange rate depreciated by 22% over the half year to 2015M3. So far this has had only a modest impact on the real effective exchange rate, which appreciated by 35% over the previous five years. On the one hand, exports will become cheaper after an evaluation, but on the other hand, it will lead to imported inflation as imports become more expensive.

Figure 15: Nigeria’s exchange rate (2000M1–2015M3)



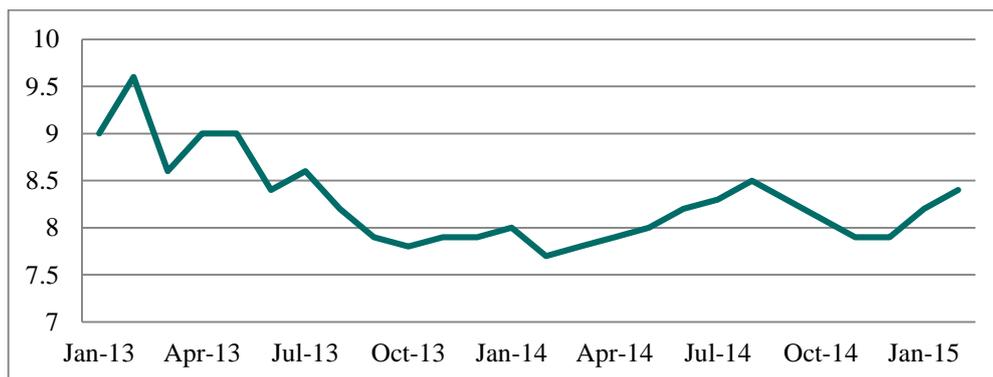
Source: World Bank’s GEM

²⁴Central Bank of Nigeria, <http://www.cbn.gov.ng/IntOps/Reserve.asp>

3.1.3 Inflation

Price statistics from NBS show that the Composite 12-Month Average Change (%) of inflation and Composite Year-on Change (%) in Nigeria have both decreased steadily since mid-2014. Looking at the year-on-year inflation rates, these came down towards the end of the year and picked up only slowly despite the very large depreciation of the naira. Also, distinguishing food price inflation from the rest of the economy, data show that the non-food price inflation drop is more significant.²⁵ This suggests that inflation has remained in check in part because of falling oil prices.

Figure 16: Nigeria's CPI inflation rate (2013M1–2015M2) in %



Source: National Bureau of Statistics, Nigeria.

3.1.4 Capital flows

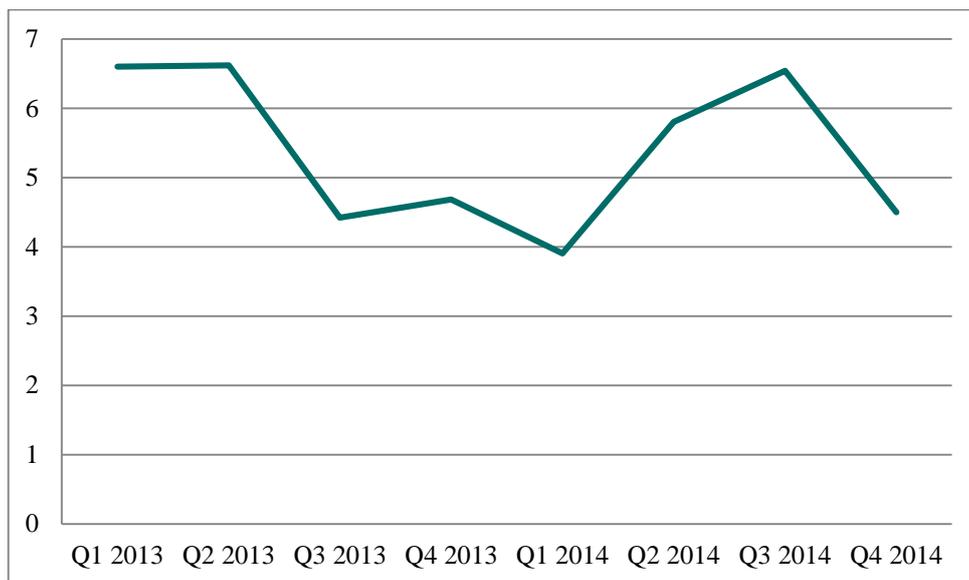
Capital inflows consists of two main investment types: and foreign direct investment (FDI) and portfolio investment. Nigeria saw capital inflows of \$4,499.74 million in the last quarter of 2014. This represents a decline of 31.2% or 2.0 billion from its 2014 third quarter level of \$6.5 billion. The reason behind the fall in capital inflows may be twofold: first, future oil profits are expected to decline due to the global fall in oil prices, which makes new investments into the oil and gas sector less attractive; second, investors' confidence is low as they become anxious about the forthcoming presidential election.²⁶

Portfolio investment into Nigeria experienced the most dramatic decline. It fell by 61% (\$3.1 billion) to \$2.0 billion consistent with declines in values of equity in Nigeria. FDI into Nigeria, on the other hand, still increased from \$545 million in quarter three of 2014 to \$769 million in quarter four – an increase of \$224 million or 41.20%. Other investments also experienced a sharp rise.

