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Hedging the Earth's future with transitory fiscal gain

Abstract

The human race has exerted inordinate pressures on the Earth's natural resources since the onset of industrialization. Unfortunately Africa has been the last to join this industrialization race as much of the continent remains rural and largely underdeveloped. As with everywhere else around the world, essential development in Africa is heavily dependent on availability of oil for energy. However, utilization of the resource as an energy source has been heavily contested as while the oil industry is the backbone of many economies, oil extraction has proved to be detrimental to the environment and society.

The study explored models that countries have adopted in order to inhibit the utilization of oil as an energy source and to encourage the efficient development of renewable energy sources. Countries such as Malaysia have reduced oil subsidies while the South African Revenue Service (SARS) is planning on introducing Carbon Emission Tax in 2016. Additionally, the study sought to examine the disparity of the effects that a drop in oil price made to stakeholders with varying degrees of purchasing power (i.e., low income individuals to large organizations). The study also analyzed the varying degrees of purchasing power that the oil price reduction gave to end users.

Historical data, during the bull and bear oil markets, was used to analyze the effect that oil price fluctuations had on corporate social responsibility initiatives. Oil companies have multifarious corporate social responsibility initiatives that are designed to promote social and environmental sustainability, additional to rehabilitation. Conclusions were drawn against observations that the fall in oil prices from June 2014 had varying effects on the economies of oil-exporting and oil-importing countries and other stakeholders. These effects ranged from lowering of the Gross Domestic Product (GDP) of OPEC countries like Nigeria and a concomitant increase in fiscal space for oil importing countries. The paper also critiqued on the profits gained from extracting and selling oil, where these did not sufficiently justify the exploitation of the environment at a time when alternative viable renewable energy sources that will facilitate the preservation of natural resources for future generations.

Keywords: corporate social responsibility, Carbon Emission Tax, economic development, environment, oil, renewable energy, sustainability.

JEL Classification: O13, Q32, Q42, Q56.

Introduction

Fossil fuels such as, coal, natural gas and specifically oil are the principal sources of the world's energy (Wakeford, 2013; IEA, 2014). Their use has been heavily contested as decades as a balance between the environmental degradation caused by the extraction of fossil fuels and the economic benefits they bring has not been achieved (van Heerden et al., Cherry and Sneirson, 2011, Frynas, 2009). The world has been left at the mercy of oil price fluctuations and the development of efficient forms of renewable energy is the only thing that can mitigate the effect of oil price fluctuations.

In terms of oil production, the world is divided into two types of countries, oil exporting countries and oil importing countries. Both oil importing and oil exporting countries have not made sufficient strides towards moving away from using fossil fuels towards green energy. Part of the resistance towards

the move from non-renewable to renewable forms of energy has stemmed from the fact that oil exporting countries are unwilling to relinquish the large profits that they make from the sale of fossil fuels.

The International Energy Agency (IEA, 2012) predicts that by 2035 global oil demand will increase by 14%. To meet this demand, oil producers have concomitantly increased oil production by taking advantage of technological advances that are being made towards oil extraction with methods such as hydraulic fracturing (fracking) and oil sands extraction (Engdahl, 2013; Gosselin et al., 2010; Wakeford, 2013). They justify the proliferation of oil extraction with the fact that oil companies have brought development through various Corporate Responsibility (CSR) initiatives. Oil-importing countries have poured capital into infrastructure that utilizes oil. An extremely expensive complete overhaul of this infrastructure would be needed to take place in order to move to renewable energy sources. The reduction in oil prices has had a variety of effects on stakeholders. This paper evaluates the effect of the fall in oil prices from June 2014 on stakeholders.

1. The role of oil in Africa

Oil is the backbone of the economies of oil exporting countries in Africa. The oil industry accounts for a

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large proportion of Gross Domestic Product (GDP) of oil exporting countries like Nigeria and Angola. The profits from the sale of oil enable the governments of these countries to meet their annual budgets. As it is, due to the fall in oil prices, exports from Nigeria fell by 14% (2.1% of its GDP) in the last quarter of 2014 (Velde and Hou, 2015). This resulted in devaluation of the Naira. African oil is favored by importers like the USA because transport costs are lower as Africa is closer to the USA than the Middle East. African crude oil is mostly 'sweet' crude oil that is easier to convert to gasoline or other products due to its low sulphur content. It also accounts for a large percentage of oil importing countries' GDP, with South Africa's 6% of the GDP coming from oil in 2010 (SAIPA, 2015).

