

African Department

Boom, Bust, or Prosperity? Managing Sub-Saharan Africa's Natural Resource Wealth



Charlotte J. Lundgren, Alun H. Thomas, and Robert C. York

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We owe special thanks to those IMF colleagues who contributed to various parts of the analysis, in particular to Jon Shields for drafting Chapter 7 and to Anton Op de Beke (Boxes 6.3 and 7.1); Rodrigo García-Verdu and Ara Stepanyan (Box 3.2); Geneviève Verdier (Box 4.4); Victor Lledo, Esther Palacio, and Yi Xiong (Box 6.1); Kareem Ismail (Box 6.2); Neil Saker (Box 3.4); Daniel Rodriguez (Box 4.2); and to Roger Nord for helping to guide our work and shape its message. Box 5.3 in Chapter 5 also benefited from the valuable contribution of Anand Rajaram from the World Bank.

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Abbreviations

CIT	corporate income tax
DRC	Democratic Republic of the Congo
ECA	Excess Crude Account (Nigeria)
EITI	Extractive Industries Transparency Initiative
ESSF	Economic and Social Stabilization Fund
FARI	Fiscal Analysis of Resource Industries
GDP	gross domestic product
GNI	gross national income
HDI	Human Development Index
IWG	International Working Group of Sovereign Wealth Funds
PIM	public investment management
PRF	Pension Reserve Fund
SOE	state-owned enterprise
SSA	sub-Saharan Africa
SWF	sovereign wealth fund

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Introduction

Sizable natural resource endowments and the potentially large economic proceeds from their extraction in a number of sub-Saharan African (SSA) countries provide an unparalleled opportunity for economic growth and development. The revenue from these resources can be used to address human capital and infrastructure deficits that are obstacles to sustained, broad-based, and inclusive growth, and to achieve improvements in social indicators. In many SSA countries, natural resources already account for an important share of export and government revenue, and several other countries in the region are poised to become significant resource exporters in the future. Empirical evidence suggests, however, that translating this resource wealth into stronger economic performance and a higher standard of living has been challenging. Making the right policy decisions in managing these natural resources can have a high payoff, but weak management and poor governance can also result in lost opportunities for strong growth and economic development.

Managing natural resource wealth is fraught with difficulties—some economic, many political—and if not done well, can adversely impact macroeconomic performance in the short and long runs. These difficulties arise from the particular characteristics of natural resource wealth:

- The *volatile and unpredictable nature* of natural resource prices, and hence resource revenue, complicates macroeconomic management and budget planning, and often imparts a high degree of procyclicality to economic policies. Indeed, macroeconomic volatility is an important contributor to the growth-damaging “resource curse,” and wide swings in government spending generally make spending less effective and less productive.
- The *exhaustibility of these resources* and related revenue raise complex economic and political issues concerning intergenerational equity and long-term fiscal and external sustainability. Questions inevitably arise

about *when* to spend the resource revenue, but also *how* to spend it. In capital-scarce SSA countries, a priority is often to tilt public spending toward investment, especially in economic infrastructure and human capital.

- *Transforming natural resource wealth into productive human, physical, and financial assets is difficult* because many SSA countries lack the institutional and administrative capacity to manage public finances well. Without this capacity, public resources are frequently wasted or misappropriated.

Addressing these challenges in a way that makes the most of resource revenue requires appropriate macroeconomic frameworks supported by strong governance and fiscal regimes. Strong governance helps ensure that resource rents are not captured by vested interests or misappropriated; and a strong fiscal regime helps ensure the government is accountable and transparent in its resource allocation.

How to address these policy challenges—in the economic context—is the focus of this publication. A two-pronged approach is used. First, the main policy considerations and options in managing natural resource wealth are outlined, drawing on experience within and outside sub-Saharan Africa, the IMF's latest analysis and policy advice in this area, the World Bank, and leading academic research. The policy advice is also informed by an exchange of views from a conference on the “Management of Natural Resources in Sub-Saharan Africa,” cohosted by the IMF and the authorities of the Democratic Republic of the Congo in Kinshasa, March 21–22, 2012.¹ Second, a list of recommended further reading material is provided in a box at the end of each chapter to further inform policymakers and other stakeholders on the theoretical and analytical underpinnings of recent work. This publication is not meant to cover the entirety of the complex set of issues related to the management of natural resources, but rather to give an overview of the main considerations and current thinking and to give guidance on further, more in-depth reading material on these questions.

Elaborating on the challenges and experiences across the SSA region in managing natural resources is important, because the returns from the exploitation of these resources has generally been poor. As a consequence, natural resource wealth has not been translated into stronger economic

¹ The Kinshasa conference was also generously sponsored by the Managing Natural Resource Wealth–Topical Trust Fund and the United Kingdom's Department for International Development. Authorities from 28 SSA countries participated in this event, which featured speakers from international organizations, academia, civil society organizations, and the private sector (the conference agenda and presentations can be found at <http://www.imf.org/external/np/seminars/eng/2012/kinshasa/index.htm>).

performance or a higher standard of living. Instead, natural resource–rich countries across the region have seen a vicious boom and bust cycle with the rise and fall of commodity prices over time; difficulties in the implementation of macroeconomic policies and real exchange rate pressures; wasteful public investment; and weak governance, where vested interests have frequently captured economic rents that should otherwise accrue to the state.

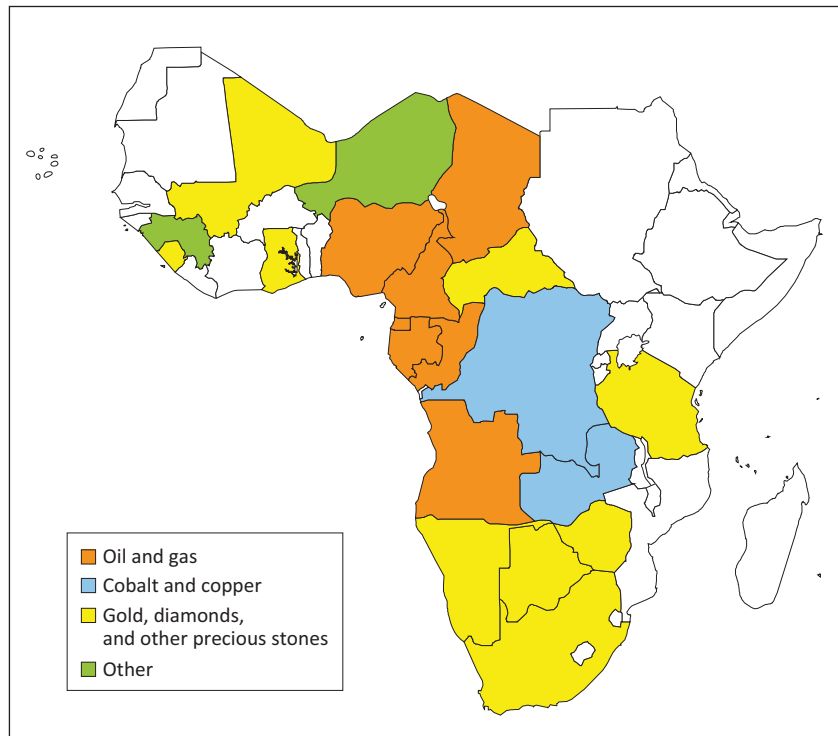
This publication is structured as follows: Chapter 2 presents some stylized facts to set the stage for the ensuing discussion and highlight the relative importance of natural resources to many SSA countries, and the contribution such resources have made to the region’s growth and development. Chapter 3 presents the main macroeconomic policy considerations, including volatility and exhaustibility of resources, striking the right balance between consuming now or later, and how best to invest resource rents. Well-designed fiscal frameworks are the cornerstone of sound economic policies in resource-rich countries and are discussed in detail in Chapter 4. Chapter 5 elaborates on the vexing problem of public investment management, given the need to “invest in investment capacity” to ensure the high quality and efficiency of investment spending. Chapter 6 considers policy options for revenue mobilization with the goal of extracting as much revenue from the natural resource sector as possible through tax policies and better tax administration, while remaining internationally competitive. Chapter 7 tackles the issue of good governance, which is essential to ensuring that resources are not wasted, that the management of natural resources is transparent and accountable, and that the public interest is safeguarded in the decision-making process.

Is There a Resource Curse in Sub-Saharan Africa?

With both a long history of natural resource extraction in sub-Saharan Africa (SSA) and—until recently—relatively poor economic performance, it is fair to ask if the region has suffered under a “resource curse.” The resource curse—that countries and regions with an abundance of natural resources tend to have slower economic growth, weaker development outcomes, and more instability than resource-scarce countries—has been a prominent and recurring theme in the academic literature on natural resource management, and especially those concerned with Africa (see, for example, Sachs and Warner, 1995, 1997, and 2001). Data from the subregion suggests that such a curse has been present to some degree but has diminished since 2000, although the broad economic and social indicators point to continued weaknesses that could be attributed to poor natural resource management. Consider some stylized facts:

- Natural resources—mainly minerals, and oil and gas—provide significant export earnings for almost half of the economies in SSA (resource-rich economies are defined as those whose exports of these resources exceeded one-fourth of total goods exports in 2005–10; Figure 2.1 and Box 2.1). Real GDP per capita growth for these economies has been higher than for other SSA countries since 2000, although the translation of resource rents into higher living standards for the populations as a whole has been slow. The significance of natural resource exports—in relation to merchandise exports and to nonresource GDP—is highest for oil exporters, with the value of resource exports exceeding the size of nonresource GDP in several countries (Table 2.1).
- Of the 20 resource-rich countries, half are fiscally dependent on budget revenue derived from natural resource extraction. This group is defined as countries with resource revenue that exceeds 20 percent of total revenue and includes the seven oil exporters (see Table 2.1) plus

Figure 2.1. Sub-Saharan Africa: Major Nonrenewable Exports



Source: IMF, African Department database.

Botswana, the Democratic Republic of the Congo (DRC), and Guinea. All other resource exporters receive less than 15 percent of budgetary revenue from natural resources, and only two of these countries (Niger and Zambia) are projected to markedly increase their revenue take from this sector in the medium term.

- For several countries, the prospective public revenue possible from existing resource wealth is sizable compared with current nonresource GDP, although with significant variation across countries. To provide an understanding of the magnitude of the resource revenue, net present value calculations for resource wealth are estimated in Table 2.1 based on projected natural resource reserves, the resource depletion rate, resource prices, and the discount rate.¹ Countries that can expect large future revenue flows from the identified resource base include

¹ Reserves and extraction rates are based on various data sources (see Table 2.1). The IMF's *World Economic Outlook* provides projections for most resource prices and for these, a five-year average price for 2012–16 is used; for the other resource prices, the 2011 price is used. The real discount rate is assumed to be 4 percent.

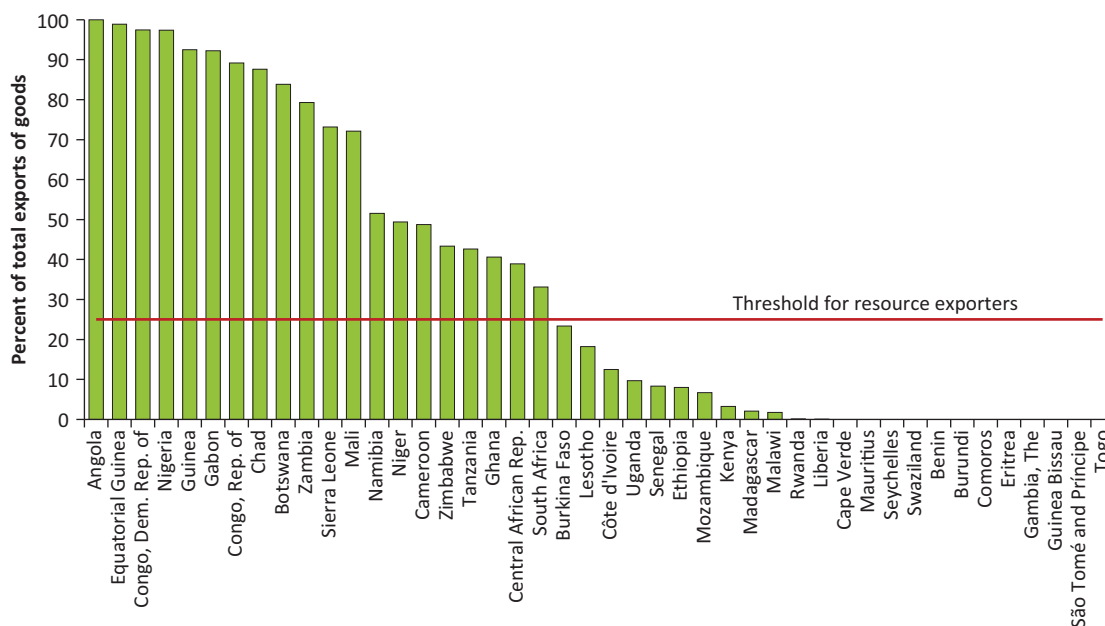
Box 2.1. The Distribution of Nonrenewable Natural Resources in Sub-Saharan Africa

Nearly 10 percent of the annual output of SSA countries and 50 percent of their exports come from nonrenewable natural resources. Natural resources are a major export in about 20 of the 45 countries in the region (Figure 2.1.1). Seven of these countries are oil exporters, accounting for more than half of the region's natural resource exports. The other 13 resource-rich economies receive at least a quarter of their export proceeds from mining. The threshold used to define resource-rich countries is 25 percent of total exports derived from natural resources.

