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The Dynamics of Oil Price and Economic Growth in Six Low-Income Sub-Saharan African Countries

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Abstract: This paper highlights the dynamics of oil price and economic growth in six low-income oil-importing countries in sub-Saharan Africa. These countries are Ethiopia, the Gambia, Liberia, Mozambique, Senegal and Tanzania. The study explores the individual countries' energy sources and the effect of oil price on economic growth. The study found that low-income countries in sub-Saharan Africa mainly depend on biofuel for energy sources and that oil is mainly used in the transport and services sector. Therefore, while the effect of oil price on the economies of low-income countries may not be huge due to the structure of their energy mix, biofuels have an adverse effect on climate change. However, oil demand has increased in the countries examined in this study, with countries like Liberia spending about 15% of its income on oil imports and Ethiopia's total import volume of petroleum products increasing by approximately 10% from 2017 to 2018. Therefore, low-income countries' policymakers should pay attention to energy efficiency policies, which have the potential of boosting economic growth and sustainable development.

Keywords: oil price; economic growth; country-based literature; oil-importing countries; SSA

JEL Classification: D33

1. Introduction

Oil plays an important role in the economy. The effects of fluctuations in oil prices depend on whether a country is an oil importer or exporter, or whether the change in the price of oil is positive or negative. Two determinants of oil price fluctuations are explained by Baumeister & Kilian (2016). First, an increase in global economic activities raises the demand for production input and oil in particular, thereby raising the price of oil. Secondly, speculative demand for oil against future shortages in the oil market puts upward pressure on the expected price of oil. Future expectations of higher oil prices were strongly marked during low oil capacity production, geopolitical tension in the Middle East and the expectation of robust global economic growth.

Oil-importing countries in sub-Saharan Africa (SSA) are also vulnerable to the changes in the oil market due to its heavy reliance on oil as a production input. Energy efficiency is also low for most SSA countries measured by energy intensity (WDI, 2018). Energy intensity measures how much energy is used to produce a unit of economic output. The effect of oil price on economic growth in a country depends on the share of oil in the energy mix. As international oil prices reduce, the cost of fuel imports, raw materials and capital goods imports also reduces, and the real effective exchange rate appreciates (African Economic Outlook, 2017). Oil price fluctuations affect the macroeconomic stance of SSA countries. Persistent increases in oil prices, especially with its climax in 2008 until 2014, led to high

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levels of unemployment and budget deficit problems in oil-importing developing countries (UNCTAD, 2008). The negative economic impact of oil price shocks on oil-importing developing countries is higher than in advanced economies. This is mainly because developing countries have less energy-intensive and less efficient production technologies (OECD/IEA, 2014).

This paper evaluates the dynamics of oil price and economic growth in six low-income oil-importing countries in sub-Saharan Africa, namely Ethiopia, the Gambia, Liberia, Mozambique, Senegal and Tanzania. This study highlights the economic growth and oil price dynamics in these countries. The paper also highlights the trends of oil price and economic growth in the selected countries during the period 1980-2016.

2. Review of Oil Price and Economic Growth in Selected Oil-Importing Sub-Saharan African Countries

2.1. Ethiopia

Ethiopia is a low-income country with a growth rate stronger than SSA's growth rate. The country's average growth rate was 10.3% between 2006/07 and 2016/17 compared to an average of 5.4% for SSA. Per capita income was $783 in 2017 (World Bank, 2018a). The agricultural, construction and services sectors are major contributors to the GDP growth rate in Ethiopia. For the GDP by expenditure calculations, private consumption and public investment boosted GDP growth in Ethiopia. Figure 1 compares the GDP growth rate in Ethiopia with the regional growth rate.

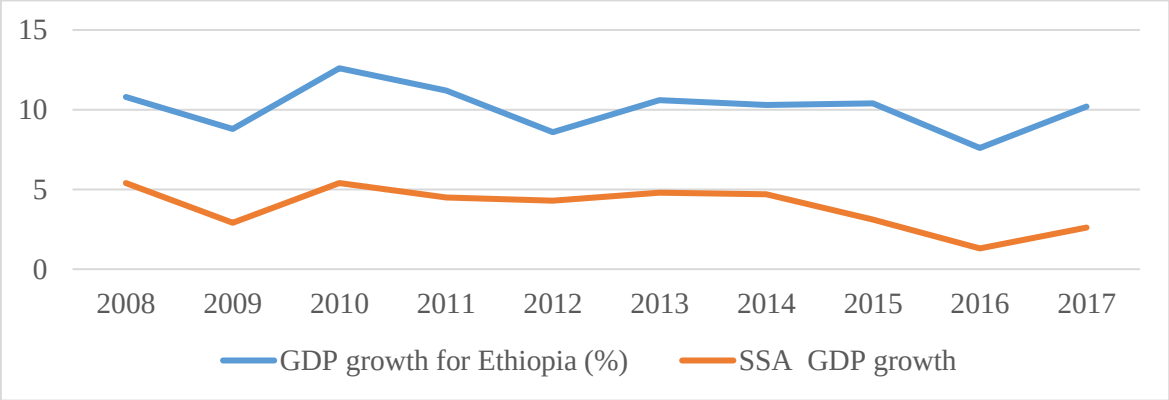

Figure 1. Comparison of Ethiopia's growth rate with Sub-Saharan Africa

2.1.1. The Effect of Oil Price on Ethiopia

Energy sources in Ethiopia are mainly from biomass. Oil is the second highest contributor to energy sources in the country. Oil is used for electricity generation and transport. The energy sector in Ethiopia is underdeveloped and is shown through its growing reliance on biomass from firewood and charcoal. Figure 2 shows the total primary energy supply by source in Ethiopia. On the other hand, oil as one of the primary energy sources has also been growing, as shown in Figure 2.

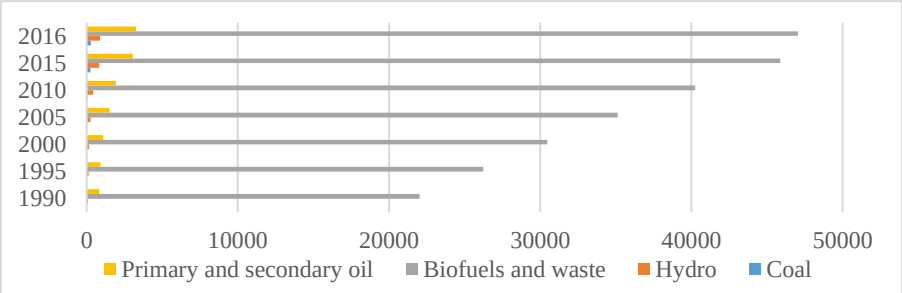

Figure 2. Comparison of Ethiopia's growth rate with Sub-Saharan Africa

Biomass accounts for about 91% of energy supply, petroleum products is about 7%, and electricity accounts for about 2% of the total energy supply (Ministry of Water, Irrigation and Energy, 2012). About 98% of households consume biomass from firewood, crop residues and dung (Mondal, Bryan, Ringler, Mekonnen & Rosegrant, 2018). As an oil importer, Ethiopia's economy is vulnerable to oil price fluctuations like any other oil- importer on the continent. Since economic growth depends mainly on the availability of a reliable source of energy, lower oil prices reduce the cost of achieving higher economic growth.

