Real
Instituto
Elcano

ari

Oil Production in Ghana: Implications for Economic Development

Robert Darko Osei and George Domfe [*]

Theme: This ARI looks at the revenue stream likely to accrue to Ghana from oil production which is to start in 2010 and the implications for the economy.

Summary: The first part of this ARI sets the tone by looking at the trends in key economic indicators for Ghana from the 1990s to date. It notes that even though the economy has made significant gains, it still remains fragile, with inequality persisting. The second part looks at the expected revenue from oil production and what the implications are for the economy. Here it estimates that oil revenues to Ghana will at a minimum be in the range of US$1.2 billion to US$2.5 billion over 2010-12 when production hits the expected maximum of 250,000 barrels per day. It goes on to argue that this income stream will significantly help fiscal consolidation in Ghana. However, it also notes that if not managed properly it could have serious repercussions for the real sector of the economy.

Analysis:

Real Sector Developments
The economy of Ghana grew at an average annual rate of about 4.7% over 1990-2007. However, growth has been most significant over the past five years –growth averaged around 5.9% annually over 2003-07–. Indeed, over the last five years, the country's growth has assumed an upward trend, unlike previous years. Between 1990 and 2002, growth fluctuated around an average of 4.2% (Figure 1). With population growing at around 2% annually, these growth rates translate into an average annual per capita GDP growth of around 2.7% over 1990-2007. This compares quite favourably with the average for the sub-region. For instance, data from the 2007 World Bank Development Indicators show that average annual per capita GDP for Ghana over 2000-05 was around 2.6% whilst that for sub-Saharan Africa was about 1.8%.

The growth in the economy has been associated with a reduction in the incidence of poverty. The poverty headcount index fell by around 23.5 percentage points from nearly 52% in 1991/92 to around 28.5% in 2006 (Figure 2). However, inequality as measured by the Gini coefficient has increased consistently over the period –from around 0.373 in 1992 to 0.394 in 2006–. A possible explanation might be that the poorest of the poor have participated much less in the growth and poverty reduction over this period. Also, the

---

[*] *Institute of Statistical Social and Economic Research, University of Ghana.*
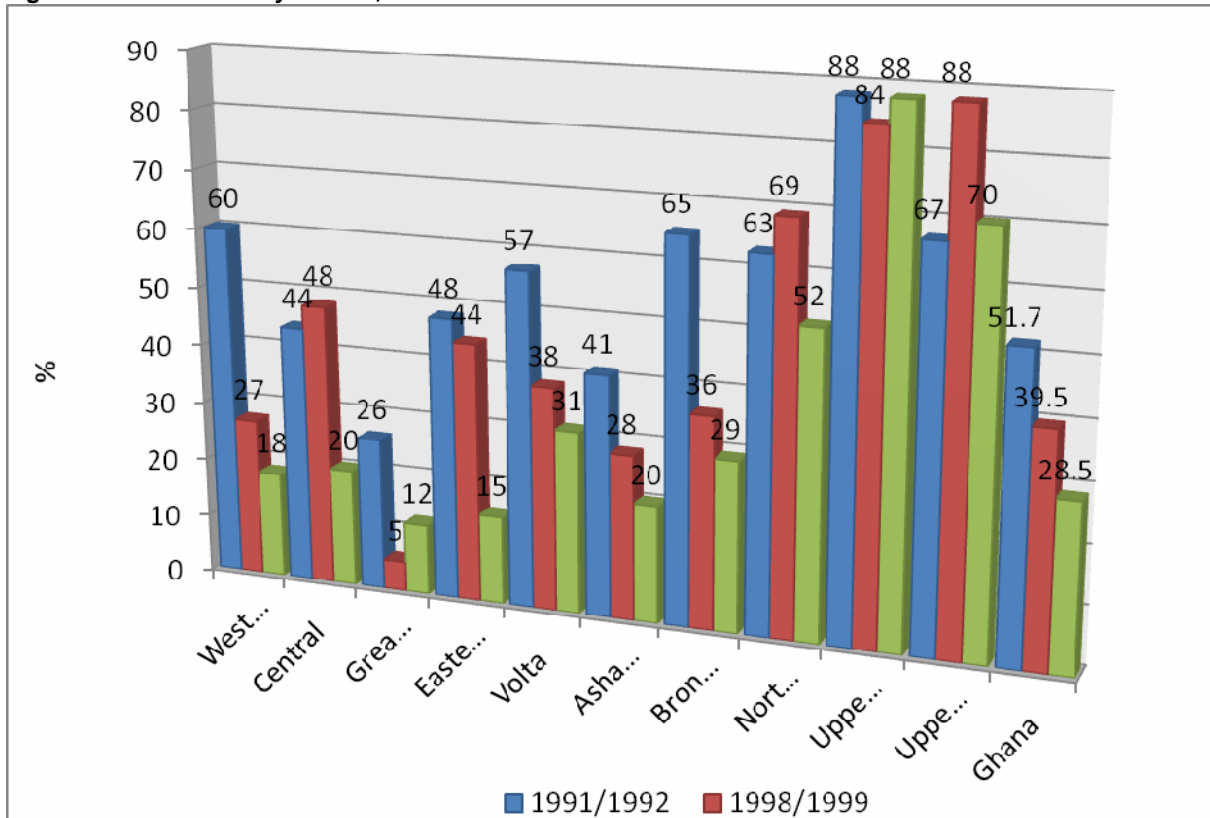
trends show an increasing spatial inequality across Ghana's regions, with the three Northern regions remaining the poorest.