Gold, diamonds, and other precious stones are the major commodity exports of most of the region's non-oil resource-rich economies. A few, however, depend heavily on base metals and uranium (Niger and Zambia) or benefit from a broad mixture of products (DRC, Guinea, Namibia, and Sierra Leone).

Given wide variations in the costs of exploiting different nonrenewable resources and in the ability of tax regimes to harness the associated rents, government revenue from natural resource exploitation differs substantially among countries (Figure 2.1.2). Although much of this analysis focuses on the 20 SSA natural resource exporters, special attention is also paid to the 10 economies deemed fiscally dependent on natural resources.

Figure 2.1.1. Sub-Saharan Africa: Resource Exports, Average 2005–10¹



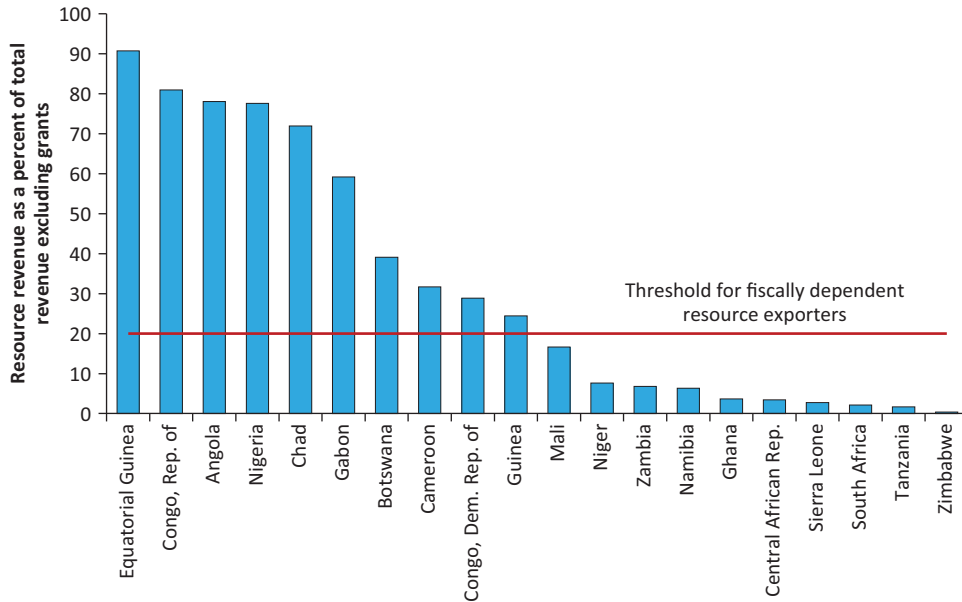
Source: IMF, African Department database.

¹Data for Côte d'Ivoire and Senegal exclude re-exports of refined oil products.

Box 2.1. (concluded)

Some countries currently listed as non-resource-rich nonetheless have significant resource export potential. For instance, Mozambique, São Tomé and Príncipe, and Uganda are among several countries seeking to exploit oil and gas reserves; prospects for offshore oil deposits in Liberia look promising; and Malawi has potentially large uranium deposits. Some resource exporters, such as Ghana (oil), Sierra Leone (iron ore), and Tanzania (gas), are also broadening the spectrum of their commodity exports. As Collier (2011) has pointed out, it is likely that the bulk of exploitable natural resources remain to be revealed, because the identified level of such resources in SSA is currently far below that of other world regions.

Figure 2.1.2. Sub-Saharan African Resource-Intensive Countries: Resource Revenue, Average 2005–10



Source: IMF, African Department database.

the main oil exporters, Botswana (although its resource revenues are likely to decline in the future as a share of nonmineral output), and the DRC. In addition, based on recently discovered resources, several countries (Ghana, Liberia, Mozambique, Niger, Tanzania, and Uganda)

Table 2.1. Resource-Intensive Countries: Selected Resource Indicators, 2010
(Percent of nonresource GDP, unless otherwise noted)

	Resource exports	Resource revenue	Resource revenue (percent of total revenue)	GDP per capita (U.S. dollars)	GNI per capita (U.S. dollars)	Subterranean wealth ¹	State partnership in resource extraction (percent of total)	Extractive Industries Transparency Initiative (EITI) status ²
Oil exporters								
Angola	110.6	59.8	75.9	4,423	3,940	1,121.4	67.0	
Cameroon	10.5	4.8	26.6	1,143	1,180	167.0	45.0	Candidate
Chad	60.2	26.1	67.6	676	620	357.5	0	Candidate
Congo, Republic of	224.1	92.0	79.0	2,943	2,150	1,548.1	0	Compliant
Equatorial Guinea	171.6	66.4	88.1	19,998	14,540	141.4	Partial	
Gabon	116.3	31.6	53.9	8,643	7,740	919.7	25.0–35.0	Compliant
Nigeria	54.3	27.2	72.2	1,222	1,180	772.3	Partial	Compliant
Other fiscally dependent countries								
Botswana	38.2	13.4	31.3	7,403	6,790	199.3	50.0	
Congo, Democratic Republic of the	68.6	5.5	26.5	199	180	135.9	30.0	Candidate
Guinea	33.6	5.0	24.8	452	400	44.0	30.0	Candidate
Other countries								
Central African Republic	2.8	0.9	8.0	457	470	n.a.	0	Compliant
Ghana	12.0	0.5	3.7	1,283	1,230	49.1	0	Compliant
Mali	16.8	3.3	17.1	602	600	75.6	0	Compliant
Namibia	17.4	1.8	5.8	5,330	4,500	14.4	50.0	
Niger	11.0	1.7	11.8	358	370	26.2	15.0–40.0	Compliant
Sierra Leone	11.1	0.3	2.4	325	340	n.a.	0	Candidate
South Africa	8.6	0.6	2.0	7,275	6,090	n.a.	Small	
Tanzania	7.2	n.a.	n.a.	527	530	n.a.	0	Compliant
Zambia	51.7	2.7	10.9	1,253	1,070	31.4	15.0–20.0	Compliant
Zimbabwe	24.4	0.8	2.5	595	460	n.a.	Partial	

Sources: Mbendi.com; U.S. Geological Surveys; World Bank, World Development Indicators; IMF, African Department database; and IMF staff estimates and calculations.

Note: n.a. = not available. Based on nonrenewable natural resources.

¹Subterranean wealth is defined as the net present value of resource wealth times the implicit tax rate (ratio of resource revenues to resource exports, 2005–10).

²Burkina Faso, Liberia, and Mozambique are EITI compliant but are not included in the group of resource exporters. EITI status is as of March 2013. See Box 7.3 for a more detailed explanation of “candidate” and “compliant.”

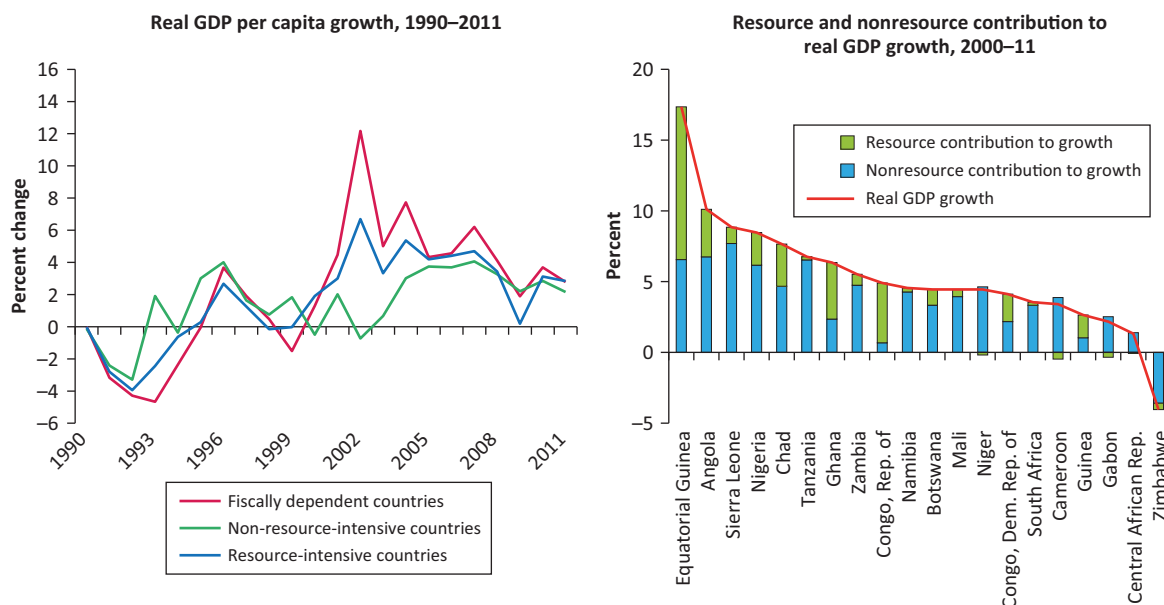
can anticipate sizable revenue inflows in the future, provided that appropriately structured tax policy frameworks are in place. These estimates are based on currently known natural resources; the bulk of exploitable natural resources in SSA likely remain to be discovered. However, the price outlook for commodities is very uncertain and the current high prices may not last, which would have adverse consequences for the value of wealth.

- Oil exporters in SSA spend considerably less as a share of GDP on public education and health than other countries. In 2006–09, the median expenditure ratio on public education and health was 3 percent of GDP for oil exporters compared with more than 8 percent of GDP for middle-income countries, and about 6 percent of GDP for non-resource-rich low-income countries. In the oil exporter group, however, substantial cross-country variation occurs. Angola had considerably increased expenditures on health and education through 2009 to more than 8 percent of GDP, but expenditures have fallen off subsequently. Consistent with this increased expenditure, Angola’s human development index rose most rapidly among oil exporters during 2005–10.

To the extent that there has been a “resource curse” in SSA, weaknesses in natural resource and macroeconomic management and poor governance seem to have played a prominent role. Relatively poor macroeconomic performance has been linked to rent seeking because national politics are oriented toward capturing the rents accruing from the natural resource extraction, typically benefiting only a small group of elites or vested interests, leaving the masses largely excluded from the benefits of growth and resulting in a sharply skewed income distribution. The notion of a “resource curse” also reflects the view that forward and backward linkages from primary exports to the rest of the economy are weak and that upward pressure from a surge in resource receipts on the nominal exchange rate and on prices leads to a broader loss of international competitiveness and, as a result, a reduction in manufacturing output and employment (i.e., the so-called Dutch disease). Sizable natural resource wealth can also lead to instability in macroeconomic aggregates because of the volatility in resource prices.

The sustained resource price boom since the middle of the first decade of the 2000s has contributed to an improvement in the performance of resource exporters, but it is too early to tell whether this improvement will be maintained. Since 2000, real GDP per capita growth has, on average, been higher in resource exporters than in other SSA countries and higher still in the fiscally dependent subsample (Figure 2.2, left panel). This growth reflects

Figure 2.2. Sub-Saharan African Resource-Intensive Countries: Real Resource and Nonresource GDP Growth



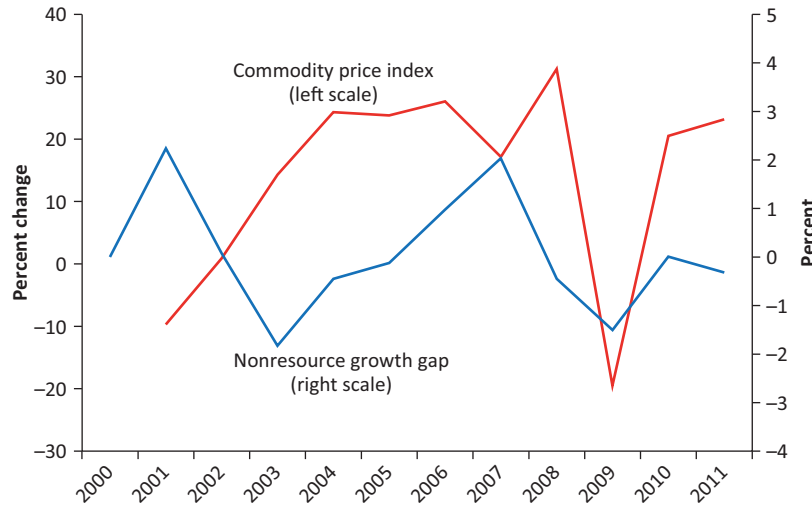
Sources: IMF, World Economic Outlook database; IMF, African Department database.

the combination of favorable commodity-price developments, new resource discoveries (Angola, Equatorial Guinea, Tanzania), and strong improvement in the nonresource economy.

