AFRICAN FORUM AND NETWORK
ON DEBT AND DEVELOPMENT

IMPACTS OF FLUCTUATING COMMODITY PRICES ON GOVERNMENT REVENUE IN THE SADC REGION

THE CASE OF COPPER FOR ZAMBIA

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A prosperous Africa based on an equitable and sustainable development.

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ACRONYMS

BOZ	Bank of Zambia
CSO	Central Statistics Office
DRC	Democratic Republic of Congo
LME	London Metal Exchange
ZCCM	Zambia Consolidated Copper Mines
FQM	First Quantum Minerals
GDP	Gross Domestic Product
UNCTAD	United Nations Conference on Trade and Development
FDI	Foreign Direct Investment
IMF	International Monetary Fund
KCM	Konkola Copper Mines PLC

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PREFACE

Zambia before the economic recession, not less than three years ago, was considered one of the best investment destinations on the continent. Its first euro bond was oversubscribed, drawing orders of almost USD$12 billion, even though it was offering lower interest rates than some developed world bonds.

Zambia became the second largest producer of copper, second to the Democratic Republic of Congo. This came at the back of increased copper productivity as a result of massive investments from mining giant companies which included Canadian mining companies Barrick Gold Corp. and First Quantum Minerals Ltd., both of which were among Zambia's biggest private employers. Swiss-based mining giant Glencore PLC was another major player in Zambia. Copper accounted for approximately three-quarters of Zambia's export earnings and there seemed no end to the boom.

However, during the last three years, Zambia is a lesson of over-dependence on a single commodity and a handful of multinational mining companies. The copper boom is over, Zambian mines are being shuttered, mining firms getting into cost cutting measure and Zambia's currency was in 2016 rated as one of the worst-performing by Bloomberg in the world. The euro bond interest rates soared to nearly 12 percent in 2015.

A depressed copper sector attributed to declining copper prices and severe electricity shortages are the largest reasons for the country's challenges. The Kwacha has lost about 50 percent of its value against the U.S. dollar in 2016, fueling higher prices on imported goods and impacting the local domestic economy negatively especially the local poor.

Copper prices dropped by more than 20 percent during the period 2015 and 2016, mostly because of reduced global demand especially from China, Zambia's biggest trading partner. This also saw Zambia's economic growth rate reduce drastically by over 50 percent, which had averaged 7 percent annually, fall to an estimated 3.4 percent in 2016, and Zambia has since sort balance of payment support from the International Monetary Fund for assistance.

The country saw most of its major mining companies cut back production drastically and undertake layoffs of workers in a bid to reduce their operational costs but also only maintain strategic operations and put on care and maintenance all "non-core operations of the mines." From 2003 to 2013, the focus for mining companies was

mainly on adding production to keep pace with soaring demand, notably from China. With demand growth narrowing off, or even declining, the new focus was on reducing unit cost of production.

Persistent low copper prices have had significant adverse effects on export earnings, investments, growth and government revenue. Domestic risks include delayed fiscal adjustment and continued uncertainty about policy direction led to lower production in the mining sector and threatened investment more generally. On the upside, the reversal of the royalty-only mining fiscal regime could lead to higher copper production and growth and with increased demand of copper from China in the medium to long term could see copper prices rebound on the upswing and back to boom levels.

This study identified typical implications of price fluctuations on many of the parameters highlighted above which include: government revenue and the responses from the sector both from the state and mining companies. The report provides sources of information to assist various stakeholders including policy makers to deal with issues of copper price fluctuations but also general commodity dependent economies. It provides recommendations that may be adapted to the individual circumstances of countries as they tackle their specific mining related copper price fluctuation challenges.

EXECUTIVE SUMMARY

Growth momentum in Zambia remains fragile, a change from the rapid expansion witnessed in the past decade mainly as a result of fluctuation copper prices. Zambia's economy came under strain in 2015 and 2016 as external headwinds and domestic pressure intensified. Gross domestic product (GDP) grew at 2.8 percent in 2015 and 3.3 percent in 2016, much slower than the average 7.4 percent between 2004 and 2014. Mining in Zambia continues to play a critical role in the health of the economy and remains the dominant forex earner accounting for over 80 percent of exports. The role that mining plays can be classified in 5 main categories which include; Employment, Local infrastructure, Linkages to other sectors, Foreign exchange earnings and Government revenue

Evolution of copper exports as a proportion of total exports and total output
Over 80 percent of Zambia's exports are that of copper. According to the Central Statistics Office, Zambia's major export products were from the intermediate category (mainly comprising copper cathodes and sections of refined copper), making it a net exporter of Intermediate goods which are mainly metals and their articles. Copper exports accounted for 27 percent of GDP in 2015 which was the lowest since 2010. Copper exports recorded their largest share contributed as a share of GDP in 2011 accounting for 34 percent. This was mainly attributed to price movements in the global market.

Evolution of copper revenue as a proportion of total government revenue
Mining tax revenue as a percentage of total tax revenue has seen a steady decline over the last three years. In 2014, the share of total mining tax revenue to total tax revenue marginally declined to 11.8 percent from 12.3 percent in 2013. Mineral royalty contributed the largest amount at K1,766.9 million, followed by company tax at K1,473.5 million. Revenue from exports of copper concentrates was K22.4 million. Following a decline in copper prices in 2012, the mining revenue to GDP also reduced to as low as 2 percent in 2015.

Copper sector employment as a proportion of total employment
By 2014 mining only accounted for 10 percent of the formal employment share. According to the labour force survey approximately 850,000 Zambians are in the formal sector which implies that mining contribution was approximately 85,000. Whereas mining was traditionally a relatively labour intensive industry, modern mining is capital intensive. The continued investments and anticipated expansion in copper production is unlikely to benefit many Zambians through additional employment.

Impacts of copper price fluctuations on government revenue and expenditure

The major impact of price fluctuations on government revenue are the revenue mix i.e. how government raises revenue and its sources of funding. Mining revenue as a percentage of total tax revenue dropped in 2013 from 19.7 percent in 2012 to 12.3 percent and further to 10.6 percent in 2015. Government spending increased from 18.1 percent of GDP in 2010 to 28.1 percent in 2015. However, government revenue did not increase as fast as spending partly due to reduction in mining revenue contribution – it increased from 15.6 percent in 2010 to 18.7 percent of GDP in 2015.

Impacts of copper price fluctuations on public investment and services

Direct budget allocations were minimally affected by the copper price fluctuations. Assumptions to this regard could be drawn to the fact that despite reduced government revenue during periods of depressed prices, government sourced alternative financing to finance social services.

Impacts of copper price fluctuations on the most vulnerable groups in the country

The first link of copper price fluctuations on the vulnerable groups is the relationship between commodity prices and government expenditures. A positive association indicates that fiscal policy is procyclical, as government spending would increase in periods of economic expansion fuelled by growing commodity prices.

Implications of fluctuating copper prices on the country's national debt

Zambia's debt stock has continued to increase and it is currently estimated that the total debt stock is at 56 percent of GDP (Minister of Finance, Hon. Felix Mutati). In 2015, Zambia's public debt was US$12,210 million dollars, has increased US$3,163 million since 2014. This amount means that the debt in 2015 reached 57.48 percent of Zambia's GDP, a 24.15 percent point rise from 2014, when it was 33.33 percent of GDP.

Government response to copper price fluctuations

The key notable responses by government are changes to mining tax policy as a result of price fluctuations. Zambia's tax regime governing the mining sector has undergone various changes over the years to respond to the existing economic situation which was mainly driven by a slump in copper prices.

Private copper mining companies' responses to copper price fluctuations

The major response from mining companies to fluctuating copper prices is to reduce cost of production by scaling down production during periods of depressed prices.

Mainly this is done through cutting down of labour and none core operations of the mine awaiting to resume full capacity at times of favourable global copper prices.

Recommendations:

Policy recommendations have focused on 4 key areas as follows:

- How to manage the impact of copper price fluctuations on national wealth and on public investments and services;
- Identification of necessary policies to promote economic diversification from the copper sector;
- Possible regulatory measures to manage and ring fence copper revenue for socio-economic development purposes;
- Role of state owned companies.

1.0
INTRODUCTION

This report analyses impacts and drivers of the global market copper price fluctuations. The movement in copper price has a strong bearing on the Zambian economy as a result of the heavy reliance on the mining sector, specifically on copper. The report further analyses impacts of the fluctuations of the copper price on the Zambian economy, and how the vulnerable groups have been affected. Government response to these price fluctuations and policy changes will also be reviewed. The study concludes by providing policy recommendations based on the analysis.

The methodology applied is a combination of the study of related literature, collection and analysis of statistical data and trend analysis covering a period of 2000 to 2015.

1.1 Overview of the Zambian economy

Growth momentum in Zambia remains fragile, a change from the rapid expansion witnessed in the past decade mainly as a result of fluctuation of copper prices. The year 2016 was a difficult year for many countries, with regional growth dipping to 1.4 percent, the lowest level of growth in more than two decades (IMF 2017).

Zambia's economy came under strain in 2015 and 2016 as external headwinds and domestic pressure intensified. Gross domestic product (GDP) grew at 2.8 percent in 2015 and 3.3 percent in 2016, much slower than the average 7.4 percent between 2004 and 2014 (World Bank 2017). The external headwinds included slower regional and global growth and lower global copper prices. Domestic pressures included power outages that intensified from mid-2015 to the end of 2016, impacting all sectors of the economy.

