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Offshore oil—the impact on South Africa's economy

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- There has of late been a growing interest from international oil and gas firms looking to explore South Africa's potential offshore crude oil and natural gas resources. In this report we consider an example of offshore oilfield development producing around 450kbd (thousand barrels per day)—a number comparable to other offshore developments in Africa. While the size of such an oilfield is small in the global context, for South Africa there are potentially large implications of producing this much crude oil domestically.

- South Africa consumes roughly 630kbd of petroleum, of which 180kbd is produced domestically. This implies that the country needs to import around 450kbd of crude oil and refined products to meet domestic petroleum demand.

- The relative magnitude of South Africa's imports of crude oil and refined petroleum products is an onerous burden on the trade balance and overall balance of payments position. Crude oil and refined petroleum products are the single biggest component of merchandise imports, constituting roughly 15-20% of South Africa's total merchandise imports

- Should South Africa be able to produce 450kbpd, there would be substantial benefits to the country via the current account and more broadly the balance of payments. These benefits could potentially spill over into a more stable currency and possibly a more stable inflation rate.

- In addition, any oil field developments would have a positive impact on GDP growth and employment via foreign direct investment and gross fixed capital formation, as well as providing the potential for increased tax receipts.

- It is estimated that the gross fixed capital formation directly associated with this project would range from approximately ZAR210bn. This represents a significant boost to investment in South Africa—roughly 35% of the country's total gross fixed capital formation in 2012. In addition, there is the potential for more investment in developing an oilfield services industry and expanding the county's refining capacity.

- An estimated 20,500 jobs could be created directly from oilfield development and operation, while a further 33,000 jobs could be created by the development of a domestic oilfield services industry.

- Lack of experience in and scope of South Africa's current oil and gas industry, might initially limit the extent to which some of these jobs can be taken up by South Africans. Such a situation does not have to remain the status quo though—a directed and efficient allocation of government and private resources in training South Africans can create the requisite local workforce for oilfield operation.

Offshore oil—the impact on South Africa's economy

There has of late been a growing interest from international oil and gas firms looking to explore South Africa's potential offshore crude oil and natural gas resources. In this report we consider an example of offshore oilfield development producing around 450kbd (thousand barrels per day)—a number comparable to other offshore developments in Africa. While the size of such an oilfield is small in the global context, for South Africa there are potentially large implications of producing this much crude oil domestically.

Although South Africa is unlikely to pay less for domestically produced crude oil than it currently does for imported oil (as any domestically produced oil is still likely to be sold at international parity prices) there would be substantial benefits to the country via the current account and more broadly the balance of payments. These benefits could potentially spill over into a more stable currency and possibly a more stable inflation rate. In addition, any oil field developments would have a positive impact on GDP growth and employment via foreign direct investment and gross fixed capital formation, as well as providing the potential for increased tax receipts.

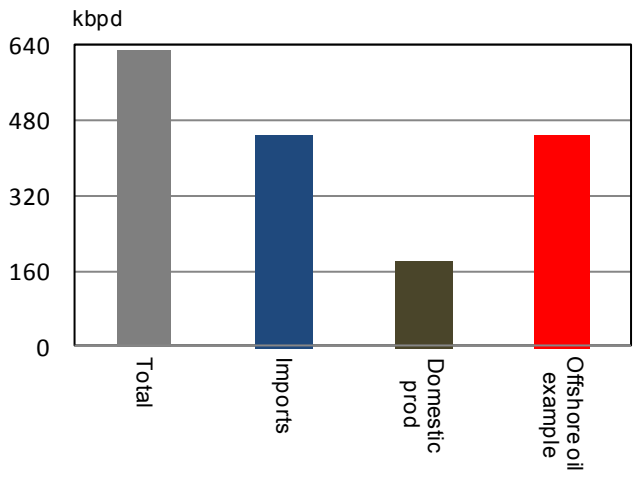
South Africa's oil demand, the current account and the Rand

South Africa consumes roughly 630kbd of petroleum, of which 180kbd is produced domestically. This implies that the country needs to import around 450kbd of crude oil and refined products to meet domestic petroleum demand (see *Figure 1*).