However, the direct contribution of natural resource production to GDP growth varies markedly across countries, from being the dominant contributor to output growth in Equatorial Guinea and the DRC to the more modest contributions observed in South Africa and Zambia (Figure 2.2, right panel). At the same time, in many countries, the role of the natural resource sector in driving growth is significantly understated by looking only at production-side measures of the sectoral contribution. Indeed, deviations from trend of nonresource growth are highly correlated with annual variations in commodity prices (Figure 2.3), suggesting that commodity prices also have a strong positive effect on nonresource activities. Moreover, resource and nonresource growth are significantly positively correlated, suggesting the existence of interlinkages between sectors, for example, more goods and services provided to the resource sector and demand effects in the nonresource sectors from resource revenue.

It should also be emphasized that GDP per capita can be a misleading measure of the income accruing to nationals in resource-rich economies, with gross national income (GNI) providing a somewhat different picture. Natural resource extraction typically involves foreign-owned firms, capital, and skilled personnel, with the consequence that a significant share of the value

Figure 2.3. Sub-Saharan African Resource-Intensive Countries: Nonresource Growth Gap and Commodity Price Index



Sources: IMF, World Economic Outlook database; and IMF African Department database.

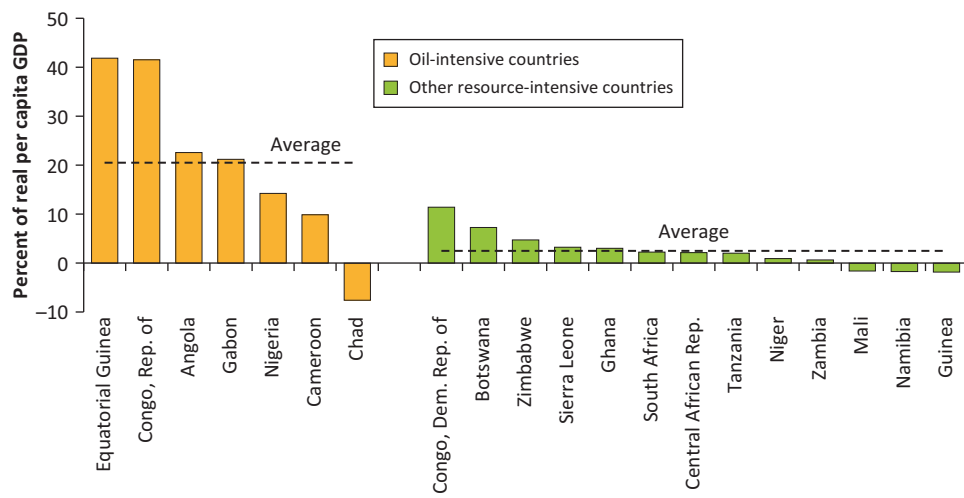
of resource output accrues to foreigners rather than nationals. As Figure 2.4 illustrates, the disparity between GDP and GNI is relatively large for the oil-producing countries, but much less noticeable in other resource exporters or non-resource-intensive economies.²

Although GNI per capita in SSA is, on average, higher in natural resource exporters than in nonresource exporters, this income advantage is typically not reflected in a corresponding disparity on the Human Development Index (HDI) or international measures of welfare (Figure 2.5). This outcome is especially true of oil exporters with GNI levels far above other resource exporters. Although faster growth among the natural resource exporters has been accompanied in some countries by larger improvements in some areas of health care (e.g., immunization), literacy and infant mortality rates are only slightly better among resource-rich countries, and school enrollment rates are considerably worse compared with nonresource economies (Figure 2.6). Aggregate cross-country comparisons should be interpreted cautiously because of the high variability in income levels across groups, but the broad averages go some way toward explaining the concerns frequently expressed about income inequality and the lack of inclusive growth in resource-rich economies.³

² Significant disparities between GDP and GNI also can occur for reasons unrelated to resources; for example, a large stock of public foreign debt or a large stock of foreign assets owned by nationals.

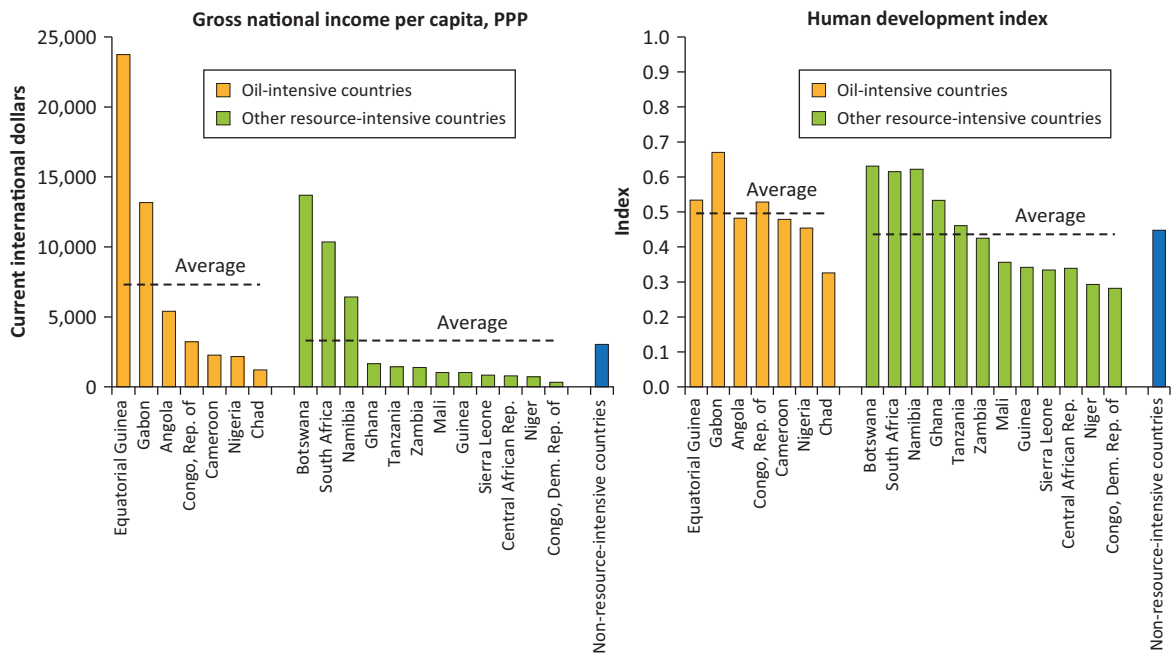
³ For example, the poor performance of Angola compared with Ghana on the HDI score, despite a large income advantage, could be seen as the legacy of decades of civil war, but this may not be unrelated to the availability of natural resources.

Figure 2.4. Sub-Saharan Africa: GDP per Capita Minus GNI per Capita, Selected Years



Source: World Bank, World Development Indicators.

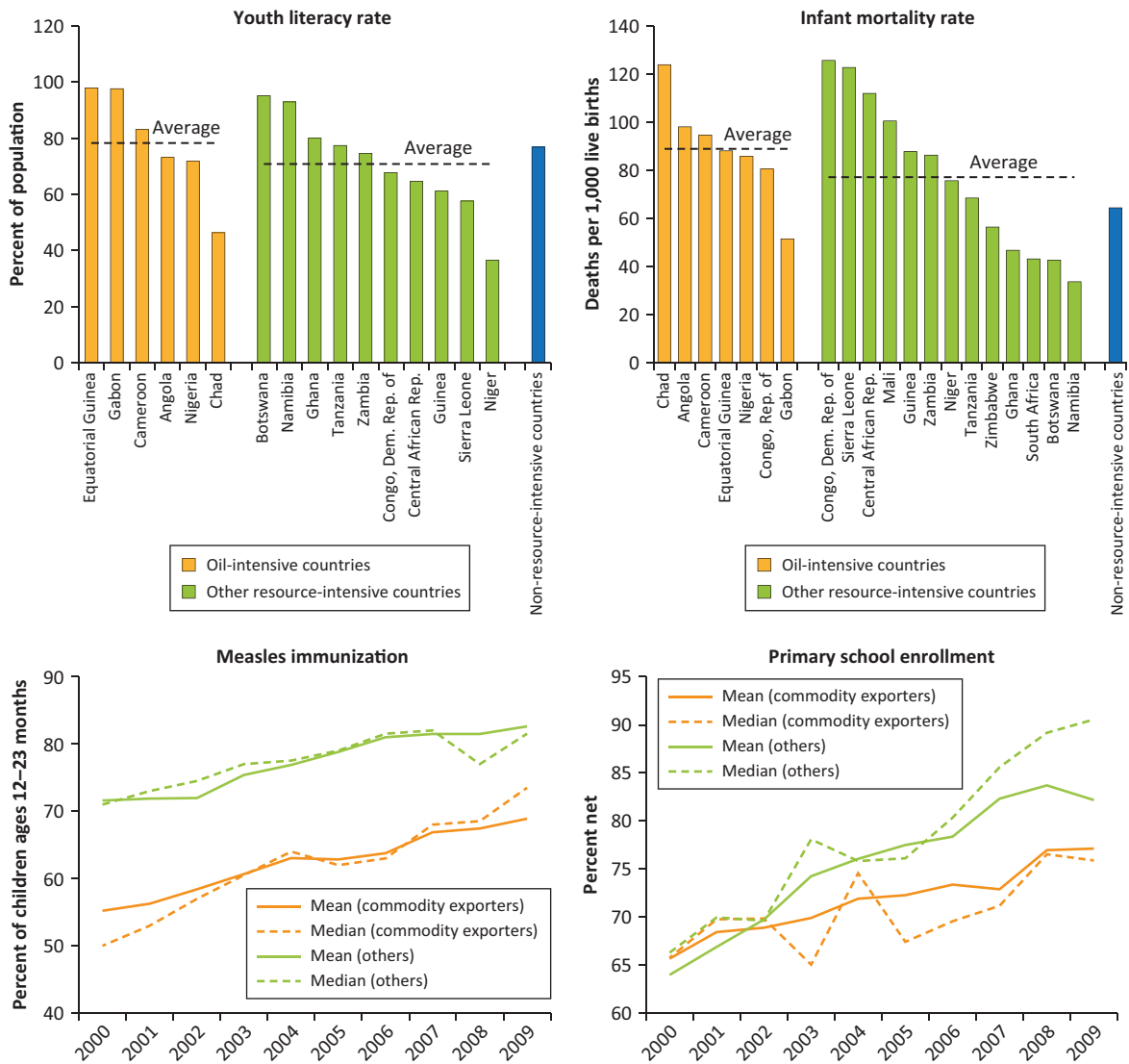
Figure 2.5. Sub-Saharan Africa: Selected Development Indicators, 2010



Source: World Bank, World Development Indicators.

Note: PPP = purchasing power parity.

Figure 2.6. Sub-Saharan Africa: Social Indicators and Resource Abundance, 2000–09



Source: World Bank, World Development Indicators.

Recommended Reading

The historical view on the weak growth effects of the resource curse as documented in the work of Sachs and Warner (1995, 1997) and Gylfason, Herbertson, and Zoega (1999) has recently been called into question. In particular, Brunnschweiler and Bulte (2008) show that once resource abundance is proxied by a measure of natural resource wealth (net present value of resource wealth) rather than resource dependence (the ratio of resource exports to output), the effect of natural resources on growth performance is positive. Moreover, van der Ploeg and Poelhekke (2009) show that per capita growth is significantly adversely affected by the volatility of unanticipated growth but, having controlled for this factor, the effects of resources on growth become positive. A number of other studies have found mixed results on the effects of natural resource abundance on economic growth (Stijns, 2005; Collier and Hoeffler, 2009).

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Macroeconomic Policy Challenges

A key economic policy challenge for resource-rich economies is to create a business climate conducive to the transformation of natural resource wealth into real, financial, and other assets, supporting sustained and broad-based development. The transformed assets include the accumulation of human capital, domestic public and private capital, and foreign financial assets. If this process is well managed, it can pave the way for inclusive growth stemming from the development of a diversified economy with job creation in the non-natural-resource private sector. Regrettably, the experience in sub-Saharan Africa (SSA) has not been promising, although there are signs it may be improving (see Chapter 2 and Box 3.1). The management of natural resource wealth involves dealing with the particular challenges of resource exhaustibility and the price volatility often associated with procyclicality, the latter exposing the economy to damaging boom-bust cycles. Drawing on recent work carried out by IMF staff and others, this chapter elaborates on appropriate macroeconomic frameworks that can help resource-rich SSA countries address these challenges. The chapter focuses on saving and investment decisions, management of exhaustibility and price volatility, and coordination between fiscal and monetary policies to prevent sharp surges in the real exchange rate.

Policy Challenge: Consume More Now or Later?

Among the first issues SSA policymakers must address in managing natural resource wealth is how much of the resource wealth to consume now versus later. For a country on a typical development path, income increases over time and the population becomes better off. With significant natural resources, however, public consumption could be boosted in the present to facilitate welfare convergence across generations, especially because poverty levels remain extremely high in almost all SSA countries. Spending some of the resource revenue today will enhance welfare, as long as the expenditure is well targeted and executed.

