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The Fiscal Challenge of South Sudan

In brief

- Oil revenues accounted for 98% of fiscal revenues in South Sudan in 2011. South Sudan has recently decided to shut down its oil production, stemming from the lack of agreement post-independence between South Sudan and Sudan regarding oil revenues.
- The aim of this paper is to evaluate fiscal sustainability in South Sudan. The starting point regarding fiscal revenues is the reserves estimates and production path forecasts provided by the operating oil companies in 2010.
- This paper argues that the pre-crisis fiscal stance of South Sudan was not sustainable and the fiscal expenditures should be considerably reduced. The paper also points to arguments about absorptions constraints in the economy and institutional capacity for efficient fiscal spending for why the pre-crisis level of fiscal spending in South Sudan was too high.
- If the Sudans are able to solve their current crisis and South Sudan can get back to building up the new state, several experiences from the CPA-period and 2011 should be useful to inform policies going forward.
- The most important issue may be to curb political pressure to spend all of the oil revenues in the short run. Fiscal sustainability and the low capacity to spend public funds efficiently suggest that the fiscal policy should be considerably more prudent going forward. The current situation should increase the political appetite for more forward looking, prudent policies.
- South Sudan should seek guidance from countries with success in controlling spending and achieving stable and sustainable fiscal policy outcomes.

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1. Introduction

South Sudan achieved its independence from Sudan in July 2011. With the majority of the oil production and three-quarter of the oil reserves of former Sudan within its territory, government oil revenues were high compared to the government budget and the rest of the economy. Oil revenues accounted for 98% of fiscal revenues in 2011 and value added in the oil sector accounted for more than 60% of total GDP in 2010. The government expected in 2011 oil revenues to decline sharply in the years to come and to run out by 2035.

Recently South Sudan decided to shut down its oil production. The lack of a post-independence agreement between South Sudan and Sudan regarding the split of oil revenues from the production in South Sudan led to the current crisis. Sudan held back ships with oil in Port Sudan and South Sudan responded by stopping oil production. Possible outcomes of the current situation range from a diplomatic agreement determining the split of oil revenues from the production in South Sudan to a full scale war between the two nations. The latter could in the medium run encourage the construction of a new pipeline from the South Sudanese oil fields, going southwards and reaching the sea around Mombasa in Kenya. For the time being, the South Sudanese oil is kept in the ground and it is hard to predict what will happen. However, one relatively certain prediction is that the investment climate as perceived by international oil companies has worsened considerably. This is likely to affect the level of investments undertaken in the extraction of oil from existing fields and exploration efforts for new fields. If anything, the likelihood for an expansion of the production from existing fields and for new finds has in other words been reduced rather than increased since South Sudan's independence.

The aim of this paper is to evaluate fiscal sustainability in South Sudan. The starting point regarding fiscal revenues is the reserves estimates and production path forecasts provided by the operating oil companies in 2010. These are the most recent available forecasts and give a good description of the fiscal revenues South Sudan was expecting before the recent political crisis. Regarding the fiscal expenditures, the paper takes the fiscal policy implemented in 2011 as its main starting point.

By utilizing revenue and spending projections together with simple present value calculations, the paper illustrates the fiscal consequences of keeping the pre-crisis expenditure level going forward. The paper contrasts this expenditure path to prescriptions of theory for optimal fiscal policy for a government facing revenues from an exhaustible resource (ref. van der Ploeg and Venables 2011, van der Ploeg 2011 and van der Ploeg and Harding 2011).

The paper argues that the pre-crisis fiscal stance of South Sudan was not sustainable and the fiscal expenditures should be considerably reduced. The paper also points to arguments about absorptions constraints in the economy and institutional capacity for efficient fiscal spending for why the pre-crisis level of fiscal spending in South Sudan was too high.

2. The macro economy of South Sudan

The economy of South Sudan consists predominantly of small scale agriculture and oil extraction. The official estimate of GDP per capita for 2010 is 1650 USD. This is more than double the level of for

example Kenya, as shown in Figure 1.[1] Value added in the oil extraction sector accounts for almost two-thirds of GDP. Wealth sharing, which was part of the comprehensive peace agreement (CPA) between Southern Sudan and Sudan 2005-2011, meant that Khartoum received 50% of the government oil revenues from the oil production in Southern Sudan.[2] Mainly due to these transfers, GNI per capita is estimated to have been about 500 USD lower than GDP per capita in 2010. The current crisis seems to be directly linked to a dramatic reduction in these transfers since independence, i.e. a relatively higher GNI per capita in South Sudan and correspondingly lower GNI per capita in Sudan.

The oil sector is dominated by Chinese, Indian and Malaysian oil companies. There are about one billion barrels of oil left in the ground.[3] This translates to a net present value of government revenues of 40 billion USD, or roughly 4000 USD per capita. 150 USD per year, or about 50 USD cents per day, in per capita terms are not trivial numbers in an economy with a GNI per capita of about three USD per day and an average daily consumption per capita of about one dollar. 51% of the population in South Sudan live below the poverty line.[4]

The dominance of the oil sector will not change in the short or medium run. As the oil is depleted and the oil production declines, the GDP per capita of South Sudan is likely to do the same. Oil production was in 2011 expected to decrease by 40% over the next five years. In principle, growth in the non-oil economy could counteract this contraction. In practice, this is not likely to happen as the non-oil non-government economy is very small, perhaps 20-25% of GDP. One would therefore need spectacular growth in this part of the economy to compensate for the reduction in oil production. Given that most of the non-oil non-government sector currently consists of small scale agriculture, which international experience shows have relatively modest growth potential, the expected growth in this sector is modest in the short and medium run. On this background it seems likely that the GDP per capita in South Sudan will be lower in 2020 than in 2010. The government will need to save some of the oil revenues in international capital markets to finance expenditures directly when oil revenues are reduced. To the extent allowed by capacity constraints in the economy and the government, some of the oil revenues should also be invested domestically. Higher levels of public and human capital would increase the production capacity of the economy, in turn increase the tax base and allow more public expenditure to be financed by taxes.