Ethiopia imported 3.8 million tons of petroleum products during 2017/2018. The total value of imports increased by 57% when compared to the preceding year due to an increase in world oil prices, but with an increase of 9.6% in total volume imported. The import volume of gasoline, gas oil and fuel oil increased by 21.4%, 14% and 10.6%, respectively, while jet fuel decreased by 7.8% (National Bank of Ethiopia, 2018). During 2017 and 2018, oil prices continued on an upward trend due to disruptions in supply followed by OPEC members' agreement and substantial global economic growth. The improvement in global growth is attributed to the recouping of investment in developed countries, growth in emerging countries in Asia, and commodity-exporting countries recuperating from the price shock of 2014. For an oil-importing country like Ethiopia, import bills have increased during this period while the price of its major exporting commodity, coffee, has significantly decreased. Therefore, Ethiopia's export earnings from coffee have decreased. Table 1 presents the petroleum imports in Ethiopia.

Table 1. Import Volume and Value by Petroleum Products

Petroleum Products	2016/2017		2017/2018		Percentage change	
	Volume	Value	Volume	Value		
	A	B	C	D	C/A	D/B
Regular Gasoline	363,845.1	4,399,921.8	441,542.3	7,602,496.3	21.4	72.8
Jet fuel	800,783.3	9,172,380.3	738,105.6	12,026,911.4	-7.8	31.1
Fuel Oil	75,283.6	657,563.3	83,268.52	1,017,928.6	10.6	54.8
Gas Oil	2,199,354.6	23,098,209.4	2,507,672.5	37,966,651.2	14.0	64.4
Total	3,439,266.6	37,328,074.9	3,770,588.9	58,613,987.4	9.6	57.0

Source: National Bank of Ethiopia Annual Report, 2017/2018. Note: Volume is measured in metric tons and value in Ethiopian Birr.

Table 1 shows that the volume and value of all the petroleum products grew both in volume and value, except jet fuel which decreased in volume by 7.8%, but the value (or cost) increased by 31.1%. Regular gasoline has the highest growth rate of value of imports. Therefore, the cost of petroleum imports for the period under review is more than the volume that was imported. Therefore, the cost of petroleum imports for the period review is more than the volume imported. Figure 3 depicts the comovement of oil price and GDP growth.

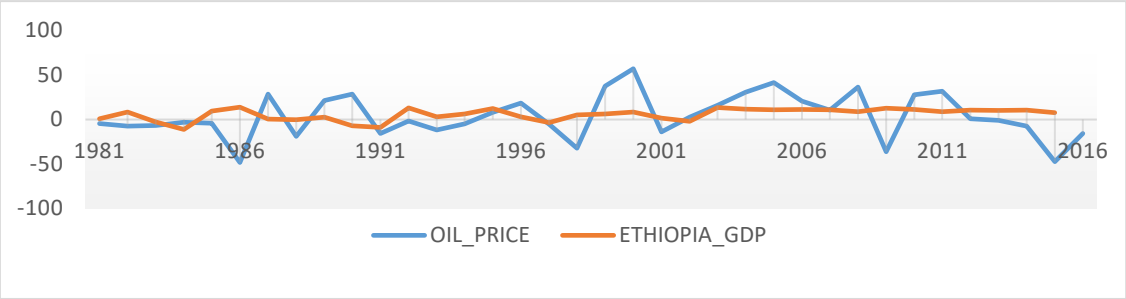

Figure 3. Oil price and GDP growth trend in Ethiopia.

2.2. The Gambia

The Gambia is a low-income country and the economy relies on tourism, agriculture and remittances. The agricultural sector is affected by erratic rainfall and tourism by the spillover effects of the Ebola crisis in Guinea, Liberia and Sierra Leone during the period 2015-2016. The political crisis in 2015/2016 also affected the economic performance of the country. The country, similar to most SSA countries, is vulnerable to external shocks, for example, erratic rainfalls that affect agriculture and the spillover of the Ebola crisis, which affected the tourism sector.

With massive public finances and returning investor confidence, the economy started to recover in 2016. Real GDP grew to 3.5% in 2017 due to a lower interest rate, a favourable rainy season and improvements in the service sector. There has been a low global demand for oil which has led to the price of crude oil decreasing significantly over the past few years. As a result, the performance of industries and the economy was boosted due to lower spending on production input, in this case, oil. Figure 4 shows the trend in the GDP growth rate of the Gambia compared with the SSA region.

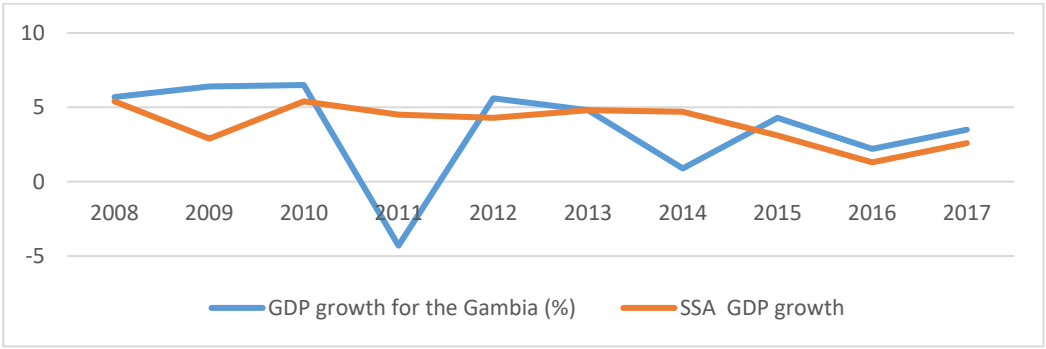

Figure 4. Comparison of the Gambia's growth rate with sub-Saharan Africa

2.2.1. The Effect of Oil Prices on the Gambia

Limited energy sources and shortages pose major challenges for the Gambia. The major energy sources in the Gambia are firewood, electricity, petroleum imports and biomass. There has been a rapid population growth rate in the Gambia in recent years. Therefore, energy demand has also increased. The gross energy consumption of the Gambia in 1998 was about 308,000 tonnes of oil compared to 374,251 tonnes of the equivalent of oil in 2009. The Gambia is heavily dependent on petroleum imports to meet its energy needs. It accounts for 23% of energy consumption and the second largest contributor to energy sources in the country. Demand for oil in the Gambia has been growing as the population grows. Consumption of liquid products from crude oil grew from 86,974 metric tonnes in 2000 to 108,470 metric tonnes in 2004. The major oil consumption sectors are for electricity generation, construction and transportation. Fossil fuel, which is majorly from crude oil, accounts for 17.37% of merchandise imports in 2016 (WDI, 2018).