Classical consumption and saving recommendations have usually been grounded in Friedman's (1957) permanent income model. In this model, a social planner's optimizing behavior suggests a fixed or constant level of consumption over time, with the level of consumption set equal to the implicit return on the natural resource asset. The model takes account of the exhaustibility of the resource and the desire to maintain the value of the asset for future generations (a key feature of the model is to ensure intergenerational equity).

The classical consumption approach has merit but is also severely restrictive and does not include a role for investment. As a consequence, the application of this approach to the management of natural resource wealth in SSA countries results in underinvestment. Indeed, precisely because many low-income, resource-rich countries are capital scarce, some of the resource windfall should be used up front to increase the capital stock and to raise the growth potential of the economy. The basic consumption-smoothing approach also fails to address the capital and credit constraints faced by many resource-rich SSA countries. Moreover, it does not reflect the reality that current generations may be poorer than future ones, which would make the marginal utility of consumption higher for the current generation. Finally, it ignores the uncertainty of wealth estimates. Natural resource prices are volatile, and uncertainty surrounds production volumes. Given that the bulk of natural resource reserves in SSA are yet to be discovered, the likely estimate of natural resource wealth in many of these countries is far higher than current estimates suggest.

Box 3.1. Procyclical Fiscal Policies and Boom-Bust Cycles in Sub-Saharan Africa

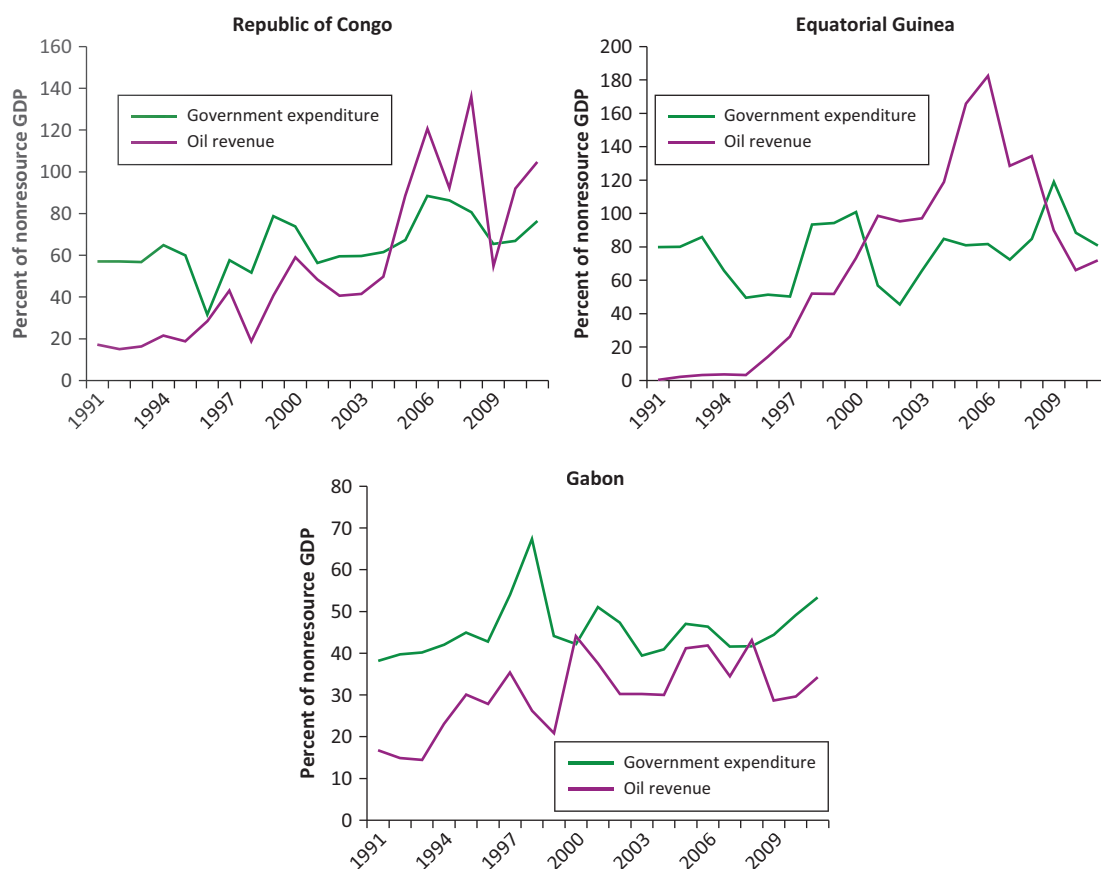
Until the first decade of the 2000s, many resource exporters in SSA experienced strong boom-bust episodes associated with fluctuations in resource prices. Whenever revenue surged it was immediately spent, resulting in large year-to-year changes in government expenditure. In addition, Arezki and Ismail (2010) find an asymmetric response of current and capital expenditure to changes in oil prices, with current expenditure increasing rapidly during booms and capital expenditure falling even more rapidly during busts.

Empirical research also shows that the deterioration of the non-oil fiscal balance in response to changes in oil revenue in SSA countries is considerably larger than in other countries (Thomas and Bayoumi, 2009). On average, a 1 percentage point of GDP increase in oil revenue would reduce the non-oil fiscal balance by 0.41 percent of GDP.

Figure 3.1.1, however, shows considerable differences across countries in the sensitivity of government expenditure to movements in oil revenue. Government expenditure and oil revenue follow each other quite closely in the Republic of Congo, but the relationship is considerably weaker in Equatorial Guinea and Gabon, although the long-term upward trends in expenditure and oil revenue are noticeable.

Box 3.1. (concluded)

Figure 3.1.1. Government Expenditure and Oil Revenue



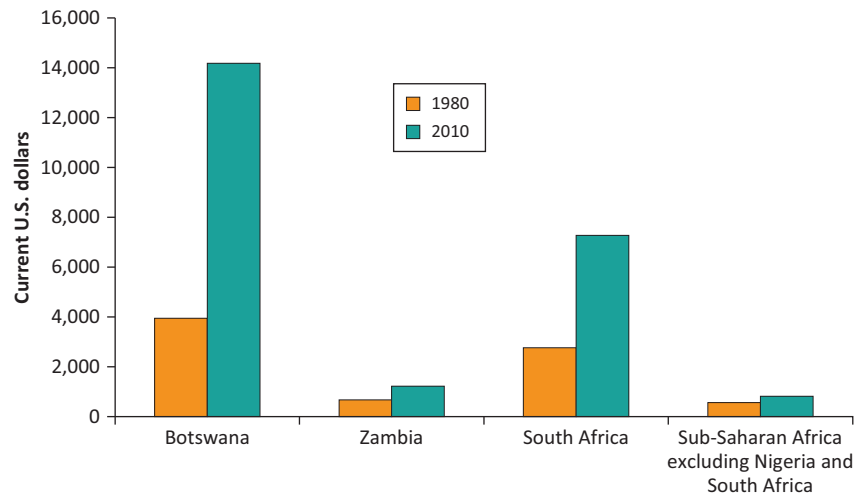
Source: IMF, World Economic Outlook database.

Once the choice between consumption and saving has been made, policymakers must decide how to invest the savings, allocating it between physical and financial assets. Because in capital-scarce countries the payoff of some investments (such as in economic infrastructure) can be quite large, a substantial share of resource revenue should be allocated for this purpose. In the same vein, certain types of current expenditure complementary to capital spending (in particular, spending on education and health, which builds human capital) can also yield high returns. In resource-intensive and fragile SSA countries, public spending on the security and justice sectors (e.g., to strengthen private property rights) may also have significant growth returns. Therefore, although most resource revenue should generally be used for capital spending, the precise balance between capital and current spending must be made on a country-specific basis. As an example, Botswana finances all of its investment spending from resource rents (Box 3.2).

Box 3.2. Managing Natural Resource Wealth: Lessons from Botswana

Botswana's ability to avoid the resource curse by prudently managing its mineral wealth has been justly acclaimed. Five decades of virtually uninterrupted, rapid growth lifted Botswana from one of the world's most impoverished countries into the ranks of the upper-middle-income nations (Figure 3.2.1).

Figure 3.2.1. GDP per Capita, 1980 and 2010



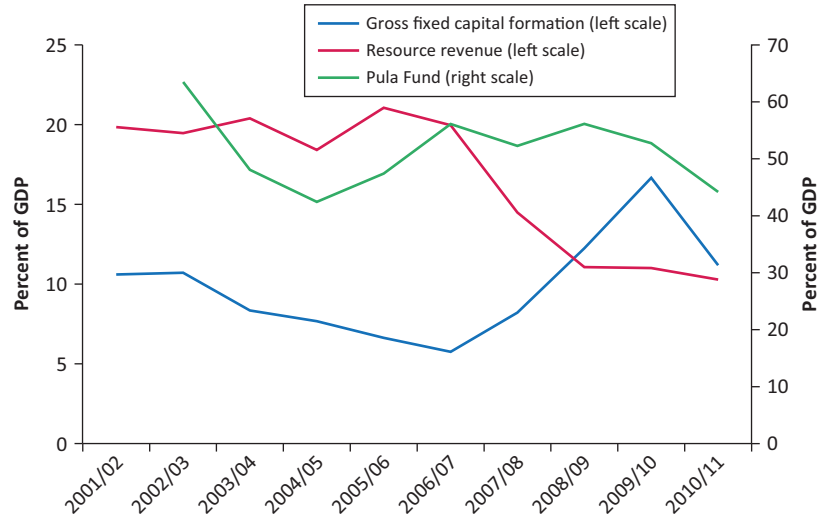
Sources: IMF, World Economic Outlook database.

Over the years, Botswana has earned a reputation for good governance and prudent macroeconomic policies. Botswana's sound macroeconomic management and ability to manage revenue from its natural resources, including diamonds, has been one of the main drivers for its remarkable economic performance. The creation of "inclusive institutions" has also helped. Indeed, the government has formed stable, long-lasting partnerships with mining companies, leaving company management in the hands of private sector firms, and carefully increasing its share of equity or revenue through skillful renegotiation of contracts.

Mineral wealth management is based on a rule that allocates non-renewable-resource revenue to investment expenditure or savings: a Sustainable Budget Index (SBI) principle ensures that "non-investment" spending is financed only with nonresource revenue. Over time, Botswana has built a large stock of government savings in its Pula Fund (Figure 3.2.2), which is managed by the Bank of Botswana. The central bank's official exchange reserves (Figure 3.2.3) and the Pula Fund have helped the government limit the adverse effects of boom-bust commodity price cycles on the economy.

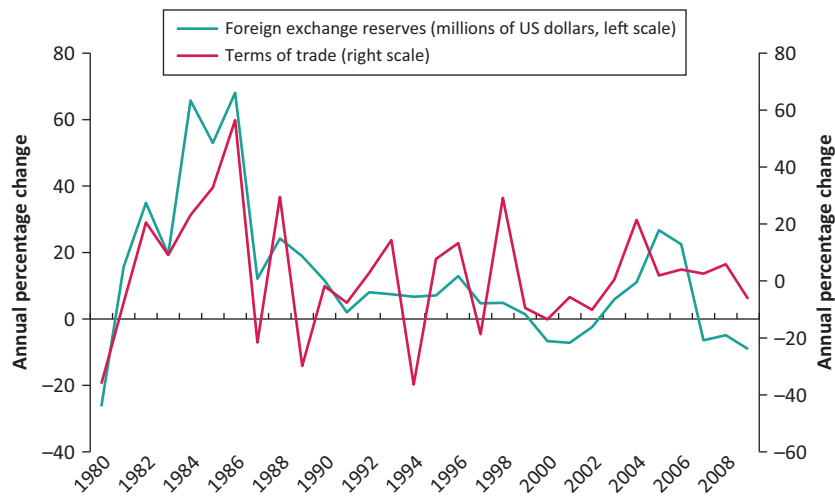
Box 3.2. (concluded)

Figure 3.2.2. Botswana: Resource Revenue and Gross Fixed Capital Formation



Sources: Botswana authorities; and IMF staff estimates.

Figure 3.2.3. Botswana: Terms of Trade and Foreign Exchange Reserves



Sources: Botswana authorities; and IMF staff estimates.

Supply-side bottlenecks and absorptive-capacity constraints will influence the speed of public investment expenditure. Supply-side bottlenecks may warrant a sharp increase in domestic investment to prevent the increase in domestic demand associated with higher resource prices, which could create inflationary pressures and adversely affect the competitiveness of the nonresource sector (and lead to Dutch disease). Absorptive constraints often arise from the weak capacity of country authorities to choose and implement productive projects and can lead to poor investment rates of return (Chapter 4). When choosing between physical and financial investments, that is, spending now or later, countries must take both challenges into account, as well as the expected duration of the revenue surge.