Figure 1: How productive is South Sudan compared to its neighbours?

	GDP per capita	GNI per capita
South Sudan	**1650**	**1094**
Kenya	788	783
Uganda	500	490
Ethiopia	319	319
Sudan	1700	1662

[1] Many countries in the Sub-Saharan African region have lower GDP per capita, but countries like Angola and Namibia produce about four times more, and Botswana and South Africa almost six times more, per capita.
[2] The former Southern Sudan became South Sudan in July 2011.
[3] These are proven reserves as reported by the oil companies in 2010. The estimates can be interpreted as being close to a p90, i.e. relativley conservative estimates.
[4] See the homepage of NBS: http://ssnbs.org/storage/key-indicators-for-southern-sudan/Key%20Indicators_A5_final.pdf

Note: Figures for 2010. Source: NBS South Sudan and WDI.

3. Fiscal policy under resource revenues: theory and best practices

The *permanent income hypothesis* (PIH) suggests a steady level of consumption. An oil find means that the level of consumption should immediately shift up to a permanently higher level. In public finance terms this corresponds to running a non-oil primary deficit equal to the permanent income from the oil wealth (Harding and van der Ploeg 2011). Before oil is depleted, the country should borrow to fund the non-oil primary deficit. As oil is depleted, the country should pay off debt and build up a sovereign wealth fund. The foreign savings should be large enough to yield interest payments exactly equal to the permanent revenue of oil to finance the non-oil primary deficit. Broadly, this is the approach chosen by Timor-Leste (see e.g. Moe 2011).

The *Bird-in-Hand rule* (BIH) is more conservative than the permanent income hypothesis, as it does not consider reserves in the ground when the new consumption level is set. Only interest payments from the accumulated foreign savings are consumed. This is the approach chosen by Norway and can be justified by the high pension bill facing the government in the coming decades (Harding and van der Ploeg, 2011).

As the PIH-rule and the BIH-rule have been implemented by Timor-Leste and Norway, they have been criticized on the ground that they focus on savings abroad rather than domestic investments. This is most likely a good idea for capital rich Norway, but for capital scarce economies the returns may be higher on domestic investments than in international capital markets, suggesting a focus on public investments in for example infrastructure and education (van der Ploeg and Venables 2011).

For South Sudan, the expected returns on domestic investments should be high given the very low level of physical and human capital. Saving less abroad and more domestically would therefore in principle be a good idea. The government of South Sudan could allow the non-oil primary deficit to be higher than the permanent value of the oil revenues provided that the extra spending was allocated to development expenditures, i.e. investments in public capital or education. Section 5 discusses a scenario consistent with PIH and high savings abroad and a scenario where domestic saving in the form of development expenditure is allowed. In practice the implementation of domestic investments may be difficult as limited productive capacity in the economy and constraints in the government bureaucracy may prevent high returns from being realized. The result of an aggressive investment program could then be a higher general cost level in the economy and a low value added per public dollar spent (van der Ploeg and Venables 2010, van der Ploeg forthcoming).

4. Fiscal policy in South Sudan 2005 – 2011

Fiscal spending was growing rapidly in the period of the comprehensive peace agreement (CPA) 2005-2011.This section argues that the level of 2011 was not consistent with fiscal sustainability or capacity constraints in the economy.

4.1.Small and dwindling oil wealth

Figure 2: Oil fields in the Sudans

Source: MoFEP, November 2011

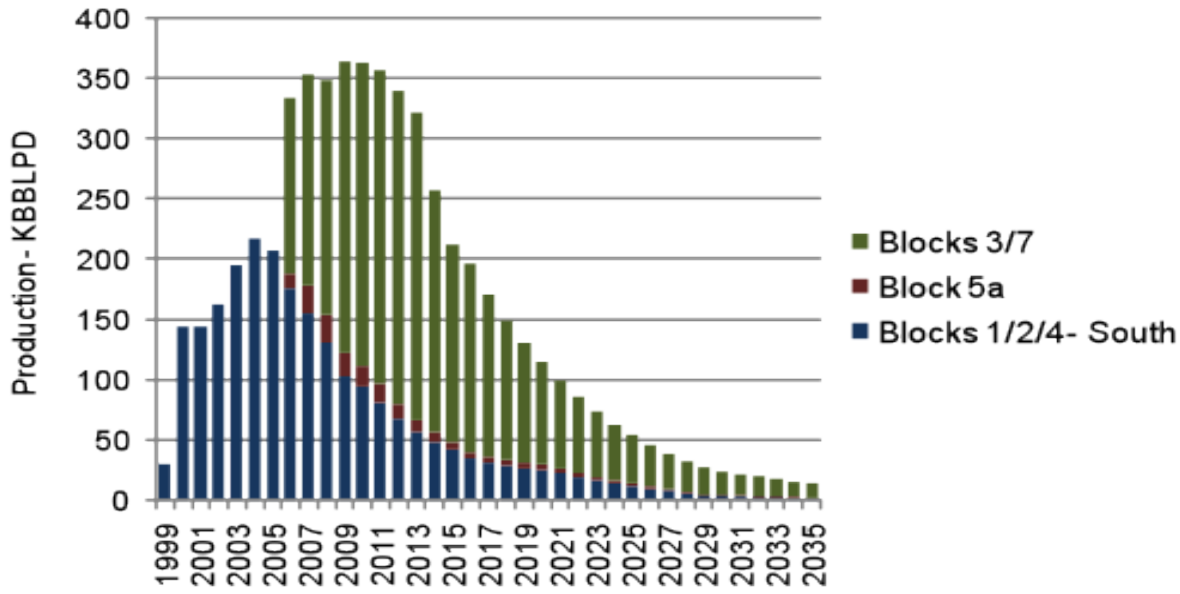
Given the estimates provided in 2010 by the oil companies operating in the territory of now South Sudan, the remaining reserves of oil as of 2011 was about 1000 million barrels. As shown in Figure 2, three quarters of this is in block 3 and 7, one fifth is in block 1m 2 and 4 and the rest is in block 5a.