Figure 1. Ghana: Real GDP Growth Rates, 1990-2007
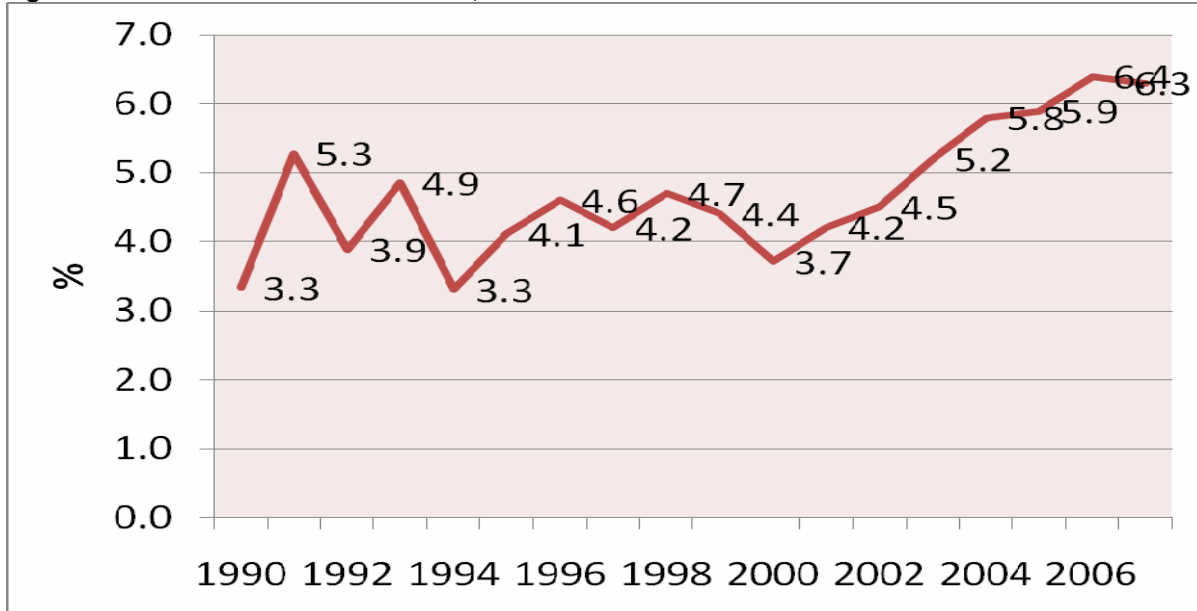
Source: various issues of the Government of Ghana Budget, Ministry of Finance.

