Public policies in taxation and revenue management are key to ensuring natural resource wealth results in economic development. Tax policy and systems should ensure that whenever natural resources are extracted, the host state receives a fair share of revenue. Revenue management policies are required to ensure that government revenues from natural resources are wisely used to finance sustainable economic development. This paper analyses key issues in natural resource taxation and revenue management and recommends policies that can improve countries' economic performance. The discussion draws on economic theory, empirical evidence and the work of the Commonwealth Secretariat.
Key Issues in Natural Resource Taxation and Revenue Management in the Commonwealth

Economic Paper Series

Daniel Wilde
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Abbreviations and acronyms

EIA Energy Information Administration (of the US)
ESI estimated sustainable income
GDP gross domestic product
HDI Human Development Index
IWG International Working Group of Sovereign Wealth Funds
ODA overseas development assistance
ONR Oceans and Natural Resources Advisory Division
PIH permanent income hypothesis
SWF sovereign wealth fund
VAT value added tax
Summary

Natural resource taxation

Competing objectives have to be balanced when designing fiscal regimes to tax natural resources. There should, for example, be a balance between ensuring that a government collects a reasonable minimum level of revenue whenever resources are exploited and encouraging investment. Similarly, a tax system that is highly progressive may also be complicated to administer and provide significant scope for tax avoidance. Public policy objectives of the government, state capacity and the host country’s economic structure should all inform the relative importance placed on competing objectives and the design of the natural resource taxation system. At the risk of oversimplifying, governments:

- where the development of natural resources provides significant benefits other than through government revenue (e.g. employment opportunities, improved energy security) should favour more neutral tax systems than those where the government revenue received is the only significant benefit;

- which are more experienced in and capable of auditing companies’ costs should favour highly progressive tax regimes, while governments with more limited capacity should favour less complex progressive regimes; and

- need significant capacity in tax administration, and a detailed understanding of the geology of natural resources and the likely costs of developing these resources, for negotiated fiscal systems to work effectively.

Revenue management

Revenue from natural resources has not always led to sustained economic development. From an economic perspective, this is because natural resource revenues are volatile and finite and can lead to a loss of economic competitiveness. Governments can ameliorate these problems by designing fiscal policies to delink expenditure from volatility in natural resource revenues, ensure an appropriate transfer of wealth across generations and restrict spending to a level consistent with maintaining economic competitiveness. This paper examines the following fiscal rules against these goals: benchmarking pricing, ‘bird in hand’, permanent income hypothesis (PIH) and non-resource fiscal deficit targeting. Each of these fiscal rules has its strengths and weaknesses, and the correct rule for a particular country is dependent both on specific economic considerations and on the policy priorities of government. However, in general:

- in countries where the main problem is volatility in natural resource revenues, causing volatility in government spending, the benchmark pricing fiscal rule should be considered;
• the bird in hand fiscal rule should be considered in countries that wish to transfer wealth across generations and delink government spending from volatility in natural resource revenues, and where the government and society are happy for consumption from natural resource revenues to increase slowly over time; and

• the PIH fiscal rule should be considered by governments that want to transfer wealth across generations, while increasing consumption faster than under the bird in hand fiscal rule.

In countries where a loss of economic competitiveness is a concern, these fiscal rules can be used in conjunction with targeting the non-resource fiscal deficit.

All the fiscal rules discussed above require the accumulation of savings in the short or long term. It is often optimal for governments to establish sovereign wealth funds (SWFs) to manage these savings. SWFs should be established with clear objectives and investment mandates which are consistent with the government’s overall fiscal policy. In addition, the institutional arrangements for SWFs should include appropriate checks and balances to insulate decisions about individual investments from political interference. It is also important that such funds have systems for effectively monitoring and managing performance, and for transparently reporting their performance to parliament and the public.

This paper therefore analyses key issues in natural resource taxation and revenue management. The first part of this paper discusses the taxation of natural resources, while the second part discusses revenue management.
Chapter 1

Introduction

Many Commonwealth member countries rely on revenues from natural resources.\(^1\) Indeed there are 11 developing\(^2\) Commonwealth member countries where natural resource revenue accounted for more than 20 per cent of exports or 20 per cent of government revenue between 2004 and 2013.\(^3,4\) In these countries, natural resource revenues normally exceeded receipts from overseas development assistance (ODA)\(^5\) and overseas remittances.\(^6\) Ensuring that public policies transform natural resource wealth into sustained economic development is thus of paramount importance to the Commonwealth.

Countries’ records in using natural resource revenues to finance economic development are mixed. A comparison of Botswana and Nigeria illustrates this point. During the 30 years from 1980 to 2010, diamonds were a major source of government revenue and exports earnings in Botswana. Its economic development over this time was remarkable, with gross domestic product (GDP) per capita more than trebling from 1980 to 2010. Nigeria’s success in using petroleum revenues to boost economic development over the same period was less sanguine,\(^7\) with its GDP per capita growing by less than 19 per cent over that 30-year period. There is also much evidence from academic literature that natural resources can contribute to, or retard, development.\(^8\) Academic studies also conclude\(^9\) that it is the quality of institutions and effectiveness of public policy which ultimately determine whether natural resource wealth leads to sustainable economic development.

Public policies in taxation and revenue management are key to ensuring that natural resource wealth results in economic development. Tax policy and systems should ensure that, whenever natural resources are extracted, the host state receives a fair share of revenue. Revenue management policies are required to ensure that government revenues from natural resources are wisely used to finance sustainable economic development. This paper therefore analyses key issues in natural resource taxation and revenue management, and outlines the position of the Commonwealth Secretariat to help Commonwealth members implement reforms in these areas. The first part of this paper discusses the taxation of natural resources, while the second part discusses revenue management. Both discussions draw on economic theory, empirical evidence and the work of the Commonwealth Secretariat.

Notes

1 In this paper, the term ‘natural resources’ is used to refer to petroleum, mining and gas.
2 In this case, all Commonwealth member countries that are not members of the Organisation for Economic Co-operation and Development (OECD) were regarded as developing. Belize is included in the table in Annex 1, despite natural resource revenue not exceeding 20 per cent of its exports or government revenue.
3 Please refer to Annex 1 for statistical data supporting this point.
Ghura and Pattillo (2012) define resource-rich developing countries as ‘low- and lower-middle-income countries (LICs and LMICs) whose exhaustible natural resources (e.g., oil, gas and minerals) comprised at least 20 percent of total exports or 20 percent of natural resource revenues, based on a 2006–10 average’.

The only exception to this is Tanzania, where receipts from ODA normally exceed revenues from natural resources.

Please refer to Annex 1 for statistical data supporting this point.

Sala-i-Martin and Subramanian (2003) provide an explanation and description of the resource curse in Nigeria.

Van der Ploeg (2011) undertakes a comprehensive literature review and concludes that the evidence shows that natural resources can be a curse or a blessing.

See Mehlum et al. (2006) for empirical evidence that it is the quality of institutions that determines whether or not countries suffer from the resource curse. Iimi (2006) also concludes that the quality of institutions is an important determinant of whether natural resources contribute to economic development.
Chapter 2

Taxation of Natural Resources in Commonwealth Countries

2.1 Why tax natural resource extraction differently from other economic activity?

Countries impose a range of taxes on economic activity. These taxes do not normally vary across industries. The same rate of corporate income tax, for example, is normally applied regardless of whether a company is manufacturing shoes or submarines. The taxation of natural resources is an exception to this rule, with most Commonwealth member countries imposing specific taxes on the mining and petroleum industries.

The existence of economic rent is normally given as the reason for imposing specific taxes on the natural resources sector. Economic rent means profits in excess of those needed to motivate economic activity. In the case of the petroleum and mining industries, this refers to the potential for companies to make profits in excess of those needed to motivate the exploration, development and production of natural resources.

There are good reasons for considering that economic rent exists in the natural resource sector. The scarcity and non-renewability of natural resources arguably causes their market price to exceed the average cost of production, leading to firms making excess profits. In some periods, the Organization of the Petroleum Exporting Countries (OPEC) has also succeeded in supporting a high price for oil by restricting its supply, which also leads to prices exceeding the average cost of production and firms making excess profits.

One argument against the existence of economic rent is that a sustained period of excess profits encourages production of otherwise marginally profitable resources. This leads to an increase in supply, which places downwards pressure on prices, while the average cost of production also increases. The overall impact is that economic rent declines due to both lower prices and higher costs.

Recent developments in the petroleum industry could be taken as supporting this argument. The increase in oil prices between December 2008 and June 2014 encouraged shale oil production, which typically has higher average costs than traditional oil production. In addition, increased supply from shale oil contributed to the fall in the price of Brent Crude from US$111.8 per barrel in June 2014 to US$ 45.84 per barrel in August 2016. This has led to a situation where the breakeven oil price for many shale producers is above current market prices and where new developments are unlikely to make excess profits. This in turn has contributed to a reduction in capital expenditure for exploration and development of new shale oil deposits and a decline in production. These events have some similarities to previous oil price crashes, when lower oil prices led to reductions in profits and in exploration...
and development expenditure. This reduction in costs led, albeit with a significant lag, to more constrained supply, higher prices and the return of excess profits.

The above argument explains why some marginal producers may not make excess profits in the long term, but it does not mean that economic rent cannot exist for lower-cost producers. Even if those companies producing oil from marginal sources at high costs are not making excess profits there will probably be a subset of producers with lower costs of production. For example, the average costs of production for currently producing fields and fields under development in Saudi Arabia are approximately US$11 and US$33 respectively,\(^4\) which is well below the current oil price.