Efficient, affordable and environmentally sustainable energy is necessary for sustainable growth and development. The industrial, commerce and agricultural development sectors require an adequate supply of energy. Energy also strengthens the provision of social services, such as education, water, sanitation and health. The Ministry of Energy oversees the management of the energy sector in the Gambia. The ECOWAS energy policy and UN energy for all policy inform the ministry's objective in order to achieve the Millennium Development Goals (MDGs). The largest consumers of energy are the household and transport sectors. The Gambia relies on petroleum products for electricity production.

The need for other sources of energy is imperative in the Gambia. There has been increased greenhouse gas emission and depleted foreign exchange resources due to imports of oil products. Moreover, fuelwood energy induces deforestation in the country. The Gambia is looking towards renewable energy sources. The country has a high prospect in solar, solar thermal and wind energy. Fossil fuel forms 96.4% of the source of electricity production in the Gambia. The net oil import and final consumption are shown in Table 2. The net oil import and the final oil consumption increased for the years reviewed in Table 2. This might be due to an increase in the consumption of alternative energy sources.

Table 2. Net Oil Import and Oil Consumption (Kilotonne of Oil Equivalent (Ktoe))

	2008	2010	2012	2014	2016	2017	2018
Net import of oil product	146	172	180	206	222	225	228
Final consumption of oil	98	116	122	139	373	383	400

Source: African Energy Commission (AFREC, 2018)

Like most oil-importing countries, the Gambia is vulnerable to exogenous world oil price shocks. Any increase in external costs leads to an increase in the import bill. However, most SSA countries absorb these shocks through oil subsidy and foreign reserves. Figure 5 shows the oil price and GDP growth trends in the Gambia.

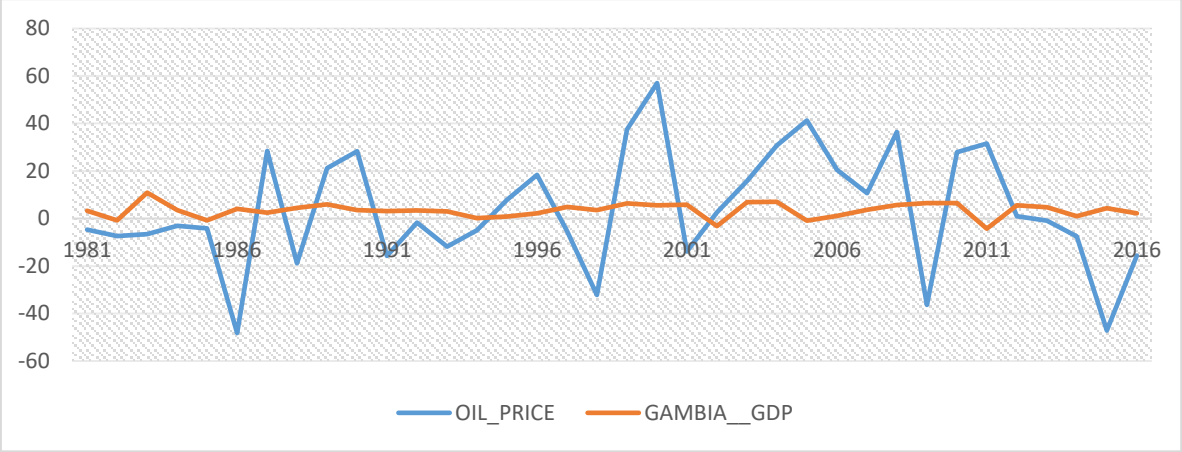

Figure 5. Oil Price and GDP Growth Trend in the Gambia

Figure 5 shows the trends of the Gambia's GDP growth and oil price percentage change from 1980 to 2016. The growth rate was 1.6 per cent in 2016, down from 4.7 per cent in 2015 due to exogenous shocks, policy slippages and a challenging political transition. The economy performed below its potential growth rate of 2.6 per cent. Seasonal changes in low rainfall caused a decline in agricultural production by half. The political turmoil in the last quarter of 2016 exacerbated the GDP performance through disruption in the trade, mining, tourism and manufacturing sectors. The Ebola disease challenge also disrupted tourists' visits to the country between 2014 and 2015.

2.3. Liberia

Liberia is the oldest independent country that proclaimed its independence on 26 July 1847. The country

is a low-income country with a population of 4.732 million (World Bank, 2018b). Liberia is a highly urbanised country where the citizens prefer the capital city and other semi-urban areas. The major sectors in Liberia are mining, agriculture and forestry. Before the civil war, these three sectors contributed 95% of total export earnings (Central Bank of Liberia, 2018). The mining and forestry sectors became inert during the civil war. The services sector is the major contributor to GDP followed by the agricultural sector. The services sector contributed about 46% and 45.6% to GDP in 2017 and 2018 respectively. Agriculture and fisheries, on the other hand, contributed 26.3% and 26% to GDP during the same period (Central Bank of Liberia, 2018). The manufacturing sector in Liberia is still at the developmental stage. Export earnings in Nigeria are generated from iron ore, rubber, timber, diamond and gold. The Liberia economy grew at an estimated 3.2% in 2018 from 2.5% in 2017. The major contributor to growth is the mining sector. In 2017, agriculture, forestry and fishing contributed 70.3% to the GDP. Figure 6 compares the GDP growth rate of Liberia with that of SSA.

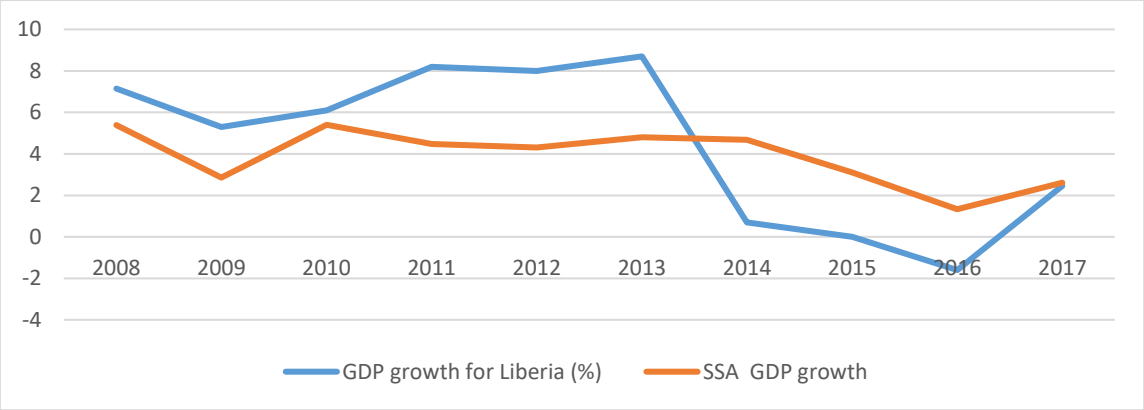

Figure 6. Comparison of Liberia's Growth Rate with Sub-Saharan Africa

The protracted civil war regressed the Liberian economy, which was flourishing prior to the civil war. The economy was approaching being classified as a middle-income country with GDP per capita income before the civil war being US$1,765. GDP per capita fell to US$310 and the country was classified as one of the poorest low-income countries in the world. The year 1993 brought an end to the civil war; however, the country's infrastructures, such as energy, telecommunication and transportation, were damaged beyond use. The Liberian government and international organisations are making efforts to restore the macroeconomic performance of the economy and being classified as a middle-income country by 2030 (Gbatu *et al*., 2017b; Central Bank of Liberia, 2018).