²⁵ Statistical News, No 539, National Bureau of Statistics, March 2015.

²⁶ Nigerian Capital Importation, National Bureau of Statistics, March 2015

Figure 17: Nigeria's capital inflows (2013Q1–2014Q4), in US\$ billion



Source: National Bureau of Statistics, Nigeria, and Central Bank of Nigeria, March 2015

3.1.5 Policy responses

The government has responded to the oil price shocks with monetary and fiscal policies. The monetary authority in Nigeria reacted to the oil price decline and naira depreciation through monetary tightening policies. On 25 November 2014, the Central Bank of Nigeria (CBN) devalued and tightened monetary policy in an attempt to manage the impact of falling oil prices and portfolio outflows and to mitigate political risk perceptions from foreign investors. The official exchange rate band went from a rate of USD NGN 155+/-3% to USD NGN 168+/-5%, whilst the interest rate increased by 1 percentage point to 13%. In addition to these measures, CBN raised cash reserve requirements on private sector deposits from 15% to 20%; the result is likely to be a withdrawal of about 500 billion naira in liquidity from the banking system.²⁷ The policy of CBN recognises that liquidity also influences exchange rate movements, in addition to portfolio outflows. However, genuine concerns remain over whether CBN can credibly defend the naira should oil price fall even further.

The federal government's annual budget is based on an oil benchmark price it assumed in the previous year. The then Minister of Finance Dr Ngozi Okonjo-Iweala presented her 2015 budget speech on 17 December 2014 as a 'transition budget' aimed at 'managing the revenue challenge'. With a downward readjustment of the government's oil benchmark price from \$77.5 per barrel in 2014 to \$65 per barrel in 2015, there are significant negative implications for government revenue and expenditure, exchange rate, and public investment. We compare budgets for 2014

²⁷ <https://markets.jpmorgan.com/research/email/jp2osige/GPS-1564145-0.htm>

and 2015 for key economic indicators and some analysis of the policy responses:

Items	2015	2014	Change
Price per barrel	\$65.00	\$77.50	-16.1%
Daily production (mbpd)	2.28	2.39	-4.6%
GDP growth rate (assumed)	5.50%	6.20%	-11.3%
US\$ Exchange rate	165	160	3.1%
Fiscal deficit (% of GDP)	-0.79%	-1.24%	-0.43% (pp)
Aggregate Revenue FGN (N billion)	3,602	3,731	-3.5%
Aggregate Expenditure FGN (N billion)	4,358	4,725	-7.8%
Expenditure Profile			
Recurrent (non-debt)	2,616	2,469	6.0%
Capital (including SURE P)	634	1,120	-43.4%
Debt service	943	712	32.4%
Statutory transfers	412	409	0.7%
Subsidy reinvestment program (SURE P)	103	268	-61.8%

Source: Nigeria's 2015 Budget- Fiscal and Macroeconomic analyses, PwC. FGN – Federal Government of Nigeria.

In terms of fiscal policy, the 3.5% fall in aggregate revenue this year coincided with a projected 7.8% fall in aggregate expenditure for 2015. This means further decline in a range of government investment projects and programmes including the subsidy reinvestment programme (SURE-P), which in 2015 is going to be cut by 61.8% from the 2014 level. Capital expenditure overall will also decrease by 43.4% in 2015 from the previous year. What is puzzling, however, is that despite difficult economic conditions, Nigeria's non-debt recurrent expenditure (including civil servants' wages, training and other administrative costs) is expected to increase by 6%. The government aims to reduce recurrent expenditure through cuts in international travel and training and non-essential administration. The PwC report suggested²⁸ 185.4 billion naira (7% of expenditure budget) has been saved, while 60,450 ghost workers have been weeded from the government ministries.

²⁸ http://pwc-nigeria.typepad.com/files/pwc_nigerias-2015-budget-bulletin.pdf

The other important issue to watch for is the Subsidy Reinvestment and Empowerment Programme (SURE-P). Given it managed to reinvest 268 billion naira in 2014, the fall in 2015 to 103 billion naira (a fall of 61.8%) seems large. In general, the overall absolute and proportional fall of capital expenditure in the government budget sends worrying signals about the long-term health of the Nigeria economy in the midst of falling global oil price.

Box 2: Management of Oil Revenues: Excess Crude Account and Nigeria Sovereign Investment Authority

Given Nigeria's high dependency on oil revenue which can change, several measures were taken. The Excess Crude Account (ECA) was set up in 2004 to act as a stabilisation fund that uses the profits from oil revenue to close the budget deficit and potentially fund domestic infrastructure investment. A benchmark oil price is set before the financial year, and the entire year's fiscal spending is made and spending allocated according to such benchmark prices. Should the international oil price overshoot the benchmark, any profits made above the benchmark price would be saved into the ECA. On the other hand, if the price goes under the benchmark, the ECA will be called upon to close the fiscal gap.