As well as this, repeat fiscal deficits have weighed on investor confidence, and low and poorly-timed rains led to reduced agricultural income for the poorest Zambians and increased food prices in 2015. Economic conditions are projected to improve in 2017. This follows high rainfall in the 2016/17 agricultural season that has improved agricultural output and quickened the replenishment of hydro-electric reservoirs.

1.1.1 The Evolution of Zambia's Copper Industry

Zambia has relied on mining for its development ever since commercial copper mining started in 1928 (Lungu John, 2008). Despite the existence of other minerals, copper is likely to continue to play a major role as Zambia's major export for many

years to come. During the colonial rule, (1924 -1953) and the period of the federation, 1953-1963, effective power over the economy resided outside Northern Rhodesia in the hands of international companies. Copper mines were the major source of revenue for the colony. They paid money to the local authority first colonial and later federal based on a combination of royalty and export taxes (Marcia Burdette 1984). The revenue was vital to the state and tended to act as a point of leverage between the state and any local group wishing to start some counter veiling power against the mines (Ibid). No other economic activity in Northern Rhodesia even began to compare with the scale, capital intensity and profitability of the mines.

Since independence, Zambia's mining tax regimes have been very closely correlated to international price and demand trends for metals. The 1960s and 1970s were decades of high metals demand, high international mineral prices and high production. The 1980s and 1990s were an era of decreasing metals demand from industrial countries, raw mineral oversupply, and lower prices. The current phase starting around 2002 was marked by a record boom in international mineral commodity prices, fuelled by metals demand in newly industrializing countries such as China and India. In January 2009, international commodity prices were again at levels seen in the early 2000s. The prices rebounded from late 2010 to 2014 recording the highest copper prices on the London Metal Exchange (LME) before getting back into a slump period currently being experienced.

Initially, the revenues from copper were channeled through Zambia Consolidated Copper Mines (ZCCM), a state-owned enterprise from the Central Bank. However, after privatization of the metal industry among others, all metal export proceeds were externalized and mining firms were free to keep their export revenues in their parent companies bank accounts (Oswald, 2013). This has had serious implications on the amount of income tax as the mining companies paid little to no tax costing the country public revenues. The implication of inadequate revenue collection from the Mining sector for Zambia's economy is compounded by the country's lack of diversification into industry. Oswald (2013) underscores that the lack of contribution of export revenues to industrial diversification in the past two decades has contributed to the lack of development in export led especially heavy manufacturing and tourism.

1.1.2 The Role of the Copper Industry in the Economy

It is undeniable that mining in Zambia continues to play a critical role in the health of the economy and remains the dominant forex earner accounting for over three-quarters of exports. The role that mining plays can be classified into 5 main categories which include: Employment, Local infrastructure, Linkages to other sectors, Foreign exchange earnings and Government revenue.

Employment contribution of the mining sector tends to dominate public policy debate mainly because it is the one benefit that affects people most directly. It has however been observed that mining employment contribution is less significant compared to the industry as observed below under section 1.4. Dreschler (2001) indicates that whereas mining was traditionally a relatively labor intensive industry, modern mining is capital intensive. The anticipated expansion in copper production is unlikely to benefit many Zambians through additional employment.

Linkages to other sectors are important in the role that mining plays. In Zambia for example, most of the industries on the Copperbelt Province were setup to provide inputs to the mines. The mining industry links with other sectors in the economy by buying an array of these inputs. This boosts aggregate demand and so increases economic growth. There are also secondary effects as mining demand increases employment in other industries. However, mining is also considered in Zambia as not well integrated into the local economy. This is because the characteristics of modern mining mitigate the development of many linkages with developing host economies. For example, most mining machinery is too sophisticated to be produced in the local economy and has to be imported and in many instances directly by the mining firms thereby eliminating the local industry in the supply chain.

Perhaps the most important role of mining in Zambia is its forex earnings. As earlier alluded to, mining accounts for over three-quarters of export earnings. The country needs foreign exchange to pay for its imports and to service its foreign debt. Because mining dominates Zambia's exports, it is the main provider of foreign exchange for the economy. But because the mining sector imports many of its inputs, it is also a significant user of foreign exchange. Along with the repatriation of profits by mining firms, this reduces the net contribution to foreign exchange earnings.

Zambia has also recorded one of largest greenfield investments in the mining sector. New "green field" mines are usually responsible for constructing social infrastructure such as housing, schools, clinics, roads and water supplies and for providing social services for their employees and their families. Much of the social infrastructure in the Copperbelt was originally provided by the mines. Further to this, there has been accelerated infrastructure development in North-western province, specifically in Mufumbwe and Solwezi with the setting up of the Lumwana Mines by First Quantum Minerals (FQM).

Lastly and definitely the most important role of mining one would argue is revenue contribution to government treasury. While the above benefits are all significant, it is increasingly recognized that the most important potential benefit of mining is the contribution the sector makes to government revenue (OSISA et al. 2009). Between independence and the start of state control of the mines in 1972, a large proportion of government revenue was derived from mining tax. Much of Zambia's public infrastructure was built during this period, largely financed by mining. This source of public revenue dried up owing to falling copper prices and nationalization, forcing substantial cutbacks in public expenditure. Now the mines are once again (mainly) privately owned, it is important that government secures a fair share of the industry's revenues and uses them for the benefit of all Zambians.

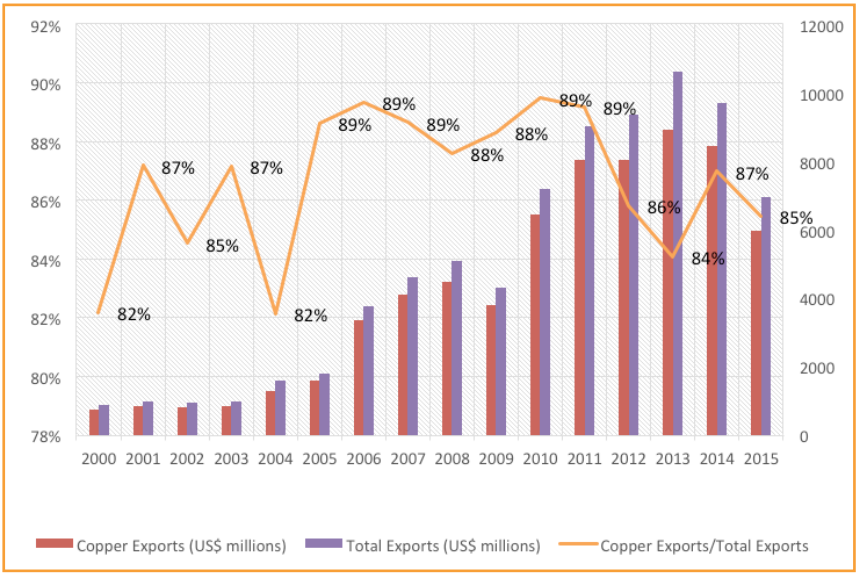
With the above, it is clear that copper plays a critical role in Zambia's economy and any price fluctuations are most surely going to impact on the growth of the economy. Reflecting on current trends, economic growth slowed down to 3.2 percent in 2015, which was attributed to the sharp depreciation of the exchange rate that raised the cost of imports and weak copper prices that impacted negatively on mining production (Bank of Zambia, 2015). Copper dominates the external trade of Zambia, and the nominal exchange rate has little short term impact on metal production or export. Zambia does not export copper because of comparative advantage. In the case of Zambia, copper exports result from a specific natural endowment (Weeks, 2013).

1.2 Evolution of copper exports as a proportion of total exports and total output

According to the Central Statistics Office, Zambia's major export products were from the intermediate category (mainly comprising copper cathodes and sections of refined copper), making it a net exporter of Intermediate goods which are mainly metals and their articles.

From the figure below it can be observed that during the period between 2000 and 2015 copper exports as a share of total exports has always been above 80 percent with an upward trend till 2011 before taking a drop in 2012 and 2013 and rising again thereafter. Upper percentage copper exports have been on average of 89 percent whilst the lower percentage average has been at 82 percent.

Figure 1: Copper Exports as a Share of Total Exports (2000 - 2015)



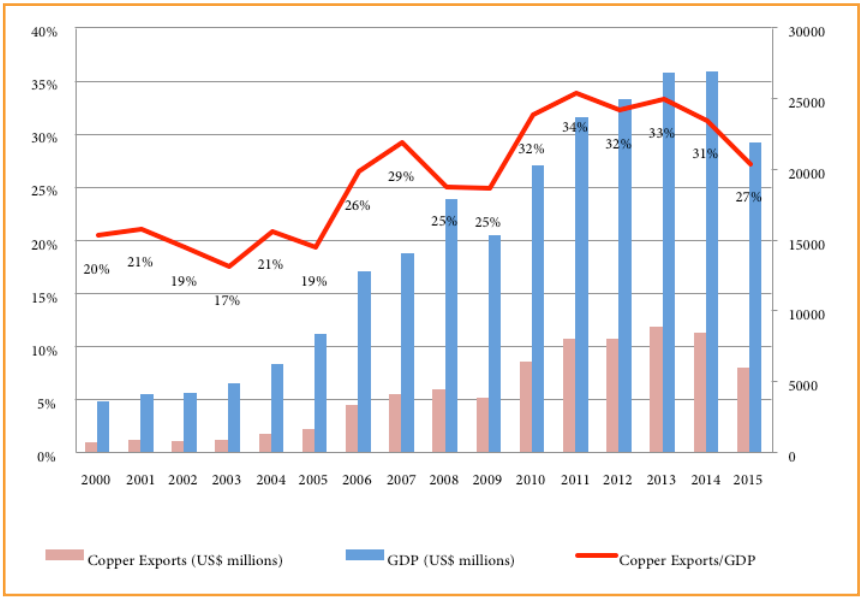
Source: United Nations Conference on Trade and Development (UNCTAD), 2016

There is a discrepancy between the official Zambia statistics from the Central Statistics Office (CSO) and the UNCTAD data on copper exports, with the latter showing a slightly higher export share. The CSO reveals that major export destination by November 2015 was Switzerland which accounted for 43.8 percent of total export earnings. China was the second main destination of Copper, followed by Singapore, South Africa and then the Democratic Republic of Congo. These countries collectively accounted for about 73 percent of Zambia's total export earnings.