2.3.1. The Effect of Oil Prices on Liberia

The African Development Bank highlights that Liberia spends about 15% of its GDP on the oil import bill (Gbatu *et al*., 2017b; Wesseh & Zoumara, 2012). The growing importance of energy in improving economic growth and development has increased oil consumption since 1991. Oil products account for 90 per cent of the total energy mix of Liberia (Gbatu *et al*., 2017b) and petroleum products alone account for 88.22% of total imports in 2016, 88.79% in 2017 and 72.1% in 2018 (Central Bank of Liberia, 2018).

Liberia is a net oil importer and its major sectors, namely electricity, transportation, agriculture and mining are dependent on oil, particularly petroleum products. Therefore, the total energy consumption as a ratio of GDP is high compared to other countries in the region.

Biomass dominates energy consumption in Liberia with over 80% as primary energy sources. Like other low-income countries reviewed in this study, firewood is predominantly used by households for cooking and heating. The energy sector in Liberia is underdeveloped and, therefore, 98% of the population still relies on biomass (WEO, 2016). Less than 1% of the population has access to clean fuel technologies for cooking (WDI, 2018).

Oil products and electricity are primarily consumed in the transport and economic production sectors. Liberia imports all its petroleum needs. Before the decline in the mining sector in the 1980s, the sector consumed the largest petroleum products in Liberia. Electricity generation was the second largest consumer of oil. However, the degradation of the sector after the civil war declined the demand for petroleum products. The demand for petroleum is currently mainly in the transport sector. The government's prospect is to increase the economic growth rate to double-digits. However, economic growth has been declining in the past few years from 0.7 in 2014 to a negative value of 1.6 in 2016 (WDI, 2017), despite the fall in global oil prices since 2014 and persistent uncertainties in the prices of oil. Figure 7 shows the co-movement of oil price and GDP in Liberia.

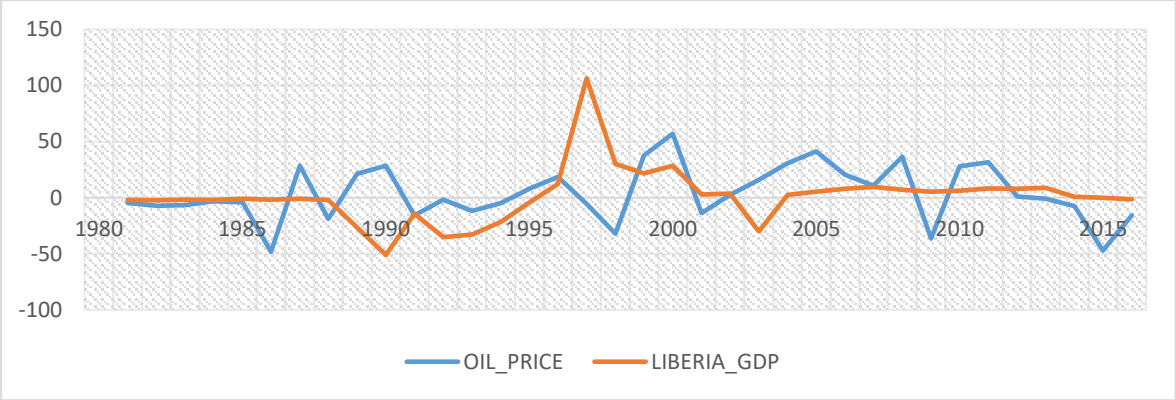

Figure 7. Oil price and GDP growth trend in Liberia

2.4. Mozambique

Mozambique is a land-abundant country situated on the east coast of Southern Africa on the Indian Ocean. Mozambique is considered as one of the poorest countries in the world, with 54% of the population below the poverty line in 2013 and 62.4% in 2014 (Coughlin, 2006; WDI, 2018) despite achieving an annual average GDP growth rate of 7% from 2004 to 2014 (World Bank, 2018c). Another country marred by war is Mozambique. The civil war in the 1980s damaged the infrastructure and the economy of Mozambique. Unstable fiscal and monetary policies also contributed to the imbalances in the economy.

However, Mozambique was able to recover from the economic downturn and recorded substantial growth in GDP, especially in the late 1980s and in the 1990s. The year 1996 recorded the highest growth rate of 26.85% from 2.24% in 1995. The Economic Recovery Programme by the World Bank and IMF exacerbated the turnaround in the economic performance of Mozambique during this period. The growth rate continued with an average of 7% annually until recently in 2016 (WDI, 2018). Figure 8 presents a comparison of the growth rate in Mozambique to the growth rate in the SSA region.

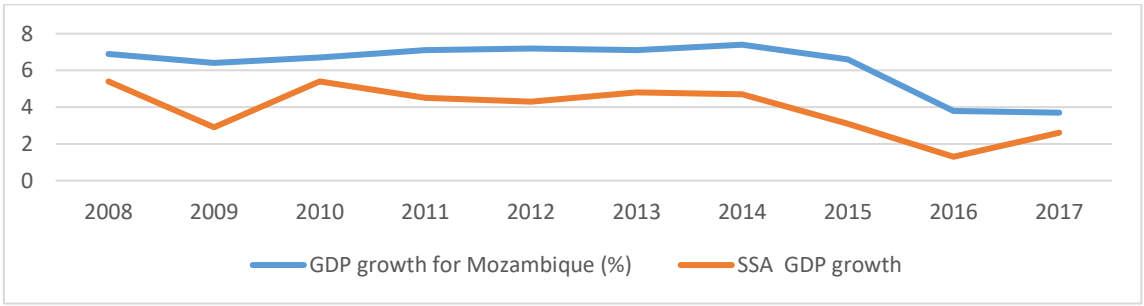

Figure 8. Comparison of Mozambique's Growth Rate with Sub-Saharan Africa

The GDP growth rate in Mozambique was higher than the region's growth rate for all the years reviewed in Table 2.7. The growth rate in Mozambique was an average of 7% from 2004 to 2014 until the substantial decline in 2016 to 3.8% from 6.6% in 2015. The growth rate further declined to 3.7% in 2017 and the real GDP was estimated at 3.5% in 2018 (AEO, 2019). The continuous decline has been attributed to decreasing public and foreign investment during the years of decreasing growth rate.