Policy Challenge: Ensuring External Sustainability

To assess and ensure external sustainability, appropriate benchmarks for a sustainable current account position for resource-rich countries must be developed. In this regard, it is useful to derive a nonresource current account balance, that is, one that excludes resource export proceeds, investment income outflows associated with resource investments, and imports related to the extraction of natural resources. A nonresource current account approximates the current account that would prevail in the absence of the natural resource, and can be viewed as a measure of the long-term nonresource saving and investment balance once the resource is exhausted. This estimate could then be compared with the annual resource flow from the net present value of resource wealth and an assessment of a sustainable net asset position. For example, in the extreme case in which all resource wealth is consumed, the nonresource current account would be compared with the annual annuity from this wealth estimate. If the medium-term nonresource current account and the annual annuity match, the real exchange rate is judged to be in equilibrium, whereas any mismatch between the two indicators would suggest that a real exchange rate adjustment can help restore equilibrium (Box 3.3). If the estimate of the nonresource current account is not representative of long-term trends because of a large temporary buildup of investment, this investment buildup can be excluded from the calculation of the sustainable level. Moreover, prudence factors can be added to the analysis to control for the uncertainty of resource price movements.

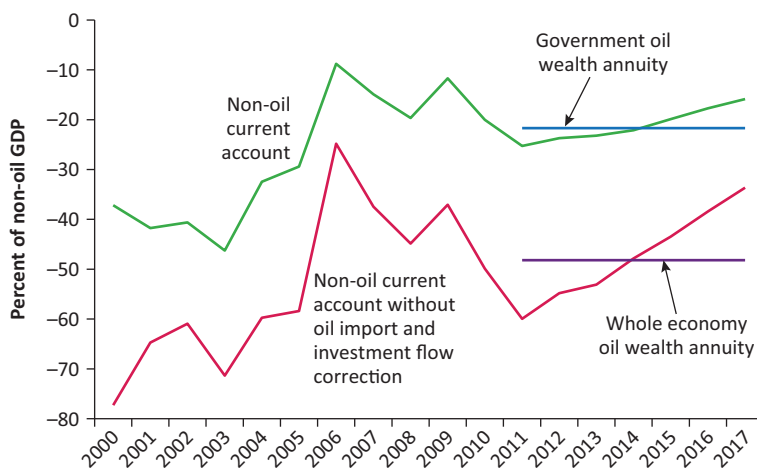
Similar to the analysis of fiscal policy, traditional models for analyzing external sustainability should be complemented by analysis that reflects external borrowing constraints and absorptive-capacity limits. In many SSA countries that face external borrowing constraints, resource windfalls can loosen these constraints, leading to a larger nonresource current account

deficit in the short term as the domestic capital stock is built up. To complement traditional models for analyzing external sustainability, IMF staff has developed a model that accounts for the lack of capital in low-income countries and incorporates effects on investment decisions from

Box 3.3. Benchmarking the Non-Oil Current Account

The analysis of fiscal policy for resource exporters is rich and has a commonly used and well-defined benchmark for assessing long-term fiscal sustainability—the comparison of the nonresource fiscal balance to a measure of the appropriate annual drawdown of resource wealth owned by the government (see Chapter 4 for further details). A similar concept can also be applied to the current account, to yield the nonresource current account deficit, which can also be compared with the annual drawdown of resource wealth. This concept is further elaborated upon using data for Nigeria (Figure 3.3.1).

Figure 3.3.1. Nigeria: Alternative Estimates of Current Account Norm



Source: National authorities; and IMF staff estimates.

The nonresource current account position excludes imports of resource-related products and investment flows back to foreign head offices of multinational companies, in addition to the resource export. Nigeria provides data on repatriated earnings of oil multinationals and foreign direct investment in the oil sector, which are used as a measure of oil-related imports. The resulting non-oil current account deficit is projected to decline to about 16 percent of non-oil GDP in the medium term, falling

Box 3.3. (concluded)

below the sustainable annual drawdown of wealth accruing to the government. The latter is defined as the net present value of wealth (based on a 4 percent real rate of return) multiplied by the government ownership share and expressed as an annuity over a 40-year period so that the wealth is exhausted at the end of this period. Basing the analysis on the current account excluding only oil exports, and therefore assuming that companies finance oil-related imports themselves through retained earnings, the corresponding current account concept also falls below the return on wealth for the whole economy in the medium term.

The analysis suggests that Nigeria can easily finance its consumption and investment expenditure based on its current level of non-oil exports and the annuity on oil wealth, implying that an exchange rate adjustment is not needed to improve Nigeria's international competitiveness. This assessment is, however, sensitive to changes in resource prices and the level of the real rate of return. The picture would be quite different if oil prices were to fall significantly from the levels prevailing in 2013.

potential investment inefficiencies, absorptive constraints, and limits to borrowing (IMF, 2012b, 2012d). This model can help inform current account sustainability analysis for resource-rich developing countries.

Policy Challenge: Coping with Price Volatility and Avoiding “Boom and Bust Cycles”

The prices of natural resources are inherently volatile and history is replete with examples of damaging “boom and bust” cycles in resource-rich economies. Volatility in revenue from natural resources can also stem from sudden changes in production volumes. The procyclicality of government spending—higher spending associated with higher revenue, as resource prices or production rise—has the potential to further fuel macroeconomic volatility. Moreover, discretionary government expenditure of this type is generally neither effective nor productive. The volatility of resource prices should make authorities cautious when choosing between investment in physical or financial assets because physical assets cannot be unwound to address sudden drops in resource revenue. Establishing institutional mechanisms or rules to reduce the adverse effects of volatile prices is therefore essential.

Two strategies may help in this regard. First, the authorities in SSA countries could try to hedge the resource price to ensure a more secure revenue base and to reduce uncertainty about the budgeted resource price. This strategy has been in place in Mexico, for example, since the early 1990s. It was successfully

implemented in the recent past with the government's purchase of an option to sell oil at \$70 a barrel, which was exercised in mid-2008 when the price fell to \$40 barrel. However, this strategy can also be politically costly if it fails, given the pitfalls in forecasting oil prices.

Second, stabilization or resource funds can be created (Box 3.4). When prices are high relative to an established benchmark, leading to a fiscal surplus, resource proceeds flow into the fund and are invested in foreign assets. When prices are low leading to deficit financing, the funds are withdrawn. One of the difficulties in establishing a stabilization or resource fund in SSA countries is that with expenditure needs so immediate, reaching broad consensus on building up a financial reserve at the start of the process is difficult. Because today's price tends to be considered the best predictor of tomorrow's price, politicians are loathe to believe that prices will suddenly fall, which appears to many to be the critical justification for accumulating financial assets in the first place. In reality, resource prices have proved to be volatile and difficult to predict, and changing expenditures from year to year (i.e., stop-and-go public investment) can be very costly.

Legitimate questions also surround the appropriate size of a stabilization fund. In this regard, policymakers should carefully consider the persistence and standard deviation of the resource price, the costs of changing expenditure during various phases of the business cycle, and lending and borrowing fees. Operationally, they should aim to stabilize expenditures and not resource revenue. Policymakers in SSA countries should be aware that experience outside the region shows that most stabilization funds have failed precisely because they were designed on the basis of contingent revenue rules

Box 3.4. Oil Funds in Selected Developing Countries

Following the successful examples of Norway and Chile (see Box 4.2 for more detail on Chile), a number of developing countries have established oil funds since the middle of the first decade of the 2000s. This box focuses on two of these cases: Timor-Leste and Nigeria. Ghana also set up oil funds (see Box 4.4).

The **Timor-Leste** Petroleum Fund, established in 2005, is governed by the Petroleum Fund law. The Ministry of Finance manages the fund on behalf of the government, which delegates day-to-day operations to the central bank. All investment decisions are validated by an independent Investment Advisory Board. The Petroleum Fund acts as both a saving vehicle and a stabilization fund, but the overriding aim is to maintain its real value and to prevent expenditure volatility. Withdrawals from the fund are fully integrated into the government budget and are linked to an estimated sustainable income formula guided by the principle of maintaining the real value of government wealth (similar to the permanent income model approach outlined earlier in this chapter).

Box 3.4. (concluded)

The projected sustainable income is based on an estimated real return of 3 percent, and any transfers out of the fund in excess of this amount are subject to parliamentary oversight. Since 2009, the transfers have exceeded the projected sustainable income as the result of a policy to front-load essential investment expenditure. The Petroleum Fund only invests in external assets and is audited annually by internationally accredited auditors. Timor-Leste adheres to the Santiago Principles initiated in 2008 to reflect appropriate governance, accountability, and investment guidelines (International Working Group of Sovereign Wealth Funds, 2008). The Petroleum Fund Consultative Council that reports to the parliament also maintains an oversight role to ensure good governance. As of end-December 2012, the fund value was about \$11.8 billion, equivalent to nearly eight times the projected budgetary expenditure for 2012 and more than three times nominal GDP (about nine times non-oil GDP).

Nigeria established an oil stabilization fund, the Excess Crude Account (ECA), in 2004, and, although not well grounded in domestic law, it was initially successful. During 2004–08, significant budgetary savings were achieved by having expenditure decisions guided by the oil reference price and the saving of surplus revenue. By end-2008, the ECA had reached \$20 billion and these resources were used effectively to counter the financial crisis of 2008–09 when oil prices plummeted; use of the ECA allowed the consolidated government balance to swing from a surplus of 6 percent of GDP in 2008 to a deficit of 9 percent of GDP in 2009. The ECA and the budget price rule are, however, imperfect mechanisms for ensuring fiscal buffers because the ECA is subject to ad hoc withdrawals and a weak legal framework. Spending pressures resurged because of rebounding oil prices, political uncertainty, and the election cycle. The government initiated a procyclical fiscal expansion financed by withdrawals from the ECA so that by end 2011 it was almost depleted. This motivated the creation of a sovereign wealth fund (SWF), which has been operational since July 2012. During 2012, revenue replenished the fund such that its value was \$9.2 billion at end-2012. The government's revamped SWF has three components: a stabilization fund, an infrastructure fund, and an intergenerational saving fund. With stricter rules than under the previous ECA, the sharp drawdowns that occurred during 2010–11 are less likely to be repeated. However, the precise modalities for determining how much oil revenue is to be allocated to the ECA are still to be determined.

(i.e., inflows and outflows were linked to a prespecified resource price or revenue target, independent of the actual fiscal balance).¹ It is also important that any funds set up be transparent and be well integrated into the budget. And if countries decide to set up separate funds for various development

¹ This issue is addressed in more detail in Ossowski and others (2008)

objectives, robust financial oversight of their use must be in place to minimize problems of budgetary fragmentation (see Chapter 4).

Policy Challenge: Achieving the Appropriate Fiscal and Monetary Policy Mix and Avoiding Real Exchange Rate Appreciation

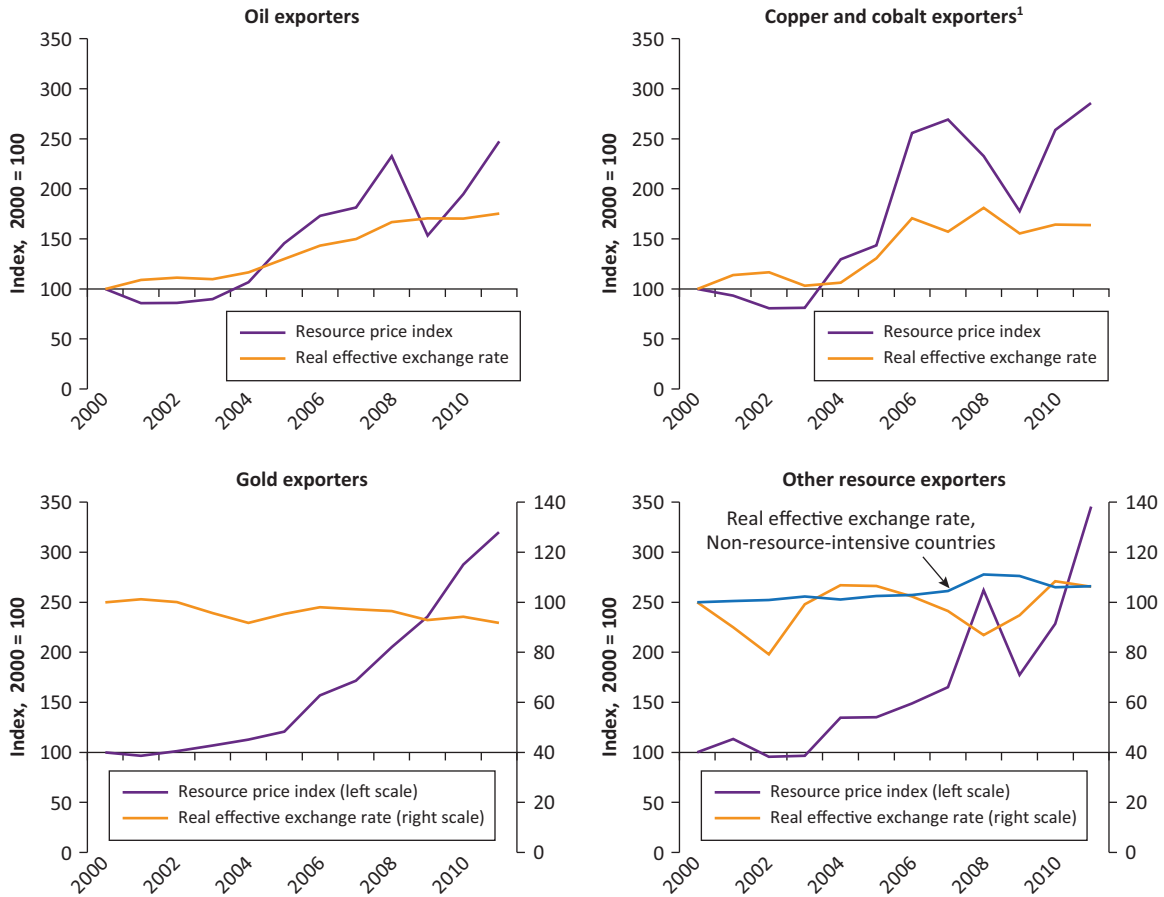
Fiscal and monetary policy coordination is important in resource-rich economies because the effects of sharp resource price changes on the domestic economy can be magnified through poor policies. SSA policymakers have numerous possibilities to consider, for example,

- If the government saves all of the windfall gain from an increase in resource prices and the central bank keeps the foreign currency, the real exchange rate remains stable. In this case, there are no adverse implications for the real economy but nor are there benefits from higher public investment.
- If reserves accumulated by the central bank are equal to the resource windfall from higher resource prices, the effects on domestic inflation and on the real exchange rate depend on whether the government spends its increased revenues and on whether the central bank sterilizes the increased demand for local currency by the government through open market operations. If the amount of sterilization matches the increased spending by government, the inflationary effects are muted.
- If, at the other extreme, the government spends the increased revenue generated by higher resource prices and the central bank fails to accumulate reserves, the real exchange rate appreciation is magnified, with possible adverse consequences for the real economy.