Official foreign exchange flows report that Switzerland is the largest importer of Zambian copper. Inspection of Swiss statistics shows that the country neither imports nor exports copper. The answer to this apparent mystery is that Switzerland serves as the site for the buying and selling of copper contracts without any physical trade in copper ore or copper in any stage of processing. Zambia does not seem to have adequate systems or institutional capacity to manage leakages, losses and tax evasion. Multinational enterprises design complex tax methods, for instance, which lead to shifting of taxable profits to other jurisdictions with low or no taxes. Not even the Bank of Zambia has the information to determine the full implications of this contract trading on copper prices and export revenues as reported to the Government of Zambia.

Cross country experience shows that the problem of misrepresentation of production, exports and foreign exchange flows characterizes metal production in many countries, developed and underdeveloped. Though country characteristics affect the degree of misrepresentation, the problem is systemic in the global metals sector (Ndikumana and Abderahim 2010).

Figure 2: Copper exports, GDP and copper exports as a share of GDP for Zambia (2000-2015)



Source: United Nations Conference on Trade and Development (UNCTAD), 2016

From figure 2 above, copper exports accounted for 27 percent of GDP in 2015 which was the lowest since 2010. Copper exports recorded their largest share contributed as a share of GDP in 2011 accounting for 34 percent. This was mainly attributed to price movements in the global market.

1.3 Evolution of copper revenue as a proportion of total government revenue

Tax revenue from the mining sector has over the last 5 years shown an upward trend due to increased mining activities, increased production and favourable metal prices. These revenues represent a growing share of total tax revenue from 12.6 percent in 2010 to 19.7 percent in 2012 before starting to decline due to reduced copper prices. Of the tax types, company tax has contributed the highest in most years, followed

by mineral royalty. Revenue from exports of copper concentrate is also showing an upward trend.

The increase in tax revenue is mainly a result of high mineral prices, increased output, and an increase in the mineral royalty rate following policy changes in 2008. Much of the industry is still recouping investment costs and when these losses are finally recouped, there is expectation of a much larger share of revenue collection. Government had projected that world demand for commodities would unlikely fall substantially in the medium term, the expectations were that the mining sector would contribute around 30 percent of total revenues by 2013 (MTEF, 2010 -2013).

Between 2010 and 2012 the contribution of the mining sector averaged 17 percent. This is an increase over the previous period of 2006 to 2009 which averaged 7 percent. From table 1 below, 2013 recorded a drop of tax revenue to 12.3 percent against the projected 30 percent in the MTEF and this continued.

Table 1: Performance of Mining Taxes

Mining taxes (ZMW 'million)	2010	2011	2012	2013	2014	2015
Company Tax	1245	2474	2613	1084	1,473.5	830
Mineral Royalty	412	868	1486	1760	1766.9	3630
Export Duty	24	19	35	12	22.4	
Windfall	-	-	-	-	-	
Mining Revenue as % of Tax Revenue	12.6%	17.7%	19.7%	12.3%	11.8%	10.6%
Mining Revenue as % of GDP	1.7%	2.9%	3.2%	2.0%	2.0%	2.0%

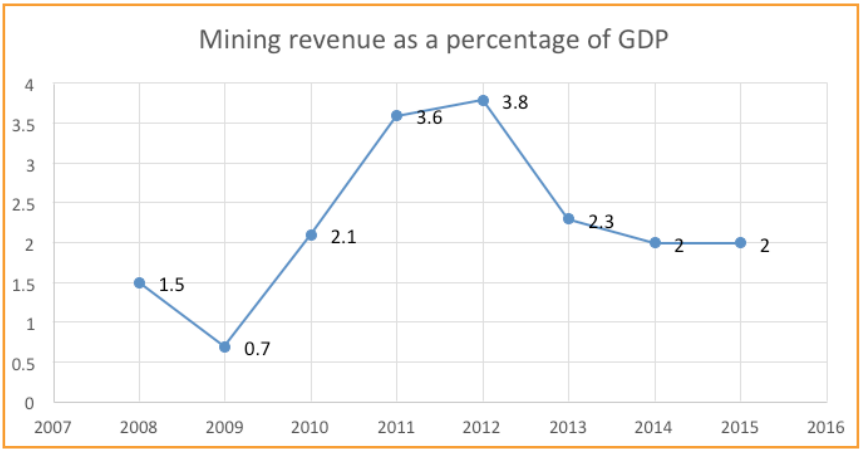
Source: ZRA Annual Reports 2008 - 2015

Mining tax revenue as a percentage of total tax revenue has seen a steady decline over the last three years. In 2014, the share of total mining tax revenue to total tax revenue marginally declined to 11.8 percent from 12.3 percent in 2013. Mineral royalty contributed the largest amount at K1,766.9 million, followed by company tax at K1,473.5 million. Revenue from exports of copper concentrates was K22.4 million.

In a similar fashion as the mining revenue-to-tax revenue contribution, mining revenue to GDP also recorded a decline in 2013 from 3.8 percent of GDP in 2012 to 2.3 percent of GDP.

Figure 3 below demonstrates the evolution of mining revenue contribution to GDP which have mainly been influenced by price movements in addition to policy reforms that sought to increase mining tax revenue contribution. However following a drop in copper prices in 2012, the mining revenue to GDP also reduced to as low as 2 percent in 2015.

Figure 3: Mining Revenue as a Percentage of GDP



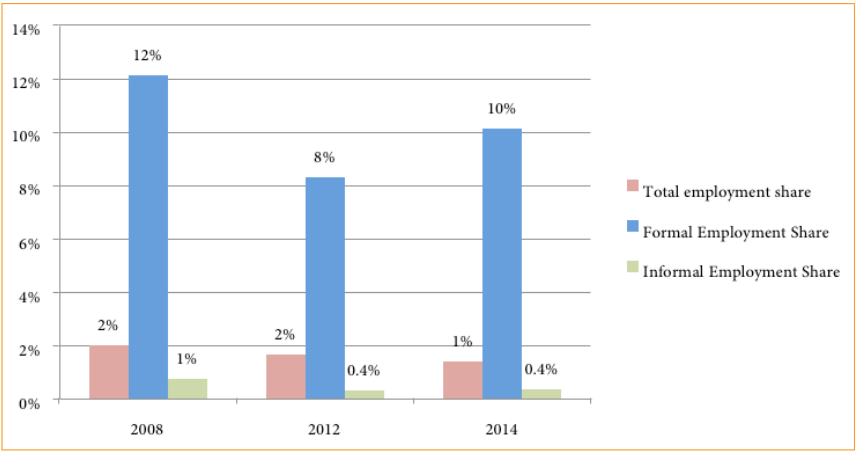
Source: ZRA Annual Reports 2008 – 2015

1.4 Copper sector employment as a proportion of total employment and decomposition of employment by gender

In Zambia, the copper sector was in the past considered an important job generator. In the 1980s more than 16 percent of the people worked in the copper sector but this must be viewed in the context of overall ZCCM employment levels, a state-owned firm, which included non-core mining activities. This percentage has decreased from 1995 onwards; the recent copper employment share has fluctuated between 7 percent and 11 percent mainly because of shedding off of labour in non-mining activities in post-privatization period.

Copper mining industry despite its expansion with new green field investments and being the major export for Zambia remains one of the lowest contributors to employment. This is mainly attributed to mechanisation and improved technologies for mining which are not labour intensive. The figure below shows that by 2014 mining only accounted for 10 percent of the formal employment share. Currently, according to the labour force survey approximately 850,000 Zambians are in the formal sector which implies that mining contribution was approximately 85,000. Whereas mining was traditionally a relatively labour intensive industry, modern mining is capital intensive. The continued investments and anticipated expansion in copper production is unlikely to benefit many Zambians through additional employment.

Figure 4: Mining Industry Employment as a Percentage of Total Employment, Formal Employment and Informal Employment (2008, 2012 and 2014)



Source: Labour Force survey (2008, 2012 and 2014), Central Statistics Office

2.0
DRIVERS OF THE GLOBAL MARKET PRICE FLUCTUATIONS OF COPPER OVER THE PAST YEARS

The copper price is primarily influenced by the global supply of and demand for copper. Main factors influencing the copper market can be divided into factors influencing the demand side and factors influencing the supply side. The factors influencing the copper price cannot be examined separately as they operate as an integrated system where they constantly influence each other. The study highlights some of these aspects as below.