Figure 2. Ghana: Poverty Trends, 1991-2006

Source: various issues of the Government of Ghana Budget, Ministry of Finance.

Fiscal Developments
The overall fiscal balance has seen little improvement over 1996-2007. After worsening from a deficit position of around 3.0% of GDP in 1996 to around 8.5% in 2000, it has only improved marginally and by 2007 was at around 8.1% of GDP (Table 1). Increasingly, the government is relying less on domestic sources to finance the deficits. The use of domestic sources for financing the deficits has been particularly low over the last few years, culminating in a net repayment of around 1.6% of GDP in 2005. However, in 2007 this had increased again to around 4.5% of GDP. The increase in domestic borrowing in 2007 was mainly a result of the energy crisis the country experienced in the year –both the decrease in the supply of hydro electricity due to poor rains and the increasing oil prices–. The government's response to the energy crisis was to purchase thermal plants to supplement the electricity from hydro sources. This also affected the oil import bill. The unanticipated increase in expenditure required an increase in domestic borrowing. Generally, though, the reliance on domestic sources for financing government deficits has been reduced and the government has relied more on foreign aid. This has resulted in an increase in available credit for the private sector.

As a share of GDP, government revenue declined over the period 1996-99. This declining trend was reversed in 2000, and since then the government revenue/GDP ratio has increased –from a level of around 17.7% in 2000 to around 26% in 2007–. The trend in government revenue has largely followed the trend in tax revenue. The increase in tax revenue over the period is due to a combination of factors, including increasing efficiency, widening of the tax net and an increase in the average indirect tax rate. Government expenditure has also increased over these years, but at an even faster rate. Government expenditure as a percent of GDP increased from around 24.5% in 2000 to around 44.8% by 2007. This explains why overall deficits have been increasing even though domestic revenue and foreign aid increased over these years.

Table 1. Ghana's Fiscal Performance, 1996-2007

(% of GDP)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Overall balance	-3.0	-2.1	-1.7	-2.5	-8.5	-7.2	-5.3	-3.4	-3.2	-2.0	-7.6	-8.1
Prim. surplus	0.3	3.2	3.7	2.3	2.5	3.8	2.1	2.5	0.7	3.4	-4.9	-6.1
Dom. financing	5.0	5.1	3.9	5.4	8.8	2.3	4.9	0.4	0.5	-1.6	4.2	4.5
Govt. re.v	19.6	16.8	16.7	16.2	17.7	18.2	18.4	20.1	23.8	23.9	22.3	26.0
Tax rev.	15.1	14.8	15.7	15.2	16.3	17.3	17.9	19.6	21.8	20.8	20.3	22.9
Non-tax rev.	4.5	1.9	1.0	1.0	1.5	0.9	0.5	0.6	1.4	1.9	0.8	2.6
Govt. exp.	22.5	18.9	18.4	18.6	24.5	23.8	26.8	28.1	32.6	30.3	37.7	44.8

Source: various issues of the Government of Ghana Budget, Ministry of Finance; and State of the Ghanaian Economy Reports produced by ISSER.

Monetary Developments
Inflation in Ghana has decreased over the years. From a high of around 71% in 1995 it has decreased to around 10% in 2007 (Figure 3 and Table 2). The decrease in inflation has been achieved, particularly in the last six years, from a tighter monetary policy. This has been made possible with the increasing independence of the Central Bank. The country's exchange rate seems to have also stabilised considerably over 2001-07, compared to earlier years. This has translated into a considerable reduction in annual depreciation rates (Table 2). However, with depreciation rates much lower than the inflation rates, there have been concerns that the ensuing real appreciation of the exchange rate might be hurting the real sector (particularly the manufacturing sector) of the economy. There is no agreement among economic commentators as to the main cause of the real appreciation of the exchange rate. However, two key factors that have coincided with this trend are the weakening US dollar and the significant inflows of foreign aid.