The relative magnitude of South Africa's imports of crude oil and refined petroleum products is a onerous burden on the trade balance and overall balance of payments position. Crude oil and refined petroleum products are the single biggest component of merchandise imports, constituting roughly 15-20% of South Africa's total merchandise imports (see *Figure 2*). These crude oil and refined product imports are a large reason (but not the only reason) why South Africa generally runs a current account deficit — the country has managed to run a current account surplus in only three years since 2000 (in 2000, 2001 and 2002). South Africa's current account deficit as a percent of GDP registered -6.3% in 2012, widest its been since 2008 (see *Figure 3*).

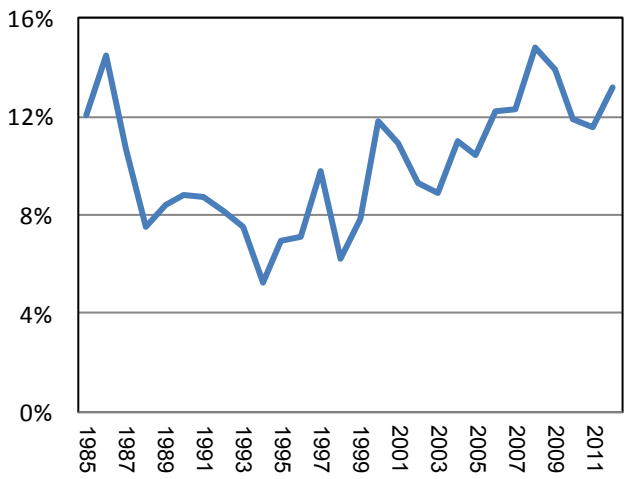
Given this context, what would 450kbd of locally produced crude oil mean for South Africa's current account? Using 2012 data on merchandise imports, 20% of imports equates to ZAR169bn. In 2012, the deficit on the current account amounted to ZAR198bn. This implies that should South Africa be able to produce 450kbd domestically (roughly equal to value of current crude oil and reined product imports), it could potentially wipe out roughly ZAR169bn worth of our merchandise imports, which means that the current account deficit as a percent-

Figure 1: SA petroleum product demand and supply



Source: IMF; Standard Bank Research; StatsSA, DMR

Figure 2: SA crude oil imports as % of total imports



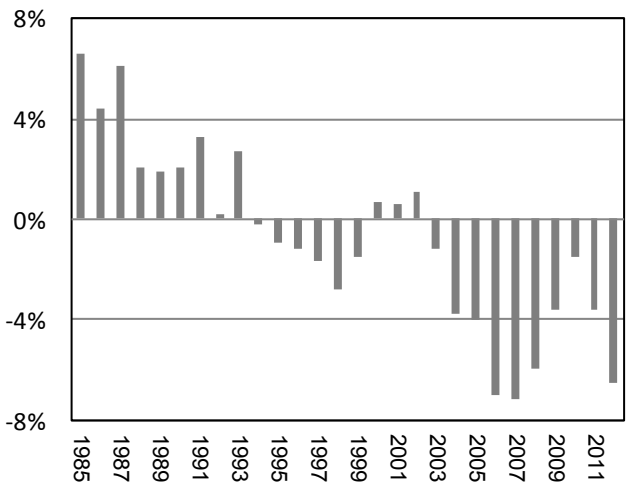
Source: IMF; Standard Bank Research

age of GDP could be reduced to -0.9%. If South Africa could manage to produce even more crude oil (which appears to be likely from preliminary assessments of other offshore crude oil projects not the focus of this report), we could even start running a current account surplus. In addition, a more balanced current account due to reduced reliance on oil imports could see greater stability in current account balances as imports will be less subject to the volatility of global oil prices and currency movement.

The main advantage of a smaller and possibly more stable current account deficit is a potentially more stable currency. South Africa's current account deficit must be funded by foreign capital inflows — this can be either in the form of portfolio (bond and equity) flows or foreign direct investment. In South Africa's case, most of the shortfall in the current account is currently funded by portfolio flows which tend to be volatile. The volatility of these flows (which are subject to the vagaries of international investor sentiment) translates into rand volatility, as the currency acts as the release valve of balance of payments pressures. A dramatic reduction in the current account deficit, as offered by the potential exploitation of this crude oil resource, would mean that South Africa would be considerably less reliant on foreign flows to fund its balance of payments position. This reduced reliance on volatile foreign flows could result in a more stable rand, and the attendant benefits to the economy that would come from greater currency stability.