Figure 3 shows the profile of the oil production since 1999, broken down on different blocks. From an initial level of 25000 barrels of oil per day in 1999, the oil production reached a peak in 2009 with 360000 barrels per day. As the figure clearly shows, the oil production was expected to be high in the period 2006-2013, due to the production from block 7. Going forward, the oil production was

expected to decline steadily towards zero in 2035. To get a sense of the speed of decline, the production level in 2017 was expected to be about 50% of the level in 2011.

Given standard assumptions on the oil price towards 2035, the path for expected oil revenues to South Sudan followed the declining production path, from about 14 billion SSPs in 2011 to about 6 billion in 2025 and 4 billion in2035.[5] As discussed in more detail in section 5, the permanent value of the expected oil revenues is about 3.6 billion SSP (1.2 billion USD) annually.[6]

Figure 3: Oil production is passed peak



Source: Ministry of Finance and Economic Planning, South Sudan, November 2011

A key issue for South Sudan going forward is whether the oil production can be increased beyond the projections in Figure 3. The most obvious way to achieve this would be to increase the recovery rate from existing fields. Projected recovery rate have been around 23%, which are very low by international standards. According to studies of the oil production in South Sudan, recovery rates of about 35% should be within reach if the necessary investments were put in place.

The second way to increase oil production in the longer run would be to discover new oil. The explorations activities seem to be very low at the moment and it is a key challenge for the government to incentivize higher search activity (Shankleman 2011).

To achieve either increased recovery rates or increased explorations will quite likely require a dramatic improvement in the investment climate. The necessary conditions for an investment climate triggering higher investments are likely to be a stable peace between South Sudan and Sudan, peace and security within South Sudan and a legal and institutional framework in South

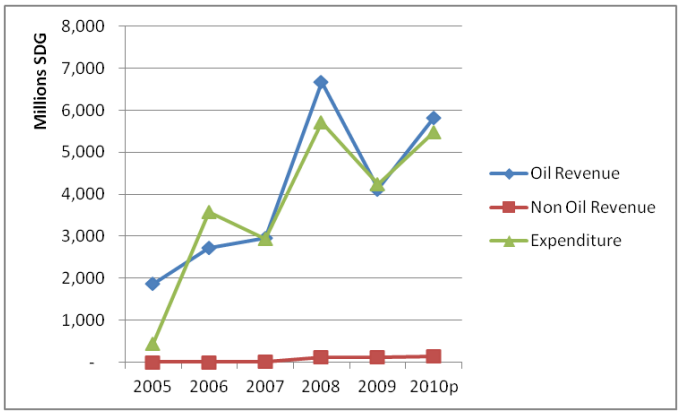
[5] Based on an assumption of zero transfers to Sudan and the following an oil price assumption: $85/barrel in 2011, $90/barrel in 2012 and an increase up to $200/barrel in 2035 (EIA's Annual Energy Outlook, 2011).
[6] For comparison, the suggested spending level in the South Sudan Development Plan for 2011 was about 9.2 billion SSP (SSDP 2011).

Sudan providing the predictability and incentives for long run investments. Observers of the oil industry in South Sudan have reported a speed of extraction more consistent with maximizing the extraction in the short run rather than the total extraction of the fields in the longer run. This is suggestive of a non-favourable investment climate. The transportation disruptions and the following shut down of the oil production over the last months must have increased the perceived political risk among international investors. Creating the necessary trust among international investors is likely to take a long time and the prospects for increased investments in oil extraction and exploration in South Sudan are bleaker now than they have been for a while. The projections from 2010 may even look optimistic.

4.2.The fiscal budget dependent on oil

Since the beginning in 2005, the fiscal budgets of the Government of Southern Sudan were almost solely financed by oil revenues. Oil revenues, non-oil revenues and fiscal expenditures over the period 2005-2010 are shown in Figure 4. Non-oil revenues were close to zero and oil revenues constituted about 98% of total fiscal revenues. Fiscal expenditures followed the revenues almost perfectly, leaving little for savings.

Figure 4: Fiscal revenues and expenditures



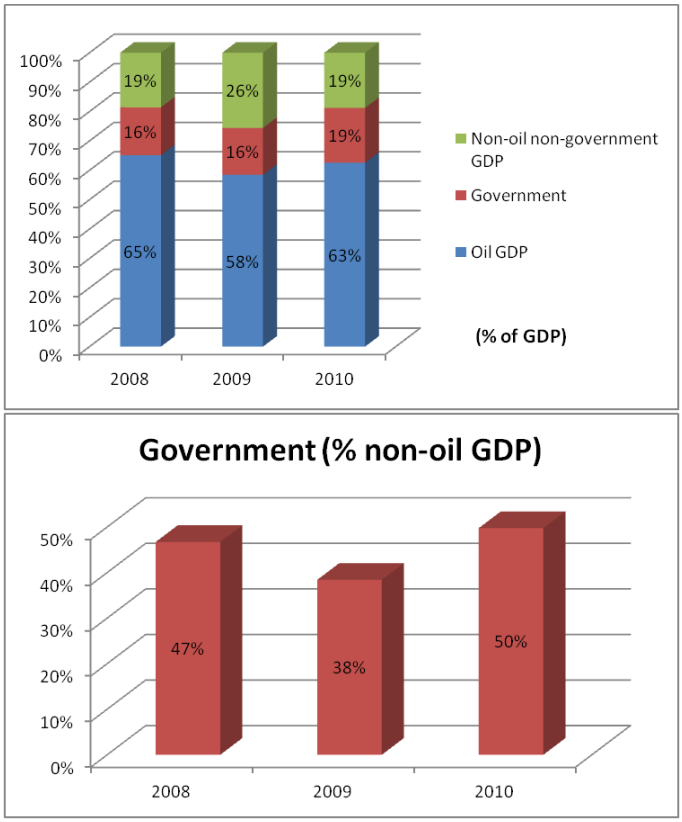
Note: Source: Annual budgets, MoFEP South Sudan

Faced with the current situation of zero oil revenues, the government of South Sudan have limited options to finance its budget in the short run. In principle it could increase its non-resource revenues, build down its assets, or receive transfers like development aid from abroad.