Table 2. Trends in Exchange Rates, 1996-2007

|	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
GHC/US$	0.16	0.21	0.23	0.27	0.55	0.73	0.84	0.89	0.91	0.91	0.92	0.97
Depreciation (%)	36	25	13	15	104	34	15	5	2	1	1	5
Inflation rates (%)	33	21	16	14	41	21	15	24	12	15	11	10
(Depreciation –inflation) (%)	4	5	-3	2	64	13	0	-19	-10	-14	-10	-5

Source: Bank of Ghana.

External Sector Development
The main components of exports remain cocoa and gold. Their joint contribution to total exports range from a high of 74% in 1996 to a low of 54% in 2001. With the increasing prices of gold and cocoa on the world market (plus increasing volumes for cocoa), the contribution of these two major export items reached around 67% in 2006. In terms of individual products, it is observed that gold remains the major export earner of the economy over this period –the only exception being in 2004 when it was overtaken by cocoa–. Prominent among the products that explain the increase in non-traditional exports are fish and fish products, oil seeds and nuts, horticulture (predominantly pineapples) and wood products –in 2006, these products jointly contributed around 40% of the total non-traditional exports–.

The appreciation of the real exchange rate coupled with the trends in trade balance point to an economy that is beginning to show signs of the Dutch disease (see section below on 'the implications of oil for Ghana's economy' for a brief discussion of the Dutch disease). Indeed, looking at the trends in trade, one sees a worsening of the trade deficits, particularly from around 2004 (Figure 3). Undoubtedly, the increase in the value of oil imports due to the sustained economic growth plus the increasing oil prices are part of the reason for this increasing trade balance. However, netting out the oil imports does not change the worsening trade balance. As shown in Figure 4 the non-oil trade balance has also increased considerably over the years. This clearly shows that non-oil imports have also increased much faster than exports over the period.

Real
Instituto
Elcano
ari

Figure 3. Ghana: Trends in Trade Balance, 1996-2007
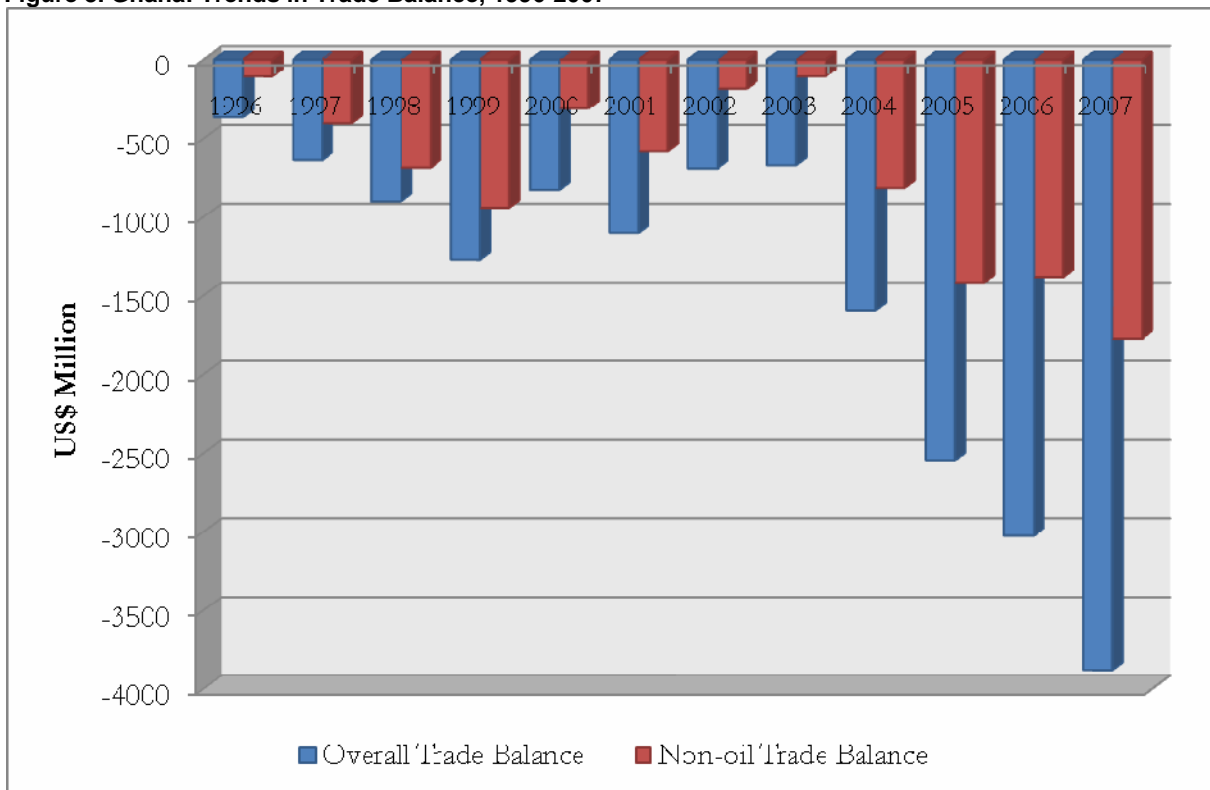
Source: Bank of Ghana.