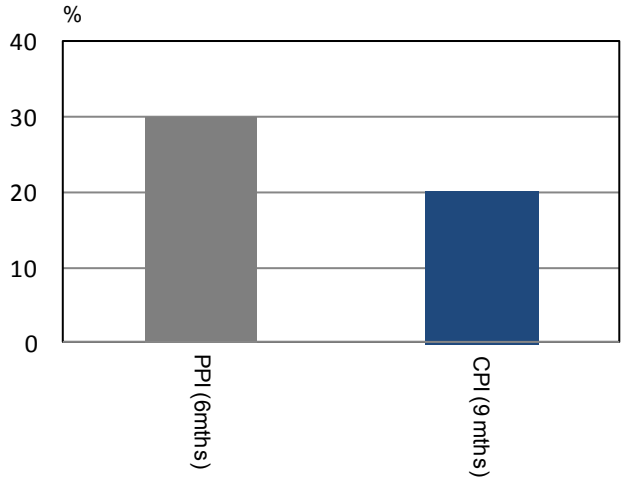
A more stable currency, apart from providing greater assurance to potential foreign investors which in turn could lead to more foreign direct investment in the local economy, also has a more direct impact on the economy via inflation. In a working paper published in 2012, the SARB estimated a 30% pass-through from the exchange rate to producer prices within a six month period, and a 50% pass-through within a year, although it found asymmetries in the effect, depending on the size and direction of the move and the degree of exchange rate volatility at the time. The average pass-through to consumer prices is smaller (at about 20% over roughly nine months) because unlike the producer prices a little over half the CPI basket comprises non-tradable services. Taken at face value, the 20% CPI pass-through estimate would suggest a 2 percentage point rise in consumer inflation from a 10% rand depreciation (in nominal trade-weighted terms). Inflation, especially inflation driven by more exogenous circumstances such as currency volatility, has deleterious effects on the economy, effecting both consumption and investment decisions of economic participants. Put simply, erosion of consumer purchasing power results reduced expenditure on goods and services, which in turn weakens company profits and consequently leads to reduced employment and lower nominal incomes (already lower in real terms due to inflation) placing a drag on the economy. Clearly, the potential for a more stable currency and the resultant possibility of less upward pressure on inflation would be advantageous to South Africa.

Figure 3: SA current account as a % of GDP



Source: SARB

Figure 4: Exchange rate pass-through into prices



Source: SARB

Investment and employment

Apart from the balance of payments advantages, the development of offshore oil fields in South Africa would provide obvious economic benefits in terms of foreign direct investment, gross fixed capital formation, employment and taxation revenues. Not only would these benefits accrue directly from oilfield operations, but also via the development of an oilfield services industry, the expansion of other (and already existing) supporting industries, as well as the potential for downstream activities.

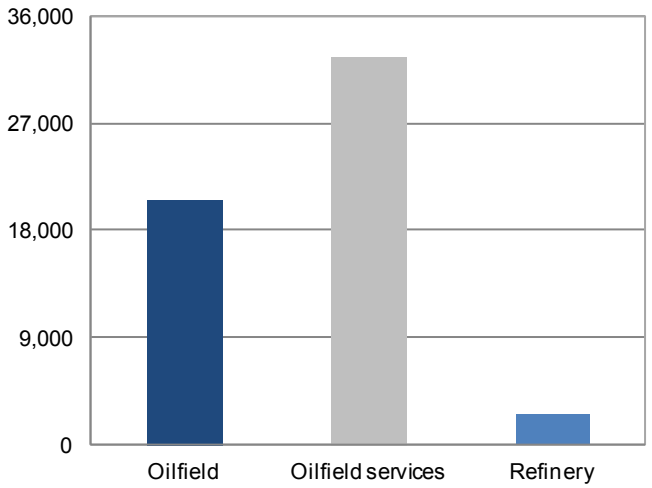
Oilfield development and operation

In order to develop the potential offshore oilfields under discussion in this report, it is estimated that the gross fixed capital formation directly associated with this would range from approximately ZAR210bn, depending on the number of fields that will be developed, the particular geology encountered and various other project specific factors. This represents a significant boost to investment in South Africa—roughly 35% of the country's total gross fixed capital formation in 2012, and by itself adding 7.0 pps to growth in gross fixed capital formation or as much as 1.3 pps to overall gross domestic product growth if assumed to span over five years.

A large part of that would be financed through foreign direct investment, a further boon to the country's balance of payments. It must be kept in mind though that given the small scale of South Africa's current oil and gas production, a great deal of equipment and capital goods will need to be imported. This would offset some of the positive effects to the balance of payments. However, given that it would be largely foreign capital financing the procurement of this equipment the balance of payments repercussions would be largely neutralised. In addition, where it is feasible the use of local suppliers (paid by foreign investors) would, apart from being beneficial in terms of local employment and income, be positive for the balance of payments.