According to World Bank's Nigeria Economic Report 2014, the balance of Nigeria's ECA fell from nearly \$20 billion in 2008 to less than \$3 billion in 2010 owing to the global financial crisis. The ECA gradually rose again to almost \$10 billion in 2012 on the back of the rising oil price, but it fell again to around \$3 billion in 2013 because the government chose to make withdrawals from ECA to cover government revenue shortfalls,²⁹ even though oil prices were high. Despite some initial savings made for the ECA in the first half of 2014 due to high oil prices, it dropped quickly after the global price started falling in mid-2014: ECA stood at \$4.1 billion in October 2014 and was depleted to \$2.5 billion in December 2014 signalling further fiscal pressure on the government.³⁰

Nigeria also set up its own version of a sovereign wealth fund – the Nigeria Sovereign Investment Authority (NSIA) – in 2011. NSIA began with a seed capital of \$1 billion in 2011 that included three funds: a \$200 million stabilisation fund; a \$400 million Nigeria infrastructure fund and a \$400 million Future Generations Fund. According to its annual report for the year 2012/13, NSIA generated profits of over \$3 million and this constituted a low return on investments.³¹

However, there remain concerns about the governance of the sovereign wealth fund and how the proceeds were shared. The governing council of NSIA is chaired by President Goodluck Jonathan, with 54 other prominent members from the public and private sectors including the 36 governors. The ECA also faced increasing tensions in its spending decisions as it was never clear how the money was going to be shared between the Federal Government and its 36 states and their powerful governors.

²⁹ Nigeria Economic Report, World Bank, 2014

³⁰ <http://www.premiumtimesng.com/business/175125-nigerias-excess-crude-account-2-45-bn.html>

³¹ [Annual Report and Accounts 2013, Nigeria Sovereign Investment Authority.](#)

Policy constraints and outlook for 2015

Political risks are severe for Nigeria. President Goodluck Jonathan has not been successful in his fight against the terrorist group Boko Haram since he was last elected in 2011. The President's decision to stand for election in 2015 has also caused widespread resentment from the Muslim North, parts of the South-West and the South-South, and the election became the most divisive election for a long time. The current state of growing insurgency in the North further increased the political tension and uncertainty around the elections, delayed by six weeks from the original date in February. With major players in the opposition party coming together to unseat the incumbent President, the election could further increase the ethnic and social divisions within the country.

The presidential election was not the only election taking place; state and local government elections were also held. There is the potential for post-election violence in Nigeria despite attempts to get parties to sign an agreement for non-violent elections. Although Nigeria's economy had been fast growing, the current challenges besetting the global petroleum market will continue to affect the country. This is particularly the case if global oil prices stay low throughout 2015. The previous government's response so far has been monetary tightening and fiscal contraction. However, fiscal contraction at the expense of capital expenditure could severely hurt the long-term growth prospects of the economy. Further downward pressure on the oil price will make Nigeria's fiscal position even more stringent as well as further depleting its foreign exchange reserves. If this scenario materialises, CBN could be called into action again in 2015 to further devalue the naira. All in all, 2015 is already becoming a year of austerity for Nigeria. The new government needs to find new sources of growth and really begin to transform the economy and become less dependent on oil. One further interesting aspect to consider, however, is that by taking over the OPEC chair in 2015, Nigeria might begin to play much more of a leadership role in managing the global oil price fluctuation and change OPEC's decisions.

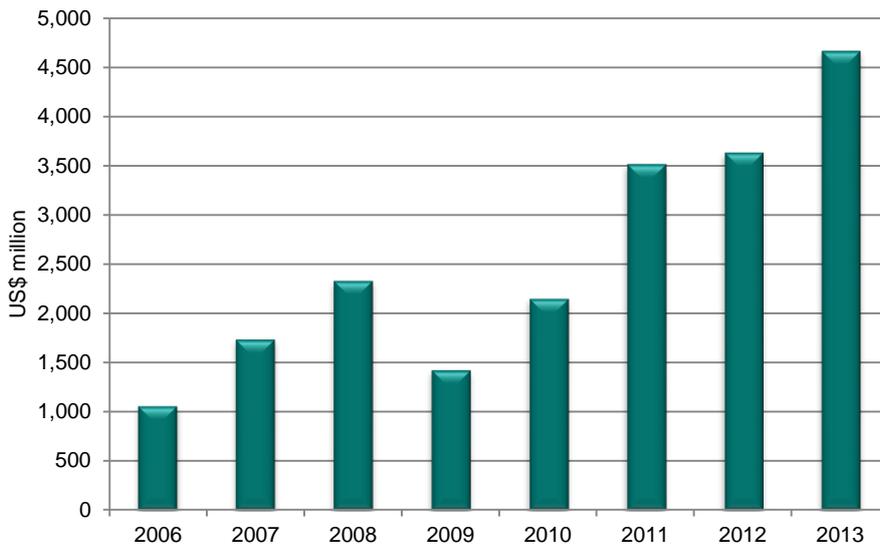
3.2 Effects of oil prices on Tanzania

Tanzania is a net oil importer. According to the Tanzanian national statistics office, estimates of the size of the Tanzanian economy increased by almost a third as a result of the rebasing of its GDP in 2014. The country has performed strongly in comparison to its African peers in recent years. Growth in sectors such as communications, transport, financial intermediation, construction, agriculture and manufacturing have led to around 7% annual GDP growth since 2012 (African Economic Outlook 2014). The recent fall in global oil price could have a fairly positive impact as oil imports account for 33% of its total imports and Tanzania is the third most oil-dependent African economy.