There is also much empirical evidence for the existence of economic rent in the petroleum sector. ONR recently calculated internal economic rates of return for fields in Chad, Ghana, Nigeria, Timor-Leste and Uganda. The average pre-tax internal economic rate of return for these fields was 41 per cent, which is well above the hurdle rate of 12–14 per cent that companies commonly want to exceed in order to approve an investment. In addition, internal economic rates of return remained high, at 34 per cent on average, even after the levying of general corporate income tax. This suggests that, without specific taxes for natural resources, economic rent would indeed exist and companies would make profits well in excess of those required to motivate production and investment.

The high sunk costs and advanced technology required for exploration of some natural resources also mean that, at least for some poorer Commonwealth members, natural resource extraction is impractical without the assistance of international companies. This implies that excess profits accruing to mining or petroleum companies would mainly benefit non-residents and, to the extent that the ownership of shares in international oil companies is concentrated among richer households, would also be inequitable. The view of ONR is therefore that there are good reasons for imposing specific taxes to ensure that the host state receives a fair share of the revenues from the exploitation of natural resources.

2.2 Designing systems for the efficient taxation of natural resources

Commonwealth member countries tax natural resources through many fiscal instruments.\(^5\) Annex 3 describes and evaluates the strengths and weaknesses of many of the fiscal instruments used for the taxation of petroleum. One approach to the design of systems to tax natural resources is to evaluate the merits of individual fiscal instruments such as royalties, income tax and excess profit taxes. The problem with this approach is that countries normally apply numerous fiscal instruments to tax natural resources, and it is the net impact of all fiscal impositions on cash flows that affects companies’ investment decisions and government revenue. An income tax may be neutral and a royalty regressive with regard to profits, but a royalty can be included in a fiscal system that is progressive overall, while an income tax can be included in a system that is regressive. A further problem with this approach is that it leads to the strengths and weaknesses of different fiscal instruments being discussed in isolation of the public policy context and capacity of the host state.
This paper, therefore, follows a principles-based approach to discussing taxation. More specifically, it discusses the underlying principles and objectives of the tax system and how these are affected by public policy goals and state capacity. Such a discussion illustrates that there are inherent trade-offs between competing objectives when taxing natural resources, and that the best system is one that is appropriate for a particular country given its administrative capacity, economic structure and public policy objectives. This paper discusses the taxation principles of neutrality, ensuring minimum revenue, state take, progressivity, tax planning, negotiation and stability.

It is often argued that taxes should be neutral and not affect economic decisions. For petroleum, this would mean that taxes would not influence investors’ decisions to develop marginal fields. This can be achieved by designing a system whereby investors pay taxes only after they have achieved an internal economic rate of return that accounts for the cost of capital and all risks associated with the project. So, for example, if it is known with certainty that investors will not develop marginal fields unless their internal economic rate of return is 12 per cent, then a fiscal system can be designed whereby no taxes are levied until after that economic rate of return has been achieved.

The problem with neutral taxation is that it fails to ensure minimum revenue from marginal resources. In the above example, a field with an internal economic rate of return of 12 per cent would be developed, the resources extracted and lost forever – and yet the government would receive no compensating revenue. An alternative fiscal regime, which included, say, a signature bonus or royalty so as to guarantee a minimum amount of revenue when extraction occurred, would, however, also lead to the non-development of some fields and a loss of economic output.

The extent to which taxation should be neutral therefore depends on a country’s particular circumstances and public policy. In a relatively poor developing country, few nationals may be employed in the natural resource sector and there may be limited economic linkages with other sectors. Resource extraction may also be dominated by foreign companies which are owned by non-nationals, meaning that any profits are remitted abroad. In such circumstances, the main benefit for the host country from mining or petroleum production would be government revenue. In such a country, it would make little sense to design a fiscal system where mining could occur without the government receiving revenue.

In a richer developed country, circumstances may be entirely different. The majority of those working in the mining or petroleum industries may be nationals and the government may regard this employment as an important benefit. The host state may also wish petroleum production to occur so as to increase energy security. In these circumstances, government revenue is simply one of a number of benefits from natural resource extraction, and serious consideration should be given to a taxation system which is entirely neutral and does not guarantee minimum revenue from marginal sites.

The extent to which the natural resource taxation system should be neutral also depends on the host state’s view concerning long-term market developments. Natural resources which are not extracted are not lost, and a site which is marginal
today may be highly profitable in the future due to increases in commodity prices or technological change decreasing costs. Taxes that guarantee minimum revenue may, therefore, lead to natural resource extraction from marginal fields being delayed, as opposed to permanently lost. A country which is optimistic about the future prospects for its natural resources, perhaps considering that their market price will increase in the long term, may then favour a tax system which guarantees a minimum level of revenue, even if this means marginal sites are not immediately developed.

Governments should also receive a fair share of the revenues from natural resources. ‘State take’ shows government revenues from a natural resource project as a percentage of net cash flows (revenues minus costs). This measure is commonly used to evaluate whether governments are receiving a fair share of the financial benefits from natural resource extraction. The Commonwealth Secretariat regularly prepares benchmarking reports which compare state take in 32 countries based on marginal, low, moderate, high and very highly profitable model petroleum fields. The countries selected are mainly developing countries, and include countries that are frontier areas and are regarded by investors as being risky locations for investment in petroleum exploration and production. This report shows that the average state take for the sample is 63 per cent, 61.9 per cent and 62.1 per cent for marginal, moderate and very highly profitable fields respectively. For the marginal fields, investors’ post-tax economic rates of return are estimated at 17.4 per cent, which is above the hurdle rate that most internal oil companies apply in determining whether to proceed with an investment. This provides some evidence that a state take of approximately 60 per cent is often achievable without reducing internal economic rates of return to a level that would significantly hamper investment.

The conclusion that a state take of 60 per cent is achievable should be interpreted carefully. Investors’ required rates of return vary according to their perception of risk, and there may be countries where a fiscal regime that led to an economic rate of return of 17.4 per cent would deter investment. This point is, however, strictly speaking not applicable to fiscal regimes where interest repayments are allowable as a cost and where the interest rate accounts for political risk. The reason for this is that, in such circumstances, the internal economic rate of return already accounts for political risk (as it is based on net cash flows after interest repayments). In addition, it is ultimately for the government and society to make a value judgement concerning whether a state take of 60 per cent does or does not represent a fair share of natural resource revenue.

There is a strong argument that tax systems should be designed to be progressive. In natural resource taxation, a progressive tax system is one whereby state take increases as net cash flows increase. Progressivity is desirable for three main reasons. First, a progressive tax regime imposes a relatively lighter fiscal burden on projects of marginal profit potential, thereby increasing the likelihood of such investments being made in the first place. Second, a progressive tax regime enables the host state to automatically capture some of the economic rent (excess profits) associated with the development of ‘superior’ deposits (i.e. those that are of exceptional quality and/or can be extracted at unusually low costs), as well as any windfall profits that may accrue as a result of especially favourable market conditions (e.g. a high-price environment). Third, because the fiscal burden adjusts automatically to reflect actual profitability, it
removes incentives for investors or the host state to seek a renegotiation of terms that might otherwise have been sought if faced by a rigid and regressive fiscal regime. Thus, progressivity can contribute to the stability of the government–investor relationship.

One problem with progressive tax systems is that they normally rely on taxing net cash flows. The net cash flows on a project are defined as revenues minus recoverable costs. This means that progressive tax systems provide a motivation for investors to reduce their tax burden by overstating recoverable costs and reducing net cash flows. Effectively investors are incentivised to hide profits in recoverable costs.

Three possible ways for investors to overstate costs are leveraging, recovering head office costs and transfer pricing. Investors often borrow to finance the exploration and production of natural resources. The interest on these loan repayments is sometimes recoverable as a cost. In such cases, investors may borrow from related parties at an above-market rate of interest in order to increase costs and lower their tax burden. In some jurisdictions, investors can also recover the head office costs associated with a particular natural resource project. As it is often difficult for the host state to accurately estimate the head office costs associated with a particular project, this provides the potential for investors to overstate costs and reduce their tax burden. Transfer pricing refers to a situation whereby an investor overpays for goods or services from a related entity, so as to transfer net cash flows away from a project in a relatively high-tax jurisdiction.

Governments can draft tax laws so as to minimise the ability of investors to overstate costs. However, such mechanisms are unlikely to be entirely foolproof; they tend to increase the complexity of the fiscal regime and can increase investors’ costs in unforeseen ways. Many fiscal regimes, for example, specify that transactions should be undertaken on an ‘arm’s length’ basis between unrelated parties. This reduces the scope for transfer pricing. It may, however, still be possible for the investor to agree to pay a supplier a higher price for a good in a high-tax jurisdiction in return for receiving a lower price in a low-tax jurisdiction. Such behaviour would still reduce the tax burden, and lead to recoverable costs being overstated and the tax burden reduced in the high-tax jurisdiction. Similarly the fiscal regime may specify that interest can be recovered only at a fair market rate, but this requires that the government can easily identify the market rate of interest. In a jurisdiction where there is significant political risk and a limited history of natural resource extraction, determining a fair market interest rate may be difficult. Overall, it is difficult to completely guard against companies overstating recoverable costs through the drafting of laws and regulations. It is also important that experienced auditors systematically audit investors’ tax returns. Some developing countries have little expertise and experience in petroleum or mining tax auditing, and their ability to identify the overstatement of recoverable costs may thus be limited.