The economic development in Africa is challenged by access to energy sources that are both cheap and reliable (Wolde-Georgis and Glantz, 2009). Energy and electricity are crucial components in the occurrence of industrialization. The lack of development in Africa has been partly attributed to the fact that a large proportion of African countries lacks electricity. The IEA (2014), for example, estimates that more than 200 million people in East Africa are without electricity while the World Bank estimates that around 76% of sub-Saharan Africa lacks electricity. The existing grid-based electricity supply has proved to be deficient to meet demand (IEA, 2014). This is evidenced by the load shedding which is prevalent in all of Africa. Back-up generators have been employed in order to counteract power outages. These generators are usually diesel-fuelled and IEA (2014) estimates that 90 kilobarrels (kb) of oil are used a day for electricity substitution. This indicates that oil is an important source of energy due to the reliability of its supply. It therefore plays a very important role in the economic development of Africa.

The transportation industry is an oil-intensive industry. The IEA (2012) cited in Wakeford (2013) states that 95% of transport in Africa runs on petrol and diesel. This means that oil is being used by a broad spectrum of stakeholders, from industry right down to household consumers. Petrol and diesel use is intensified by the fuel inefficiency of second hand vehicles (as well as that of luxury vehicles that are favored by the wealthy) which are the vehicles of choice in Africa (Lamprecht, 2014). Africa is the veritable dumping ground of second and third-hand motor vehicles from Japan, the United Kingdom (UK) and the United States of America (USA). The public

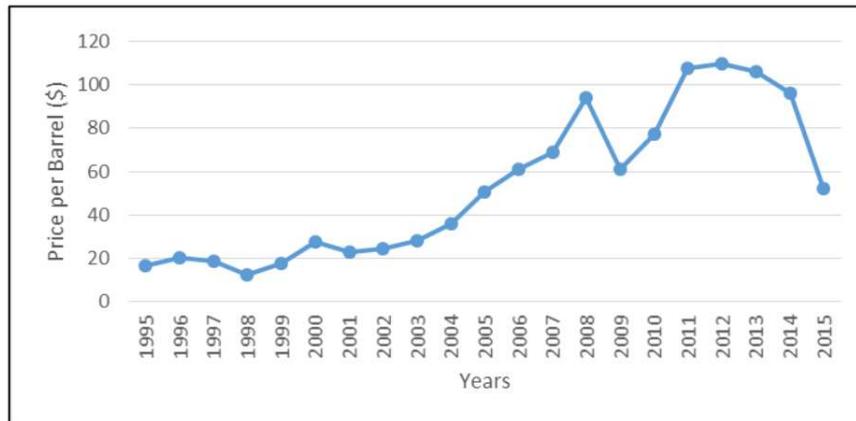
transport system, which mostly comprises busses and commuter omnibuses is also heavily reliant on fuel like petrol and diesel.

2. Corporate social responsibility

Globally, there has been a move towards making businesses more sustainable through triple bottom-line reporting and performance. This practice is in line with the three pillars of sustainability (economic, environmental and social). Sustainability was described by Kuhlman and Farrington (2010) as "*maintaining well-being over a long, perhaps even indefinite period*". This definition in essence means that current resources may be utilized in such a manner as not to compromise use by future generations (Brundtland, 1987).

Corporate social responsibility (CSR), which forms a large part of good corporate governance, is an ever-evolving concept (Smith, 2003). The bottom-line is that it refers to an organization's responsibility towards the socio-economic and ecological landscapes in which it operates. In South Africa, companies that are listed on the Johannesburg Stock Exchange (JSE) are obligated to comply with the King III Code on Corporate Governance (Directors, 2009), which emphasizes sustainability reporting and good corporate governance. Companies treat CSR as a form of investment as it assists with corporate differentiation (Giannarakis and Theotokas, 2011). However, as CSR initiatives are expensive, companies only tend to conduct those projects, which directly bring profits while overstating the company's environmental credentials. This phenomenon is known as 'greenwashing' (Utting and Ives, 2006; Cherry and Sneirson, 2011). For oil companies in particular, as they are already labelled as negative ecological impactors, their CSR projects are generally meant to provide the "greenwashing" effect. The relationship between oil market trends and CSR formed part of the 2008-2009 financial crisis debate in studies such as those conducted by Njoroge (2009) and Karaibrahimoglu (2010). This period experienced major fluctuations in oil prices, which resulted in bull and bear market trends occurring over short time-steps.