3.2.1 The value of imports has declined by a fifth

Imports of oil grew fast in the period up until 2013.

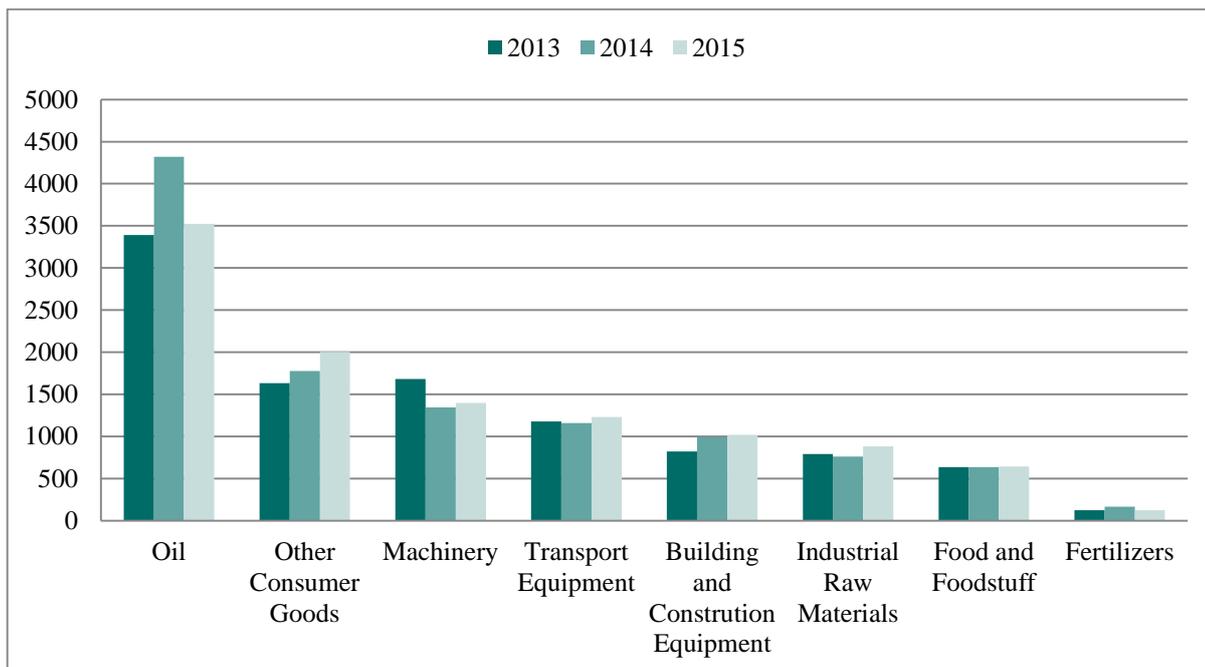
Figure 18: Tanzania's petroleum imports (value), 2006-2013



Source: UN Comtrade

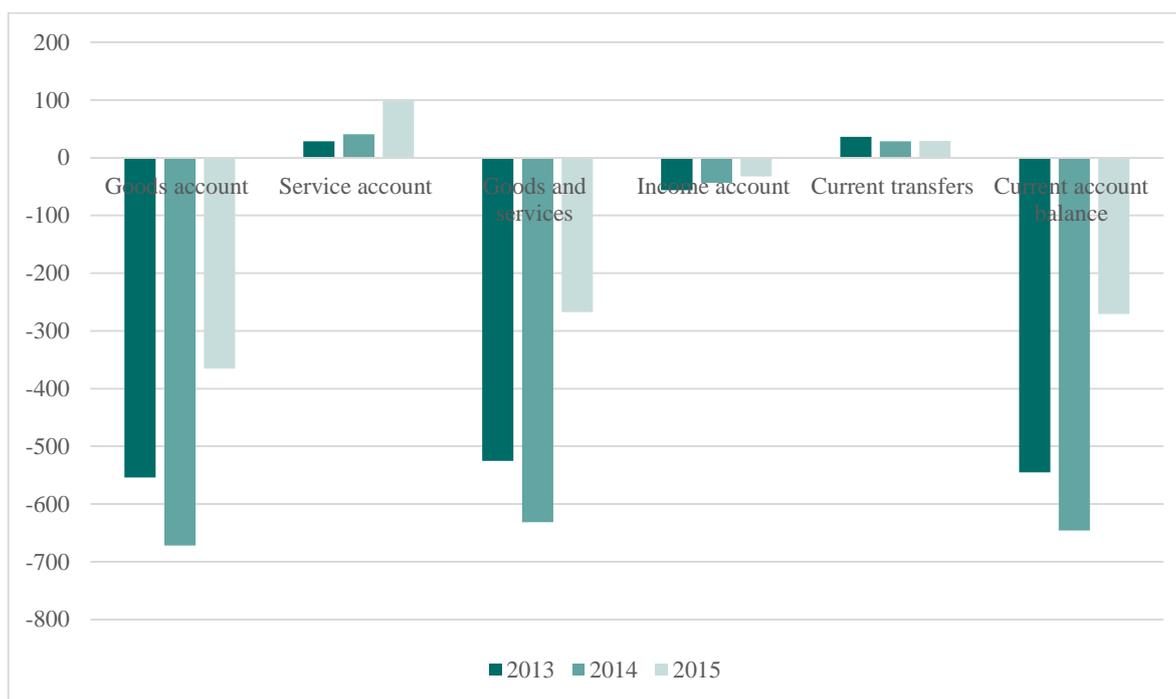
However, the import data from Central Bank of Tanzania show that while most of Tanzania's imports have increased, Tanzania's oil imports bill has shrunk significantly – decreasing from \$4.3 billion in 2014 to \$3.5 billion in the year to January 2015, which is a fall of 18.4%. Other imports – such as machinery, transport equipment, and building and construction materials – have all shown a slight increase from the previous year (apart from fertiliser). Figure 20 shows that Tanzania's current account (to January 2015) has improved considerably, with the deficit halving in a year's time.