2.1 The London Metal Exchange

Copper is traded in various stages of processing including concentrate; blister and anode; refined, semi-fabricated, and fabricated products; and scrap. Most copper is traded - and its price determined - as refined cathode and rod. The amount of copper traded on the London Metal Exchange (LME) is a very small part of all copper trade, but this market plays an important role in setting the price (Business Structure of the Copper Industry) Zambian copper is sold in world markets at prices based on the London Metal Exchange (LME) copper price quotation which is notorious for its short-term volatility. The consequence of the variability of the copper price is that export earnings and government tax revenues from the industry fluctuate considerably (Obidegwu, 1980).

Price quotations on the LME are determined by transactions occurring during two daily trading sessions. Copper is traded on the LME in the form of electrolytic cathode or high conductivity fire refined copper in 25 tonne contracts. Delivery can be immediate (the next day) or in 3 months from approved LME warehouses. All trade occurs between the LME member and the customer. Prices are quoted in pounds sterling and tenths of a pound sterling on a metric tonne basis, and may fluctuate without limit according to market activity (Business Structure of the Copper Industry).

Copper prices are highly volatile and depend on many external factors: existing copper stocks and contracts, deposits discoveries, the local and world-wide economic environment and technological innovations, for example (Wets & Rios, 2012). The uncertainty that accompanies price volatility affects traders whose trading strategies are based, in part, on short-term volatility movements, and investors interested in hedging an underlying diversified portfolio of commodities. In particular, producers

need to manage their exposure to fluctuations in the prices for their commodities. They are primarily concerned with fixing prices on contracts to sell their produce; hence the existence of future markets (Dash. et al, 2015).

2.2 Short-term Price Determinants

Near-term prices (1 to 3 years) tend to fluctuate in response to normal business cycles through their effects on consumer demand. However, price shifts may be exaggerated by speculative actions. For, example, in late 1987, copper prices began to rise as inventories dropped. The average price of copper for the first half of the year was about 66 cents per pound—up only a few cents from 1986. This minor increase, however, led to anticipation of a tighter copper market and a subsequent increase in copper sales to investors. The increased demand by speculators tightened the market even further, and by the end of 1987 spot prices had soared to nearly $1.50 per pound (Business Structure of the Copper Industry).

Near-term copper price movements also are tied to the relative inelasticity of world copper supply and demand, which in turn may mask longer-term effects. Copper production capacity is slow to respond to both increases and decreases in demand. Thus, during the early 1980s, many major copper producers perceived the downturn in demand and price as part of the general economic recession. When copper prices were much slower to respond to the economic recovery in the United States than other sectors, however, more fundamental changes in the world copper industry (e.g., due to new market entrants, substitution, and third world debt) were recognized (Business Structure of the Copper Industry).

2.3 Long-term Price Determinants

In the long term (5 years and beyond), prices are determined by the structure of the market, including: the degree of ownership concentration (and thus market control) among producers and consumers; economic forces, such as technological change leading to radical shifts in production costs or consumer demand; and investment patterns, including the extent of government participation (Business Structure of the Copper Industry).

For the copper industry, some note-worthy structural, economic, and technological factors may play an important role in long-run pricing. First, long-term contracts for ores and concentrates are likely to become more prevalent as the location of new smelting capacity is increasingly dictated by environmental concerns.

Second, concentration of ownership in the industry, particularly mining, has become more diluted. While the most recent sales of domestic capacity have, for the most part, meant fewer companies involved in domestic production, more countries have entered the market. While the trend toward State control of production at foreign copper properties is likely to continue, ownership probably will widen as burgeoning third world debt makes it increasingly difficult for LDCs to obtain project financing. Thus their cost of capital will be higher without significant private participation or development bank help.

Third, greenfield copper capacity additions have leveled off, and the surplus capacity that existed during the early 1980s is declining. While new capacity is planned for the next 5 years, it may be partially offset by exhaustion or cutback of existing operations, combined with demand growth created by new or expanded applications (Business Structure of the Copper Industry).

2.4 The impact of the supply and demand of Copper on the Copper Price

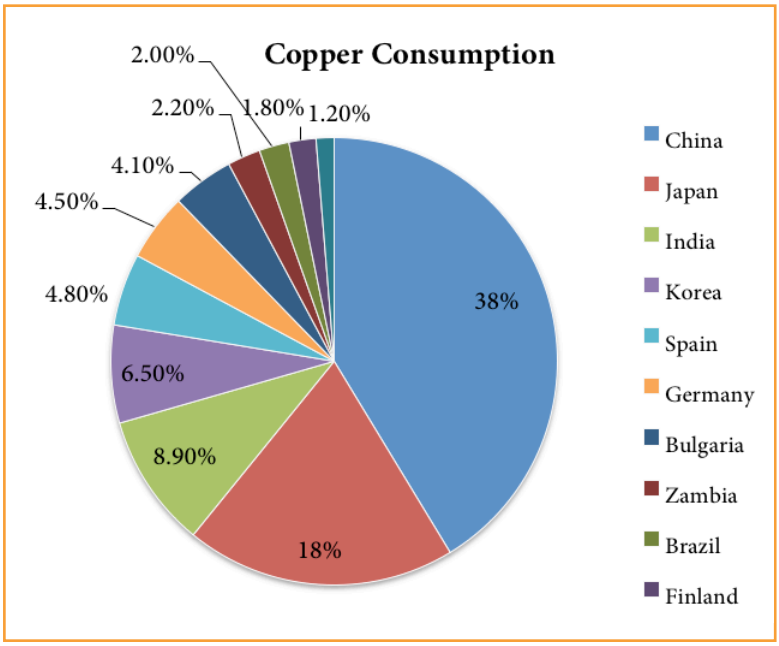
The copper market is relatively transparent in that a change in supply or demand is reflected in price, while an excess of production over consumption results in higher stock levels, and a deficit of production relative to consumption results in lower stock levels that result from mine or plant openings or closings, strikes, or technology changes (Papp. et. al, 2008). Dash et al (2015) highlights the following about copper prices:

- Base metal prices are affected mainly by changes in inventory level, global growth and demand in major consuming industries, including the construction, packaging, and transportation industries, and prices of alternative metals & alloys;
- Political unrest in the producing countries such as South America and North America also affect base metal prices;
- Any new production also takes years to commission as the scale of mining is large, it takes enormous financing and requires endless environmental permissions and needs extensive infrastructure as well.

However, the raw materials industry does not operate in isolation. It is subject to external influences such as deflation of the U.S. dollar, economic recessions, rapid growth of the Chinese economy, and trade restrictions. Nonetheless, consumption of these metals is distributed among several leading consuming countries and many smaller consuming countries that are geographically distributed around the world (Paet al , 2008).

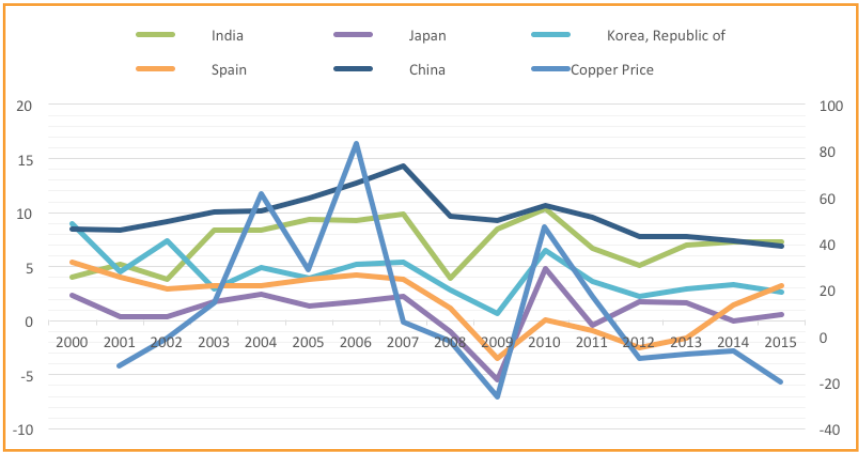
Among the 58 copper-consuming countries, the leading consumer China accounts for about 38 percent of consumption; the leading 4 consumers (China, Japan, India and Korea) account for about 71 percent of world copper consumption.