Progressive fiscal regimes then, while having many advantages, do provide companies with a motivation to engage in tax avoidance. Less progressive fiscal regimes, where tax liability does not vary with costs or profits, provide less incentive for tax avoidance. The latter kind are also simpler to administer, as the need for the government to ensure against transfer pricing, unreasonably high interest costs and the recovery of unreasonable head office costs is less important.
Given that highly progressive fiscal regimes have both advantages and disadvantages, the key question is: what host state characteristics favour progressive regimes? A country which had considerable experience and capacity in petroleum and mining tax auditing, where interest rates on loans for natural resource projects were well known and where fair market prices for inputs were easily available would be well placed to implement a highly progressive regime. A constructive relationship and a degree of trust between the host state and the investor are also important to the successful implementation of a highly progressive regime. In contrast, a government with limited experience and capacity to administer the fiscal regime or audit tax returns and a tense relationship with investors would be less well placed to implement a highly progressive fiscal regime.

There are many countries that fall in between the two extremes of being well placed and poorly placed to implement highly progressive regimes. For such countries, fiscal regimes that guarantee a minimum level of revenue through a royalty and allow the government to share in excess profits through the implementation of additional profit taxes warrant consideration. Such fiscal regimes represent a reasonable compromise between the need to ensure minimum revenue, the need to guard against tax planning and progressivity.

Another important issue is whether governments should negotiate tax rates with investors. The logic for negotiated regimes is that they allow the setting of tax rates at a level where government revenue is maximised, given the characteristics of a particular petroleum field or mine. The reality of negotiations, however, significantly deviates from this logic. In the case of petroleum, for example, governments in developing countries are normally reliant on companies for data on recoverable reserves and field geology. This weakens the government’s negotiating position. Investors are also likely to be much better informed regarding the likely development and operating costs over the life of the field. In addition, if governments do not have a strong understanding of likely exploration and production costs during negotiations, it is difficult for them to calculate – let alone negotiate – tax rates that will maximise revenue.

Negotiated tax rates can also complicate tax administration. The relevant sector ministry for natural resources often leads negotiations, but the Ministry of Finance will probably administer some taxes. Effective communication and knowledge sharing between these ministries then become necessary for effective administration. Yet, in some developing countries, co-ordination between these ministries is lacking. Negotiated fiscal systems are also likely to lead to numerous tax rates and possibly definitions of recoverable costs, and this also complicates tax administration. There are reports of developing countries losing track of the different tax rates that should be applicable to different fields and investors. Negotiated fiscal regimes can also, if the details of any agreement are not published, be opaque and provide a conduit for corruption.

Governments, therefore, need significant capacity in tax administration and a detailed understanding of field (or mine) geology and costs for negotiated fiscal systems to work effectively. This would suggest that negotiated fiscal systems should be most prevalent in developed countries with an established record of petroleum production (or mining). But this is not the case. In general, there is an inverse correlation between capacity for tax administration, economic modelling and negotiation, and the extent to which deals are
negotiated. Richer countries often have standard tax agreements, while poor countries tend to negotiate tax rates. In addition, negotiated deals have often served countries badly in practice, because of a lack of knowledge, corruption or incompetence.\(^{10}\)

The extent to which the governments should guarantee stability in tax rates after agreements have been signed is also a key issue in the design of fiscal systems for natural resource extraction. Fiscal stability clauses are often included in contracts between governments and investors. These clauses are designed to provide security to companies from unexpected increases in taxes. Such clauses are arguably required in the petroleum and mining industries, compared with other industries, due to the high sunk costs involved. Investors argue that they need protection against a situation whereby they heavily invest in exploration and production, in expectation of high future profits, only for taxes to be sharply increased during production.

By reducing uncertainty and risk, fiscal stability clauses should increase investment. One problem, however, with such clauses is that they can restrict the reasonable taxation of unexpected economic rent. A sharp, unexpected increase in oil prices can, for example, lead to a particular oil field being much more profitable than expected by a company when it started exploration. Yet a fiscal stability clause can prohibit the government from increasing taxes and fairly sharing in this excess profit. On the other hand, it could be argued that a well-designed progressive fiscal regime could ensure that government revenue increases with profits, without the need to amend the fiscal regime.

Fiscal stability clauses have also, sometimes, been broadly worded and have used poorly defined terms. In some countries, fiscal stability clauses refer to the government ensuring that there is no change in any (or compensating the investor for any change in) laws or regulations that affect the investor's 'economic benefits'. An investor could argue that any changes to labour or environmental legislation which increased its costs had led to a reduction in its economic benefits, and therefore that the fiscal regime should be amended so as to reduce the burden of taxation as compensation. Such a broad interpretation of the fiscal stability clause would actually result in instability in the fiscal regime itself.

Overall, governments should be cautious of signing fiscal stability clauses. A review of recent laws and contracts in Tanzania, Trinidad and Tobago, Angola, Equatorial Guinea and Kurdistan revealed that only the Kurdistan Model Production Sharing Contract has a stabilisation clause.\(^{11}\) If the government does consider that it is essential to use a fiscal stability clause, the clause should guarantee stability in only the burden of taxation (and not more broadly defined economic benefits) until after the investor has achieved an agreed internal economic rate of return.

### 2.3 An approach to natural resource taxation

This paper has discussed a principles-based approach to taxing natural resource extraction. Underpinning this approach is the consideration that the design of fiscal regimes for natural resources inherently involves conflicts between competing objectives. There is, for example, a degree of conflict between the idea that the fiscal regime should be neutral and guaranteeing the government minimum revenue.
Similarly, there is a degree of conflict between ensuring taxes are progressive and reducing scope for tax avoidance. The relative importance given to different objectives is ultimately dependent on the public policy objectives, economic structure and capacity of government in the host state. In very broad terms, countries:

- where the development of natural resources provides significant benefits other than through government revenue (e.g. employment opportunities, improved energy security) should favour more neutral tax systems than those where the government revenue received is the only significant benefit;

- which are more experienced in and capable of auditing companies’ costs should favour highly progressive tax regimes, while governments with more limited capacity should favour less complex progressive regimes; and

- need significant capacity in tax administration, and a detailed understanding of the geology of natural resources and the likely costs of developing these resources, for negotiated fiscal systems to work effectively.

Designing systems for the taxation of natural resources should therefore be based on a detailed analysis of the characteristics of the host state.

Notes

1 For a detailed discussion of the reasons why natural resources may be taxed differently from other economic activity, see Boadway and Keen (2010). For a more detailed discussion of petroleum fiscal regimes, see Nakhlé (2010).
2 The source for this data is the US Energy Information Administration (EIA) website, available at: https://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm [Accessed 22 September 2016].
3 See Annex 2.
4 The source for this data is Rystad Energy.
5 The word ‘taxes’ is used in this paper to refer to any fiscal instrument that results in the government receiving revenue from a natural resource project.
6 Strictly speaking a royalty is not a tax. A royalty is, rather, a payment to the owner of an asset by a company or person who wishes to exploit that asset for profit. However, as a royalty on petroleum or mining production is one of a range of fiscal instruments that are used by governments to generate revenue, this paper regards royalties as part of the system for taxing natural resources and throughout much of this paper the term “petroleum taxation” is used to refer to royalties and taxes.
7 See, for example, Furman (2008).
8 One potential solution to this problem is to create a system whereby royalties vary with some measure, such as daily production, which acts as a proxy for net cash flows. Such a system may be progressive and is not as vulnerable to tax avoidance, as it does not rely on companies reporting net cash flows. The problem with such a system is that it is progressive only to the extent that the proxy varies with net cash flows, and in reality there are circumstances in which measures such as daily production and net cash flows diverge.
9 For more detailed evidence on these points and other issues for administering fiscal regimes for natural resource extraction, see Calder (2014).
10 For more detailed evidence on this point and issues for administering fiscal regimes for natural resource extraction, see Calder (2014).
3.1 Negative economic impacts of natural resource revenues

Natural resource revenues have not always led to economic development. From an economic perspective, this is because natural resource revenues are volatile and finite and can lead to a loss of economic competitiveness.

International commodity prices and natural resource revenues are extremely volatile. For developing resource-rich Commonwealth members, natural resource revenues have often been more volatile than non-resource revenues. Volatility in revenue can harm long-term economic development if it feeds through to inefficient public spending. A ministry of education, for example, is unlikely to be able to provide effective services if its budget increases by 15 per cent one year and then decreases by 30 per cent the next year due to volatility in resource revenues. There is much evidence that volatility in resource revenues has fed through to public spending in many Commonwealth member countries. Volatile natural resource-financed public spending can also lead to volatility in aggregate demand, inflation, exchange rates and interest rates. The overall impact is an unstable macroeconomic environment, which inhibits businesses from making long-term productive investments and retards economic growth.

The exhaustibility of natural resources also means government revenue from their extraction cannot continue indefinitely. This implies that consumption and government spending financed by natural resource revenues are temporary. Short, unsustainable increases in consumption and living standards are generally regarded as being detrimental to a society’s long-term welfare and should be avoided. The extent to which revenues from natural resources are in practice finite over the medium term varies between Commonwealth members, but for those countries with limited reserves compared with annual production it is important that their governments implement policies to maintain a sustainable level of consumption over time.

Natural resource-rich countries can also suffer from ‘Dutch disease’. This occurs when revenue from natural resources increases demand in the economy, which in turn causes inflation (in a fixed exchange rate regime) or currency appreciation. Higher inflation increases costs and reduces the competitiveness of businesses that export goods or compete with imports (e.g. manufactured goods). Higher prices raise profits and wages in the non-traded sector that does not have to compete with imports (e.g. restaurants, construction). Domestic labour and capital, therefore, move away from the traded sector to the non-traded sector. The end result is that the domestic economy is dominated by the non-traded sector (e.g. construction, restaurants) and most traded goods are imported.
Some economists have argued that Dutch Disease is not a problem. Their argument is that, if natural resource inflows are likely to be permanent, then movement of domestic resources to the non-traded sector may represent the optimal way for the economy to adapt to its new-found wealth. However, natural resource revenues may be exhaustible in the medium term for many countries. For these countries, the movement of labour to the non-traded sector is likely to be temporary. This movement of labour will, however, involve many workers losing their jobs and considerable short-term economic hardship, and therefore should be avoided. In addition, even when natural resource revenues continue over the long term, Dutch disease can reduce long-term economic growth if productivity gains are concentrated in the traded sector.