Figure 19: Tanzania's imports of goods, 2013M1, 2014M1, 2015M1, million US\$



Source: Monthly Economic Review, Bank of Tanzania, February 2015. Data are for year ending in January.

Figure 20: Tanzania's current account, 2013M1, 2014M1, 2015M1



Source: *Monthly Economic Review, Bank of Tanzania, February 2015. Data are for year ending in January.*

3.2.2 Inflation has fallen by 2 percentage points

Prudent monetary policies coupled with a stable food supply and improved energy situation have been important in easing inflationary pressures in the economy. Data from the African Development Bank and National Bureau of Statistics in Tanzania show that the inflation rate fell from 16% in 2012 to a new low of 4.8% in 2014, and is likely to decline even further given lower prices for imported oil. According to the Consumer Price Index, the monthly percentage fall between November and December 2014 was greatest (-2.8 %) for the 'Energy and Fuels' price group.

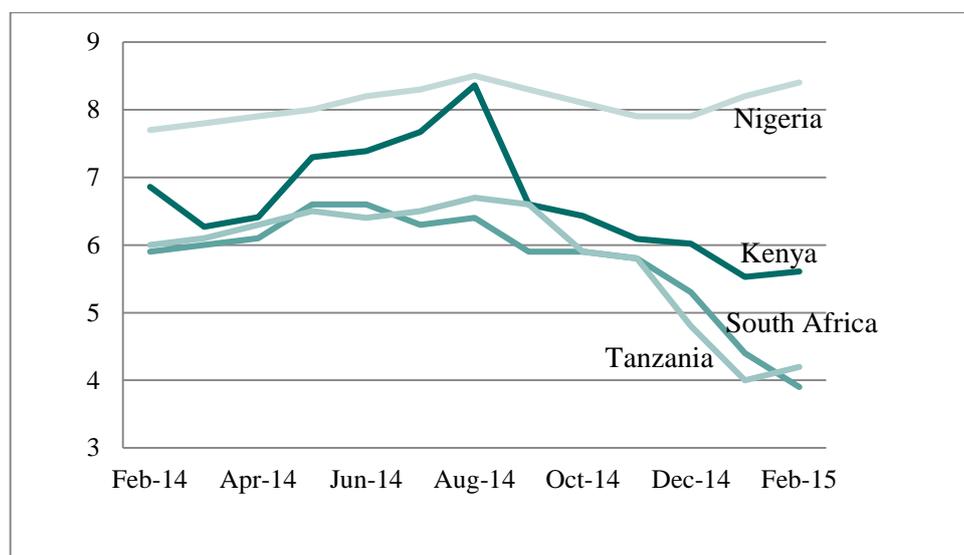
Indeed, Figure 22 includes statistics from Tanzania's National Bureau of Statistics which demonstrate that while the inflation rate in Tanzania held steady above 6% from February 2014 to September 2014 (reaching its peak at 6.7% in August), it fell quickly to 4.2% in February 2015.³² This corresponds to the fall in oil price since mid-2014. As Tanzania is a net oil importer, the fall in oil price meant that Tanzania would be importing deflation into its economy hence lowering its inflation figures domestically (depending on price pass through). The fall in inflation rates is about 2 percentage points, raising the real disposable incomes of consumers by 2%.

Echoing the data, the IMF argued in March 2015 that the nominal exchange rate depreciation against the US dollar has occurred because of the strength of the US dollar. The IMF also argues that the recent decline in international oil prices has contained the impact of the exchange rate depreciation on import costs.³³

³² National Bureau of Statistics in Tanzania, March 2015.

³³ Press Release, IMF review session to Tanzania, March 2015

Figure 21: Tanzania's National Consumer Price Index (NCPI) and inflation rate from February 2014-February 2015, compared to selected other countries



The IMF includes the following forecasts (Table 8). Even though growth is keeping up, inflation has come down dramatically. However, the budget balance and current account were not expected to improve by much.