Increasing non-resource fiscal revenues has been on the agenda for South Sudan for a while already, but is hindered by the low tax base and the new state's low capacity to collect taxes. The upper panel of Figure 5 illustrates how small the non-resource tax base is. The value added of the non-oil non-government economy is in the order of 20-30% of GDP. The government value added is about half the size of the non-oil GDP economy (lower panel Figure 5). It is hard to think that taxing own employees would solve the financing problem of the state. The only solution would be to tax the non-resource non-government parts of GDP, but the size of the non-oil economy is very small and unable to sustain such a relatively large government. Even if one managed to create high economic

growth in the non-resource non-government GDP, it would take several decades before it could sustain the pre-crisis level of government spending. This is illustrated in section 5.2.

Figure 5: The non-oil tax base is low



Sources: MoFEP and NBS, South Sudan, and authors calculations.

Going beyond the mere size of the non-resource tax base, its character may also suggest a limited revenue potential in the near future. Most of the non-resource non-government GDP consists of small scale farming. Large parts of the production are not subject to market transactions, but home production for home consumption, which are hard to tax in practice. For the parts of the non-resource tax base that consist of market based activities, taxation should be possible, but the new state has still a long way to go in developing operative tax legislation and an efficient law enforcement.

The second option available is to finance a budget deficit by building down financial or real assets. The accumulation of financial assets over 2005-2010 was limited, as illustrated by Figure 4. The same was true for 2011. Real assets could for example be natural resources or land in South Sudan, but the values of these are a direct function of the political climate and the security situation. Borrowing domestically or abroad are theoretical options, but a domestic financial market is yet to be developed and the small size of the non-resource economy means that only very limited domestic savings can be generated. Borrowing abroad may be an option, but South Sudan has little capacity to generate foreign exchange except by exporting oil, making it hard to service the interest payments on foreign debt. Foreign lenders may also demand some collateral. As the value of any collateral is

affected by the current crisis, the terms on which South Sudan could borrow are likely to be unfavourable.

A last option for financing a budget deficit would be to receive transfers from friendly countries. This could take the form of development aid or concessional lending from international finance institutions or bilateral lenders. All donors have so far showed little interest in providing budget support to South Sudan. It is believed that the new state is not yet ready. Donors have therefore concentrated on project funding and may be tempted to keep doing so.

If donors turn out to keep being sceptical towards the provision of budget support in South Sudan, the only viable option for South Sudan may be to dramatically cut spending level.

4.3.High fiscal spending

Compared to similar countries, the South Sudan fiscal spending the last couple of years seems high. Figure 6 shows the spending of some neighbouring countries together with different measures of South Sudan fiscal spending in 2010 and 2011. The most conservative estimate of South Sudan's fiscal spending, the budget of the central government excluding transfers to the states, shows a 167 USD per capita of central government spending in 2010. This compares to 37 USD in Ethiopia, 60 USD in Uganda and 104 USD in Kenya. Although definitions of government spending may vary somewhat and the GDP per capita of South Sudan was in the higher end of the low income bracket in 2010, a level of spending per capita about twice as high as economically more developed neighbours seems ambitious. The strong increases in fiscal spending since 2005 (Figure 4) have not been accompanied by a corresponding expansion in the capacity to spend. The South Sudan state is still in its infancy and, regardless of fiscal sustainability concerns, the level of spending should always be limited in accordance with the capacity to deliver public services. The fiscal spending is also high compared to the size of the economy (Figure 5). This carries the risk of crowding out private activities in the economy, which inevitably will affect the growth in the non-resource economy.

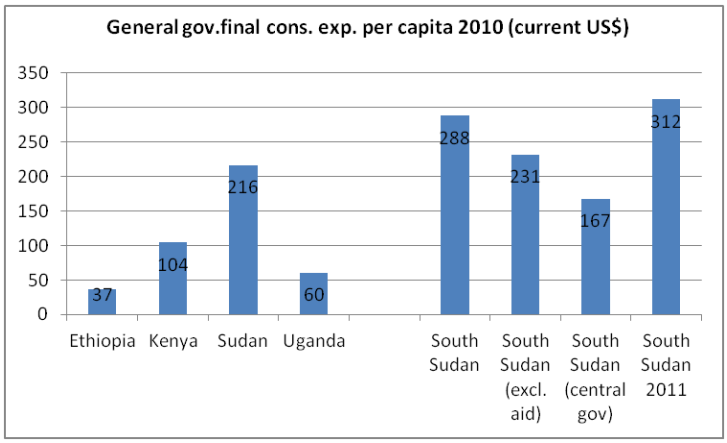
The South Sudan Development Plan (SSDP 2011) discusses the fiscal budgets and aid allocations in some detail. Regarding the allocation of funds across different types of expenditures, three features are worth mentioning. First, the amounts and share allocated to salaries have increased steadily, raising concerns about patronage and inflationary pressure in the general labour market. Second, the share of the fiscal budget allocated to the conflict prevention and security pillar has been high, around 40%, while the shares allocated to social and human development and economic development pillars have been small, around 10% and 20%. Third, donors have allocated up to 58% of their funds to the social and human development pillar. This is a reflection of donors stepping in to fund and provide basic public services, like health and education, in the absence of a state capable of doing so.[7]

In addition to fiscal sustainability, which is the focus of this paper, there are several other reasons for curbing the fiscal spending. One aspect is *capacity constraints* in the economy, which will induce high fiscal spending to increase costs and possibly crowd out the private sector (van der Ploeg and

[7] See figure 9, section 2.4.3 in the South Sudan Development Plan 2011.