Oil Production in Ghana

In June 2007 a consortium made up of Kosmos, Tullow and Anadarko discovered oil in commercial quantity in the West Cape Three Point concession. Oil production is therefore expected to start in commercial quantities in 2010 in Ghana. Although the initial production is estimated at around 120,000 barrels a day, it is expected to rise to around 250,000 barrels a day by 2012. The reserves discovered so far in Ghana are estimated at around 2 billion in total and are expected to last for around 20 years in full production. However, industry analysts believe that the country's reserves are likely to be greater.

Projected Oil Revenues

The following simplified assumptions can be made to estimate the revenue that will accrue to Ghana based on current discoveries.

- Production is expected to begin in 2010 with the number of barrels produced per day estimated to be around 120,000 (this is what GNPC expects beginning from 2010). The 2010 production level is around 48% of the targeted total of 250,000 barrels/day.
- The number of working days in the year is 365.
- The projection of the proportion of revenues that will come to the Government of Ghana is 40%. This is based on the GNPC projection that the government is to get 40%-50% of the total oil revenue based on the agreements signed with the oil producing countries.
- The number of barrels produced increases by around 44% annually from 2010 so that by 2012 the total number of barrels/day is almost 250,000.
- The price of oil is assumed to average around US$70 per barrel under scenario 1 and US$100 per barrel under scenario 2 over the entire period.

Based on these conservative assumptions we obtain a projected revenue from oil of the range of US$1.22 billion to US$1.75 billion in 2010, under scenarios 1 and 2, respectively. This is expected to reach between US$2.54 billion to US$3.62 billion by 2012 under the two scenarios (Figure 5). Clearly these are quite significant inflows compared to the total of grants and loans of around US$1.34 billion in 2007.