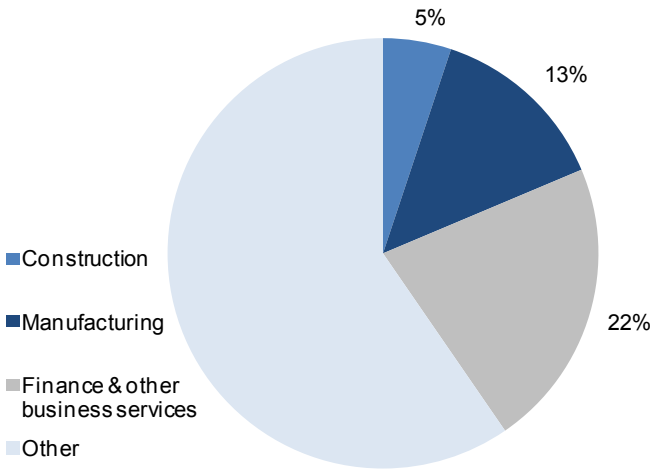
Foreign direct investment would result in outflows in terms of repatriation of profits and/or dividend payments to foreign investors. However, to the extent that local investment participation is encouraged (something which would be facilitated by the current MPRDA target of 10% ownership by historically disadvantaged South African within the oil sector, and perhaps increasing to 26% as proposed in the MPRDA discussion draft) these outflows in the balance of payments can be reduced. We also feel that such outflows would not negate the positive effect on the balance of payments of the previously discussed reduced reliance on crude oil impacts, i.e. the overall balance of payments effect would be positive. Assuming a reasonable rate of return for foreign investors, these outflows would around ZAR6.3bn, much less then the previously stated gains of drastically reducing imports of crude oil.

Figure 3: Potential job creation in industries directly related to exploitation of the oil resource



Source: Standard Bank Research

Figure 4: Current contributions to employment of industries that stand to gain from development of a local oil industry



Source: QLFS; Standard Bank Research

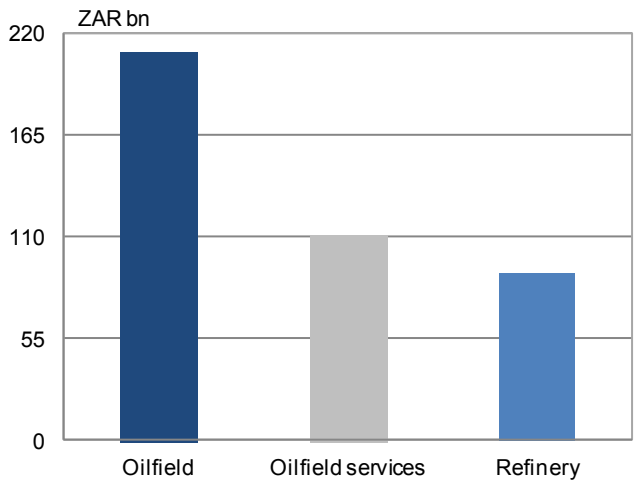
In terms of job creation, operating oilfields of the scope currently envisaged, we calculate (using other overseas oil and gas sectors as a benchmark) would require around 20,500 personnel. Here too though, lack of experience in and scope of South Africa's current oil and gas industry, might initially limit the extent to which some of these jobs can be taken up by South Africans. Such a situation does not have to remain the status quo though—a directed and efficient allocation of government and private resources in training South Africans can create the requisite local workforce for oilfield operation. Commensurate with the skills requirement of these jobs is the income received, i.e. these jobs are well-paying which could raise the general standard of living of local participants.

Oilfield services

The exploitation of South Africa's offshore oil prospects would of necessity entail a significant expansion of the country's oilfield services industry. Oilfield services include: seismic data gathering, management and processing; exploratory and production drilling equipment; engineering, fabrication and installation; and operations. While South Africa is currently not completely without an oilfield services industry, the relative paucity of current domestic oil production (approximately 2kbd) severely constrains both the need for and scale of this industry. However, with a potential 450kbd of domestic oil production, a relatively significant oilfield services industry would be required and could be supported. Using overseas oilfield service industries as a benchmark we calculate that a 450kbd oil production could support an oilfield service industry generating pre-tax profits of roughly ZAR8bn per year and employment opportunities of around 33,000. In the development of this industry there is considerable scope for foreign direct investment with roughly ZAR110bn gross fixed capital formation required to develop an oilfield service industry of this size.