Economic growth in Mozambique is at risk due to the following factors. Mozambique's economy is closely tied to South Africa, which is the second largest export trading partner of Mozambique. Therefore, economic downturn in South Africa increases the vulnerability and risk exposure of the country. Moreover, rising oil prices for an oil-importing country such as Mozambique and public debt distress could slow growth.

2.4.1. The Effect of Oil Prices on Mozambique

Mozambique has the potential for oil extraction. Oil has been discovered, but the reserves are not known. Oil is mostly consumed by the transport sector. Oil products are imported. Households and communities generate electricity from diesel and petrol due to inadequate supply from the national grid. The oil sector is also vital to the transport and industry sectors. Therefore, heavy reliance on imported oil for transport and industry may result in less competitiveness of export due to high costs in production, mainly from oil import costs. However, local energy supply in Mozambique is inadequate to keep up with the rate of economic growth. Therefore, Mozambique plans to explore gas power plants due to the frequent breakdown of oil plants and the high cost of diesel.

Fluctuation in oil prices, especially increases, affects the generation of electricity for the growth of the manufacturing of domestic goods. Imports thus become cheaper than domestic manufactured goods. There has been a rapid increase in the demand for oil in developing countries. As industrial growth occurs, power-intensive industries increase, which exacerbates pressure on the energy supply in the country. Particularly in Mozambique, the establishment of the Mozambique Aluminum Smelter increases the demand for electricity. Mozambique has potentials of other sources of energy besides biomass and oil. Hydropower, coal, natural gas, wind and solar energy can enhance energy supply, particularly in the power sector. An adequate supply of energy is required for economic growth. Figure 9 shows the total primary energy supply by sources in Mozambique. Energy consumption in Mozambique like most low-income countries in SSA is mostly from biomass. Oil is the second largest source of energy, while electricity is also growing rapidly.

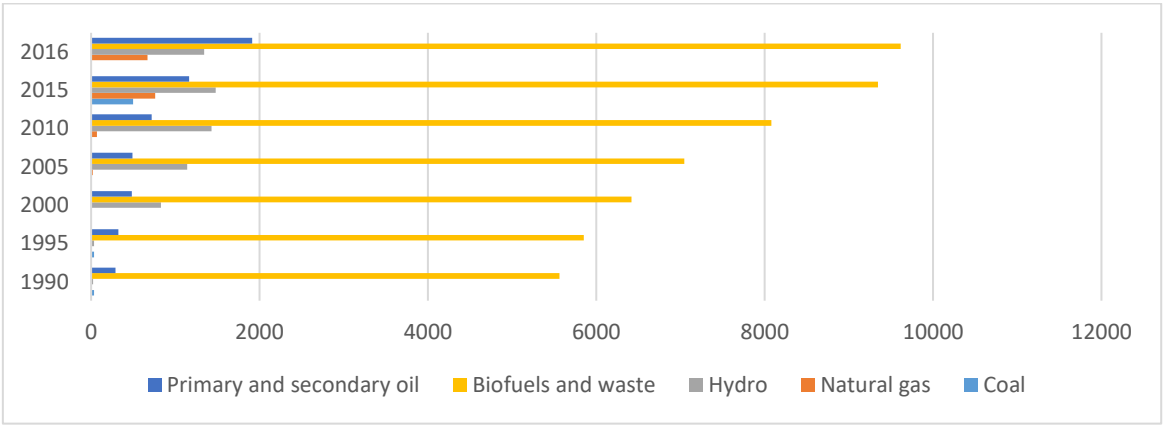

Figure 9. Total Primary Energy Supply by Source in Mozambique

Mozambique relies on imported oil. It consumes an average of 600 million litres of oil products annually (Energypedia, 2018a). Mozambique spends about US$270 million on oil import, which is about 14.6% of the country's total imports (Cuvilas, Jirjis & Lucas, 2010). The major sources of energy in

Mozambique are biomass, natural gas, liquid fossil fuels (gasoline and petroleum) and solar (Ministry of Energy, 2012). To diversify the economy and reduce the lingering dependence on imported fuel, Mozambique has mainly invested in biofuel, which has the potential of reducing poverty in the rural areas of Mozambique and creating employment which can generally improve the development of the rural areas through the utilisation of locally available resources. The specific crops considered were sugarcane and sweet sorghum for the production of ethanol, and jatropha for the production of biodiesel. Interest in biofuel production, therefore, reflects in part the surge in world oil prices culminating in the first half of 2008. New investments in Liquefied natural gas is expected to replace liquefied petroleum gas in the country. Figure 10 shows the co-movement between oil price and GDP growth in Mozambique.

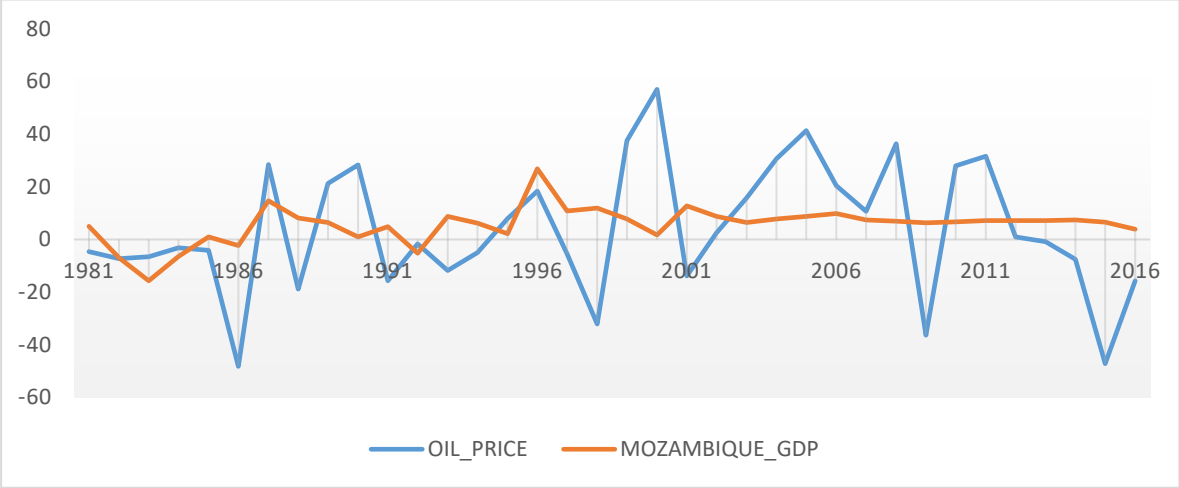

Figure 10. Oil price and GDP Growth in Mozambique

2.5. Senegal

Senegal is a country in the West African region with a population of 15.9 million, a GDP of US$17.9 billion at 2010 constant prices and a GDP growth rate of 6.8% in 2017. Senegal is bordered by the Gambia, Guinea, Mali and Mauritania. Senegal is classified as a low-income and one of the least-developed economies with the lowest income in SSA (AEO, 2016). The economy largely depends on agriculture and foreign aid. Agriculture accounts for two-thirds of export revenue, majorly in peanut production and about half of its population is employed in the agricultural sector (WDI, 2018). Senegal grew by 1.76% in 2011. By 2012, the GDP grew by 4.41% in 2012 and further grew by 6.5% in 2015, 6.6% in 2016 and 6.8% in 2017. Shortfalls were recorded in 2013 at 3.46% and 2014 at 4.3% (WDI, 2017; IMF, 2017).