Figure 5: Top 10 Copper Consumers, 2014



Source: World Atlas (2014)

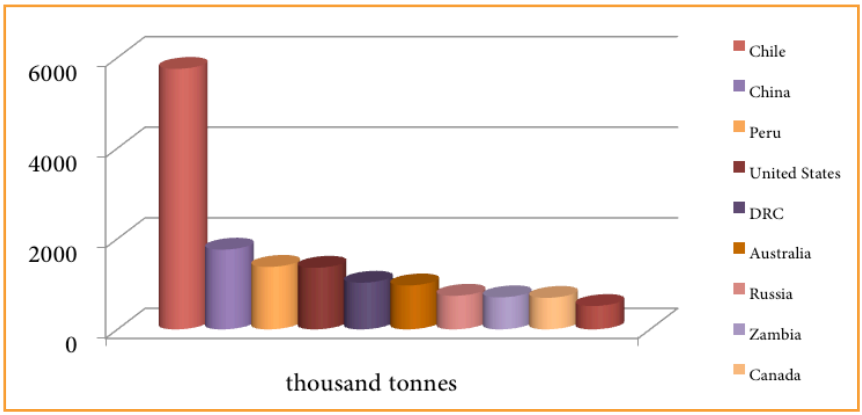
Figure 6: Top 5 Copper Consuming Country GDP Growth against the Copper Price Fluctuations (2000- 2015)



Source: United Nations Conference on Trade and Development (UNCTAD), 2016

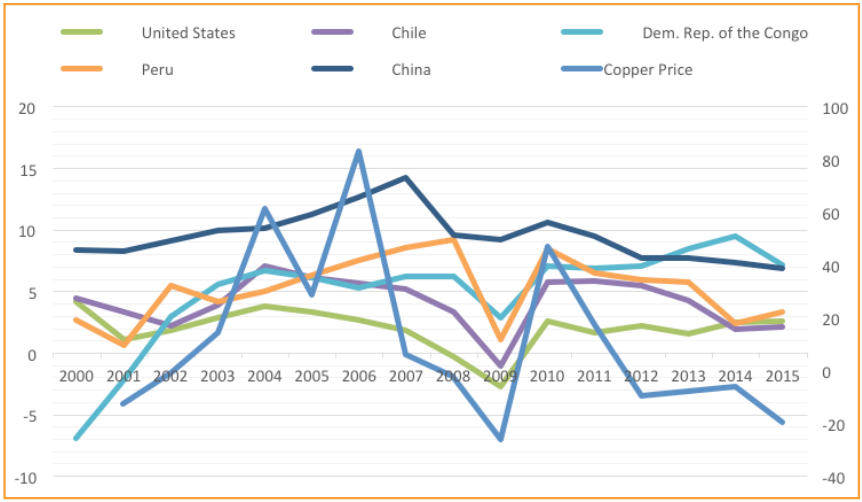
From figure 6 above it can be observed that the copper price is closely correlated to the global demand patterns. From 2000 to mid-2007 the demand was increasing due to the high productivity (GDP) in the copper consuming countries. Mid-2007 experienced sharp global decline in productivity by consuming countries forcing the copper price downwards before rebounding 2009 and later recording a downward trend from 2011. High copper consuming countries productivity and the demand for copper they create plays a critical role in influencing copper prices and in turn productivity of copper producing countries like Zambia among other factors. Zambia has continued to be among the top 10 major copper producers in the world. Among the copper-producing countries, Chile remains as the largest producer accounting for more than 30 percent of production. Zambia is the second largest producer of copper in Africa, second to the Democratic Republic of Congo. Below is a graph highlighting the top 10 global copper producing countries.

Figure 7: Top 10 Copper Producing Countries in 2014



Source: World Atlas (2014)

Figure 8: The Top 5 copper producing GDP countries against Copper Price



Source: United Nations Conference on Trade and Development (UNCTAD), 2016

The graph above highlights GDP growth movements of copper producing countries in relation to price. Generally, it can be observed that recessions result in reduced demand, however supply can be delayed by long lead times for the construction of new facilities (ibid).

The productivity of copper producing countries has closely been correlated to copper price and the cyclical movements in production can be attributed to a large extent by shifts in copper prices.

Nonetheless, in addition to supply of and demand for a mineral commodity, money supply is also an important factor in determining price. Technologies affecting demand also play an important role in setting long-term copper prices. However, the impact of these innovations is as uncertain as future supply (Business Structure of the Copper Industry).

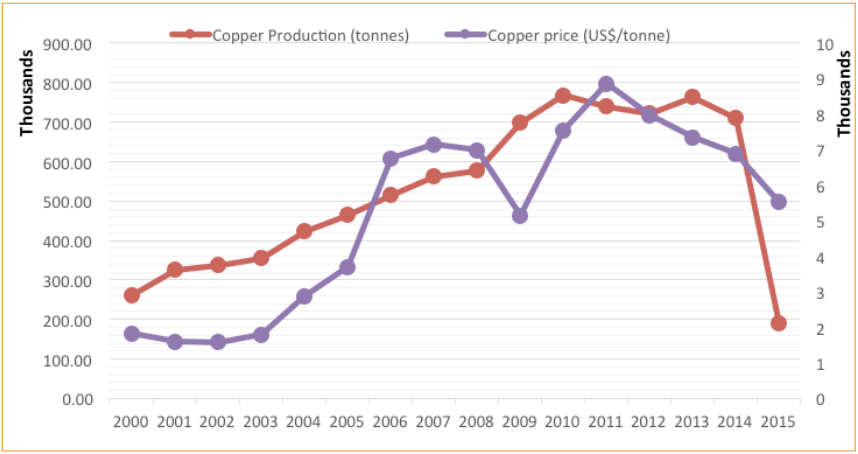
3.0
MACROECONOMIC IMPLICATIONS OF COPPER PRICE FLUCTUATIONS

3.1 Impacts of copper price fluctuations on government revenue and expenditure

As highlighted under Section 1.3 above, the evolution of copper revenue as a proportion of total government revenue, price fluctuations impact government revenue either negatively or positively in the instance of increase and decrease respectively. It has been observed in table 1 on performance of mining tax revenue that mining tax revenue had recorded an upward trend till 2012 when it started to drop mainly due to mining activities i.e. in terms of production highly influenced by global copper prices.

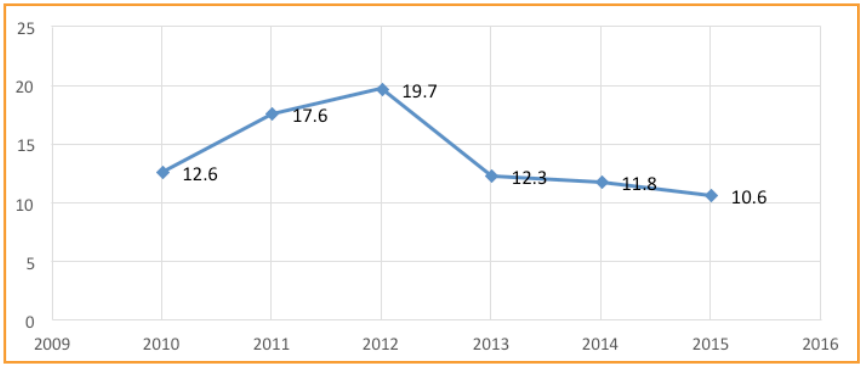
The price and production levels remained relatively stable between the period 2011 and 2013 before taking a slump. Copper prices recorded a decline to an average of USD 5,500.00/Mt whilst Copper production dropped to slightly above 190,000mt per annum in 2015. From the 2011 prices, the drop represented a 37.6 percentage point reduction, compared to production which represented a 75-percentage point drop. It can be observed that the proportion change in production is much higher in relation to proportion change in prices and that a drop-in copper prices negatively impacts production as can be observed in figure 9 below.

Figure 9: Zambia Copper Production against Copper Prices (2000 – 2015)



Source: Central statistics office, 2016 (Copper Production), and United Nations Conference on Trade and Development, 2016 (Copper Price)

Figure 10: Mining Revenue percent as share of Total Tax Revenue



Source: ZRA Annual Reports 2010 - 2015

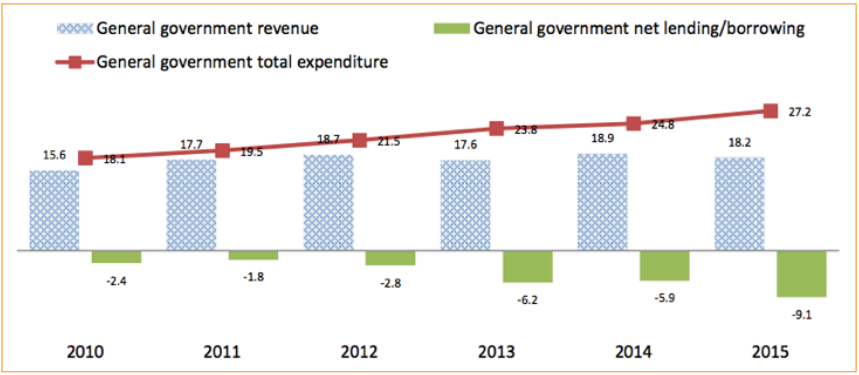
The major impact of price fluctuations on government revenue are the revenue mix i.e. how government raises revenue and its sources of funding.

As shown in figure 10 above, mining revenue as a percentage of total tax revenue dropped in 2013 from 19.7 percent in 2012 to 12.3 percent and further to 10.6 percent in 2015. This implies that government has to compensate revenue loss if it is to maintain its expenditure pattern with other sources of revenue such as increased debt financing.

Alternatively, the government could resort to scale down expenditure to match with available total revenue which would also compromise service delivery and other government functions. It has been observed that during the period under review, the government recorded a budget deficit. A fiscal surplus/deficit, often expressed as a percentage of Gross Domestic Product (GDP), is the difference between government expenditure and revenue. When the government collects more than it spends, a budget surplus exists; and when the government spends more than it collects, a budget deficit exists.

During the period under review, government spending increased from 18.1 percent of GDP in 2010 to 28.1 percent in 2015. However, government revenue did not increase as fast as spending partly due to reduction in mining revenue contribution – it increased from 15.6 percent in 2010 to 18.7 percent of GDP in 2015. That means expenditure pressures outstripped revenues by 3.6 times, thereby resulting into huge fiscal deficits particularly in 2013 (6.2 percent of GDP) and 2015 (9.1 percent of GDP). Figure 11 below shows the evolution of government revenue and spending, as well as the fiscal deficit for the period 2010 to 2015 (International Monetary Fund, 2016).