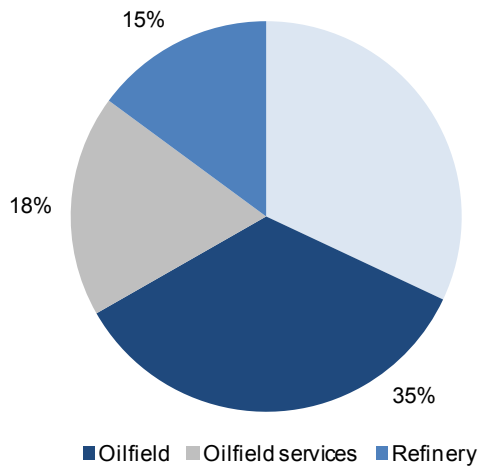
As for oilfield development and operation a key challenge in creating and sustaining a significant oilfield services industry in South Africa would be the lack of the requisite skilled and experienced workforce as well as the required equipment. One way around this apparent weakness is to make it attractive for more experienced overseas oil and gas companies to invest in the development this sector—as is the case for direct development and operation of the oilfields. However, to garner acceptance by the wider South African community as well as local communities, it is necessary to guard against even the perception that an imported workforce and a foreign company will receive the bulk of the benefits accruing from the exploitation of this resource. To this end government should consider directing resources towards local skills development initiatives to match the needs of the industry, as well as local content partnerships in manufacturing of the required equipment.

Figure 5: Potential investment (gross fixed capital formation)



Source: Standard Bank Research

Figure 6: Potential investment as a percentage of 2012 GFCF



Source: Standard Bank Research; SARB

Supporting service industries

Though not optimal, even if participation in oilfield operation and services industries is largely by foreign firms, there would still be considerable benefits to existing domestic industries to the extent that the oil industry requires their respective services. Chief among these industries would be manufacturing, construction and financial services. Benefits would most likely also accrue to transportation, accommodation and property, as well as retail sectors of the local economy. Increased demand for these services would invariable necessitate greater employment in these industries, as well as greater revenues and increased tax receipts for government (in the form of both corporate and value added taxes).

Downstream activities

As already mentioned, the project under discussion in this report would largely cover South Africa's current crude oil imports. This implies that current refining capacity would be sufficient to process this new production. However, there is a growing need for refined products (the country currently imports around 80kbd of refined products) and current plans to expand refining capacity (most notably the Mthombo project) might be viewed with less scepticism (some have voiced concerns over its commercial viability) by the development of local crude oil resources. An expansion of current refining capacity would require importing of crude oil to supply these refineries, however, importing crude oil and refining it locally, is less costly than importing refined products. In addition, the development of the Tugela South oilfield could promote and facilitate the development of other potential domestic crude oil resources, further enhancing the investment case for expansion of refining capacity (i.e. local beneficiation). It is expected that the Mthombo refinery project would require around ZAR90bn in investment and provide around 10,000 jobs during the construction phase (3-4 years) and around 2,500 permanent jobs.

There might be concerns that the development of local crude oil resources would threaten the significant coal– and gas-to-liquids industries in South Africa. We do not feel that this is something to be concerned about. As already mentioned, exploitation of this resource would only cover our current crude oil imports which do not satisfy total domestic petroleum consumption. In order to meet domestic demand for petroleum products, production from this domestic crude oil supply would still need to be supplemented by synthetic fuel production(160kbd), as is currently the case.

Furthermore, and as mentioned before, 450kbd production is very small compared to global oil production. Global oil production currently stands at more than 85mbd (million barrels per day). As a result, this amount of new production should not influence the global oil price and by extension should not negatively impact revenue from existing local industries in this sector (such as Sasol). Secondly, any surplus oil produced within South Africa can easily be exported to international markets without the risk of pushing prices lower.

Dutch disease

One concern regarding the impact of crude oil development on the wider economy would be the possibility of negative "Dutch disease" effects. The diversity and resilience of an economy can potentially be compromised by an overwhelming focus of public and private investment in one resource industry. While the current diversity and size of the South African economy does ease concerns surrounding this issue, it would be prudent of government to remain vigilant and guard against such effects.

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