A bull market is characterized by investor confidence, which causes commodity prices to increase thereby triggering an upward market trajectory. Figure 1 shows world average oil prices from 1995 to 2015. An example of this trend is shown in where the oil commodity experienced a bull market from 2001 to 2008.



Source: <http://www.statista.com/statistics/262858/change-in-opeac-crude-oil-prices-since-1960/>.

Fig. 1. World average crude oil prices from 1995 to 2015

A closer inspection of month-on-month trending (Figure 2) indicates that oil prices rose from \$62/barrel in January 2007 and peaked at \$147/barrel in July 2008. This occurred prior to the global financial collapse, which was announced in September 2008. By February 2009 – a bear market period, oil prices had fallen to below \$50/barrel. Consequently, these price fluctuations impacted on this particular industry’s CSR projects. Karaibrahimoglu (2010)’s research which was conducted for various industries showed a general drop in the number of CSR projects from

78.4% in 2007, before the global financial crisis to 42.7% in 2008 during the crisis. Specifically for the oil industry, which was a part of the study, trends showed a reduction in the number of these projects during the oil bear market period in the second half of 2008. Studies by Njoroge (2009) and Giannarakis and Theotokas (2011) also echoed this sentiment, which has been attributed to the fact that CSR initiatives are consequently expensive companies which are not willing to spend money on them during times of financial crisis (Giannarakis and Theotokas, 2011, Njoroge, 2009).



Source: <http://www.investing.com/commodities/crude-oil-historical-data>.

Fig. 2. World monthly oil price from January 2007 to June 2009

Mohr et al. (2001) and Karaibrahimoglu (2010) highlighted that CSR projects influence consumer behavior. While this could be true for most industries, history has indicated that for the oil industry this might not necessarily apply (Jarvik, 2014). Due to the fact that oil is a basic commodity and demand for oil always exists, consumers are much less discerning. A large proportion of the world’s oil comes from conflict regions where human rights violations and environmental degradation is rife, yet the sad truth is that consumers cannot afford to care about all these when choosing who to buy oil from. Cus-

tomers are much more interested in selling price and the quality of the oil they wish to purchase rather than the CSR projects being conducted by oil supplier. By virtue of the fact that grassroots approval is not necessary to the success of companies in the oil industry, companies are much less inclined to ‘waste’ money on CSR initiatives. Corporate social responsibility is governed by ISO 26000 (Moratis and Cochius, 2011; Missimer et al., 2014). The standard gives companies guidance on how to be socially and ethically responsible but does not provide certification like other ISO standards. This then

means that this particular standard might merely offer insights into trends and characteristics of social responsibility, whence companies are not incentivized sufficiently enough to want to practice good corporate responsibility.

3. Impacts of oil industry

3.1. Environmental impacts of the oil industry.

As oil supplies from orthodox geological formations have been dwindling, exploration companies have turned to other environmentally-risky sources such as shale oil, tar (oil) sands, and hard to reach oil deposits that lie underground including below the ocean floor (Baumuller et al., 2011; Bell and Fitzgerald, n.d.). Additionally, the use of controversial extraction methods like fracking has caused further ecological damage.

As it was previously mentioned, technological advances have enabled the feasibility of oil extraction from oil sands. Canada is currently the only major centre of oil sand extraction, its oil reserves represent 14% of global reserves while large deposits also occur in the Congo-Brazzaville, Nigeria and Madagascar, Venezuela, Angola (Mech, 2011). The industry emits environmentally toxic greenhouse gases (GHG) such as carbon dioxide (CO₂), nitrous oxide (N₂O) and methane (CH₄) (Gosselin et al., 2010; Charpentier et al., 2009). In addition, all facets of oil sands' development, including *in situ* extraction, bitumen upgrading and surface mining, are water-intensive. According to Gosselin et al. (2010), the extraction of 1 m³ of synthetic crude oil requires 2.5 m³ of water if surface mining is used and 0.5 m³ of water if *in-situ* recovery is used. Like fracking, extraction of oil from oil sands utilizes vast amounts of surface and groundwater. A study by Komex (2004) found that the Basal Aquifer at Muskeg River Mine has resulted in a decrease of groundwater by 40 m. Water recoveries processes have been known to be unsustainable. For example, effluent from the extraction processes cannot be eco-