Figure 11: Government expenditure, revenue and fiscal deficit as a percent of GDP, 2010-2015



Source: IMF World Economic Outlook 2016

The mining sector fiscal regime is premised on a number of Acts such as: Income tax Act, Value Added Tax, Customs Act but also informed by Zambia Development Agency Act which stipulates a number of incentives given to investors as well as the Mines and Minerals Development Act the parent Act governing the mining sector in the country. The incentives given in the Act are translated into the fiscal regime affecting the tax rates payable accordingly.

Double taxation treaties (DTA) also play a role in determining what tax rates companies will be subjected to depending on their residence DTA where applicable as DTAs takes precedence over other national laws and regulations.

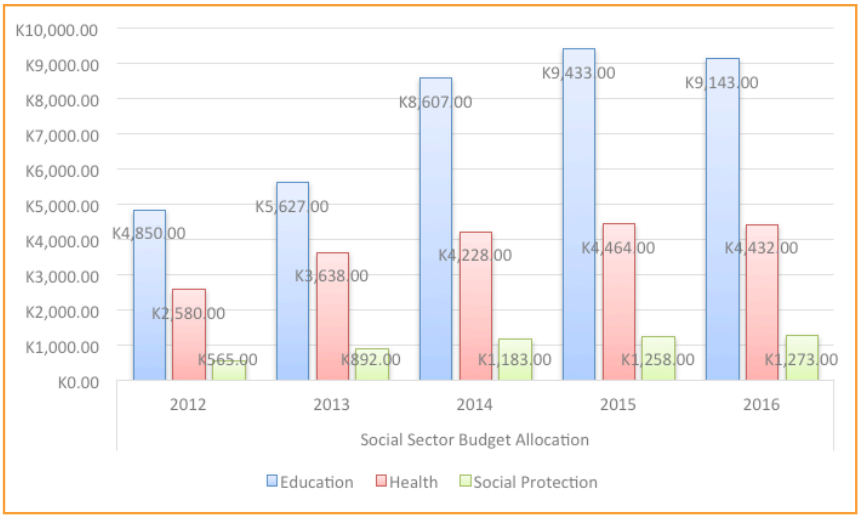
It is also worthy to note that Zambia currently has Double Taxation Agreements with 22 countries in the World as this has implications on how much tax is levied. Dividing up taxing rights on cross-border income between two countries is primarily done to avoid double taxation as well as promote investment into the country by removing uncertainty on the part of the investor. Zambia as a result of these DTAs forgoes tax revenue with the hopes to attract investment. This is especially so because evidence points to the fact that Zambia has agreed to a greater reduction in potential tax revenue.

3.2 Impacts of copper price fluctuations on public investment and services

Expenditure policy during the period under review was assumed to give priority to social sectors (i.e., education, health, and social protection) and capital investment

spending as a means of promoting broad-based economic growth. Increased copper production and non-copper exports together were expected to improve the current account to surpluses over the medium term and necessitated investments in the sectors highlighted above. A review of the social sector spending reviews an expansionary budget expenditure allocation during the period under review as per the graph below:

Figure 12: Social Sector Budget Allocation (k'million)

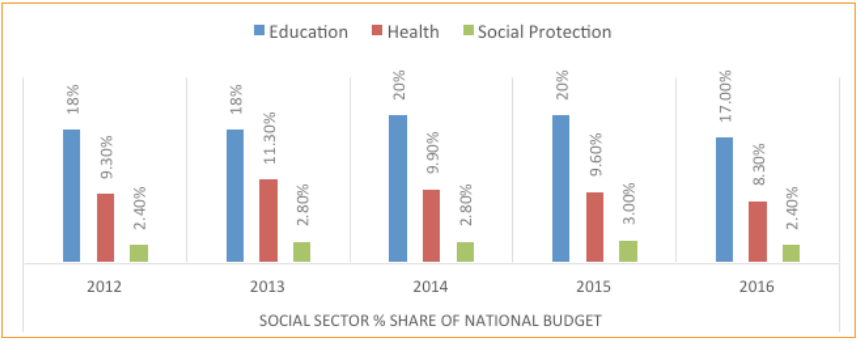


Source: National Budget 2012 – 2016

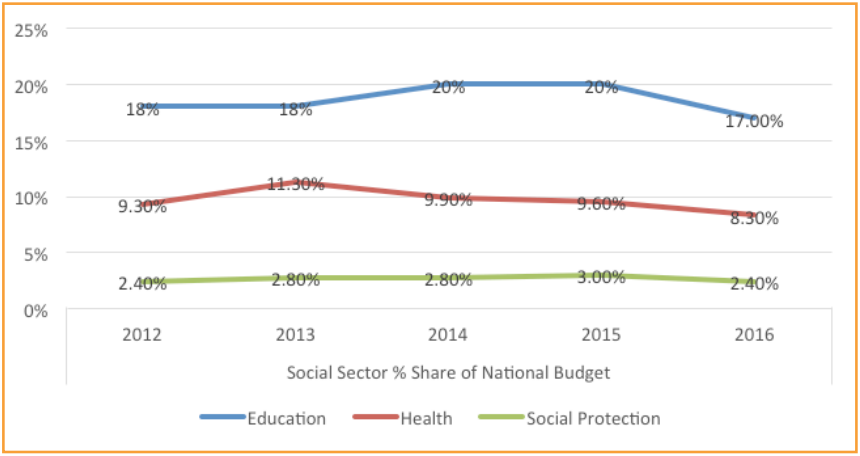
Direct budget allocations were minimally affected by the copper price fluctuations. Assumptions to this regard could be drawn to the fact that despite reduced government revenue during periods of depressed prices, government sourced alternative financing to finance social services as will be observed under Section 3.4 on the Implications of fluctuating copper prices on the country's national debt.

However despite a general increase in budgetary allocations in terms of nominal values, the social sector investments recorded a downward trend during depressed copper price periods from 2014 as highlighted in the figure below. Education recorded a decline from 20 percent budgetary allocation in 2013 and 2014 to 17 percent in 2016. Health also recorded a decline from 11.3 percent in 2013 to 9.9 percent in 2014; 9.6 percent in 2015 and 8.9 percent in 2016 respectively. Social protection which had been recording a constant upward trend in budgetary allocations recorded a decline in 2016 to 2.4 percent from 3.0 percent in 2015.

Figure 13: Social Sector % Share of National Budget



Source: National Budget 2012 - 2016



Source: National Budget 2012 - 2016

To get the full impact of copper price fluctuations on public investment and services, budgetary releases and utilization provides a more accurate measure. The study could not establish this due to none availability of data. However the Ministry of Finance indicated that utilization rates on social service investment has remained constantly low during the period under review averaging 65 percent of budget allocations and as low as 45 percent in other sectors.[1]

1 Minister of Finance, Hon. Felix Mutati

3.3 Impacts of copper price fluctuations on the most vulnerable groups in the country

The first link of copper price fluctuations on the vulnerable groups is the relationship between commodity prices and government expenditures. A positive association indicates that fiscal policy is procyclical as government spending would increase in periods of economic expansion fuelled by growing commodity prices (Arezki, Hamilton, and Kazimov, 2011; Céspedes and Velasco, 2014). It can be observed in Zambia for the period under review that as commodity prices dropped government revenue also reduced as a result of reduced productivity contributing to among other things fiscal deficit and influencing government spending especially away from direct social sector spending as highlighted above under section 3.2.

Further to this, as a result of reduced exports and reduced forex, Zambia faced inflationary pressure as a result of increased demand for forex. Higher inflation may increase the budget deficit through higher nominal interest rates and a higher real cost of purchases of goods and services or investment and, in general, of those items of public spending that can be indexed (e.g. pensions and wages). For example, during the period under review from 2014 to 2016, the basic needs basket[2] increased from K3,500.00 to K5,880.00 pushing up the cost of leaving for the vulnerable.

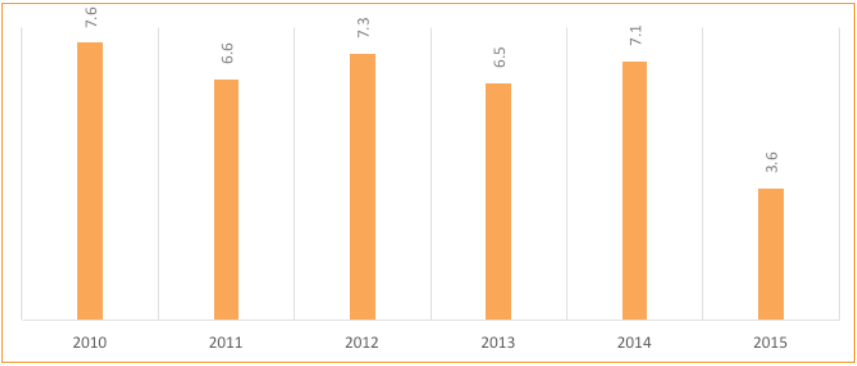
3.4 Implications of fluctuating copper prices on the country's national debt

Zambia's debt sustainability assessments are mainly based on growth projections and the main risk would mainly come from lower GDP growth. Fluctuations in copper prices exposes vulnerabilities related to declines in mining production over the long term especially given the copper mono-economy nature of Zambia which highlights the need for Zambia to diversify its production structure to address the country's constraints to broad-based growth.