Table 8: Tanzania's macro indicators

	2012	2013(e)	2014(p)	2015(p)
Real GDP growth	6.9	7	7.2	7
Real GDP per capita growth	3.9	3.9	4.2	4.1
CPI inflation	16	7.9	4.8 ³⁴	4.9
Budget balance % GDP	-4.6	-5.8	-5.2	-4.9
Current account balance % GDP	-14.2	-13.7	-15	-14.8

Source: Data from domestic authorities; estimates (e) and projections (p) based on authors' calculations; IMF African Economic Outlook 2014.

3.2.3 Capital inflows to the energy sector

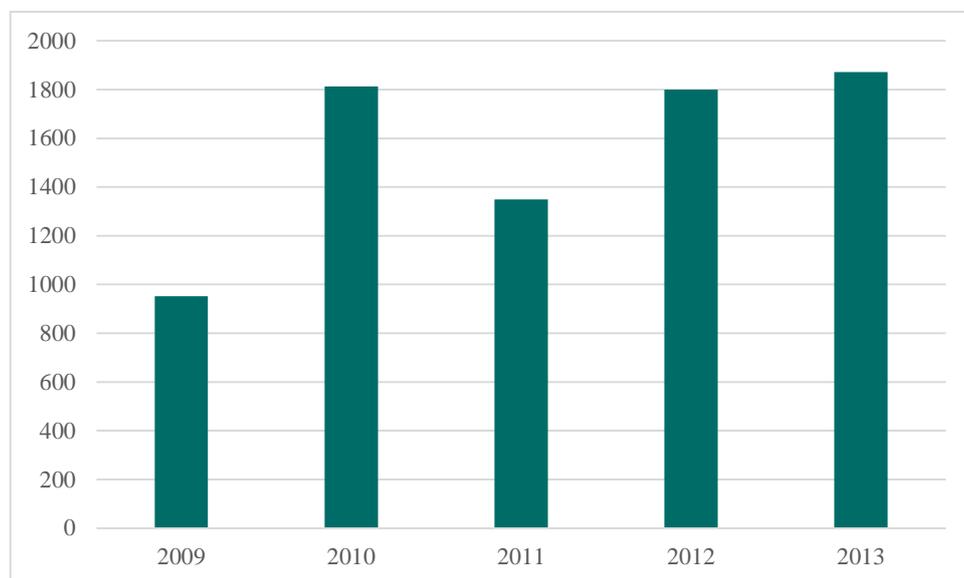
FDI into Tanzania has been higher (see Figure 22) than other East African countries owing in particular to a number of UK companies investing in the country's mining and energy sectors, including African Barrick Gold and BG Group. Tanzania's inflows stood at \$1.872 billion in 2013 followed by Uganda at \$1.146 billion and Ethiopia at \$953 million. Kenya's FDI inflow was \$514 million.

Uganda, Kenya and Tanzania are all prospective major energy exporters. More than 53.2 trillion cubic feet of natural gas has been discovered in Tanzania and 3 billion barrels of oil in Uganda. Tullow Oil has reduced investment in oil in Kenya,

³⁴ This is the actual reported figure from Tanzania's National Bureau of Statistics in December 2014.

postponing the start date of energy production until around 2020. However, BG group stated it would not reduce its investment in Tanzania as they are in it long term.³⁵ Other companies such as Statoil are less clear on their immediate spending plans. A liquefied natural gas facility is expected to receive \$20-30 billion over the coming 10 to 20 years.

Figure 22: FDI into Tanzania, million US\$



Source: Central Bank of Tanzania

3.2.4 Policy responses

The decline in oil prices has reduced the cost of oil and fertiliser imports, and it can improve Tanzania's fiscal position and ease inflationary pressures, although monetary tightening in the US and uncertainties in the Euro Zone as well as its forthcoming election in October 2015 could create serious challenges for Tanzania in 2015.

The Tanzanian Shilling has depreciated against the dollar in the year to February 2015 (12%) but this is less than the depreciation of many other African countries' currencies.

Tanzania did not have to raise interest rates, and the reduced fertiliser expenditure will have prevented the fiscal deficit from getting much worse.

Policy constraints and outlook for 2015

Tanzania has had current account and budget deficits for some time, so the decline in oil prices ought to be welcome (even though we cannot yet see it in the current account data). However, there are some other challenges ahead as well. The country is due to hold its presidential election in October 2015. According to the 2014 Global Financial Integrity Report, previous elections in Tanzania were characterised by sharp increases in illicit financial outflows. For examples, illicit financial outflows were significantly larger in 2005 and 2010 election years as shown in Table 9 below. On balance, however, 2015 might see still see net inflows given that new gas discoveries might continue to attract international investors.

³⁵ <http://www.ippmedia.com/frontend/?l=78459>

Table 9: Illicit financial outflows (HMN+GER) 2003-12 in million US dollars:

Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average
Tanzania	340	96	704	36	58	390	308	1,356	613	717	462

Source: Global Financial Integrity's latest annual report on illicit financial flows from the developing world, titled 'Illicit Financial Flows from Developing Countries: 2003-2012,' published in December 2014.