Although the government may be successful in coordinating the public sector response to a resource windfall, the behavior of the private sector can offset these effects. Strong public policies such as mitigating the effects of revenue surges on the domestic economy can be counteracted by opposite behavior from the private sector. For example, private spending may be boosted following a hike in resource prices to take advantage of the resource boom and may offset the prudent public sector stance. This behavior is evident in movements in the external current account and corresponds to the concept of Ricardian equivalence.

Since 2000, SSA countries have experienced mixed success in insulating the real exchange rate from resource price pressures, with oil and copper exporters encountering the greatest difficulty in keeping the real exchange rate stable. An examination of the evolution of the real exchange rate across

Figure 3.1. Sub-Saharan Africa: Resource Price Index and Real Effective Exchange Rate, 2000–11



Sources: IMF, African Department database, and Information Notice System; and World Bank, Commodity Price Markets.

¹Excluding Democratic Republic of the Congo.

SSA’s natural resource exporters since 2000 reveals that gold exporters and “other” exporters have managed to avoid a real exchange rate appreciation in the face of rapidly increasing resource prices (Figure 3.1). In contrast, the real exchange rate has followed real export prices for oil exporters and copper and cobalt exporters (Zambia).² The key explanatory factors for the different real exchange rate trajectories appear to be the share of resource income accruing to nationals (high for “oil exporters,” lower for “others”) and the importance of resource exports relative to total exports.

² The resource price is deflated by the consumer price index of countries making up the special drawing rights basket (the euro area, Japan, the United Kingdom, and the United States). The resource prices and real exchange rates are weighted by the sum of exports and imports to create group aggregates.

Recommended Reading

Macroeconomic Frameworks

Collier, Paul, Frederick van der Ploeg, Michael Spence, and Anthony J. Venables, 2010, “Managing Resource Revenues in Developing Countries,” *Staff Papers*, International Monetary Fund, Vol. 57, No. 1, pp. 84–118. ISBN: 9781589069114.

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Fiscal and Current Account Oil Price Sensitivities

Arezki, Rabah, and Kareem Ismail, 2010, “Boom-Bust Cycle: Asymmetric Fiscal Response and the Dutch Disease,” IMF Working Paper 10/194 (Washington: International Monetary Fund). www.imf.org/external/pubs/cat/longres.aspx?sk=23783.0.

Thomas, Alun, and Tamim Bayoumi, 2009, “Today versus Tomorrow: The Sensitivity of the Non-Oil Current Account Balance to Permanent and Current Income,” IMF Working Paper 09/248 (Washington: International Monetary Fund). www.imf.org/external/pubs/cat/longres.aspx?sk=23390.0.

Current Account Norms

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(Box continues)

IMF Working Paper 13/80 (Washington: International Monetary Fund). www.imf.org/external/pubs/cat/longres.aspx?sk=40437.0.

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Sovereign Wealth Funds

Das, Udaibir S., Adnan Mazarei, and Han van der Hoorn, 2010, *Economics of Sovereign Wealth Funds: Issues for Policymakers* (Washington: International Monetary Fund). ISBN: 9781589069275. www.imf.org/external/pubs/cat/longres.aspx?sk=23386.0.

International Working Group of Sovereign Wealth Funds, 2008, *Sovereign Wealth Funds: Generally Accepted Principles and Practices—Santiago Principles*, available at www.iwg-swf.org/pr/swfpr0804.htm.

Ossowski, Rolando, Mauricio Villafuerte, Paulo Medas, and Theo Thomas, 2008, *Managing the Oil Revenue Boom: The Role of Fiscal Institutions*, IMF Occasional Paper No. 260 (Washington: International Monetary Fund). ISBN: 9781589067189. www.imf.org/external/pubs/cat/longres.aspx?sk=20565.0.

Fiscal Frameworks

Fiscal policy takes center stage in making the most of large endowments of natural resources. The prospects for substantial proceeds from the exploitation of natural resources provide opportunities to promote economic development in sub-Saharan Africa (SSA), notably through much-needed investment in infrastructure and human capital. Managing these resources effectively is therefore critical. This chapter draws heavily upon recent IMF analytical work, particularly “Macroeconomic Policy Frameworks for Resource-Rich Developing Countries” (IMF, 2012b), to present the main arguments and policy options.

The high volatility and uncertainty of natural resource revenue complicates macroeconomic management and medium-term budget planning. Having a fiscal framework that can help anchor appropriate medium-term targets is essential. To the extent that natural resource revenue is exhaustible, the complex issues of long-term sustainability, intergenerational equity, and the need for effective saving vehicles are brought to the fore and must be addressed.

As stressed in IMF (2012b), a number of elements should be included in fiscal frameworks for resource-rich countries, including the following:

- Indicators to assess the fiscal stance in support of macrofiscal stability;
- Rules that anchor the short- to medium-term fiscal policy path but offer sufficient flexibility to channel precautionary savings to urgent spending needs, in particular, for scaling up growth-enhancing expenditure;
- An appropriate benchmark for assessing long-term fiscal sustainability; and
- A strong institutional setup with adequate capacity to forecast revenue, manage expenditure, and set medium-term targets for fiscal policy.

The relative importance of each of these elements in the design of a fiscal framework depends on country-specific factors (such as the size and extraction profile of the resource reserves) and priorities. As a general rule, however, in resource-rich countries where the capital stock is deficient—which is the case in most SSA countries—the main priority for the fiscal framework should be to balance concerns about macroeconomic stability against economic development. In countries in which resource revenue is perceived to be temporary as opposed to permanent (or long lasting), intergenerational equity issues must also be addressed. There is no “one size fits all,” and factors such as the country’s development level, credit constraints, demographic profile, and absorptive and institutional capacity should be considered in designing the fiscal framework.

Policy Challenge: Alleviating Capital and Credit Constraints While Maintaining Macroeconomic Stability and Fiscal Sustainability

There are good reasons to rethink Friedman’s (1957) previously dominating expenditure-smoothing approach to fiscal management of natural resources. As noted in Chapter 3, this classical view of natural resource management in the academic literature and among policymakers placed primary importance on the permanent income model, which implies maintaining annual current spending equal to the implicit return on the present value of future resource revenue. In this way, the permanent income model provides a benchmark for the nonresource primary deficit that could be sustained indefinitely. In the past, IMF staff often relied on this model to guide policy discussions (IMF, 2012c) but have recently moved away from this approach for a variety of reasons: (1) the permanent income model addresses only the constant flow of consumption and not the appropriate rate of investment; (2) it fails to address the capital and credit constraints in many resource-rich low-income countries like those in SSA; (3) it ignores the reality that current generations may be poorer than future ones, which would make the marginal utility of consumption higher for the current generation; and (4) it fails to take into account that the bulk of resource reserves in SSA are most likely yet to be discovered.

Consequently, more flexible fiscal framework models that can accommodate scaled-up investment can be justified, and this is now reflected in IMF staff advice to many resource-rich countries in this position (IMF, 2012b). This flexibility can be achieved in a number of ways, including by exploring options for short- and medium-term fiscal anchors, long-term fiscal sustainability benchmarks, and sovereign wealth funds (SWFs). The best framework for a country depends on country-specific economic and institutional circumstances, including the level of resource revenue dependency, resource wealth and reserves, revenue horizon, and development needs. Depending on these factors, established principles for fiscal frameworks can be modified to

allow for more flexibility to front-load growth-enhancing investments while maintaining macroeconomic stability.

Several options for short- and medium-term fiscal anchors are available, each with its pros and cons:

- *Nonresource balance anchors* are defined using the standard fiscal balance excluding net resource revenue. Nonresource balance anchors allow for effectively managing short-term demand fluctuations and insulate fiscal policy from revenue volatility. Specific nonresource targets can be set taking absorptive capacity into account.
- *Price-based rules* or *structural balance rules* seek to smooth the fiscal effect from changes in resource revenue by using a reference price to estimate revenue based on a moving average of past or future resource prices (or both past and future prices). The shortcoming of this anchor is that it ignores the exhaustibility of resource revenue and changes in production volumes, although sustainability concerns can be addressed by deliberately cautious revenue projections.
- *Expenditure growth limits* can cap the growth of government spending in nominal or real terms, or as a percentage of resource revenue. The benefits are its simplicity, ease of monitoring, and relationship to absorptive capacity (i.e., growth rates). A disadvantage of expenditure growth limits is that they may reduce the incentives to mobilize nonresource revenue. Expenditure growth limits can be used to complement a price-based or structural balance rule that does not take into account changes in production volume.

With several options for short- and medium-term fiscal anchors at hand, how can country authorities be guided in their choices? A key question to ask is how long the resources are likely to last. As a general rule, countries with long resource horizons should be mainly concerned with managing the volatility of resource prices and ensuring macroeconomic stability. Countries with shorter resource horizons face similar problems but in addition, must address the issue of long-term fiscal sustainability once the resource is exhausted (Box 4.1).

**Box 4.1. Capital-Constrained Resource-Rich Sub-Saharan African Countries:
Anchors and Benchmarks**

In all types of economies, the overall fiscal balance (total revenue minus total spending) is used as an indicator of the net financial position, that is, whether the government is increasing or reducing its financial wealth. The primary fiscal balance (the overall fiscal balance excluding interest payments) gives an indication of the fiscal stance—that is,

Box 4.1. (concluded)

whether fiscal policy has an expansionary or contractionary effect on domestic demand. The recommendation for resource-rich countries, given that resource revenue typically originates from abroad, is to complement the analysis of the fiscal balance by also considering the *nonresource* primary fiscal balance (the overall fiscal balance, excluding interest payments and resource revenue and resource expenditure). Beyond these basic indicators, IMF staff have recently recommended a range of anchors and benchmarks (Table 4.1.1) to guide fiscal policies in capital-constrained, resource-rich SSA countries (IMF, 2012b).

**Table 4.1.1. Capital-Constrained Resource-Rich Sub-Saharan African Countries:
Anchors and Benchmarks**

Short- or Medium-Term Fiscal Anchors				
Long Resource Revenue Horizon		Short Resource Revenue Horizon	Long-Term Fiscal Sustainability Benchmarks	
Price-based rule (structural primary balance rule with price smoothing)	Expenditure growth rule	Nonresource primary balance rule	Modified permanent income model rule	Fiscal sustainability framework (modified debt sustainability framework)
Aims to determine expenditure levels on the basis of smoothed resource revenue for a given fiscal target; a smoothed estimate of resource revenue is used to determine the expenditure envelope. Helps insulate spending from price volatility.	Sets a limit on the growth of government spending. Useful for limiting the procyclicality of fiscal policy and in cases of absorptive capacity constraints (e.g., overheating, large current account deficits). Usually used in combination with a price-based rule.	The target should be set in line with long-term sustainability benchmarks and calibrated in the short-term sustainability depending on cyclical conditions.	Deviates from the traditional permanent income model by allowing a scaling up of investment in the medium term, but followed by a scaling down of spending after the scaling up period to rebuild and preserve net financial wealth. It does not consider the growth impact or replacement and recurrent costs associated with additional investments.	Based on a debt sustainability framework. Aims to stabilize net resource wealth (over the longer term) at a level lower than what the permanent income model or the modified permanent income model would imply, while allowing scaling up of expenditures. Can consider growth impact and replacement and recurrent costs associated with additional investment.