In summary, natural resource revenue can, if not properly managed, lead to volatile and inefficient public spending, an unsustainable increase in consumption and Dutch Disease.

3.2 Fiscal rules

This section examines fiscal rules to mitigate the potentially harmful impact of natural resource revenues. The fiscal rules that are analysed here are benchmark pricing, the ‘bird in hand’ fiscal rule, the permanent income hypothesis (PIH) and non-resource fiscal deficit targeting. For the purposes of this discussion, it is assumed that natural resource extraction affects domestic demand only through government spending. This paper also initially assumes that government spending is on consumption and not investment, although later this assumption is relaxed when we discuss public investment in infrastructure.

Under the benchmark pricing fiscal rule, the government sets a benchmark price for the natural resource in its national budget. This benchmark price should be set at the expected long-term average price for the natural resource (or lower if the government wants to accumulate long-term savings). The national budget forecasts the amount of revenue that would be collected from natural resources at the benchmark price and sets a level of government spending consistent with this amount. When actual prices exceed the benchmark price, natural resource revenue is higher than required to finance government spending, and savings accrue. When actual prices fall below the benchmark price, natural resource revenue is lower than shown in the national budget and the government maintains spending by running down savings. The benchmark pricing fiscal rule should then delink spending from short-term volatility in natural resource revenue and increase macroeconomic stability.

The benchmark pricing fiscal rule is simple in theory, but can be difficult to implement in practice. The true long-term price for commodities cannot be known with certainty, and it is often difficult to distinguish short-term fluctuations in prices from long-term structural shifts. This makes it difficult for the government to set the benchmark price at a level equal to the long-term average price for the commodity. A benchmark price that is consistently below the long-term average price will lead to the accrual of unintended long-term savings. In contrast, a benchmark price that is
set above the true long-term price will lead to savings being exhausted. Meanwhile, a benchmark price that adjusts to short-term (non-structural) changes in commodity prices can lead to volatility in government spending. Nigeria provides an example of a country that has in theory followed a benchmark pricing fiscal rule. However, it has in practice deviated from this rule by distributing savings to state-level governments, adjusting the benchmark price to short-term changes in the price of oil and diverting savings to funds which are meant to transfer wealth between generations.10

A further problem with the benchmark pricing fiscal rule is that it does not transfer wealth between generations. Savings that accrue are the result of commodity prices deviating from their long-term average and are not intended to transfer wealth to future generations. Nor does the benchmark pricing fiscal rule solve the problem of a short-term increase in revenue from natural resources financing a temporary, unsustainable increase in consumption.

The ‘bird in hand’ fiscal rule has been proposed to transfer natural resource wealth across generations. Under this fiscal rule, the government saves all the revenues from natural resources as they accrue, and only the yield from these investments is used to finance current spending and consumption. This leads to a slow, sustainable increase in government spending.

The bird in hand fiscal rule delinks government spending from natural resource revenues. The reason for this is that actual government spending is based on past savings. The fiscal rule therefore stops government spending from declining when natural resource revenues fall. In addition, the bird in hand rule results in a level of government spending that is sustainable over the long term, even after natural resources have been exhausted.

Under the bird in hand rule, government spending increases only slowly over time. This leads to higher consumption for future generations than for the current generation, which is inequitable.11 In practice, this will not be a significant problem for countries with limited natural resources that are quickly exploited and transformed into financial assets. A country with a single oil field that is fully exploited and decommissioned within 20 years will see government spending increase relatively quickly, and effectively the same generation will experience low and maximum yearly consumption. That being said, the current generation’s average level of consumption over its lifetime will still be lower than that of future generations. For countries where natural resources are exploited over a long period of time, say 100 years, the level of government spending will peak only in the far future – so the consumption of the current generation will be significantly lower than that of future generations.

The PIH provides all generations with an equal increase in consumption from natural resource revenues. This is achieved by the government spending and consuming only the long-term real rate of return on total natural resource wealth, when total natural resource wealth is equal to the value of savings from natural resource revenues and the value of future revenues from, as of yet, unextracted reserves. Under the PIH, government spending from natural resource revenues immediately increases to its maximum amount. Government spending increases much faster than under the bird
in hand fiscal rule, because it is based on total natural resource wealth, as opposed to financial savings from past revenues. Under the PIH fiscal rule, the government will initially have to finance spending from borrowing if actual natural resource revenues in the first year are smaller than the long-term real rate of return on total natural resource wealth. In addition, over time, the value of financial assets will increase relative to the value of future natural resource revenues. As government spending is based on natural resource wealth, and not short-term revenues, the PIH should delink government spending from short-term movements in commodity prices.

In practice, the PIH is complex to administer and consistent with numerous different levels of public spending. This is because the PIH relies on inherently uncertain forecasts of future natural resource revenues. To forecast revenues from natural resources, governments have to decide rules for forecasting prices, production and costs. All these rules and forecasts are subject to value judgements, which have a large impact on the actual level of government spending that is regarded as being consistent with the PIH. For example, one government might include all resources stated in the United States Geographical Survey and use the Energy Information Administration’s (EIA) high-price forecast for Brent Crude when estimating government spending consistent with the PIH. This would lead to a very high level of government spending. It would also run the risk of actual revenues being lower than forecast, and initial consumption being higher than warranted and unsustainable in the long term. Another government might make a very conservative forecast of future revenue from petroleum by forecasting revenue from only oil fields where production had commenced and by using the EIA’s low-price forecast. This would lead to a conservative forecast of future revenues and, therefore, low current government spending. In all likelihood, as existing proven reserves were developed in the future, natural resource revenues would be higher than forecast and the initial level of consumption would prove to be too low. This would be inequitable, as it would favour future generations relative to existing generations. In countries such as Timor-Leste, which has implemented a specific fiscal rule based on the PIH, methodological changes and yearly changes to information on reserves, future oil prices and costs of production have resulted in significant changes each year to the level of government spending seen as consistent with the PIH.

Economists have also argued that government spending should increase faster than under the PIH. The underlying assumption here is that living standards increase over time and that a dollar of government spending has a larger impact on welfare in poor societies than rich societies. This implies that government spending from natural resource revenues will have the largest impact on welfare if it is frontloaded, with spending initially being higher than dictated by the PIH. It is also argued that such a policy is consistent with intergenerational equity, as government spending will be higher for the current – otherwise poorer – generation than for the richer generations of the future. Thus frontloaded government spending is helping to equalise welfare across generations.

One problem with this argument is that it rests on the assumption that living standards always increase over time. The reality for some natural resource-rich countries is that, for significant periods, living standards have stagnated. For example, Nigeria’s GDP
per capita was lower in real terms in 2002 than in 1960.\textsuperscript{13} It is perhaps unwise to advise developing countries to spend resource revenues quickly, based on the assumption that they will be richer in the future.

The frontloading argument also ignores state capacity. In general, as countries become richer, the capacity of their governments increases. This implies that, while populations in poor countries have a greater need for public spending now than in the future, they also have governments which are less able to spend money effectively now than in the future. In short, if living standards are assumed to increase over time, then it should also be assumed that government capacity increases over time, and increasing government capacity suggests that spending from natural resource revenues should be backloaded, not frontloaded.

A further criticism of all the fiscal rules discussed so far is that they do not guarantee a level of government spending consistent with the absorptive capacity of the economy. The PIH, for example, ensures a level of government spending from natural resources that is consistent across time, but not that this level of spending is financed below the absorptive capacity of the economy. For a poor, resource-rich country, the level of spending consistent with the PIH could lead to a significant appreciation of the exchange rate and a loss of competitiveness. In Timor-Leste, for example, following the PIH could arguably risk economic competitiveness. In 2012, the estimated sustainable income (ESI, which can be regarded as the government’s conservative measure of the PIH) was US$665 million, compared with domestic revenue of US$137 million and non-oil GDP of US$1,359 million.\textsuperscript{14} Thus, even under the PIH, the government would be spending nearly six times as much as if there was no natural resource revenue. This does not of course mean that government spending did reduce economic competitiveness. But it does show that, for some developing countries, following the PIH does not necessarily restrict government spending to a level at which Dutch Disease is no longer a concern for public policy.

The non-resource fiscal deficit-targeting rule aims to ensure that government spending\textsuperscript{15} from natural resource revenues does not lead to a loss of economic competitiveness. The non-resource fiscal deficit can be defined as non-resource revenue minus government spending, divided by non-resource GDP.\textsuperscript{16} The deficit thus shows the amount of government spending as a percentage of the economy financed by natural resource revenue. It can be interpreted as an approximate measure of the increase in domestic demand from natural resource revenues. Detailed economic analysis should be undertaken to determine the level of the non-resource fiscal deficit that is consistent with low inflation, a stable exchange rate and maintaining competitiveness in the traded sector. Government spending should then be restricted to ensure the targeted non-resource fiscal deficit is not exceeded. As targeting the non-resource fiscal deficit does not guarantee a fair intergenerational transfer of wealth, it should arguably be used in conjunction with another fiscal rule. For example, there can be a double lock, with government spending restricted to whichever is the lower amount given by the PIH and the non-resource fiscal deficit-targeting rule.

The fiscal rules discussed so far all involve saving natural resource revenues in certain periods. A key question is whether such savings should be invested domestically or
Internationally. This question has been a key point of discussion for public policy in the academic literature and in a number of resource-rich countries such as Guyana, Nigeria and Timor-Leste. In many of these countries, the discussion has focused, in particular, on the benefits and costs of domestic investment in infrastructure.