The recent annual growth in GDP is accompanied by lower global oil prices in 2014. However, the gains have been smaller than expected. Moreover, supported infrastructure investment and improved private consumption have also improved the GDP of the country (IMF, 2017). There has been a decline in import as a percentage of GDP since 2014 despite the increased infrastructural investment due to the lower oil prices resulting in lower import bills. From 47.5% in 2014, the import percentage of GDP declined to 40.5 in 2017. The trade balance has also improved by 4.2% since 2014 and terms of trade increased by 6.8% from 2014 to 2017.

After the rebase of national income calculations from 1999 to 2014, the economy grew by 30%. GDP in Senegal expanded from $15.3 billion to $19.6 billion and public debt to GDP ratio decreased from 60.4% to 46.8%. Economic growth since 2015 has increased with an average of 6.8%. The annual GDP grew from 6.46% in 2015 to 6.74% and 7.2% in 2016 and 2017, respectively. Projections for 2018 was

targeted at 7.0% due to the expectations that the oil prices would have an effect on the country's GDP as it is an oil-importing country (World Bank, 2018d; AEO, 2019). Figure 11 shows the comparison of Senegal's growth rate to the growth rate of sub-Saharan Africa.

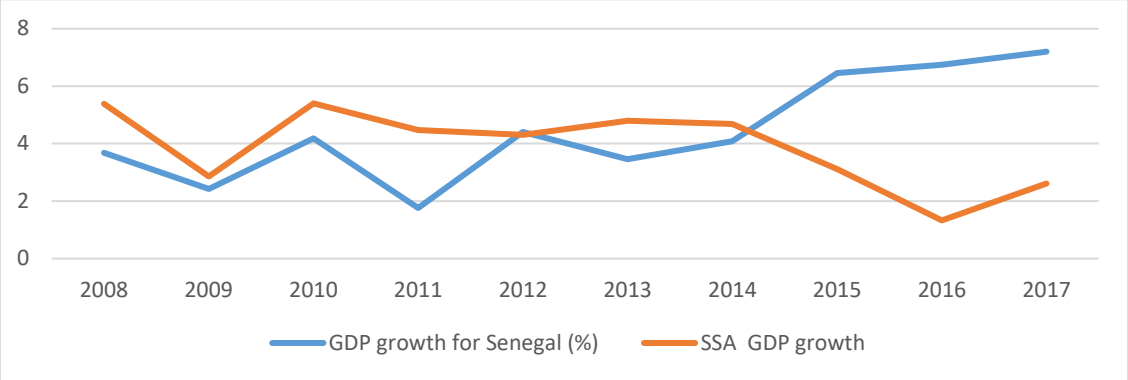

Figure 11. Comparison of Senegal's Growth Rate to sub-Saharan Africa

The Effect of Oil Prices on Senegal

The energy sector in Senegal is relatively small. Fossil fuel and biomass are the highest contributors to energy supply in Senegal. Fossil fuel and biomass accounts for 90% of the energy supply in the country. Coal, hydro and solar supplement fossil fuel and biomass. Senegal largely depends on biomass to provide energy for household cooking from firewood or charcoal. Household energy consumption is mainly for cooking. A total of 58% of households uses firewood for its cooking, while 26% uses charcoal. A total of 11% and 4% of households, mainly in urban centres, use LPG and electricity, respectively, and 1% consume lamp oil for their cooking needs. Though LPG is popular in the country's capital where 20% of the population resides, LPG supply, however, is erratic and even urban households rely on charcoal to meet its energy needs (Energypedia, 2018b). Figure 12 shows the total primary energy supply by source in Senegal.

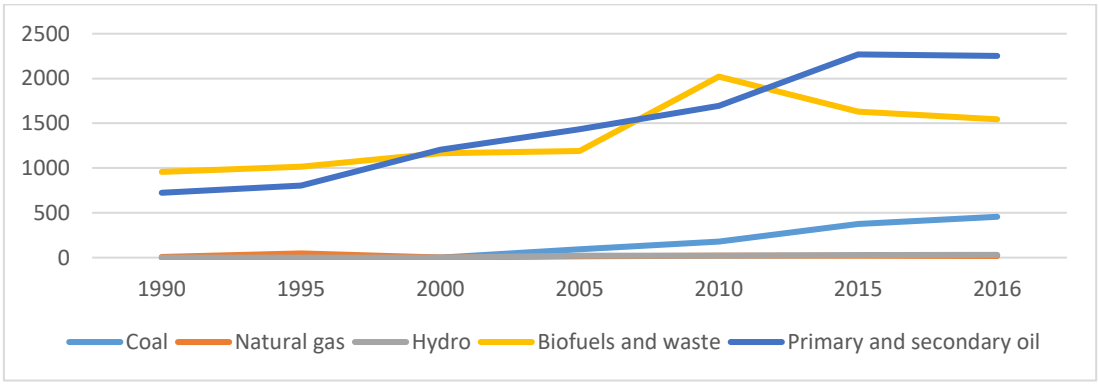

Figure 12. Total Primary Energy Supply (TPES) by Source - Senegal

Figure 12 depicts the total energy supply by source in Senegal from 1990 to 2016. The primary energy sources in Senegal are biomass (biofuels and waste) and oil (primary and secondary oil). Oil supply is the highest and shows a continuous increase. Biofuels and waste is the second highest source of energy supply in Senegal. Unlike other LICs in this study, biomass does not form the highest energy supply for all the years considered in Figure 11. Oil surpassed biomass in 2000 and 2005, and is presently the highest supplier of energy in Senegal.

Gas/diesel is the highest consumed oil product in Senegal. Senegal, similar to most SSA

countries, is vulnerable to fluctuations in the oil price. The country depends on imported oil for all oil-related energy needs. Therefore, its trade balance is vulnerable to fluctuations in the price of oil. All oil products are imported, making Senegal's trade balance very vulnerable to oil price volatility (WDI, 2018; BP Statistical Review, 2018). New energy policy aims at enhancing other sources of energy with greater emphasis on renewable energy development. Senegal leads the renewable energy development in the ECOWAS sub-region due to its National Energy Policy. It also supports the International Renewable Energy Agency (IRENA) in the promotion of renewable energy sources. Figure13 shows the co-movement of oil price and GDP growth in Senegal.