- If a country with a relatively *short resource revenue horizon* focuses only on the overall fiscal balance or the overall primary fiscal balance (the overall fiscal balance excluding interest payments) to guide fiscal policies, it runs the risk of an abrupt expenditure adjustment when revenues from natural resources come to an end. If the nonresource primary deficit is relatively large, the sustainability of the fiscal position could be jeopardized even before the natural resource is exhausted. Therefore, the conventional fiscal indicators should be complemented with indicators that explicitly exclude the resource, such as the *nonresource primary balance*. The nonresource primary balance—the overall primary balance excluding (net) interest payments and (net) resource revenue, preferably scaled to nonresource GDP¹—provides a measure of the underlying fiscal policy stance and the impact of government operations on domestic demand, and helps to delink fiscal policy from the volatility of resource revenue. This is a better anchor for fiscal policy for countries with a short revenue horizon over the short to medium term, compared with, for example, the primary balance alone.
- A country with a *long resource horizon*, however, need not worry about exhaustibility of the resource and could focus on managing volatility and avoiding procyclical fiscal policies. In this case, a *price-based rule* (based on price smoothing) or a *structural primary balance indicator* is a useful fiscal anchor. If public expenditures move in tandem with natural resource revenues, expenditures will increase (decrease) as natural resource prices increase (decrease), thus reinforcing the effect on domestic demand from changes in resource prices and resulting in procyclical fiscal policies. More to the point, misjudgment of the sustainability of temporary increases in resource prices and inadequate fiscal buffers to sustain spending levels when prices decline are common reasons behind boom-bust cycles in resource-rich economies (Chapter 2). Using a price-based rule or a structural fiscal indicator can help break this link. A structural-type fiscal indicator uses a reference price for the natural resource determined by a price formula or independent committee of experts, as in Chile (Box 4.2). This structural indicator ensures that resource revenue is more or less independent of the business or commodity-price cycle. Price formulas can take a number of forms giving various weights to historical and forward-looking resource prices. The resulting structural resource revenue can then be used either in the budget process to project

¹ Given the large volatility of resource GDP and, therefore, total GDP, such an indicator should ideally be expressed through nonresource GDP.

revenue or to derive a “structural” primary balance² as the basis for a fiscal rule.

- The structural balance rule can be usefully combined with an *expenditure growth rule or ceiling*. Such a rule, defined as the growth of expenditure or expenditure as a share of nonresource GDP, can further help avoid volatility and procyclicality. It can also be a helpful tool in guiding the pace of investment growth when a country faces capacity constraints (Berg and others, 2011).

The fiscal framework and its anchors should be guided by an assessment of *long-term fiscal sustainability*, which could be defined as the ability of the government to sustain spending, tax levels, and other policies in the long run without running into insolvency problems. This is relevant for all resource-rich SSA countries and especially those with a short resource revenue horizon.

The *permanent income hypothesis* provides a useful framework for assessing long-term sustainability, although the model should be appropriately *modified* to accommodate some scaling up of public spending. This modification can be made by allowing short-term deviations from the permanent income model’s constant expenditure path; countries could front-load spending to scale up growth-enhancing public investment and reduce spending later on, to keep spending broadly constant over the longer term. Although this modification leads to some improvement in the analytical framework, it still falls short of the ideal because even a modified version of the classical model fails to take account of potential growth-enhancing effects from scaled-up public investment. These growth-enhancing effects are potentially significant and could yield high fiscal returns over time, which would lessen the need for compensatory spending reductions in the future.

Alternative approaches to assessing long-term sustainability that explicitly take into account expected growth-enhancing effects from higher investment should, therefore, be considered. This could be done either by using a *fiscal sustainability framework combined with a debt sustainability framework* that is modified to take account of the growth impact from investment, or by means of alternative models (Box 4.3). The alternative models are driven by a number of simplifying assumptions, including that windfall resource revenue is primarily used for public investment or other growth-enhancing spending. The results are also sensitive to the assumptions made about efficiency of these resources and the quality of those investments (Chapter 5).

² This differs from cyclically adjusted balances that take into account output gap fluctuations resulting from nonresource economic cycles. Potential GDP, which forms the basis for estimating output gaps, is generally difficult to calculate in SSA countries because of data constraints, structural changes, and significant GDP volatility.

Box 4.2. Chile's Experience with Fiscal Rules

Chile produces about one-third of the world's copper; the commodity accounted for 54 percent of Chile's exports and nearly 14 percent of its fiscal revenue in 2012. With an expected duration of at least 50 years, copper reserves can be considered long lasting. Chile also has a strong record of macroeconomic stability and sustained growth, with annual real GDP growth averaging 5.3 percent during 1991–2011. This growth performance has been backed by a strong macroeconomic policy framework that includes inflation targeting, a flexible exchange rate, and a fiscal rule.

The fiscal rule, adopted in 2001, has two objectives: (1) to contribute to fiscal and macroeconomic stability by insulating public spending from volatility in copper prices and economic activity, and (2) to improve the net asset position of the central government. To meet these goals, an annual structural balance target is set, initially at a surplus of 1 percent of GDP. In the design of the Chilean rule, intergenerational considerations do not play a prominent role. In 2006, the fiscal rule was anchored in the fiscal responsibility law that set guidelines for computing the structural balance and mandated that the administration must set such a target within 90 days of taking office. The exact formula used for determining the structural balance is complex, but essentially captures the difference between trend revenue consistent with trend estimates of output and copper price, and public expenditure. The difference between the overall fiscal balance and the structural balance is the cyclical component of both mining and nonmining revenue.¹

The fiscal responsibility law also established rules for managing fiscal resources and set up two sovereign wealth funds, the Pension Reserve Fund (PRF) and the Economic and Social Stabilization Fund (ESSF). The PRF receives revenue of between 0.2 and 0.5 percent of GDP to be used to cover pension guarantees. The ESSF is intended to be a fiscal buffer, receiving any budget surplus left after payment to the PRF and debt amortization, and is to be used to finance deficits at times of revenue shocks. The capital of both SWFs is invested abroad.

Since its introduction, the target for the structural balance has been adjusted several times to respond to changing economic circumstances, but it has remained a strong anchor for fiscal policies. It is worth noting that the fiscal target, even before the legal framework was adopted, was well backed by strong political commitment. In addition, several features of the framework shield it from political interference and ensure transparency: the estimates of potential GDP and long-run copper prices are determined by a group of independent experts; and annual budget reports, including the targets for the next four years and a detailed review of implementation of the previous year's budget relative to targets, are published.

¹ Chile has thus extended the notion of a structural balance further, by also adjusting nonresource revenue to the economic cycle. In many SSA countries, where the economic growth cycle is not well defined and where data shortages and capacity constraints make the estimation of potential output difficult, Chile's type of structural balance rule may be difficult to apply but might be considered in the future as data and information improve.

**Box 4.3. Exploring Alternative Models of Sustainability:
The Democratic Republic of the Congo**

The Democratic Republic of the Congo (DRC) is a resource-rich country in which decisions on public savings, investment, and consumption are particularly complex because of its political and institutional features. The volatility of commodity prices further complicates macroeconomic management. Copper and cobalt dominate exports (80 percent in 2011), with gold, diamonds, zinc, and coltan adding a further 10 percentage points.

IMF (2012d) assessed the DRC's fiscal sustainability taking into account the potential growth effects of scaled-up public investment. Simulations were undertaken using a model developed by IMF staff comparing two policy options for the use of windfall revenue: (1) building up a fiscal buffer through external savings ("bird-in-hand"); or (2) increasing public investment. In the first option, the windfall revenue is saved in a sovereign wealth fund that expands significantly over time. The second option, simulating a more balanced approach with an up-front but gradual increase in public investment, produces better macroeconomic results in terms of GDP growth, capital stock, and nonresource GDP than the first option. However, because of absorptive constraints, the direct cost of using more of the windfall revenue for public investment (the sum of the annual difference between gross and effective public investment) is twice as high as in the first option. Moreover, in the second option less of a fiscal buffer is available to offset a potential decline in commodity prices.

Although the findings of these simulations depend on a number of assumptions, they illustrate the possible trade-offs and policy implications of using the windfall resources: (1) in a country with large infrastructure gaps, allocating a higher portion of revenue to public investment may pay off with higher GDP growth and poverty reduction (and these effects may even be underestimated given the catalytic effect public investment could have on private investment); (2) the costs owing to absorptive and efficiency constraints point to the need to reinforce public financial management and build the capacity of the civil service and institutional structures to strengthen government accountability and transparency; and (3) setting up a rule for how much of the windfall resources should be saved in the early years of its exploitation makes it easier for policymakers to resist political pressure to increase government consumption and to boost capital spending above absorptive capacity.

Box 4.4. Ghana's New Fiscal Rules

Following Ghana's first major oil discovery in 2007, the government initiated a national consultation on how to manage this newfound wealth efficiently. Although Ghana's oil reserves are relatively small on a global scale—with production from the current Jubilee field expected to peak at 120,000 barrels a day—there is considerable upside potential from new discoveries. Ghana's Petroleum Revenue Management Act seeks to strike a balance between macroeconomic stability and the avoidance of procyclical spending, large infrastructure spending needs, and the need to save for future generations.

The act—passed in 2010 ahead of the first full year of production—includes several provisions: a stabilization fund, an endowment fund for future generations, and annual budget funding and earmarking of funding for public investment. Although the framework does not set any specific budget rule with fiscal indicators that take into account resource revenue, the act sets targets for the partition of resource revenue between the budget and the two wealth funds: (1) of the benchmark oil revenue, up to 70 percent is allocated to the budget and at least 30 percent is transferred to the stabilization and the endowment funds; (2) of the allocation to the budget, 70 percent should be devoted to capital expenditure; and (3) of the 30 percent transferred to the funds, 70 percent goes to the stabilization fund and 30 percent to the endowment fund.

The act also provides for regular public reporting by various government agencies, including the Ministry of Finance and Economic Planning, the Ghana Revenue Authority, and the Bank of Ghana. In addition, transparency clauses are consistent with the requirements of the Extractive Industries Transparency Initiative. A strong framework for public accountability is ensured through disclosures of public expenditure and regular scrutiny by the Public Interest and Accountability Committee. The committee must publish semiannual reports that are also submitted to the president and to parliament. The auditor-general provides external audits of the petroleum funds each year, and the Bank of Ghana conducts internal audits, with the governor submitting quarterly reports. In addition, civil society organizations have been very active in monitoring oil revenue management.

Ghana's setup for managing its oil revenue has positive features with regard to transparency and clear targets for the distribution of the revenue between the budget and the funds. However, as a general principle, SWFs should be a complement to, rather than a substitute for, clear fiscal rules. Although the absence of a budget rule with special provisions for the resource revenue may be motivated by the relative small share of resource revenue out of total revenue in Ghana, the country's performance in managing its resource revenue will depend on clear fiscal targets and adherence to those targets.

Sovereign wealth funds are useful tools in macrofiscal management and for handling intergenerational issues, but they should not be a substitute for clear fiscal rules. A number of countries have set up SWFs, some with the hope that such a fund would remove the pressure to spend windfall revenue. However, empirical evidence suggests there is no significant difference in the fiscal stance in countries with funds with rigid in- and outflow rules compared with others. One explanation may be the lack of borrowing constraints, which allows governments to borrow to finance the payments to the funds.

An SWF should therefore be seen as a useful complementary tool that is integrated with the budget. Rather than being “development funds” with their own authority to spend, they should be fully integrated with the budget and support the implementation of sound fiscal policies (e.g., financing countercyclical policies). Importantly, they should also enhance transparency and credibility by making revenue and the use of it more visible. Finally, they should maximize the yield on the government’s financial savings. (See examples of SWFs in Box 3.4 and Box 4.4.)

Recommended Reading

Arezki, Rabah, Thorvaldur Gylfason, and Amadou Sy, eds., 2011, *Beyond the Curse: Policies to Harness the Power of Natural Resources* (Washington: International Monetary Fund). ISBN: 9781616351458. www.imf.org/external/pubs/cat/longres.aspx?sk=24843.0.

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IMF, 2012b, "Macroeconomic Policy Frameworks for Resource-Rich Developing Countries," IMF Policy Paper, August 24 (Washington: International Monetary Fund). www.imf.org/external/pp/longres.aspx?id=4698.

IMF, 2012c, "Macroeconomic Policy Frameworks for Resource-Rich Developing Countries: Background Paper 1," IMF Policy Paper (Washington: International Monetary Fund; August 24). www.imf.org/external/pp/longres.aspx?id=4699.

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Making Public Investment More Efficient

Natural resource revenue has augmented fiscal space in many sub-Saharan Africa (SSA) countries, creating the potential for public investment to be the engine of long-term growth, diversification, and poverty reduction. In the past, however, scaling up public investment has often led to disappointing results. Why is that? Part of the answer lies in the fact that what matters is not only *how much* is spent, but also *how* it is spent and *on what* it is spent. This chapter examines this issue by taking a closer look at investment capacity and investment efficiency.