Domestic investments are commonly argued for on the basis of higher returns to capital. The underlying economic rationale for these arguments is that, as capital is scarce in developing countries, rates of return should be higher. There is, however, compelling empirical evidence that capital does not flow from rich to poor countries by the amount predicted. One reason for this is that low government capacity in developing countries reduces the actual ex-post rates of return on private investments. Similarly, there have been many studies of government spending on infrastructure in developing countries that have shown that ex-post economic and financial returns on projects have been low. The underlying reason for this is that, while capital may be scarce in developing countries, the capacity of government to effectively invest resource revenues domestically by constructing infrastructure may be limited. It could even be argued that the capacity of governments is broadly in line with their level of domestic economic development. It would then follow that what distinguishes developing resource-rich countries is capital abundance and limited state capacity, implying that in general there will be low returns to domestic infrastructure investment in such countries.

Debates concerning whether resource revenues should be invested domestically or internationally have also often conflated financial and economic rates of return. Investments in international assets such as equities offer purely financial returns. Cost-benefit analysis studies of infrastructure projects in developing countries commonly report economic rates of return. Financial and economic rates of return are not, however, strictly comparable. The economic rate of return on a road project in a developing country will, for example, include the value of the time saved by travellers. This benefit cannot, however, be easily monetised. In many poorer resource-rich countries, the financial rates of return from infrastructure projects and other domestic investments by government will be low because of consumers’ limited ability to pay. Even projects that substantially increase economic output may contribute little to government revenues, due to domestic revenue collections being low as a percentage of non-resource GDP. This does not mean that governments should never invest resource revenues in domestic infrastructure with low financial, but high economic, rates of return. It does, however, mean that, if the government is choosing to invest domestically in projects with high economic and low financial rates of return, this will weaken the government’s fiscal position. A situation is thus possible whereby a government continually sells foreign assets, invests in domestic projects with high economic rates of returns, but faces falling revenues and an eventual fiscal crisis.

Governments should also consider the impact of domestic investment on economic competitiveness. Some economists have argued that increased government infrastructure spending financed by resource revenues is unlikely to cause Dutch Disease. Their argument is that spending on infrastructure increases the long-term
productive potential of the economy and that its impact on domestic demand is limited. This would be true if the spending immediately or quickly resulted in better, useable infrastructure and if the construction industry was competitive. It could also be the case when international firms using imported goods and expatriate labour undertook construction. However, in many resource-rich developing countries a sharp increase in domestic investment in infrastructure will strain the capacity of the domestic construction sector and the project management capacity of government. The result would be increased profits and wages, and much poor-quality construction work. In addition, the increased demand from spending on infrastructure would happen prior to infrastructure being completed and used by firms to increase supply. It follows that even infrastructure spending that creates high-quality assets can still cause Dutch Disease in the short term.

There are then many reasons for governments to be cautious when considering whether or not to invest natural resource revenues domestically. Our view is that governments should not significantly increase domestic investment of natural resource revenues based solely or mainly on the a priori assumption that returns are likely to be higher domestically than internationally. This does not of course mean that governments should never invest resource revenues domestically, but it does mean a more cautious and detailed approach should be followed whenever a country is considering significantly scaling up domestic investments financed by resource revenues.

### 3.3 Designing fiscal rules for natural resource revenue management

The previous section discussed fiscal rules for the management of natural resource revenues. There is no one best-fit rule for all developing natural resource-rich Commonwealth countries. Rather, the best rule to implement depends on both the economic structure of a country and the public policies that its government wishes to pursue. In broad terms and at the risk of overly simplifying, Commonwealth member countries:

- which have significant reserves of natural resources should arguably concentrate on delinking revenue from short-term volatility in natural resource revenues and maintaining economic competiveness; these concerns speak to the implementation of the benchmark pricing and non-resource fiscal deficit-targeting rules;

- with limited natural resource reserves, and governments and populations that are willing to see consumption increase slowly over time, should consider implementing the bird in hand fiscal rule; if the sustainable yield from savings of natural resource revenues is large compared with the size of the domestic economy, then consideration should also be given to implementing the non-resource fiscal deficit-targeting rule;

- with limited natural resource reserves, and governments and populations that wish to see an immediate increase in consumption, should consider implementing
the PIH; if the sustainable yield from total natural resource wealth is large compared with the size of the domestic economy, consideration should also be given to applying the non-resource fiscal deficit-targeting rule.

The level of consumption consistent with the PIH, for example, is heavily dependent on how total natural resource wealth is forecast. This is in turn dependent on how future commodity prices, reserves and costs are forecast.

When considering scaling up domestic investment, it is important for governments of Commonwealth member countries to:

- Clearly articulate the principal reason for making the domestic investment. Is it to maximise financial returns or more broadly defined economic returns? If the goal is to maximise economic rates of return, then it is also important to ensure that overall fiscal policy remains sustainable.

- Increase domestic investments only in line with the capacity of the government (or the private sector) to manage these projects. In practice, this should involve only an initial modest increase in domestic investment and reviewing projects ex post to determine whether they were effectively managed and achieved high returns. Only if these goals were achieved should investment be further scaled up.

- Increase domestic investments only if this can be done without undermining short-term economic competiveness. This can be done by maintaining a non-oil fiscal deficit-targeting rule.

### 3.4 Sovereign wealth funds

All the fiscal rules discussed in the last section involve the accrual of savings. Sovereign wealth funds (SWF) are state-owned investment vehicles that are used to invest national savings. The majority of SWFs have been established to invest savings from natural resource revenues, although there are other reasons for establishing these funds – such as investing general current account surpluses or to finance future liabilities. This section concentrates on discussing key issues in establishing natural resource revenue SWFs. The issues discussed are SWF objectives, investment mandates, institutional structures and whether such funds should invest domestically or internationally. The discussion provides a high-level overview and does not aim to comprehensively cover every aspect of SWF management.

SWFs should have clearly stated objectives. These objectives should be closely related to and arguably flow from the fiscal policy rules through which the government is accruing savings. For example, a government implementing benchmark pricing is accruing short-term savings and, therefore, it should be clear that the objective of the SWF is short-term stabilisation. In contrast, a government following the PIF fiscal rule is establishing a fund for long-term savings and the intergenerational transfer of natural resource wealth, so these should be identified as the long-term objectives of the fund. It is also important that there be a clear and unambiguous statement of the SWF’s objectives and arguably that these objectives be mandated by law.\(^{22}\)
The broad investment mandate of the SWF should also be consistent with its objectives and the government’s fiscal policy. An SWF that has been established to manage short-term savings should mainly invest in relatively low-risk and liquid assets, such as US Treasury Securities. In contrast, an SWF which has been established to manage long-term savings can consider investing in riskier and sometimes less liquid assets with higher financial rates of return, such as equities and property. In practice, ensuring consistency between fiscal policies, the objectives of the SWF and the investment mandate of the fund has proved difficult in many countries. Timor-Leste and Nigeria arguably provide illustrative examples in this regard.

In Nigeria, savings accrued from a benchmark pricing fiscal rule designed to ensure short-term stabilisation. These savings were originally saved in the excess crude account, but in 2011 money was transferred from that account and three new funds were established, namely a stabilisation fund, an infrastructure fund and a future generations fund. The infrastructure fund and future generations fund invest in relatively risky and (in the case of the infrastructure fund) non-liquid assets. This is arguably problematic, given that the fiscal rule determining the level of savings is not designed to result in significant long-term savings or transfers of wealth between generations. The risk with such a policy is that, during a sustained fall in oil prices, the stabilisation fund’s account balance will reach zero and government spending will have to be cut, while there continues to be a positive balance in the infrastructure and future generations funds; or alternatively that, when oil prices are low, a fire sale of the assets of these two funds will be required to maintain government spending.

In Timor-Leste, fiscal policy originally followed the PIH. More specifically, the government saved all petroleum revenues in its SWF. The amount withdrawn from the fund was set at 3 per cent (the forecast long-term real yield on investments) of total petroleum wealth, when total petroleum wealth equalled savings in the SWF plus a conservative forecast of future oil revenues. Withdrawing the ESI is therefore consistent with maintaining the real value of total petroleum wealth and the long-term intergenerational transfer of wealth. It is also consistent with the balance in the SWF increasing over time and the value of future oil revenues declining (as oil is produced) until the SWF’s balance equals total petroleum wealth. The distribution of the fund between asset classes was designed to be consistent with this fiscal policy, with the Petroleum Fund Law specifying that up to 50 per cent, not less than 50 per cent and not more than 5 per cent of the fund’s balance could be invested in equities, fixed income and alternative instruments respectively. This distribution of investments, with a significant amount invested in the relatively risky asset class of equities, is consistent with a long-term investment horizon. In recent years, the government has, however, consistently withdrawn more than the ESI from the petroleum fund and, according to some commentators, this could result in the SWF balance declining. Yet the investment mandate of the fund has not been amended to reflect this new fiscal policy.

The institutional arrangements governing an SWF are also important. A well-designed structure, with a clear division of responsibility between different institutions and appropriate checks and balances, can limit risk and help ensure the SWF is effectively managed. In particular, it is important that there be a clear
division of responsibility between the setting of the overall objectives of the fund and deciding which individual investments to make, and that fund managers be insulated from political pressures.

There are two broad models for achieving these goals. Under the management model, the fund is a pool of assets owned by the state, which then provides an investment mandate to an operational manager. Under the investment company model, the government sets up a company, with its own legal personality, which manages the assets of the fund.