Venables 2011). Another aspect is the bureaucracy's *capacity to spend*. This capacity and hence the value of each dollar spent is likely to be low, as is found in similar countries (Dabla-Norris et al. 2011 and van der Ploeg 2011). This is true both in terms of quality and quantity, the latter meaning that high volumes of projects will by itself induce lower value of spending.

Figure 6: Spending in South Sudan and neighbouring countries



Source: MoFEP South Sudan and World Development Indicators

5. Fiscal sustainability

This section presents three different spending scenarios and their fiscal consequences given the oil revenue predictions of the Ministry of Finance and Economic Planning (MoFEP) in South Sudan as of fall 2011. The section presents a level of fiscal expenditures consistent with fiscal sustainability and illustrates how debt will be accumulated under a higher expenditure level. The current fiscal crisis has put oil revenues to a halt for the time being. This situation triggers a re-think of how to finance government expenditures in South Sudan. This section sheds light on what would be a reasonable size of the government sector (i.e. level of public expenditures) if the proven oil reserves could be extracted as planned. The actual revenue trajectory is likely to be lower if the political risk is not considerably reduced over the coming years. The calculations of this section may therefore be seen as optimistic rather than conservative.

The projections made in this section rest on a set of assumptions, as listed in Figure 7. Fiscal oil revenues are determined by the oil price assumptions, the oil production forecasts and the existing contracts between the government and the oil companies. Oil revenues are in USD and to calculate their real value in SSP one needs to take into account the real exchange rate, i.e. the difference in domestic and international inflation and the nominal exchange rate. The assumption is an annual real appreciation of SSP of 3% each year (constant nominal exchange rate and domestic inflation 3% higher than international inflation). An appreciation of the real exchange rate is consistent with an economy phasing in considerable oil revenues. The exact size of the real appreciation is, however, very uncertain.

Figure 7: Assumptions behind fiscal projections

ASSUMPTIONS	
DOMESTIC DEFLATOR	5%
INTERNATIONAL DEFLATOR	2%
EXCHANGE RATE	3.00
REAL RATE OF RETURN	3%
REAL DISC. RATE	3%
EXPENDITURES 2011 (Mill. SSP)	8,000
NON-OIL REV. 2011 (Mill. SSP)	296
NON-OIL REV. GROWTH REAL RATE	10%
Wealth sharing agreement with Sudan: 100% to the South	
Oil price assumption: 2011: $85/barrel, 2012: $90/barrel increasing to $200/barrel in 2035 (EIA's Annual Energy Outlook, 2011).	
10 USD discount on Brent Blend	
All monetary variables measured in real 2011 South Sudan Pounds (SSP)	

Note: MoFEP 2011 and author's assumptions.

Non-oil fiscal revenues are determined by assuming their growth rate directly. This growth rate is set to 10%, which then could be generated by a growth in the non-resource economy and/or by an increase in the effective taxation of the non-resource economy. 10% annual growth in non-resource revenues is probably optimistic, at least for the whole period. In the short run one could, however, imagine annual jumps exceeding 10%, for example due to a change in the effectiveness in tax law enforcement. The oil and non-oil revenue path is common for all the three expenditure scenarios (explained below).

On the expenditure side, three scenarios are presented. The first is an expenditure path consistent with the permanent income hypothesis (PIH), a theoretical benchmark. The second is consistent with a conservative estimate of the level of expenditures throughout 2011. The third scenario is an intermediate case. It implies a smaller net asset position around 2030 than under PIH, but is closer to be consistent with fiscal sustainability than the expansionary alternative.

5.1. The permanent income hypothesis

Intuitively, the permanent income hypothesis (PIH) suggests that consumption should be smooth over time, implying that the level of government expenditures in real terms should be equal in all periods going forward.[8] However, the non-oil revenues are assumed to add to the expenditure level

[8] In principle, the government expenditures could be argued to be equal in per capita terms, so one should adjust for population growth. A positive population growth means lower spending in early periods and higher spending later. One could also argue that the spending should be equal as a share of the size of the economy. A growing economy means that a given amount of oil revenues decreases towards zero as share of the economy in the long run. One should in this case also adjust for the economic growth (Harding and van der Ploeg 2011). In the following, the simplest case is spelled out, i.e. the expenditures are not evaluated on a

as they grow, generating an increasing expenditure path. PIH in the public finance context is implemented as fixing the non-resource primary budget deficit at the level of the permanent value of the oil revenues. This is consistent with the optimal expenditure path under the assumption of the real interest rates being equal to the discount rate (Harding and van der Ploeg 2011, van der Ploeg et al. 2011).