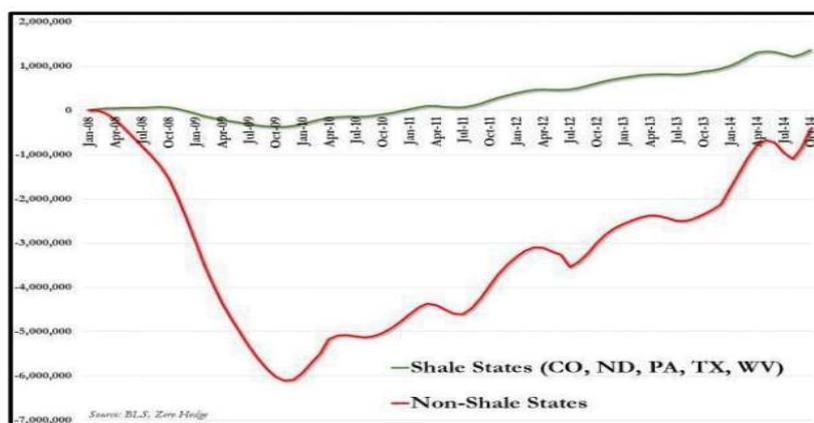
nomically recovered due to its toxic composition (Johnson, 2015). Seepage of contaminants into the groundwater supply may also be experienced.

Advances in extraction technologies and a regulatory loophole in the USA's Energy Policy Act of 2005 have enabled viability of methods like fracking (Johnson, 2015; Engdahl, 2013). This loophole, which is known as the Halliburton Loophole, exempts gas drilling and extraction from components of the USA's Safe Drinking Water Act, Clean Air Act and Clean Water Act. An investigation conducted by the American Congress found out that as a result of the loophole, 32 million gallons of diesel fuel (as a fracking chemical) were injected into the ground from 2005 to 2009 (Federman, 2011). Oil companies are not required by legislation to provide a comprehensive list of the chemicals, which they use in the fracking fluids that they inject into groundwater supplies (Engdahl, 2013, Johnson, 2015). Oil companies insist that the chemicals are a trade secret. At this point, economic removal of these chemicals from the water supply is an impossibility. Shale reserves have a very short life span, however, the environmental damage that they cause is eternal.

3.2. Social impacts of the oil industry.

The manner in which oil companies interact with society is important as they do not operate in a vacuum. In this regard, oil companies affect society both negatively and positively. Positive aspects include provision of employment opportunities to a large section of society which resides within locales in which the companies operate.

Depending on circumstances, the presence of oil companies can either help in alleviating or exacerbating national unemployment as indicated by Figure 3. The graph shows the changes in employment levels in USA states where shale oil extraction occurs and states where shale oil extraction does not take place.



Source: Tverberg, 2014.

Fig. 3. Jobs in America – shale vs non-shale states

Another study by Davis and Haltiwanger (2001) found that oil shocks (extreme fluctuations in oil price) are responsible for 20% to 25% of variability in employment growth. Oil companies also attract highly skilled labor from other countries. These people then help impart specialized know-how to local staff. In South Africa, the oil industry employs more than 100 000 people, directly and indirectly (SAIPA, 2015).

A number of human rights violations often occur in oil extraction regions. As freshwater is scarce the concern is that water meant for domestic consumption has been diverted towards industrial use. Fracked gas has been known to seep into households through water faucets and can often be ignited. This makes tap water extremely dangerous in places where this phenomenon has been experienced.

Different indigenous communities have been displaced from their homes to make room for oil extraction ventures. Oil disasters are also frequent occurrences. An example is the Deepwater Horizon Explosion. In addition to causing widespread ecological damage, the explosion and subsequent oil spill caused residents of the Gulf of Mexico, whose livelihoods depended on tourism and fishing, to lose their sources of income (Cherry and Sneirson, 2011; Frynas, 2009).

Evidence has shown that a drop in oil prices has the effect of increasing household wealth and purchasing power. A study conducted by Petercam (2014) concluded that the drop in oil prices in 2014 saved each Belgian household €185 on average. In 2013, prior to the oil price drop each Belgian household spent €3266 per year on energy, this amount fell to €3081 in 2014. At a household level, the lowering of oil prices is only felt through a reduction of energy spending. However when oil prices go up, basic and luxury good prices go up as well. Commodity producers benefit when oil prices fall as this lowers energy and transport costs. This reduction in costs, however, does not translate to a lowering of the prices of produce. In countries like South Africa where the GINI coefficient is high, there is a disparity in the benefits felt by individuals with different income levels. The lowering of energy costs caused by the decrease in oil price is only felt by those who can afford to run motor vehicles and electricity generators. A drop in oil price does not increase the household wealth of the low income earning citizen who uses public transport and does not use a generator when blackouts due to load shedding occur.