Timor-Leste provides an example of the investment management model. The Petroleum Fund Law establishes the SWF and its overall objectives. Ceilings and floors for investment by asset class are also established by law. The Ministry of Finance, having taken advice from the Investment Advisory Board, drafts a more detailed investment mandate outlining the amount of the fund that should be invested in each asset class and relevant performance benchmarks. This investment mandate forms part of an agreement between the Ministry of Finance and the central bank, which acts as the operational manager of the fund. The operational manager, with guidance from the Ministry of Finance, selects and appoints external managers who are responsible for making individual investment decisions.

Nigeria provides an example of the investment company model. The Nigerian Sovereign Investment Authority was established as a corporate body by law in 2011. The law also establishes the overall objectives of three funds, namely the future generations fund, infrastructure fund and stabilisation fund. The broad purpose of these funds is also described by law, but ceilings and floors for different asset classes are not mandated. The law also establishes a governing council (which is responsible for advising the board) and a board of directors (which is responsible for setting and monitoring overall policy and general supervision of management). The board also drafts and publishes an investment policy statement for each of the three funds. These investment policy statements outline, for each fund, the overall rate of return which is being targeted, the distribution of investments by asset class and benchmark indexes against which performance can be measured. External managers are also appointed to invest some of the assets of the three funds.

A comparison of the institutional arrangements for these two SWFs illustrates three key points. First, the overall investment mandate of these funds flows from their objectives, which are established by law. Second, the institutional arrangements for both funds seek to insulate day-to-day investment decisions from political interference. In Timor-Leste's case, this is done by employing external managers to make individual investment decisions within the mandate drafted by the Ministry of Finance. In Nigeria's case, it is done by establishing the Nigerian Investment Authority as a separate corporate body to manage the investments and by it employing external managers. The third key point is that there is a clear attempt to establish a transparent system for monitoring financial performance through the establishment of appropriate benchmark indexes.

There is also some debate concerning whether SWFs should invest domestically. This argument is distinct from the earlier discussion about the overall benefits of investing...
resource revenues domestically, as it is possible to have considerable investment of resource revenues in domestic assets through the national budget, while the SWF continues to make solely international investments. Key risks to SWFs investing domestically include the following:

- **The measure of the SWF’s performance and its mandate becoming unclear.** When SWFs are mandated with maximising financial returns, their performance can be clearly and easily measured. Financial performance can be easily evaluated by comparison with international benchmark indexes and the performance of other funds. Domestic investments are, however, often made for reasons other than gaining financial returns, such as increasing economic growth and maximising economic rates of return. This can lead to a situation whereby the mandate of the fund moves away from maximising financial returns and towards broader economic and policy objectives. Measuring the impact of the SWF's investments on these broader policy objectives can be difficult, and situations where financial rates of return are low – but possibly justified because of the other benefits of domestic investments – may arise.

- **Decision-making for the SWF becoming more prone to political interference.** Domestic investments result in national employment and profits for resident companies, while international investments do not. This arguably means that domestic investments are more likely to be subject to political interference than international investments. Allowing the SWF to make domestic investments can then make it more vulnerable to political interference.

- **The managers of the SWF are likely to be poorly placed to judge whether or not its domestic investments are affecting economic competiveness.** Any domestic investment by an SWF is likely to have some impact on domestic demand. However, whether or not this contributes to a loss of economic competiveness depends on the government’s overall macroeconomic and fiscal policy and the structure of the economy. The SWF's management, when choosing between individual domestic and international investments, is likely to be poorly placed to evaluate other government policies and the macroeconomy. The SWF’s management will be principally concerned with whether the investment is likely to make a reasonable financial return, and not the overall impact of domestic investments on the economy. There may be ways to mitigate this problem, such as an investment mandate specifying the overall amount of investment in domestic assets that the fund is allowed to make and/or the Ministry of Finance setting the level and composition of government spending in light of the domestic investments of the SWF. However, it would arguably make macroeconomic management simpler if the SWF made solely international investments and if domestic investments from natural resource revenues were made through the national budget.

For these reasons, careful consideration is required before SWFs are mandated to make domestic investments.

Appropriate reporting requirements should also be established for an SWF. In developing resource-rich countries, substantial investments are made through SWFs – while much of the populace continues to suffer severe economic hardship. It
is, therefore, important that broad-based political and popular support be garnered for the SWF, and that the government demonstrate that it is being transparently and effectively managed. At a minimum:\(^31\)

- Quarterly reports showing the SWF's assets, disbursements, withdrawals and investment returns should be produced.
- An annual report should also be drafted explaining the overall mission of the SWF and the institutional arrangements for its management. The annual report should also report on the SWF's assets (including individual investments), disbursements and withdrawals, and how the investment performance of the SWF's portfolios compares with relevant benchmarks.
- An external auditor should audit the accounts of the SWF and the audit report should be published.
- There should be a sustained effort to educate the population on the mission and management of the SWF.

Nigeria and Timor-Leste both provide strong examples of effective reporting systems for SWFs. In Timor-Leste's case, quarterly reports on the SWF are drafted by the central bank, submitted to the Ministry of Finance and made publicly available. These reports show the SWF's assets, receipts, withdrawals and investment returns. The Ministry of Finance also drafts annual reports on the SWF, and these are submitted to the national parliament and made publicly available. The annual report includes financial statements, which are audited by an internationally recognised accounting firm. The Nigerian Sovereign Investment Authority also submits an annual report on its performance to the National Assembly.

### 3.5 Designing SWFs

The previous section discussed some of the key issues that should be considered in establishing an SWF. This discussion informs the Commonwealth Secretariat's approach to advising on the establishment of a natural resource SWF, the key elements of which include assisting the host government to:

- ensure that the SWF has clearly stated objectives, that these are consistent with the government's fiscal policy and that the SWF has an appropriate investment mandate, given its objectives;
- ensure that the SWF is established under law and that there is an effective institutional structure, with a clear division of responsibility between different institutions and appropriate checks and balances;
- work through the costs and benefits of allowing the SWF to invest domestically; and
- establish comprehensive, detailed and transparent systems for reporting on the SWF's performance to the public.

This approach underpinned the Commonwealth Secretariat's recent work in advising the governments of Belize and The Bahamas towards the establishment of SWFs.
The Santiago Principles provide a strong framework for promoting transparency, good governance and accountability. Commonwealth members should design SWFs that conform to these principles and to work towards membership of the International Forum of Sovereign Wealth Funds in the long term.

Notes

2 Collier et al. (2010) and Poplawski-Ribeiro et al. (2012) contain useful discussions of fiscal rules in resource-rich countries.
3 For empirical evidence on the volatility of oil revenues, see Table 1, page 5 of Ahmad (2002).
4 For specific evidence on the volatility of natural resource revenues in Nigeria, see Okogu and Wilde (2009) and Okonjo-Iweala and Osafo-Kwaako (2007).
5 There is considerable empirical evidence showing that economic volatility reduces economic growth. For example, see Ramey and Ramey (1994) and Dabušinskas et al. (2013).
6 For more detail on this point, see Collier et al. (2010).
7 For a simple exposition of Dutch Disease, see Ebrahimzadeh (2012). For one of the first technical discussions of Dutch Disease, see Corden and Neary (1982). For empirical evidence of Dutch Disease across countries, see Harding and Venables (2010).
8 See, for example, Matsen and Torvik (2005).
9 The reality of this assumption will vary across countries. In a poor country where petroleum is exploited off-shore by international companies, employing few nationals and purchasing little local content, it is probably fair to assume that natural resource extraction significantly affects the domestic economy only through government spending. On the other hand, in a developed economy where resources are extracted by national companies, mainly employing residents and with well-developed local supply chains, there are clearly numerous ways for natural resource extraction to increase domestic demand.
10 See Collier et al. (2010) for a more detailed discussion of this point.
11 See, for example, Collier et al. (2010).
12 According to World Development Indicators data, Nigeria’s GDP per capita in constant 2005 US dollars was $590 in 1990 and $568 in 2002.
13 Figures taken from Timor-Leste’s State Budget of 2014 (Ministry of Finance 2014).
14 Excluding interest repayments.
15 This fiscal rule is most appropriate in resource-rich countries where there is no financing from debt and therefore all of the non-oil deficit is financed by resource revenues. It could also be argued that this fiscal rule is appropriate for countries where the non-oil deficit is partly financed from external debt and where such debt will be repaid mainly from natural resource revenues, as in this case external debt is increasing domestic demand and reducing scope for future (non-debt repayment) spending from natural resource revenues. In countries where a significant amount of the non-oil fiscal deficit is financed by domestic debt, this fiscal rule may be inappropriate, as domestic debt does not necessarily increase domestic demand and therefore the non-oil fiscal deficit does not necessarily show the increase in demand due to spending financed by natural resources.
16 See, for example, Collier et al. (2010) and Sachs (2007).
17 See, for example, Beck and Wilde (2015).
18 See, for example, Alfaro et al. (2008).
19 See, for example, Beck and Wilde (2015) for the case of Timor-Leste.
20 See, for example, Sachs (2007).
21 The Santiago Principles (International Working Group of Sovereign Wealth Fund 2008), which International Working Group of Sovereign Wealth Fund (IWG) members have committed to implement, also stress that it is important that the ‘legal framework for the SWF should be sound and support its effective operation and achievement of its stated objective’.
The Santiago Principles also state that the SWF’s investment policy should be clear and consistent with its defined objectives, risk tolerance and investment strategy. These principles do not, however, explicitly state that the investment strategy should flow from the fiscal policy that determines the amount of savings.

See, for example, Ministry of Finance (2011).

For a more detailed description of the governance of SWF, see Kunzel et al. (2008).

The division into the manager model and investment company model is taken from Al-Hassan et al. (2013).

See Annex 4 for a more detailed description of the institutional arrangements for Timor-Leste’s and Nigeria’s SWFs.