Figure 8: The permanent income hypothesis

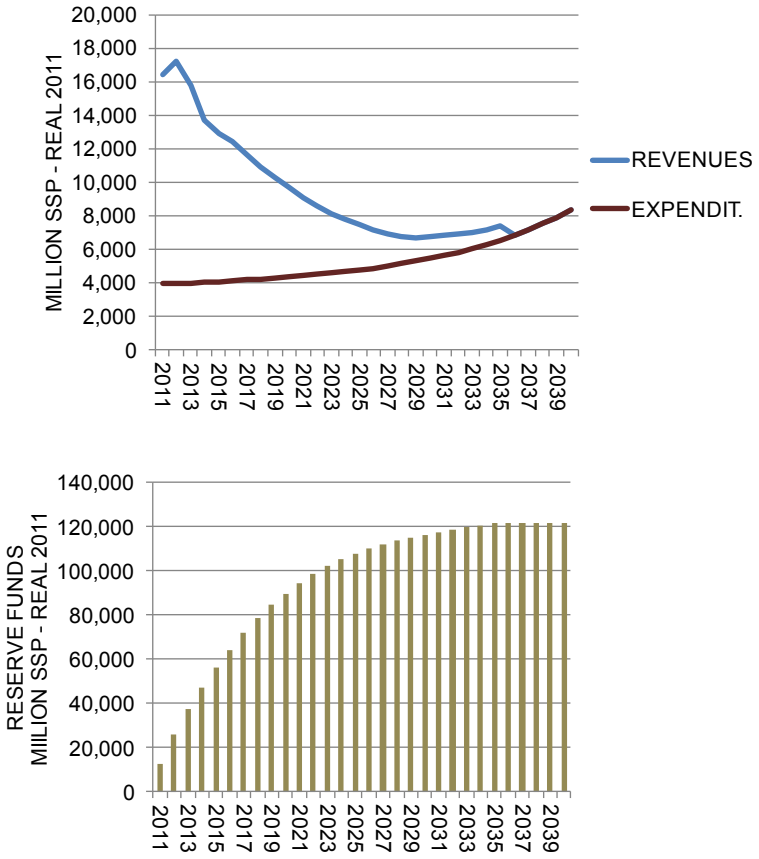


Figure 8 shows the revenue path and the PIH expenditure path in real 2011 SSP (upper panel). It also shows the following build-up of net assets. Under the PIH, the state saves in assets abroad while the resource revenues are above the permanent income of the petroleum wealth. When the petroleum is fully depleted, the country should have built up exactly enough assets abroad to make their interest payments exactly equal to the permanent income from the petroleum wealth. This way the stable consumption path can be maintained forever. The permanent income of the petroleum wealth in South Sudan is with the assumptions of Figure 7 calculated to be about 1.2 billion USD (3.6 billion SSP). Given a real interest rate of 3%, one would need to build up assets abroad equal to 40 billion USD (120 billion SSP). For comparison, GDP and Non-oil GDP were about 13 and 5 billion USD in 2010.

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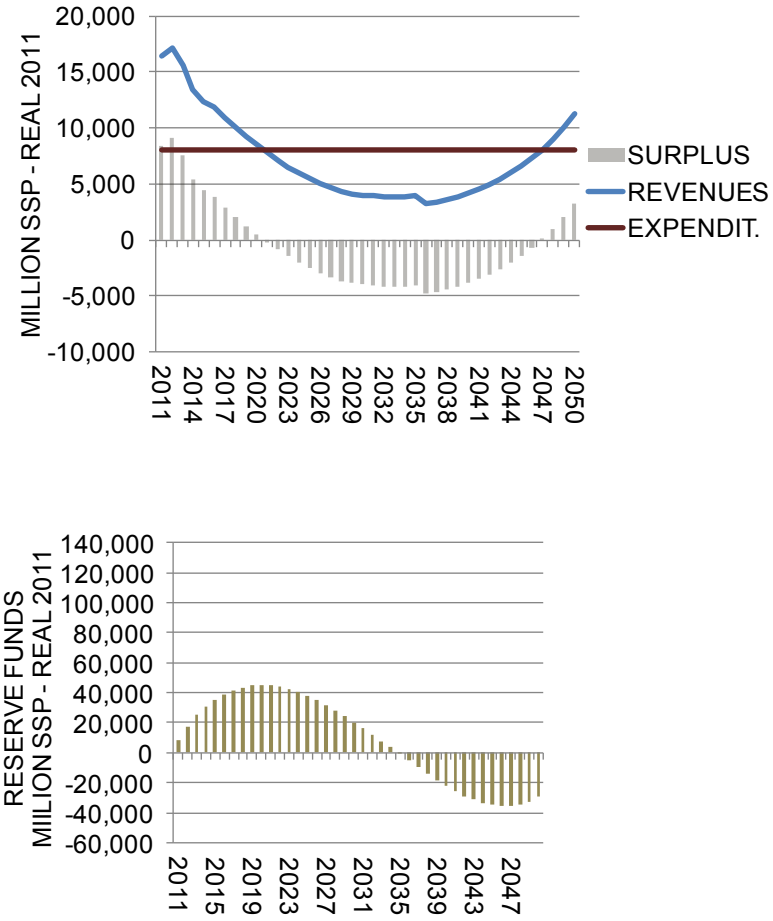
population growth or economic growth corrected basis. A constant expenditure level therefore means a constant amount of South Sudan Pounds per year in real terms.

5.2. Fiscal expenditures at the level of 2011

The South Sudan Development Plan of July 2011 presented a fiscal framework, where the expenditure level for 2011 was set to 9.2 billion SSP (SSDP 2011, section 5.2). Over the following months in 2011, some concerns were raised about this level being too high. This section evaluates the fiscal consequences of the level of expenditures the new state seems to have had the intention to establish, evaluated on the relatively short period post-independence and the fiscal policy the Government of Southern Sudan implemented throughout the CPA-period. To be on the conservative side, the expenditure level is set to 8 billion SSP for 2011. This expenditure level is then kept in real terms until 2050 and compared to the fiscal revenues over the same period.