3.3. Economic effects of the oil industry. The oil industry has been responsible for the global success of the Organization of the Petroleum Exporting Countries (OPEC such as Saudi Arabia, Kuwait and Qatar).

The budgets of these oil-exporting countries are set in accordance with predetermined oil prices. When oil prices drop in an unprecedented way, governments are often forced to either use their reserves in order to meet their obligations or face fiscal complications.

Fluctuations in oil price affect a broad spectrum of industries. As at 2014 USA energy companies accounted for 20% of the junk bond market (Snyder, 2014). The failure of this large portion of the junk bond market, due to oil price shocks, could result in a stock market crash. This is evidenced by the fact that since the drop in oil price in 2014, companies like British Petroleum (BP) have announced retrenchment exercises (Tverberg, 2014; Krauss, 2014). In Nigeria, banks have already begun retrenching employees as a result of their inability to meet financial obligations (Hesse and Poghosyan, 2009; Awulor, 2015). This has partly been attributed to the drop in oil price.

3.4. Models for discouraging oil use. A number of countries are now discouraging oil use. Specifically, the governments of Malaysia, India and Indonesia, announced that they would abolish petrol and diesel subsidies (Ngu and Raghu, 2014) in December 2014. It was done to balance their budgets in order to strengthen their fiscal positions. The removal of subsidies also encourages people to move away from using expensive petrol and diesel towards cheaper forms of renewable energy such as solar, wind and biofuels (Amigun et al., 2011; IEA, 2015).

Another measure to discourage oil use has been the implementation of carbon taxes. Carbon pricing and emission standards have been found to be effective in making the use of carbon-intensive fossil fuels prohibitive (IEA, 2015). The South African Revenue Service (its tax agency) will be introducing Carbon Emission tax in 2016 at a rate of R120 per tonne of CO₂ equivalent, thereafter increasing at a rate of 10% per year for 5 years. This has been heralded as one of the best methods of stimulating use of renewable energy with consequential reduction of GHG emissions (Devarajan et al., 2009). As a large proportion of carbon emissions come from fossil fuel usage (IEA, 2015), these legislations largely impact on the oil industry. The measure has won favor with environmentalists who have been calling for GHG reduction measures at a national level. However, it has been critiqued by organizations such as the South African Petroleum Industry Association (SAPIA) as they feel that carbon taxes are punitive to the petroleum industry.

Conclusion

This paper echoes a notion that has been repeated by other researchers who have called for the replacement of fossil fuels like oil with green forms

of energy. This is because beyond money, the oil industry has failed to provide long-lasting benefits to a majority of countries which produce oil. This commodity is responsible for a large proportion of the economic wealth of oil exporting countries. It makes up a large part of their GDP. Unfortunately the GINI coefficients of countries like Nigeria, Venezuela and Angola show that this economic wealth is not always distributed equitably. Poor management of the income gained from oil exports has led to a lack of development in these countries shows how unjustifiable all the negative impacts of the oil industry are. The employment provided by the industry is another transitory gain that oil extraction is responsible for. It is temporary in nature because data has proved that when oil prices go down and oil wells run dry, oil companies are quick to retrench workers. The industry is not sustainable, therefore the employment it provides is not long-lasting.

The current depressed fossil fuel prices present an opportunity to better align pricing with the true costs that are associated with energy production. This can be accomplished partly by phasing out fossil fuel subsidies and initiating carbon pricing (IEA, 2015). This way governments no longer need to fund the use of harmful materials, thereby making continual use of fossil-based fuels prohibitive. Oil price market fluctuations have a variety of positive and negative effects globally. Moving to cleaner, renewable energy should furnish an energy security hedge against these future market fluctuations. As the benefits of continued oil use have been found to be transitory in nature, it is crucial to take up a longer-term outlook. A combination of policy support, further technological innovations and mainstream renewable energy integration should lower the use of oil and other carbon-based energy sources in order to preserve the Earth for future generations.

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