The Santiago Principles, to which both Timor-Leste and Nigeria have agreed, also commit members to ensuring that ‘the operational management of the SWF should implement the SWF’s strategies in an independent manner and in accordance with clearly defined responsibilities’.

The Santiago Principles also state that ‘The SWF’s investment decisions should aim to maximise risk-adjusted financial returns in a manner consistent with its investment policy.’ In practice, however, committing to this principle has not constrained the IWG from making domestic investments, justified by broader social and economic criteria.

The Santiago Principles recognise the importance of close co-ordination with fiscal and monetary authorities when the SWF’s activities have significant direct domestic macroeconomic implications, but contain little detail on how this co-ordination, which may be difficult to achieve in practice, should occur.

The Santiago Principles also commit IWG members to annual auditing of the SWF’s financial statements, publicly disclosing relevant financial information and drafting an annual report.
Chapter 4

Conclusion

Transforming natural resource wealth into sustained economic development is a key public policy goal for many Commonwealth member countries. This goal can be achieved only if governments develop effective systems for natural resource taxation and revenue management. This paper has discussed many of the key issues in natural resource taxation and revenue management.

It is recognised that designing a system to tax natural resources inherently involves conflicts between competing objectives. A careful balance must be struck, for example, between ensuring that the government receives a reasonable minimum level of revenue whenever mining occurs and encouraging investment. Likewise, a system that is highly progressive may also be complicated to administer and provide greater scope for tax avoidance. The public policy objectives of the government, state capacity and the host country’s economic structure should all inform the relative importance placed on competing objectives and the design of the natural resource taxation system. The Commonwealth Secretariat successfully followed this approach when assisting countries such as Guyana, Jamaica, Namibia, Sierra Leone and Tanzania to reform natural resource taxation.

Despite collecting significant revenues from natural resources, the record of governments in transforming natural resource wealth into a sustained increase in living standards has been mixed. The main reasons for this are that natural resource revenues are volatile, and finite and can lead to a loss of economic competitiveness. Therefore fiscal policy should be designed to delink spending from volatility in natural resource revenues, ensure an appropriate transfer of wealth across generations and restrict spending to a level consistent with maintaining economic competitiveness.

This paper examined four fiscal policy rules – benchmark pricing, bird in hand, PIH and non-resource fiscal deficit targeting – which aim to achieve one or more of these objectives. Each of these fiscal rules has its strengths and weaknesses, and the correct rule for a particular country is dependent both on specific economic considerations and on the policy priorities of the government. In general, however, it is recommended that:

- In countries where the main potential problem is volatility in natural resource revenues causing volatility in government spending, the benchmark pricing fiscal rule should be considered. This fiscal rule does not transfer wealth across generations, but this may not be a major concern in countries with significant reserves of natural resources.
- The bird in hand fiscal rule should be considered in countries that wish to transfer wealth across generations, and delink government spending from volatility in
natural resource revenues, and where the government and society are happy for consumption from natural resource revenues to increase slowly over time.

- The PIH fiscal rule should be considered by governments that want to transfer wealth across generations, while increasing consumption faster than under the bird in hand fiscal rule. The ‘devil is in the detail’ of this fiscal rule, with many different levels of government spending being consistent with the rule depending on exactly how future natural resource wealth is forecast.

The benchmark pricing, bird in hand and PIH fiscal rules do not necessarily ensure that the amount of government spending is consistent with the absorptive capacity of the economy. In countries where a loss of economic competiveness is a concern, these fiscal rules can then be used in conjunction with non-resource fiscal deficit targeting.

The fiscal rules discussed above require the accumulation of savings in the short or long term. It is optimal for an SWF to be used as a vehicle to manage and invest these savings. The discussion of SWFs in this paper highlighted four key issues.

First, SWFs should be established with clear objectives, which should be consistent with the government’s overall fiscal policy. For example, if the government is following a benchmark pricing fiscal rule, the objective of the SWF is for short-term stabilisation. In contrast, if the government is following the bird in hand fiscal rule, then the SWF is established to manage and invest savings to ensure the transfer of wealth across generations.

Second, the investment mandate of the fund should be consistent with its objectives and the government’s fiscal policy. An SWF whose goal is short-term stabilisation should have an investment mandate which focuses on relatively safe and liquid investments. On the other hand, a fund that looks to achieve the long-term transfer of wealth between generations should have an investment mandate which allows investment in riskier assets, with higher long-term rates of return.

Third, the roles and responsibilities of different institutions in managing the SWF should be clearly outlined. Countries with successful SWFs have implemented a wide range of institutional arrangements, but common themes include insulating from political interference through decisions about which individual investments to make, and effectively managing and monitoring investment performance.

Fourth, SWFs in many natural resource-rich countries involve making substantial savings, while much of the population continues to experience significant economic hardship. This speaks to the importance of the government building support for the SWF among the general population through transparent reporting.

In conclusion, many Commonwealth member countries have significant natural resources. These natural resources should provide funds for countries to transform their economies and raise the living standards of their peoples. Yet the economic performance of resource-rich countries has been somewhat mixed. The reforms discussed in this paper for taxation, revenue management and SWFs can improve economic performance.
Annex 1

Statistical Data on Resource-rich Developing Commonwealth Countries 2004 to 2013
<table>
<thead>
<tr>
<th>Country</th>
<th>Natural resource</th>
<th>Natural resource exports as a percentage of total exports</th>
<th>Natural resource government revenues as a percentage of total government revenues</th>
<th>Overseas development assistance as a percentage of natural resource exports</th>
<th>Remittances as a percentage of natural resource exports</th>
<th>Human Development Index (2015 classification)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belize</td>
<td>Petroleum</td>
<td>5%</td>
<td>6%</td>
<td>35%</td>
<td>104%</td>
<td>Medium human development (HDI value 0.702)</td>
</tr>
<tr>
<td>Botswana</td>
<td>Diamonds</td>
<td>73%</td>
<td>40%</td>
<td>5%</td>
<td>2%</td>
<td>Medium human development (HDI value 0.698)</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>Petroleum</td>
<td>95%²</td>
<td>90%³</td>
<td>Not available</td>
<td>N/A</td>
<td>Very high human development (HDI value 0.856)</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Petroleum</td>
<td>47%</td>
<td>31%</td>
<td>38%</td>
<td>7%</td>
<td>Low human development (HDI value 0.512)</td>
</tr>
<tr>
<td>Ghana</td>
<td>Petroleum and gold</td>
<td>55%</td>
<td>7%⁴</td>
<td>37%</td>
<td>15%</td>
<td>Medium human development (HDI value 0.698)</td>
</tr>
<tr>
<td>Country</td>
<td>Natural resource</td>
<td>Natural resource exports as a percentage of total exports</td>
<td>Natural resource government revenues as a percentage of total government revenues</td>
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<td>Human Development Index (2015 classification)</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Guyana</td>
<td>Minerals (gold and bauxite)</td>
<td>52%&lt;sup&gt;5&lt;/sup&gt;</td>
<td>Not available</td>
<td>34%&lt;sup&gt;6&lt;/sup&gt;</td>
<td>74%&lt;sup&gt;7&lt;/sup&gt;</td>
<td>Medium human development (HDI value 0.636)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Petroleum</td>
<td>7%</td>
<td>37%</td>
<td>1%</td>
<td>10%</td>
<td>High human development (HDI value 0.779)</td>
</tr>
<tr>
<td>Nigeria</td>
<td>Petroleum</td>
<td>97%</td>
<td>76%</td>
<td>5%</td>
<td>25%</td>
<td>Low human development (HDI value 0.514)</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>Minerals (principally gold) and petroleum</td>
<td>74%</td>
<td>Not available</td>
<td>12%</td>
<td>0%</td>
<td>Low human development (HDI value 0.505)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Gold</td>
<td>35%&lt;sup&gt;8&lt;/sup&gt;</td>
<td>Not available</td>
<td>180%&lt;sup&gt;9&lt;/sup&gt;</td>
<td>15%&lt;sup&gt;10&lt;/sup&gt;</td>
<td>Low human development (HDI value 0.521)</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>Oil</td>
<td>86%</td>
<td>52%</td>
<td>0%&lt;sup&gt;11&lt;/sup&gt;</td>
<td>1%&lt;sup&gt;12&lt;/sup&gt;</td>
<td>High human development (HDI value 0.772)</td>
</tr>
<tr>
<td>Zambia</td>
<td>Copper</td>
<td>63%</td>
<td>7%&lt;sup&gt;13&lt;/sup&gt;</td>
<td>30%</td>
<td>1%</td>
<td>Medium human development (HDI value 0.586)</td>
</tr>
</tbody>
</table>
Notes

1 The sources for this table are: World Development Indicators, various International Monetary Fund Article IV reports, UNDP’s Human Development Indicators Database, BP Statistical Review of World Energy and Poplawski-Ribeiro et al. (2012).

2 Average calculated based on available data, three years, 2011–13, both dates inclusive.

3 Ibid.

4 Average calculated based on available data, three years, 2011–13, both dates inclusive for petroleum only.

5 Average calculated based on available data, eight years, 2006–13, both dates inclusive.

6 Ibid.

7 Ibid.

8 Average calculated based on available data, seven years, 2007–13, both dates inclusive.

9 Ibid.

10 Ibid.

11 Average calculated based on available data, eight years, 2003–10, both dates inclusive.

12 Average calculated based on available data, ten years, 2003–12, both dates inclusive.

13 Average calculated based on available data, two years, 2012 and 2013.
Annex 2

Breakeven Oil Prices for USA Shale Plays

Notes

1 The breakeven oil price is that which gives a net present value of zero at a 10 per cent discount rate.
2 This graph is reproduced from Arezki and Blanchard (2014). The data is originally from Rystad Energy.
Annex 3

Fiscal Instruments for the Taxation of Petroleum Production

*Corporate income tax*

Natural resources can be taxed via the standard corporate income tax regime. This results in a neutral tax, with revenue remaining constant as a percentage of profits. One advantage of this approach is that it does not require the introduction of a separate tax regime, and government officials will already be familiar with the legal framework and administrative processes. As corporate income tax is paid at the level of the corporation, it allows losses on one field (contract area) to be deducted from profits from other contract areas. This can lead to a postponement and permanent loss of revenues. A further issue with applying the standard corporate income tax regime is that it may include insufficient safeguards against the minimisation of tax liability, as it was not specifically drafted with large, multinational natural resource companies that operate in numerous jurisdictions in mind.