Figure 9: Fiscal expenditures at the level of 2011



As shown in Figure 9, the fiscal revenues given the assumptions laid out in Figure 7 were projected to be considerably higher than the expenditure level of 8 billion 2011 SSP until about 2020. This would imply positive savings and hence an accumulation of net assets abroad. The assets were expected to reach a peak level of about 45 billion SSP (15 billion USD). As the revenues (i.e., oil revenues + non-oil revenues + interest payments from assets) would fall below the expenditure path, the de-accumulation of the assets would have to begin. This would continue until about 2045. Net assets would be around zero in 2035 and a net debt of almost 40 billion SSP would have been accumulated around 2045. At that point, the non-oil revenue growth of 10% annually (since 2011) would have made non-resource revenue large enough to more than finance the 8 billion of expenditures, and the payment of debt could begin. More than anything does this scenario illustrate

how far off the non-resource revenues are in terms of financing an expenditure level of 8 billion SSP. More than 30 years with an annual growth of 10% in non-resource revenues would be spectacular by international standards. The level of 8 billion SSP in government expenditures is not sustainable given the proven oil reserves and more realistic assumptions regarding non-oil revenues. Given that the oil revenues are close to zero in 2035, there is also a question about how favourable terms South Sudan would be able to achieve on any borrowing abroad.

5.3.Adjusted sustainable income

The Permanent Income Hypothesis as spelled out above subscribes that South Sudan should accumulate foreign assets and spend the permanent income of its oil wealth forever. However, a capital scarce country may have higher returns on domestic savings than savings abroad, due to decreasing returns to capital (van der Ploeg and Venables 2011). If this was the case in South Sudan, South Sudan should rather prioritize investments at home. Relevant investments objects would be public capital like roads and education to accumulate human capital.[9]

The scenario in this section sets government consumption equal to the permanent revenue of the oil wealth. "Development expenditures", set to 30% of the total government expenditures, are then added on top. Development expenditures would consist of investments in physical and human capital. Education expenditures seem to be the most standard definition of human capital investments, but some health expenditures could possibly also be included. Compared to the budgets over the period 2005-2011, under this scenario there would be a stronger focus on investments and less on consumption.

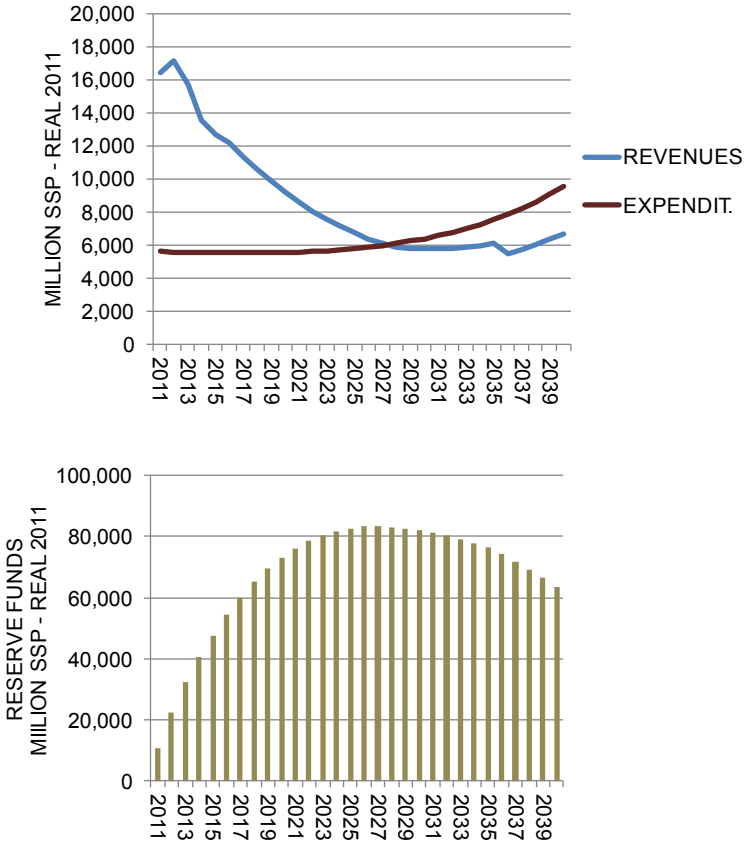
The expenditures in 2011 are set to the permanent income of 3.6 billion SSP plus 1.7 billion SSP in development expenditures plus 0.3 billion SSP in non-oil rev, summing up to 5.6 billion SSP. Going forward, the non-resource revenues increase by 10% annually – as in the two scenarios above. This latter assumption could be criticised on the ground that higher investments in physical and human capital would increase the growth in the non-resource economy, i.e. the tax base for non-resource revenue would then grow more than in the other scenarios. Given that the higher development expenditures gave positive returns and that these returns were taxable for the government, the non-resource revenues should grow more in this scenario than the two others. It is hard to project exactly how big the difference in the growth in non-resource revenue would be between the different scenarios. The current set up offers transparency by keeping the non-resource revenue growth rates equal in all scenarios. The reader should however keep this in mind and rather think that the relatively high growth assumed, 10%, is more likely for this adjusted sustainable income scenario than the other two scenarios.

Figure 10 shows the fiscal effects over the period 2011-2040 of keeping the expenditures at 5.6 billion SSP and keep the revenue scenario as in the two previous scenarios. Assets abroad would under this scenario be accumulated until the end of the 2020s and the net asset level would peak at around 80 billion SSP (more than 25 billion USD). By 2040, net assets would stand around 60 billion SSP. This is about half of the net assets generated under the PIH, but very prudent compared to the about 20 billion in net debt generated under the scenario of spending like in 2011.

[9] For a discussion of development expenditures and transformation of assets like natural resources to other assets in accordance with the Hartwick rule, see World Bank (2011).

Not discussed in this section is the issue regarding wealth sharing with Sudan. There seem to be expectations in Sudan of transfers of foreign exchange from South Sudan. The lack of such transfers seems to have contributed to the current crisis. The assumption underlying the revenue scenario used in the three scenarios in this section was one of zero transfers from South Sudan to Sudan. For given assumptions about the oil production path, oil price path and the contracts with the oil companies, this is yet another reason for why the revenue path may represent the upper bound.