Figure 4. Projected Oil Revenue for Ghana, 2010-15
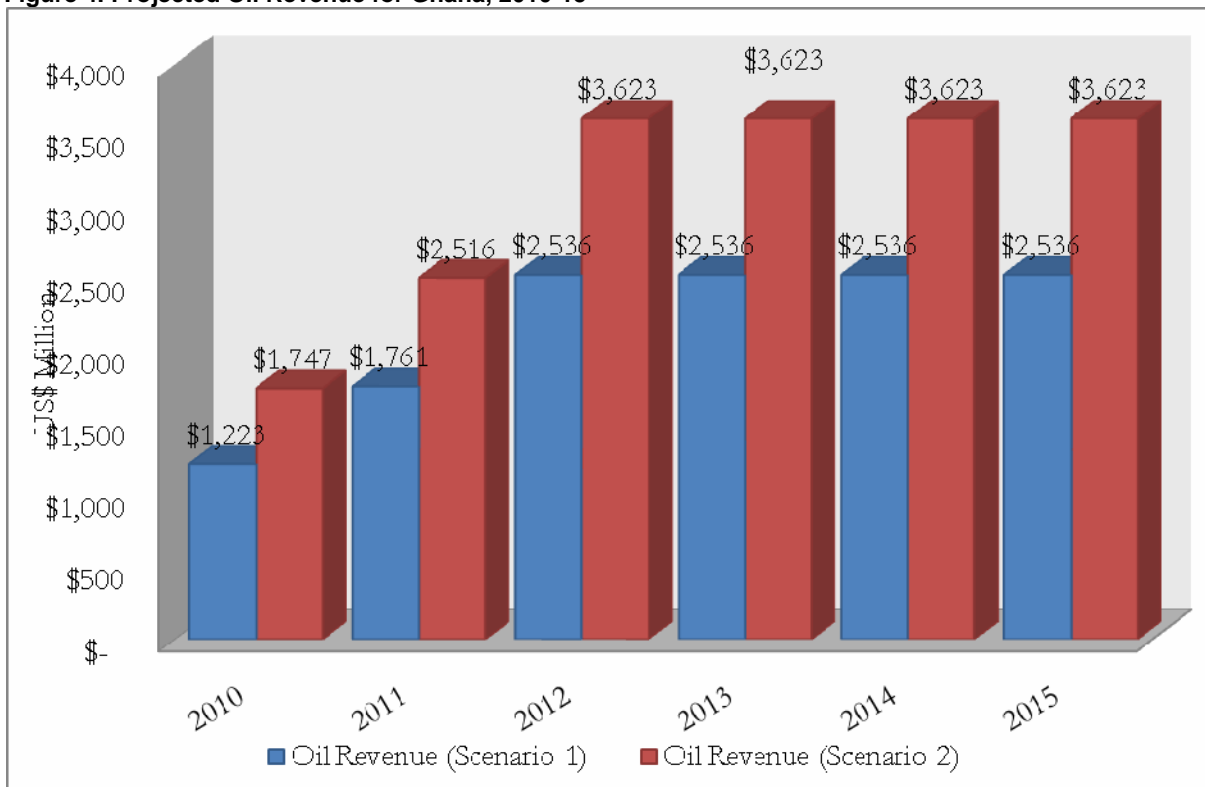
Source: the author.

The Impact of Oil on Ghana's Economy
The oil revenue stream that is expected from oil production in Ghana will significantly complement current efforts to move the country to a middle income status. For instance, the total resources required to finance the Growth and Poverty Reduction Strategy (GPRS II: 2006-09) was estimated at US$8.06 billion. The expected revenue over the life of the GPRS II amounts to US$6.27 billion, leaving an overall funding gap of US$1.79 billion. In that plan the gap was expected to be filled by external inflows and resources from the capital market. However, the gap can very easily be financed with a year's revenue from oil.

Implications for Fiscal Consolidation
There is no doubt that the estimated oil revenue will help fiscal consolidation in Ghana. The overall budget deficits over 2006-07 were in the range of 7%-8% of GDP. From Figure 5 it can be seen that, even under scenario 1, the oil revenues can cover a significant portion of these deficits. Furthermore, projected oil revenues far exceed the 2007 level of grants, loans, cocoa exports and gold exports. Indeed, at the projected levels, oil revenue will become the most important export earner for the country, contributing over 60% of exports by 2012. We estimate GDP and domestic revenue levels for 2010-15 based on an annual growth of around 21% (the average for 2004-07). Based

on these estimates, the projected oil revenue will constitute around 19% of domestic revenue in 2007 and reach a peak of around 27% in 2012.