During the period under review Zambia's debt stock has continued to increase and it is estimated that the total debt stock is at 56 percent of GDP[3]. In 2015 Zambia public debt was 12,210 million dollars and it has increased to 3,163 million since 2014. This amount means that the debt in 2015 reached 57.48 percent of Zambia's GDP, a 24.15 percentage point rise from 2014, when it was 33.33 percent of GDP.

2 The amount needed by a family of 5 to access basic needs, complied the Jesuit Centre for Theological Reflection
3 Minister of Finance, Hon. Felix Mutati

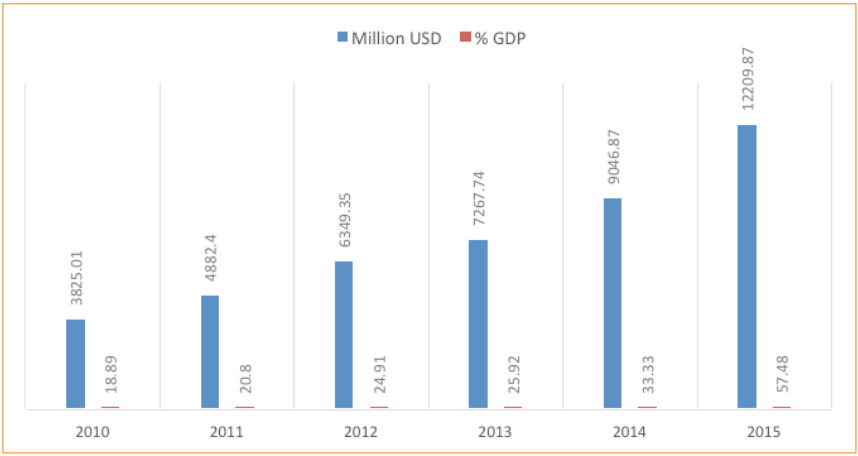
Figure 14: Percentage GDP Growth



Source: Bank of Zambia Annual Reports 2010 – 2015

Figure 14 above shows that the growth path has been lowered from the projected 7.6 percent (2013 MTEF) for 2014 and 7.8 percent for 2015, largely reflecting lower copper prices, while the inflation path has been revised up, reflecting the projected higher inflation in 2015 due to the recent large depreciation of the Kwacha. Zambia's economic stability as well as debt sustainability are related to its ability to generate export earnings. As can be seen in the developments of 2014 to 2015 , a sizeable decline in copper prices can exert significant pressures on the exchange rate pushing government to step in and substitute the forex earnings flows with external borrowing. Figure 15 below highlights the percentage share of public debt to GDP. It can be observed that there was a 24.15 percentage point rise from 2014, when it was 33.33 percent of GDP to 57.48 percent as a combination of debt accumulation and reduced productivity thereby pushing the debt to GDP ratio up. During the same period, the economy experienced over 50 percent reduction in GDP growth from 7.1 percent to 3.6 percent mainly attributed to a fall in copper prices. This puts pressure on governments especially in reference to debt service to revenue ratio as the revenue base is eroded but also that most of governments' debt stock is held in foreign currency which raises the cost in interest repayments due to currency devaluations as the forex earnings reduce.

Figure 15: Public Debt Stock as % of GDP



Source: Bank of Zambia Annual Reports 2010 - 2015

Table 2 below highlights the trend for the period under review of government debt repayments as allocations of the national budget. In 2015 total debt repayments increased to 11.33 percent from 10.95 percent in 2014 and this was mainly due to cost of borrowing increasing i.e currency fluctuations induced by copper price fluctuations leading to reduced productivity and forex earnings. The table below highlights the trend for the period under review of government debt repayments as allocations of the national budget.

Table 2: Debt Repayment Kmillion

Year	2011	2012	2013	2014	2015
Domestic Debt Interest	1,170.70	1,650.10	1,521.30	2,850.50	2,896.16
External Debt Interest	494.6	1,416.80	1,026.40	1,822.40	2,391.68
Total Debt Repayment	1,665.30	3,066.90	2,547.70	4,672.90	5,287.84
(% Share of Budget	8.11	11.07	7.91	10.95	11.33

Source: Annual Budgets 2011 - 2015

4.0
INSTITUTIONS RESPONSE TO COPPER PRICE FLUCTUATIONS

4.1 Government response to copper price fluctuations

The notable responses by government are changes to mining tax policy as a result of price fluctuations. In times of booms many stakeholders including civil society organisation and the general citizens have argued that the country continues to lose significant revenue either through poor tax codes and administration or tax avoidance practices by the mining sector. This has mainly been due to the relatively low tax contribution to GDP of the mining sector which has averaged around 4 percent. Given that mining contributes over 80 percent of foreign earnings, the country should be benefiting more in terms of tax contribution.

Government key policy direction has also mainly been in response to this fact and involved regular revisions of its mining tax policy to the extent of being accused of being inconsistent in its policy and breeding instability in the sector. Since 2011 when the PF ascended to power, the Government has changed the tax policy not less than three times.

Zambia's tax regime governing the mining sector has undergone various changes over the years, and table 3 below provides an overview of these changes and what they might mean for government revenue and companies operating in the country.

Table 3: Mining Tax Policy Changes (2013 – 2016)

Category		Change Year			
Corporate Tax rate (% of the profit Base)	2013	2014	2014	2015	2016
Mining – base metals/gemstones/precious metals	30%	0	30%	30%	30%
Other Mining Operations	30%	0	30%	30%	30%
Mineral Royalty Rates					
Mineral Royalty on base metals, precious metals and gemstones – underground mining	6%	9%	6%	6%	N/A
Mineral Royalty on base metals, precious metals and gemstones – open cast mining	9%	20%	9%	9%	N/A
Varied Mineral Royalty Rate on Copper (price based)	N/A	N/A	N/A	N/A	3-6%
Flat Mineral Royalty on base metals, industrial minerals & energy minerals	N/A	N/A	N/A	N/A	5%

Flat Mineral Royalty on Precious Metals & gemstones	N/A	N/A	N/A	N/A	6%
Capital Allowances deductions					
Mining equipment & related capital expenditure	100%	100%	25%	N/A	N/A
Commercial motor vehicles & other plant and machinery	25%	25%	25%	N/A	N/A
Non-commercial motor vehicles	20%	20%	20%	N/A	N/A
Carry forward of tax losses					N/A
Mining operations	10yrs	10yrs	10yrs	N/A	N/A
Prospecting & exploration	5yrs	5yrs	5yrs	N/A	

Source: ZRA Practice Notes (2013 – 2016)

The Government of Zambia indicated that the 2016 tax reforms were meant to respond to the existing economic situation which was mainly driven by a slump in copper prices. The move was intended to ensure that many jobs are saved and that mining operations are also sustained. It was further highlighted that the introduction of a mining tax on precious metals and gemstone is towards diversification away from copper. In the short term, the reduction and suspension of some of the previous taxes will lead to a loss in revenue. However, losses in revenue will be offset by the economic contribution of the many jobs to be saved as well as an enabling environment that will encourage medium to long term investments in the sector.[4]

The alignment of taxes to prevailing copper prices as designed in the 2016 tax system is said to benefit Zambia in periods of high copper prices while sustaining the industry in periods of low copper prices. Government has further indicated the need to continue on its path to reform the tax regime so that it remains stable and predictable in order to encourage further inflow of Foreign Direct Investment (FDI) in the sector and the secondary industry.

Government has established a Sovereign Wealth Fund as a strategy to deal with investing windfall earnings. This is currently being managed by Industrial Development Corporation (IDC) which is an investment company wholly owned by the Zambian Government. However, there is not any readily available information on whether any resources have gone into the fund as yet or how much is in the fund.

4 Minister of Information, Hon. Chishimba Kambwili, 2016

Furthermore, the Zambian Government through the Ministry of Mines has adopted the African Mining Vision (AMV) to leverage the countries resource potential to benefit its citizens. Zambia does however have its context that the AMV does not consider. There has been conversation around a Country Mining Vision that is yet to be developed.

4.2 Private copper mining companies' responses to copper price fluctuations

The major response from mining companies to fluctuating copper prices is to reduce cost of production by scaling down production during periods of depressed prices. This is mainly done through cutting down of labour and none core operations of the mine awaiting to resume full capacity at times of favourable global copper prices.

For example during the period under review i.e. 2015 & 2016 Glencore, the mining and commodity group, one of Zambia's largest mining firm suspended production at its Mopani mine and announced plans to lay off over 3,800 workers at the mine.

Chinese-owned Luanshya Copper Mines also suspended operations and cut jobs at its Baluba mine because of the copper price and a power crisis and 1,600 workers were put on forced leave. Other mines include Nchanga mine which was put on care and maintenance.

The layoffs and shutdowns followed an earlier uproar over the Zambian government's efforts to increase mining royalties which led to threats of closure and postponed investments at several major mining companies. Thousands of job losses were predicted.

The mineral royalty increases were partly rolled back after months of controversy and protests by the companies but also the fluctuating copper prices provided an incentive for government to engage with the companies. This led to the renegotiation of the mining tax regime of 2016.

The mining sector welcomed tax reforms as indicated by the Zambia Chamber of Mines. Further to this, Barrick Gold in a statement issued on April 23, 2016 indicated that it will not suspend operations at its Lumwana open-pit copper mine in Zambia since the country's government had reduced mining royalties. "We appreciate the leadership and engagement of President Edgar Lungu and the government of Zambia on this matter," said Barrick Co-President Kelvin Dushinsky in a statement. "While Lumwana still faces challenges, in light of the government's recent announcement we intend to continue operations at this time."