Figure 10: Adjusted sustainable income



6. Subsoil savings and the way forward

The previous sections illustrated that the fiscal stance of South Sudan throughout 2011 would mean that the whole oil wealth, now estimated to be about 40 billion USD in present value terms, would be consumed away by about 2035 (except for any domestic assets in the form of physical or human capital financed over the budgets). Such a consumption of the country's wealth would be strongly inconsistent with the simple Hartwick-rule, which prescribes that the total wealth should be preserved although it may take different forms over time (as natural, financial, physical or human capital).

The issue of preserving the natural capital seems to have been solved in the short run, by shutting down the oil production and leaving the petroleum reserves in the ground. However, the value of the wealth has most likely been affected by the current turbulence: Expected extraction costs may

have gone up due to higher risk premium increasing financing cost of necessary installations; already installed installations may have been damaged by military attacks; and transportation costs may be permanently higher if the crisis is not solved, as new pipelines will have to be constructed (if at all feasible). All these issues affect the cost of producing oil and reduce the expected government revenues.

Issues concerning inefficient fiscal spending may suggest that the reduction of the oil revenues in the short run is welcome. But a collapse in oil revenues may lead to a balance of payments crisis, as the only viable other source of foreign exchange may be international aid. The situation could be worsened by lending from the central bank to the government to finance a likely budget deficit. Without the central bank being able to borrow money from the public in South Sudan, this could easily result in so called money printing and then escalating hyperinflation.[10] The end result would be a very weak currency and extremely expensive imports for the people in South Sudan, hurting the very import dependent economy in the short run.[11]

According to popular media, there are currently efforts by the South Sudan government to borrow abroad. With little non-resource capacity to generate foreign exchange earnings (i.e. non-resource exports are close to zero) and the value of the oil wealth being uncertain due to the political climate, the interest rates on any loan would most likely be high. South Sudan could then get itself into a spiralling debt problem quite quickly.

If the Sudans are able to solve their current crisis and South Sudan can get back to building up the new state, several experiences from the CPA-period and 2011 should be useful to inform policies going forward:

The most important issue may be to curb political pressure to spend all of the oil revenues in the short run. Fiscal sustainability and the low capacity to spend public funds efficiently suggest that the fiscal policy should be considerably more prudent going forward. The current situation, with suggested cuts by the Ministry of Finance and Economic planning in the order of 60%, should increase the political appetite for more forward looking, prudent policies. More prudency will mean higher savings, more efficient spending and a re-allocation from consumption towards investment items in the budget.

To achieve a more prudent policy outcome South Sudan could seek guidance from other countries with some success in controlling spending and achieving more stable and more sustainable fiscal policy outcomes. The consensus among policy makers as well as academics seems to be in favour of more rule based policies. Some framework providing guidance for the direction of fiscal policy beyond the immediate issues has proven to produce fiscal policies more consistent with long run optimality. More important than the formulation of rules may be the building of a political consensus about goals and then the means to achieve the goals. The formation and implementation of such a consensus takes well-functioning institutions.[12] South Sudan has a tremendous challenge in creating the environment for a more prudent fiscal policy. However, the current crisis is a reminder

[10] Annual inflation rates throughout the latter half of 2011 was already above 50%, the definition of hyperinflation.

[11] The issue of coordination between fiscal and monetary policy and macroeconomic stability in South Sudan is not addressed in debt in this paper.

[12] See Wyplosz (2012) for a recent discussion of rule based fiscal policies.

of the value of prudency and the need for precautionary saving, and should increase the new state's motivation for setting out a new direction in its fiscal policies.[13]

Bibliography

Collier, Paul & Venables, Anthony J. (2011), Illusory revenues: Import tariffs in resource-rich and aid-rich economies, *Journal of Development Economics*, Elsevier, vol. 94(2), pages 202-206

Era Dabla-Norris, Jim Brumby, Annette Kyobe, Zac Mills, and Chris Papageorgiou (2011), Investing in Public Investment: An Index of Public Investment Efficiency, IMF Working Paper WP/11/37

Frankel, Jeffrey (2005), On the Tenge: Monetary and Exchange Rate Policy for Kazakhstan, Short-term Consultancy

Harding, T. and F. van der Ploeg (2011), Official forecasts and management of oil windfalls, OxCarre Research Paper 27

Ploeg, F. van der (2011), Natural Resources: Curse or Blessing? *Journal of Economic Literature*, 49, 2, 366-420

Ploeg, F. van der (2011), Bottlenecks in Ramping up Public Investment, *International Tax and Public Finance*, forthcoming

Ploeg, F. van der and A.J. Venables (2011), Harnessing Windfall Revenues: Optimal policies for resource-rich developing economies, *Economic Journal*, 2011, 121, 1-31

Ploeg, F. van der and A.J. Venables (2010), Dutch Disease Dynamics, Oxcarre working paper

Frederick van der Ploeg, Radoslaw Stefanski and Samuel Wills (2011), Harnessing Oil Revenues in Ghana, OxCarre Policy Paper 12, Department of Economics, University of Oxford

Shankleman, Jill (2011), Oil and State Building in South Sudan, United States Institute of Peace, Special Report 282, July 2011

South Sudan Development Plan SSDP, MoFEP, July 2011

World Bank (2011; Kirk Hamilton and Scott Wallace), The Changing Wealth of Nations, The World Bank, Washington DC

Wyplosz, Charles (2012), Fiscal Rules: Theoretical Issues and Historical Experiences, NBER Working Paper No. 17884, March 2012

[13] A fiscal rule should: guide and bind the politicians (rules rather than discretion); be consistent with fiscal sustainability; ensure macroeconomic stability; be consistent with public spending giving good value for money. Examples of relatively well functioning fiscal rules can be found in countries like Chile, Timor-Leste and Norway. Chad and Nigeria may be examples of countries where the formulation of fiscal rules were less successful. An efficient fiscal rule may be characterized by simplicity, backing by political consensus, and flexibility rather than rigidity.

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