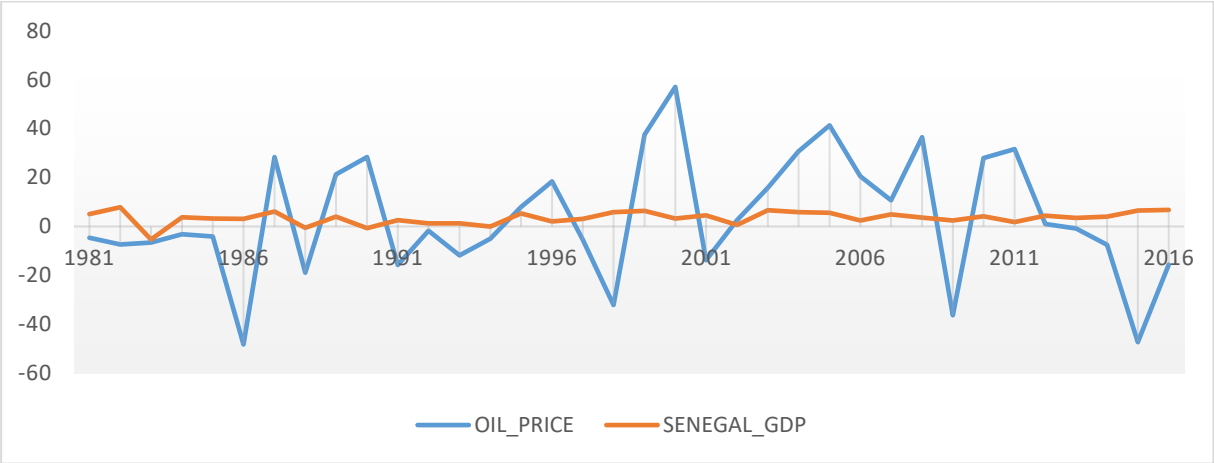

Figure 13. Oil Price and GDP Growth Trend in Senegal

2.7. Economic Growth in Tanzania

Tanzania is a low-income country and a net oil importer. Tanzania's GDP increased by almost a third after the rebasing of its GDP in 2014 (WDI, 2017). After a real GDP growth rate of figures above 7% from 2013 to 2016, growth in Tanzania fell to 7.1% in 2017. However, Tanzania was projected to grow at 6.7% in 2018 and 6.9% in 2019, respectively, and as one of the best economies in East Africa in terms of economic growth. Tanzania's economy has performed better than most African countries in recent years. The annual GDP growth has increased to approximately 7 per cent annual growth since 2012 (WDI, 2017).

The recent fall in the global oil price was accompanied by an increase in GDP growth. Oil imports account for 33% of its total imports and Tanzania is the third most oil-dependent African economy. The value of total imports has declined by one-fifth since 2015. Even though the import volume has increased, the Tanzania import percentage of GDP has reduced significantly from 29.79% in 2014 to 26.34% and 19.2% in 2015 and 2016, respectively. Other imports, such as machinery, transport equipment, and building and construction materials have, however, shown a slight increase in these years. Figure 14 compares Tanzania's growth rate with the SSA growth rate.

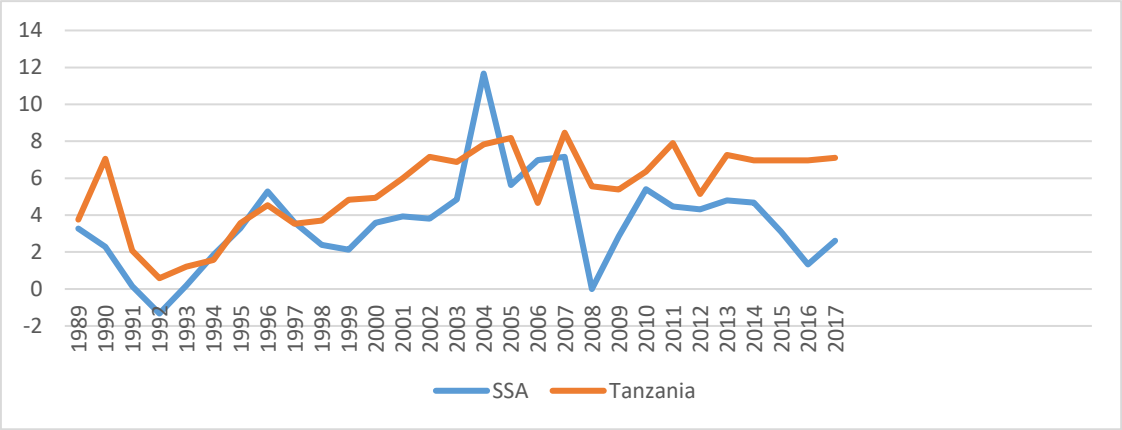

Figure 14. Comparison of Tanzania's Growth Rate to Sub-Saharan Africa

Figure 14 shows that the GDP growth rate in Tanzania exceeds that of the whole of SSA for most years, except in 2004, 2006 and 2007. Growth rates have also improved in the country over recent years since 2015, as shown in the figure above. A stable macroeconomic environment, coupled with an increase in private sector development, encouraged both domestic and foreign direct investment in various sectors of the economy. Foreign direct investment (FDI) in Tanzania has been higher than in other East African countries, particularly owing to some UK companies investing in the country's mining and energy sectors, including African Barrick Gold and British Gas (BG) Group (now acquired by Shell). 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 (Bank of Tanzania, 2018

2.7.1. Effects of Oil Prices on Tanzania's Economy

Tanzania is a prospective major energy exporter. More than 53.2 trillion cubic feet of natural gas has been discovered in Tanzania. However, BG group stated it would not reduce its investment in Tanzania due to its long term prospects. 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 (United Republic of Tanzania, 2011). Figure 15 shows the total primary energy supply by source in Tanzania. Biofuels and waste are the highest primary energy sources in Tanzania. Oil is the second largest with growth in natural gas due to new investments in its exploration.

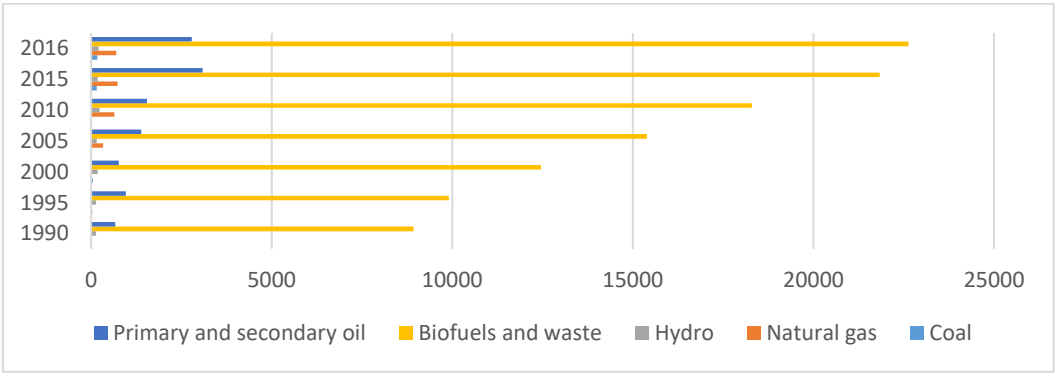

Figure 15. Total Primary Energy Supply (TPES) by Source – Tanzania

Oil plays a significant role in the economic environment of a country. Oil demand in Tanzania is increasing rapidly. Tanzania is an oil importer and relies on oil for some of its energy needs. A persistent fall in commodity price, especially during the global financial crisis and the 2014 fall in the price of oil, has increased uncertainty in the business cycle. A slow growth in global economies has also increased