4.3 Policy challenges arising from copper price fluctuations

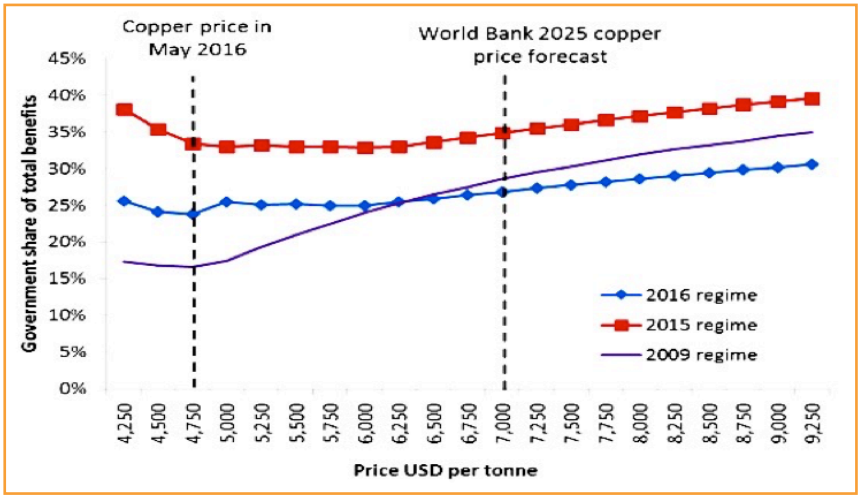
The major challenges arising from copper price fluctuations are the process of policy reforms that would respond to the market conditions to allow mining firms to remain operational and not wind up due to high cost structures and low earnings due to low copper prices. Furthermore, the risk of job losses during periods of depressed copper prices and the efforts for job creation and poverty reduction. All this comes with a lot of uncertainties in terms of price for the medium to long term and focus is usually based on stabilisation mechanism for the short term. For example, the 2016 tax reforms were meant to respond to the existing economic situation which was mainly driven by a slump in copper prices. The changes however meant that in the short run government would have to lose revenue as a result of the downward revision of the taxes and hence had to revise its annual budget with regards to mining receipts.

However, if prices rise again, the government is also likely to receive a smaller share of income than if it had stuck with one of the previous tax regimes. This is because the removal of the variable profit tax, and the design of the price-based royalty, ensures that the new tax regime is less progressive than previous regimes.

The figure 16 below shows how the government's share of total benefits from a typical mining project changes as the price of copper rises. It compares the new regime with the 2015 and the 2009 regimes. The latter included illustrating how a reasonably progressive regime is more responsive to price changes.

For example, compare the 2009 and 2016 regimes in figure 15. At a low price of USD 4,750 per tonne, the current price of copper, the 2009 regime takes only 17 percent of total benefits generated by a mining project, giving relief to the company that might otherwise be forced to close down. In comparison, the 2016 regime places a relatively high burden on companies, although not as high as the 2015 regime. On the other hand, at a price of USD 7,000 per tonne (as forecasted by the World Bank) the share of benefits taken by the government rises considerably under the 2009 regime but grows much slower under the 2016 regime.

Figure 16: Modelled government share of total project benefits for different copper price assumptions



Source: World Bank 2016

5.0
CONCLUSION

Zambia, which relies on copper mining for about over 70 percent of its total exports, has long failed to use revenues from high copper prices to effectively fight poverty. And low tax revenues have dogged the government's ability to deliver socioeconomic development, even during times of plenty.

Due to internal and external factors, the sector's performance remains unsatisfactory. A central feature of the Zambian copper sector is that the revenue contribution into the state's budget has continued to be low when compared to output. The weak revenue generation could be explained by the nature of the mining sector administration and tax regime, which provide exceptionally favorable incentives in the form of low taxes, low royalty rates and longer stability periods. Illicit financial flows and transfer pricing schemes have also deprived Zambia of much-needed resources.

Therefore, despite the high share of copper exports in total exports, the country still has very low revenue take from copper relative to total public revenues. This is a deeper reflection of the political economy and weak state capacities for governing natural resources in many least-developed countries (Barma et al., 2012). In particular, it highlights the dangers of case-by-case negotiations of scale regimes, often a temptation that applies to countries emerging from economic crisis eager to attract foreign investment yet facing limited knowledge of markets and negotiation capacity. A good case in point is the recent renegotiated tax regimes in 2016 following a slump in copper prices. However, despite the low upper mineral royalty rate, the renegotiated tax regime if well implemented provides the opportunity to capture adequate revenues. Issues related to governance, transparency and accountability over the revenues will remain central. If Zambia can get this balance right, the country's mineral wealth can finally begin to contribute to its long-term economic and social development.

Above all, Zambia will need to ensure that it leverages the natural resource wealth advantage it has i.e copper mining especially in boom periods through building reserves as well as a vehicle for diversification into other sectors such as agriculture and manufacturing.

6.0
RECOMMENDATIONS

The study based on analysed factors on the implication of copper price fluctuations in Zambia makes the following policy recommendations:

6.1 Introduce effective mechanisms for building domestic and foreign financial reserves

In order to manage the impact of copper price fluctuations on national wealth and on public investments and services, the study recommends that Zambia should introduce effective mechanisms for building domestic and foreign financial reserves (e.g. stabilisation funds) from copper earnings especially in times of booms. It has been observed that Fiscal policy can be used to offset the decline in economic activity when copper prices fall but this depends on the availability of domestic and foreign financial reserves.

This could be achieved by the use of a fiscal policy seeking to reduce volatility in mineral revenues by creation of stabilization funds. Through the funds, "excess revenues" during boom times can be saved either for future generations or to create a buffer if prices fall below the reference price or as a tool for diversification in other productive sectors of the economy.

The fiscal framework ideally should avoid the expansion of spending levels beyond what is considered sustainable in the medium term and be able to provide funding to continue spending when international prices for copper are lower. This will reduce fiscal pressure and impacts of price fluctuations.

For example, Chile established two funds in 2006: the Pension Reserve Fund (FRP) to help finance pension and social welfare spending and FEES to help overcome fiscal deficits when copper revenues decline unexpectedly. These funds are governed by a strong set of deposit and withdrawal rules underpinned by a fiscal rule that smooths spending over time. FEES allows government to finance budget deficits and make repayments of the public debt thus largely safeguarding fiscal spending against fluctuations both in the global economy as well as in revenues from taxes, copper and other sources. In the case of a downturn affecting tax revenues, the national budget could be financed in part by FEES without needing to borrow.

6.2 Economic diversification away from copper

The study recommends the need for the identification of necessary policies to promote economic diversification from the copper sector. Diversification away from copper remains Zambia's most sustainable way to mitigate the adverse impacts of copper price fluctuations. With over 70 percent export earnings from copper, the impact of fluctuations of copper prices is that export earnings and government tax revenues from the industry fluctuate considerably and undermines stable sustainable development and growth.

6.3 Invest in enhancing tax administration and monitoring

Zambia apart from price fluctuations, faces challenges with high level of tax avoidance hence the need for government to continuously invest in enhancing tax administration and monitoring as well as tax codes aimed at curbing the vice. When copper prices reached a recent high around the early 2010s, tax avoidance reached an estimated $2-3 billion/year according to NGO analyses – which is equivalent to as much as 70 percent of the national budget or at least $1.5 billion/year according to the government's figures. Most of this is lost through commercial mechanisms such as companies' overestimates of costs and understatement of revenues. There is therefore need to re/negotiate copper contracts and related fiscal agreements.

6.4 Introduce measures to manage and ring fence copper revenue for socio-economic development

In order to avoid the boom-and-bust patterns that have characterized Zambia's economic fortunes, the study recommends that government needs to develop a much more careful use of resources and the revenues it generates as this remains one critical ingredient in a bid to foster a more equal, inclusive economic growth trajectory for Zambia. It is important to note that this current period of low growth in Zambia is not new. There have been previous periods of rapid growth in the past, but notably these were followed by phases of economic decline that eroded many of the gains yielded through growth.

6.5 Promote External Scrutiny & democratic rights

The study also recommends that promoting democratic rights such as a free and critical press and the ability of civil society movements to have a public voice, at the local and national level, can contribute to better management of the gains from natural resources.

There is need to promote independent institutions supervising the fiscal framework, oversight, and a strong civil society and media to contribute to the success of the fiscal framework that will maximize gains for the country and the investors. Easily accessible information on the application of the fiscal rule and on government performance against it form the cornerstone of such an accountability system, hence the need for legislation that promotes access to information.

6.6 Increase shareholding structure in Mining Companies

Governments should increase shareholding structure in mining companies so as not to only have a say through board decisions on the operations of the mines but also to have a say on how profits can be shared. This will allow the country not only to be dependent on tax revenue but also dividends as is the case of Chile. It will also allow government to benchmark cost and profit structures for effective taxation through the information as its currently difficult to establish effective tax systems due to information asymmetry and aggressive tax avoidance schemes.

This will further allow the Zambian government to have two revenue streams as highlighted above. One is the sale of copper and other minerals from equity ownership through surplus transferred to the treasury and the taxes paid by the company. The second source corresponds to taxes paid by private mining companies, in particular as opposed to the current situation were government only relies on tax revenue.

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