Table 3. Importance of Projected oil Revenue for Fiscal Consolidation in Ghana

US$ million	2010	2011	2012	2013	2014	2015
Proj. oil revenue (scenario 1)	1,223	1,761	2,536	2,536	2,536	2,536
Proj. oil revenue (scenario 2)	1,747	2,516	3,623	3,623	3,623	3,623
Loans (2007 level)	480	480	480	480	480	480
Grants (2007 level)	857	857	857	857	857	857
Domestic revenue	6,547	7,893	9,516	11,473	13,831	16,675
Total exports (2007 level)	4,027	4,027	4,027	4,027	4,027	4,027
Cocoa exports (2007 level)	1,103	1,103	1,103	1,103	1,103	1,103
Gold exports (2007 level)	1,734	1,734	1,734	1,734	1,734	1,734
GDP	25,245	30,435	36,692	44,235	53,330	64,294
Oil rev (scenario 1) % of						
Loans (2007 level)	255	367	528	528	528	528
Grants (2007 level)	143	205	296	296	296	296
Domestic revenue	19	22	27	22	18	15
Total exports (2007 level)	30	44	63	63	63	63
Cocoa exports (2007 level)	111	160	230	230	230	230
Gold exports (2007 level)	71	102	146	146	146	146
GDP	5	6	7	6	5	4

Source: the authors and various issues of the State of the Ghanaian Economy Reports produced by ISSER.

Implications for the Real Sector ('Dutch Disease')
A significant body of research over the last 20 years has shown that the natural resource endowment of many developing countries adversely affected the efficiency with which they have used their capital and consequently, resulted in worse social and economic conditions –a phenomenon known as the 'resource curse'–. Among the factors that have been used to explain the resource curse is the 'Dutch Disease' –where the increased revenue from the mineral resources exported has the effect of raising the price of domestic goods relative to foreign goods–. The agricultural and manufacturing sectors experience a decline, resulting in increased unemployment. The question, therefore, is whether this is a risk that Ghana faces with its impending oil production.

Many will argue that there is a real risk of Ghana experiencing this phenomenon. This argument is in line with the already observed signs that the manufacturing sector seem to be struggling. In particular, we observe that in more recent years, when foreign inflows have increased it has been associated with a real appreciation of the exchange rate and an increasing trade deficit. Should foreign earnings double with oil production, it will undoubtedly result in further pressure on the exchange rate to appreciate, with possible adverse consequences for the real sector, particularly manufacturing and agriculture. This can only be averted if the additional resources are spent in a way that ensures increasing productivity to offset the loss in competitiveness.

Implications for Rent-Seeking and Conflict
An all-too-common characteristic of oil producing countries, particularly in sub-Saharan Africa, is the high levels of corruption and the weak systems of public governance. One explanation for this is that the high oil revenues make governments the biggest spenders in the country. This engenders rent-seeking behaviour as interested parties try to persuade government officials to spend in a way that might not be most beneficial to the country. This rent-seeking behaviour can result in increased inequality and, in extreme cases, in conflict.

Democratic governance in Ghana is more mature than in most parts of sub-Saharan Africa. This will be a trump card for Ghana as it will help reduce rent-seeking behaviour and, consequently, the conflicts that are usually associated with oil production. However, it is important that negotiations with the different interest groups are institutionalised in order to remove any ambiguity in the distribution and use of oil revenues.

Conclusions: The oil finds in Ghana represents a blessing in many ways. The country has grown both politically and economically since the 1990s and seeks to achieve middle-income status by 2015. However, the resources required to fund programmes designed to help propel the country towards this objective are not assured. The projected revenue from oil production in Ghana provides a good source of financing for the country's development. However, oil production comes with its own challenges, among which are the 'Dutch Disease' and rent-seeking behaviour associated with oil production.

There are two possible ways by which the potential 'Dutch Disease' effects can be mitigated. First, it will be important to replace foreign aid with oil revenue, in view of the country's absorptive capacity. In this way the possibility of a major jump in foreign exchange resources as well as government spending is curtailed. Secondly, it is very important that more resources are targeted at infrastructure and human capital development. This will help improve productivity significantly and ensure that the country (particularly the industrial sector) is better able to withstand exchange rate pressures.

This paper argues that Ghana sets out from an advantageous position, in relation to some of the other countries in the sub-region, in terms of managing its oil resources. It also has the benefit of learning from the experiences of other oil-producing developing countries. It is crucially important that the country continues to develop the institutions for proper economic management and governance to be able to fully reap the benefits from its oil finds.

Robert Darko Osei
George Domfe
Institute of Statistical Social and Economic Research, University of Ghana