vulnerability in the African region. The fluctuations in oil price, especially an increase in the oil price, cause inflationary pressure and balance of trade deficit in Tanzania. The transport sector is the main consumer of imported oil in Tanzania. Other sectors that consume oil are industries, agriculture, household and private companies. Gas/diesel and motor gasoline in Tanzania are largely consumed by the transport and industrial sectors. LPG is in the developmental stage in the provision of an alternative energy source for household cooking in the country.

Table 3 shows imported goods categorised into capital goods, intermediate goods and consumer goods from 2013/14 to 2017/18. In the 2017/18 fiscal year, the value of imports of intermediate goods increased by 2.6%. The total value of imported goods increased from US$119.4 million in the 2016/2017 fiscal year to US$188 million in 2017/2018. Moreover, the total import value of intermediate goods increased from US$58.6 million in 2016/17 to US$90.7 million in 2017/2018. Oil imports contributed about 68.4% to the total intermediate imported goods in 2017/18. The share of intermediate imported goods increased significantly from 2016/17 to 2017/18 and was larger than capital goods and consumer goods.

Table 3. Goods Import Category (Millions of Dollars)

Category	2013/14	2014/15	2015/16	2016/17	2017/18	Percentage change (2016/17-2017/18)
Capital goods	129.6	91.2	89.9	36.2	54.7	51.0
Transport equipment	49.3	36.8	57.9	17.7	22.3	30.7
Building and construction	23.5	32.7	7.3	6.4	8.1	25.9
Machinery	56.9	21.7	24.7	12.7	24.3	91.0
Intermediate goods	58.4	83.1	57.8	58.6	90.7	54.7
Oil	46.9	55.7	41.6	44.9	62.0	37.9
Industrial raw material	11.5	27.3	16.2	13.7	28.7	-
Consumer goods	88.5	115.6	28.4	36.4	61.3	68.5
Food and foodstuff	36.6	53.9	0.5	13.2	24.0	82.2
All other consumer goods	51.9	61.6	27.9	23.2	37.3	60.6
Grand total (c.i.f)	276.6	289.8	176.1	131.2	206.6	57.5
Grand total (f.o.b)	251.7	263.8	160.2	119.4	188.0	57.5

Source: Bank of Tanzania Annual Report, 2017/2018.

The exploration of the discovered oil fields in the country is expected to reduce oil imports. A large exploration of proven oil fields in Tanzania will decrease the burden associated with oil importation. Recent explorations are, however, inadequate to meet the growing demand for oil in the country. Tanzania also has a rich source of renewable energy in the form of biomass and can potentially replace oil importation. Moreover, the recent discovery of natural gas in some regions in the country can augment oil consumption for electricity generation. Effective and efficient energy policies and incentives will ensure that other sources of energy are explored. A large investment in the sector is, however, required to enhance growth and development. Figure 16 shows the co-movement of the oil price and GDP growth in Tanzania.

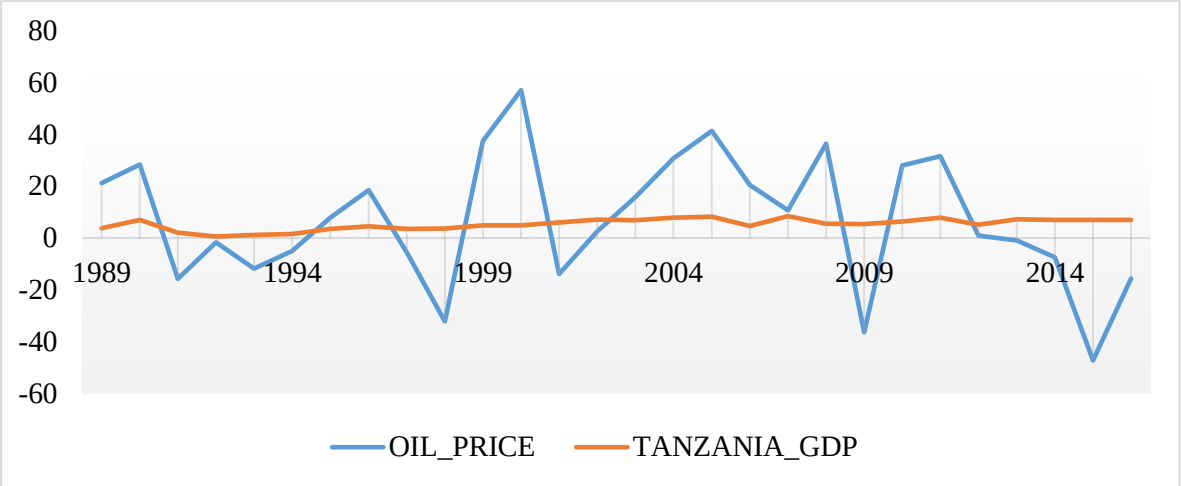

Figure 16. Oil Price and GDP Growth Trend in Tanzania

3. Conclusion

This paper highlights the dynamics of oil price and economic growth in six low-income oil-importing countries in sub-Saharan Africa (SSA). These countries are Ethiopia, the Gambia, Liberia, Mozambique, Senegal and Tanzania. The study examines the co-movement between the various sources of energy and economic growth in the countries under study. SSA countries consist majorly of low-income countries that are highly dependent on oil imports. Bacon and Mattar (2005) reported that net oil-importing countries of SSA are highly vulnerable to oil price shocks. Oil price fluctuations affect the macroeconomic stance of SSA countries in various ways. A persistent increase in oil prices, especially with its climax in 2008 until 2014, led to high levels of unemployment and budget deficit problems in oil-importing developing countries (UNCTAD, 2008). Studies have shown that the negative economic impact of oil price shocks on oil-importing developing countries is higher than in advanced economies. This is mainly because developing countries have less energy-intensive and less efficient production technologies (OECD/IEA, 2014). The findings of this study show that low-income countries in SSA mainly depend on biofuel for energy sources and that oil is mainly used in the transport and services sector. However, oil demand has increased in these countries with countries such as Liberia spending about 15% of its income on oil imports, and Ethiopia's total import volume of petroleum products increased by 9.6% from 2016/17 to 2017/18. The study recommends that low-income countries' policymakers should pay attention to energy efficiency policies, which have been found to have the potential of boosting economic growth and sustainable development.

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