*Field income tax*

Many jurisdictions have a specific income tax for natural resource projects. This tax is normally levied on taxable income at the level of the field. This ring fencing serves to protect tax revenues that could otherwise be postponed by deductions from other projects operated by the same company. Safeguards, such as not allowing interest to be recovered as a cost and requiring that transactions occur on an ‘arm’s length’ basis, can also be introduced. A field income tax is neutral, with revenue being a fixed percentage of taxable income.

*Additional profits/resource rent taxes*

Additional profits taxes aim to tax excess profits. The tax is therefore levied, or its rate increased, when the project exceeds some predefined internal economic rate of return. Additional profits taxes are progressive, with government revenue increasing as a percentage of net cash flows as net cash flows increase. There are two major disadvantages to additional profit taxes. First, when implemented in isolation, they result in a government revenue stream that is backloaded. Second, government revenue becomes dependent on net cash flows, which are dependent on recoverable costs. Such taxes thus provide a strong incentive for investors to overstate recoverable costs to minimise their tax burden. Government capacity to monitor and audit recoverable costs may also be limited.
Royalties
Royalties are commonly set at a fixed percentage of production or gross revenues. Royalties are normally regarded as easier to administer, as production and natural resource prices are easier for the host state to determine and monitor than costs of production. Royalties are normally regressive, as they increase with revenues and not net cash flows. In some fiscal regimes, royalty rates vary with cumulative or daily production or other factors.

Import duty
Investors often need to import expensive equipment when exploring and developing natural resources. Levying import duty on such imports would result in a significant early revenue stream for the government, but would also discourage companies from exploring and developing natural resources. In some countries, there are also concerns that foreign companies with significant import duty needs will be targets of rent-seeking behaviour. For these reasons, investors in natural resources have often sought and been granted exemptions from import duty.

Value added tax (VAT)
In many countries, imports are liable for VAT but exports are zero rated. As the natural resource industries import capital equipment and export most of their production, this can lead to significant refunds – which can complicate tax administration. For this reason, capital goods used in natural resource extraction are often exempted from VAT.

Bonuses
Bonuses can be paid by investors to the host state when the contract is signed, a discovery is made or production commences. The amount of the bonus can be negotiated, set by law or the result of a bidding process. Bonuses are relatively easy to administer, but they are also likely to be regressive, as in most cases they do not increase with net cash flows.

Rentals
Rentals are paid by the investor per period for the right to explore, produce or mine in a specific area. The amount of the rental is often legislated, but can sometimes be negotiated or determined by bidding. Rentals are easy to administer, but they are also regressive, as they do not increase with net cash flows.

Production sharing
Under this system, the host state continues to own the natural resource, while the investor actually explores for and exploits the natural resource. The investor also pays for all costs associated with the development and production of the natural resource. In a typical production-sharing system, the investor will bear all costs. Once production starts, ‘profit oil’ is calculated as revenue minus recoverable costs. Profit
oil is then shared between the state and investor. In some cases a ceiling, normally set as a percentage of revenue, will be placed on the costs an investors can recover from profit oil in any one year, with unrecovered costs being rolled forward. This ensures the government an early revenue stream. The share of production received by the government can also vary with production or natural resource prices. In some cases, the contractor is liable for corporate income tax on its share of production, while in other countries it is explicitly exempted from such taxes. Production-sharing is a flexible fiscal instrument, with the use of cost ceilings and varying production shares meaning that regimes can be designed in such a way as to ensure the early receipt of revenues and progressivity. Production-sharing regimes can, however, be complicated to administer, as the government has to be able to audit whether or not only allowable costs were recovered.

State participation

In some countries, states hold equity positions in natural resource projects. This arguably allows the government to share in any post-tax economic rent generated from the project. The government commonly gains an equity stake in three ways: a) purchasing it on the same terms as a commercial investor; b) on concessional terms (in the most extreme case, free); or c) on a carried interest basis. Equity participation by the state (especially free equity participation) results in a cost for the investor. The investor is likely to want to make good this cost by requesting reductions in other taxes. In this sense, even free equity participation often ends up being paid for by the state. A further problem with state participation is that the government will receive revenue only if there are profits. As profits are dependent on costs, this provides a strong motivation for the investor to overstate costs and/or engage in transfer pricing. State participation is, therefore, similar to taxes which are levied on profits and production sharing, in that it is likely to be an effective fiscal instrument only if the government is in a position to determine whether stated costs for exploration and production are reasonable.

Note

1 For a more detailed discussion of individual fiscal instruments, see Baunsgaard (2001).
### Annex 4

**A Comparison of Timor-Leste’s and Nigeria’s Sovereign Wealth Funds**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Timor-Leste</th>
<th>Nigeria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall objectives of the fund</td>
<td>The Petroleum Fund Law establishes the overall objectives of the fund as contributing to the wise management of petroleum resources for current and future generations.</td>
<td>The Nigerian Investment Authority is established by law with the objectives of building a savings base for the Nigerian people, developing infrastructure and economic stabilisation. Three sub funds – namely the future generations fund, infrastructure fund and stabilisation fund – are also established to meet these objectives.</td>
</tr>
</tbody>
</table>
| Disbursements and withdrawals from the fund | The Petroleum Fund Law establishes that all petroleum revenues and investment income are disbursed to the fund. The methodology for calculating the ESI is established by the Petroleum Fund Law. The Ministry of Finance calculates the ESI and it is included in the annual state budget. The maximum amount that can be withdrawn from the fund each year is approved by parliament through the annual budget process. Within this annual limit, the Ministry of Finance determines withdrawals to the Treasury Single Account in line with its cash management policy. | Disbursements and withdrawals to the Nigerian Investment Authority are established by law. More specifically:  
  - initial seed funds of US$1 billion were provided to the Nigeria Investment Authority;  
  - additional funds can be disbursed to the Nigerian Investment Authority if oil revenues exceed that estimated using the benchmark (budget) price for oil and existing funds in the Federation Account exceed the budget smoothing amount;  
  - the Nigerian Investment Authority can disburse money to the government if its board unanimously votes to do so, the disbursement is made out of uncommitted funds, the disbursement amounts to no more than 60 per cent of its profit for that year, and it has made profits in that year and its five years of operating. Additional withdrawals can also be made from the stabilisation fund if actual oil revenues fall below forecast oil revenues (given the benchmark price) and the budget smoothing amount has already been depleted. |
<table>
<thead>
<tr>
<th>Activity</th>
<th>Timor-Leste</th>
<th>Nigeria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment mandate</td>
<td>The Petroleum Fund Law establishes ceilings and floors for investments in equities, fixed income and alternative instruments. Within these ceilings and floors, the Ministry of Finance, after taking advice from the Investment Advisory Board, determines the actual amount allocated to different asset classes.</td>
<td>The Nigerian Investment Authority drafts investment policy statements, which outline ceilings and floors for a wide range of different asset classes. There is an investment policy statement for each assets class.</td>
</tr>
<tr>
<td>Investment decisions</td>
<td>The central bank is the operational manager of the fund. In this role, the central bank procures fund managers to manage individual portfolios. The fund managers are responsible for deciding which individual equities and treasuries to purchase.</td>
<td>The Nigerian Investment Authority employs external managers to make individual investment decisions. The Nigerian Investment Authority directly manages some assets.</td>
</tr>
<tr>
<td>Monitoring fund performance</td>
<td>The central bank monitors the investment performance of the fund by comparing the returns achieved for individual portfolios against the most relevant investment index (such as the MSCI World Index for equities).</td>
<td>The investment policy statements for the three funds outline benchmark indexes. There are different benchmark indexes for evaluating overall performance and the performance of different asset classes and external managers. The executive management of the Nigerian Investment Authority and its board both have a role in evaluating performance against these benchmarks.</td>
</tr>
<tr>
<td>Reporting</td>
<td>The fund managers are responsible for submitting monthly reports to the central bank. The central bank submits, and makes publicly available, quarterly reports to the Ministry of Finance. The Ministry of Finance drafts and submits an annual report to parliament. This report is publicly available.</td>
<td>The Nigerian Investment Authority drafts an annual report. This report is submitted to the president, the minister, the Central Bank of Nigeria, the National Economic Council, the National Assembly and each State House of Assembly for its activities during the financial year concerned. These reports are made publicly available.</td>
</tr>
<tr>
<td>Activity</td>
<td>Timor-Leste</td>
<td>Nigeria</td>
</tr>
<tr>
<td>----------</td>
<td>----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Auditing</td>
<td>The central bank employs a private sector external auditor to audit the petroleum fund.</td>
<td>The financial statements of the Nigerian Investment Authority’s annual statements are audited by an internationally recognised auditor.</td>
</tr>
</tbody>
</table>
Ahmad, ME (2002), Oil Revenue Assignments: Country Experiences and Issues, No. 2–203, International Monetary Fund, Washington, DC.


Ghura, D and C Pattillo (2012), Macroeconomic Policy Frameworks for Resource-rich Developing Countries, International Monetary Fund, Washington, DC.