Fiscally, Tanzania is expected to keep budgetary spending for 2015/16 unchanged despite a sharp fall in development assistance from developed economies. In order to offset this loss of revenue, the government would need to boost domestic revenue collection from an estimated 12.2 trillion shillings previously to 14.7 trillion shillings and borrow from the financial markets. Furthermore, recurrent expenditure may rise to 15.1 trillion shillings from 13.4 trillion shillings previously.³⁶

3.3 Summarising the case study findings

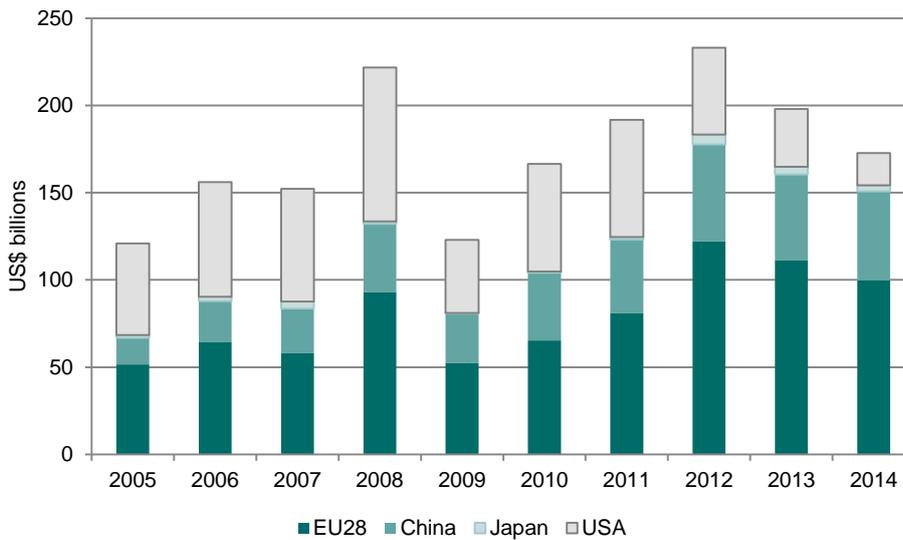
Section 2 indicated that the 30% drop in oil prices in 2014 can be expected to lead to an immediate decline in the value of oil imports, a decline of \$20 billion in Africa and \$15 billion in sub-Saharan Africa. On the other hand, the sum of effects for African exporters amounts to \$88 billion in lost export revenues, with \$63 billion losses for sub-Saharan African exporters.

Section 3 described how the cases of Nigeria and Tanzania show the contrasting fortunes of exporters and importers. Nigeria's oil exports fell by 14% in half a year, whilst Tanzania's imports of oil dropped by 20%. The government in Nigeria quickly presented a transition budget and cut expenditure by 8%. Nigeria's exchange rate devalued rapidly, coinciding with reduced capital inflows. Angola and Equatorial Guinea will experience similar effects as Nigeria in terms of decline export revenues. South Africa and Kenya will face lower import bills and lower inflation similar to Tanzania.

The value of African oil exports to the major developed countries (EU, US, Japan) and China fell by \$25 billion in 2014 or 13% (Figure 23). Exports to the US fell by 44%, to the EU by 10%, but to China increased by 4%. Figure 24 shows monthly imports of oil by the major countries from sub-Saharan Africa; a drop is visible in the last few months of 2014. The decline in the year to the last three months of 2014 is 17%.

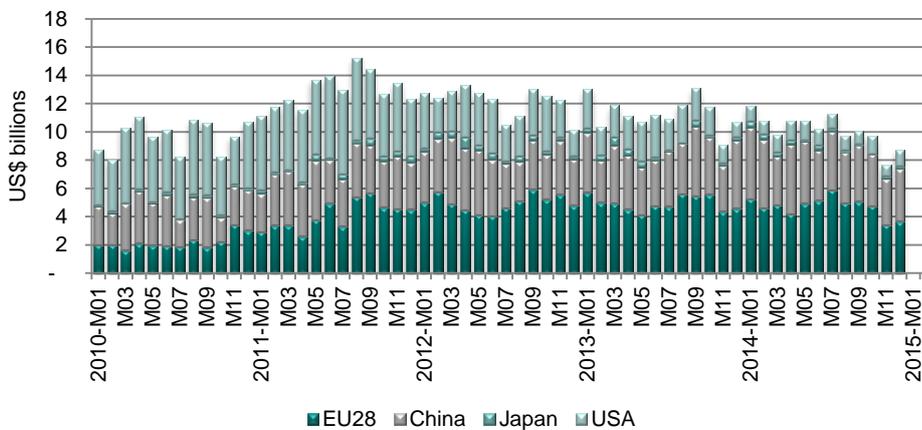
³⁶ Reuters, March 17th 2015

Figure 23: African oil exports, annual 2005-2014, billion US\$



Note: Data for 2011-13 are ITC aggregates of direct and mirror data.
Source: ITC trade map

Figure 24: US, EU, Japanese, and Chinese oil imports from sub-Saharan Africa, monthly 2010M1-2014M12, billion US\$



Source: ITC Trade Map. 'SSA' = Africa minus Morocco, Algeria, Tunisia, Libya and Egypt.

However, there are also benefits that unite both types of countries. Nigeria's inflation rate has not decreased but has remained in check despite upwards pressures owing to the depreciation. In the case of Tanzania, inflation dropped by 2 percentage points, similar to the declines in South Africa and Kenya. This is very significant for consumers – if inflation is on average 1-2% lower than it would otherwise have been (and this is a reasonable estimate on the basis of the data in this section), it would increase real disposable incomes by 1-2%, which could boost the value of consumption (assuming consumption is three-quarters of incomes), a windfall worth around \$10 billion in sub-Saharan Africa in real terms.

Furthermore, all African countries are expected to gain from the positive externalities of higher global growth.

4 Conclusions

This report has examined the recent oil price declines and in particular the expected and actual effects on exporters and importers.

We first reviewed the drivers of oil prices and argued without using a model to confirm the analysis that most of the evidence points to important supply effects, followed by demand effects and fewer geopolitical effects directly affecting the oil price. US oil production experienced the largest volume increase since records began, and its share in oil production has increased to above 15% in 2014 (from 10% five years ago). Demand has also slowed, but this may not have been the main driver of the current oil price drop.

Expected pathways

We then noted from existing literature the *expected* pathways through which oil prices affect economies. Following the 30% drop in oil prices in 2014, the value of oil imports by sub-Saharan Africa is expected to decline immediately by \$15 billion. On the other hand, the sum of effects for sub-Saharan African exporters amounts to \$63 billion in lost export revenues.

All African countries are expected to gain *indirectly* from the positive externalities of higher global growth. The recent drop in oil prices may increase global growth by some 0.5-1.0%. Spillovers from developed-country growth to Africa growth are often found to range from a quarter to a half, which means Africa should benefit from that global growth by around 0.1-0.5%.

Other potential second-round effects include the possible consequences if high-cost producers are put out of business and oil prices rebound. Over time, the strategy of OPEC to maintain market share may succeed.

Actual impacts

We then examined actual effects of the oil price decline within specific country contexts, e.g. on trade and inflation. Section 3 described how the cases of Nigeria and Tanzania show the contrasting fortunes of exporters and importers. Nigeria's oil exports fell by 14% in half a year, worsening the current account, whilst Tanzania's imports of oil dropped by 20%. The government in Nigeria quickly presented a transition budget and cut expenditure by 8%, more than required by the fall in oil revenues. Nigeria's exchange rate devalued rapidly, coinciding with reduced capital inflows. Angola and Equatorial Guinea will experience similar effects to Nigeria in terms of decline export revenues. South Africa and Kenya will face lower import bills and lower inflation similar to those of Tanzania. In 2014, the value of African oil exports to the major developed countries (EU, US, Japan) and China fell by \$25 billion or 13%. Exports to the US fell by 44%, to the EU by 10%, but to China increased by 4%.

There are also benefits that unite both types of countries. Nigeria's inflation rate has not decreased, but it remained in check despite upwards pressures owing to the

depreciation. In the case of Tanzania, inflation dropped by 2 percentage points, similar to the declines in South Africa and Kenya. This is very significant for consumers – if inflation is on average 1-2% lower than it would otherwise have been (and this is a reasonable estimate on the basis of the data in this section), it would increase real disposable incomes by 1-2%, which could boost the value of consumption (assuming that consumption rises in line with incomes and the propensity to spend is three-quarters of each unit of incomes), a change equal to around \$10 billion in sub-Saharan Africa.

Policy responses

Countries have responded to the oil price change. For example, the Asian Development Bank (AsDB) (2015) suggested that 10 countries have either **reduced oil price subsidies or increased taxes** following an oil price change. It can thus be a catalyst for more efficient future development in economic and environmental terms. In other cases, countries can stabilise the negative effects on revenues for exporters or enhance the positive effects of oil prices on lower inflation for importers by **speeding up price pass through** by allowing markets to function properly.

In the case of Nigeria, instruments have been put in place since the crisis of 2008 in order to **smooth the effects of price change**, and these include an excess crude account. However, the funds were spent even when oil prices were high. The steep oil price decline is creating pressure given the high dependence on the sector not only for total export revenue but also for government revenue. In both Tanzania and Nigeria, there has been less monetary tightening than would have been the case without an oil price drop.

Of course, both large net oil importers and net oil exporters need to either reduce energy intensity or diversify trade and production to reduce the impact of changing oil prices on economies.

There are other important **systematic risks and opportunities**. Should non-OPEC sources of supply maintain and/or increase their market share, other second-round effects include the reduction of oil exporter dollars into global financial markets. It should be borne in mind that the flow of OPEC petrol dollars has boosted liquidity. As oil prices fall, the liquidity delivered to global markets may decline, and this could have more far-reaching consequences. Of course, this crisis is different in that it is mainly the result of a supply shock to oil (especially in the US).

Finally, as we have seen in this paper, changes in the price of oil can have large distributional consequences: between oil importers and exporters, between poor and rich groups within a country, between producers and consumers, sectors, etc. If the price is high, one group gains; if the price is low, another gains. It therefore seems important to foster **cooperation** amongst such groups so that one group can compensate other groups over a period of say 5-10 years.

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