Earlier chapters discussed the issue of the portion of resource revenue that should be saved versus spent to ensure macroeconomic stability and sustainability, and the way these objectives can be balanced against the need to address the large requirements for capital investment in most SSA countries. Increased revenue from natural resources presents an opportunity to unblock SSA countries' growth potential. Lack of basic economic infrastructure—transportation facilities, power, potable water—is often cited among the major impediments to private sector growth and employment creation. Well-designed public investments can therefore not only directly fill urgent infrastructure gaps but also, together with overall improvement of the business climate, act as catalysts for increased private investment. The right investment priorities can also help avoid macroeconomic stability challenges related to the scaling up of spending. By addressing specific supply bottlenecks at the micro level and increasing productivity in the economy, appropriately targeted public investment may also help alleviate some of the related macroeconomic stability challenges, such as upward pressure on domestic prices and large real exchange rate appreciation.

However, even if the capital stock is inadequate, capital investments will only deliver high returns if good investment choices are made and assets are created, operated, and maintained in an effective way. In addition

to inadequate capital stocks, many SSA countries suffer from weak administrative capacity and absorptive constraints. That is, even with access to financing, they lack the capacity to manage domestic investments well. Managerial and physical bottlenecks, weak technical expertise, and limited information often lead to poor selection and implementation of investment projects. Governance problems also lead to waste and leakage of resources (Chapter 6). Many of these problems are related to a general need to reform and strengthen civil service capacity and to improve overall public financial management in areas such as budgeting, procurement, and the expenditure chain. But institutional processes and specific capacity to manage public investments also need to be strengthened. The challenge of managing investments well is relevant for most SSA countries, resource rich and non-resource-rich, but capacity constraints tend to become even more urgent in resource-rich countries given the sudden surge in revenue and the desire to use it quickly to address infrastructure deficits.

Policy Challenge: “Investing in Investing”

Although a case can be made for front-loading public investment in capital-scarce countries, a critical prerequisite is building the capacity to manage it. From this follows a need for countries to start “investing in investing” (Collier, 2011, 2012). Investing in investing takes time and until sufficient investment capacity is achieved, some investments may need to be delayed until the capacity has been built, to avoid the waste of resources.

Collier (2012) describes investing in investing as having three components, the first being the need to increase capacity to manage public investment. In addition to an overall strengthening of transparency and governance of resources, specific actions to strengthen institutional arrangements for public investment management are essential. In the first instance, a minimal public investment management (PIM) system should be established. Rajaram and others (2010) identify eight “must-have” features of an effective PIM system (Box 5.1), while allowing for each of the features to be adapted to the capacity of a country.

Once a PIM system with the basic steps is operational, capacity can be built by gradually strengthening the procedures around the different steps. This strengthening can best be achieved with the help of diagnostic tools to identify the weakest links of the overall PIM system. Until recently, few methodological tools were available to help country authorities take this process forward other than physical indicators of input and output. In response, IMF economists developed a composite index of the efficiency of PIM processes for 71 countries, 40 of which are low-income countries.

The index assesses the quality and efficiency of the four consecutive stages of the investment process: project appraisal, selection, implementation, and evaluation, and allows for benchmarking against other countries at each stage. This diagnostic tool can help identify and prioritize the institutional weaknesses that need to be strengthened (Dabla-Norris and others, 2011) (Box 5.1).

Box 5.1. Key Elements of a Public Investment Management System

The precise design of PIM systems may vary between countries but to serve its purpose, such systems should include a few fundamental elements as outlined below.

- | | |
|--|--|
| Stage 1: Strategic Guidance and Appraisal | <ol style="list-style-type: none"> 1. Investment guidance, project development, and preliminary screening. Broad strategic guidance to anchor investment decisions and make a first selection can be derived from a national plan or other medium- to long-term strategic plan that defines economy-wide development priorities. 2. Formal project appraisal. This step includes feasibility analysis, cost-benefit analysis, and identification of relevant alternatives. 3. Independent review of appraisal. |
| Stage 2: Project Selection and Budgeting | <ol style="list-style-type: none"> 4. Project selection and budgeting. Linking the process of appraisal and selection of investment projects is important to ensuring sustainability of recurrent costs and proper accounting of any revenue generated by the project. |
| Stage 3: Project Implementation | <ol style="list-style-type: none"> 5. Project implementation. This step includes clear organizational arrangements (including procurement plans, management and monitoring of project implementation, cost management systems, multiyear budgeting) and a realistic timetable. 6. Project adjustment. This step should be included to allow for changes in project implementation resulting from changing circumstances. It can also reinforce the monitoring process, making it active rather than passive. 7. Facility operation. This is the process of ensuring that the investment project is ready for operation and can be delivered, including verification of any needed adaptations or additional investments before use. |
| Stage 4: Project Evaluation and Audit | <ol style="list-style-type: none"> 8. Basic completion review and evaluation. This often-neglected step serves the important function of evaluation by the responsible agency or ministry after completion, whether the project was completed within the original budget and time frame, and whether outcome and output meet the initially established objectives. |

Adapted from Rajaram and others, 2010, and Dabla-Norris and others, 2011.

A case in point in this respect is Gabon, a country with significant resource revenue that is taking specific measures to strengthen its investment capacity to speed up much-needed investments without compromising investment efficiency (Box 5.2).

In a forthcoming volume on PIM, building on the approach of Rajaram and others (2010), the World Bank identifies some broad PIM typologies for groups of countries (Box 5.3), which could also help identify typical weaknesses and provide guidance on PIM priorities as well as present good practical examples from the advanced PIM countries.

The second component in Collier's (2012) investing-in-investing principle is to improve the environment for private investment. Public investment (for example, roads and electricity) is often critical to generating more private investment, and the return on either depends on investment in the other. Private and public investments combined can pave the way for more inclusive growth, stemming from the development of a diversified economy with job creation in the non-natural-resource private sector. One measure of the climate for private investment is the World Economic Forum Global Competitiveness Index, which is produced annually. According to this index, Rwanda is an example of an SSA country that has managed to quickly climb in this rating. Overall governance is also an important part of the business climate (Chapter 6).

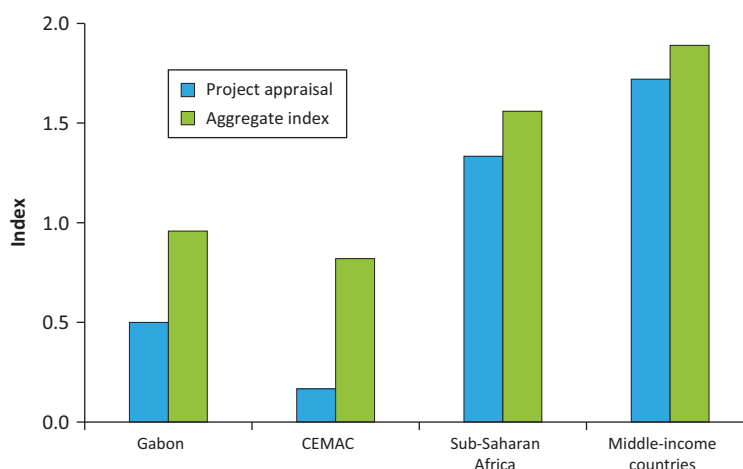
The third component according to Collier, which is relevant but clearly beyond the scope of this publication, is policies to reduce the unit costs for both public and private investment. In SSA, capital goods are generally expensive, construction costs high, and construction skills scarce. Improved trade policies and behind-the-border measures can further contribute to lowering investment costs. Deliberate public policies to address these barriers to investment can help close the capital gap.

Box 5.2. Transforming Oil Assets into Capital Assets: Gabon

The Gabonese authorities in 2009 launched an ambitious public investment program (PIM)—amounting to US\$12 billion, equivalent to more than 150 percent of non-oil GDP, over the next seven years—aimed at transforming Gabon into a diversified emerging market economy in the long term. The program is focused on improving the level and standard of economic infrastructure through road building, upgrading the port facilities, and enhancing energy supply (hydroelectric and thermal power). Improved infrastructure will help support the development of Gabon’s forestry sector, palm oil industry, and other sectors. Special enterprise zones are also being created to facilitate this development.

In recognition of its weak administrative capacity in public investment management (Figure 5.2.1), especially at the appraisal stage, the Gabonese authorities have established a national agency for major public works, with technical and personnel support from Bechtel, a private engineering corporation. Bechtel has significant experience in Gabon, having assisted the authorities with the planning and execution of the 2012 Africa Cup of Nations in Gabon. Bechtel will guide the government’s public investment program during the next five years. Many of the key elements of a strong PIM system enumerated in Box 5.1 seem to have been put in place in Gabon, although more is needed to ensure an independent review of the investment appraisal process (step 3) and a clearer articulation of the program timeline and deliverables (step 5). Knowledge also needs to be transferred smoothly from Bechtel into local hands to ensure the buildup of local managerial capacity and technical expertise.

Figure 5.2.1. Public Investment Management Index, 2010



Sources: Gabonese authorities; Dabla-Norris and others, 2011.

Note: Index ranges from 0 (worst) to 4 (best). CEMAC = Economic and Monetary Community of Central Africa.

Box 5.3. Public Investment Management Reform: A Multicountry Diagnostic Perspective

The PIM system diagnostic approach defined in Rajaram and others (2010) identifies eight “must-have” features for an effective PIM system. Using this approach, the World Bank has reviewed the functionality of PIM systems in 29 countries representing a diverse sample of institutional and political settings and spanning advanced economies (6), emerging economies (11), natural resource–dependent economies (5), and aid-dependent economies (7), including a number of those in postconflict or fragile situations. The countries are located in Africa (8), East Asia and the Pacific (4), Europe and Central Asia (14), and South America (3). The analysis enabled the identification of some broad PIM systemic typologies, which can be described as advanced PIM; donor-dependent PIM; postconflict or fragile PIM; natural resource–dependent PIM; and new EU members PIM. According to the study, some countries share characteristics that fit into more than one typology (in particular, many resource-rich SSA countries are also aid-dependent and postconflict countries).

Natural resource–dependent states (defined by the World Bank as those with more than 25 percent of fiscal revenue from natural resources) in the sample include Angola, the Republic of Congo, Equatorial Guinea, East Timor, and Mongolia (of which, Angola, Congo, and East Timor also fit the postconflict or fragile state typology). These countries have particularly compelling reasons to strengthen PIM given the need to translate extractive industry revenue into durable development assets. Although these countries share many of the PIM problems of aid-dependent countries and a general lack of institutional capacity, some diversity exists in the PIM capabilities of this group of countries, reflecting different political settings and different institutional and historical experiences (for example, Mongolia and Timor-Leste are relative newcomers to resource dependence whereas Angola has a long history of managing oil). The presence of national resource companies creates particular challenges for governments in coordinating PIM, and the trend toward use of “resource-for-infrastructure barter deals” sidesteps even the limited project appraisal capability of these countries. There is also a higher degree of politicization of investment decisions, which undermines technical appraisal capacity for which there is no policy demand. Revenue volatility creates additional challenges for project implementation and has led to large domestic arrears in Angola and Timor-Leste.

Many resource-rich SSA countries are also aid-dependent. Aid-dependent countries in the World Bank sample display distinctive characteristics and weaknesses in most aspects of PIM, from the strategic guidance stage to the project evaluation stage. Notably, countries in this group lack domestic capacity for project appraisal and therefore rely on donor capabilities, which results in uneven criteria for project selection.

Box 5.3. (concluded)

Unpredictability and lack of synchronicity in donor funding also affect project implementation, and management of projects is often diverted into donor-funded implementation units, which reduces the coherence of domestic PIM systems. Postconflict and fragile states significantly overlap with the aid-dependent typology and typically meet few if any of the PIM must-have features. In the immediate aftermath of the conflict, the emphasis is on completing critical infrastructure projects at the expense of value for money, and only gradually does attention focus on restoring government investment management capabilities. Bosnia, the Democratic Republic of the Congo, Kosovo, and Sierra Leone all displayed a gradual evolution from the immediate postconflict situation to one that resembles the more usual aid-dependent characteristics with weak capabilities.

Broad consensus surrounds the critical importance of public investment for a country's overall growth and development process, yet this is often the weak link in fiscal policy management that limits the impact of public spending. The World Bank study concludes that advanced economies that do employ well-disciplined PIM systems indeed demonstrate higher efficiency of public spending. That such systems are not in place in developing economies is a reflection both of the difficulty of behavioral and institutional change in the public sector, and of the strong incentives for political authorities to prefer more ad hoc and discretionary processes and to resist the introduction of systems that would limit the scope to allocate resources on a political basis. The opportunity to benefit from corruption in procurement is another strong factor that makes PIM reform difficult. The study also points to the fact that particular endowments or characteristics (natural resources, access to aid, or postconflict environments) create specific challenges and distortions and concludes that reform efforts must begin with an acknowledgment of the importance of political commitment to systemic improvement and, as with most public sector reform, must seek to influence the executive as well as leverage broader civil society engagement and support to ensure that governance of public resources is improved.

Source: World Bank, forthcoming volume on *Investing to Invest: Promoting Public Investment Management*.

Recommended Reading

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World Bank, "Doing Business Report," available at www.doingbusiness.org/.

World Bank, forthcoming, *Investing to Invest: Promoting Public Investment Management* (Washington).

World Economic Forum, "Global Competitive Report," available at www.weforum.org/.

Raising More Resource Revenue Efficiently and Fairly

For a given natural resource endowment, the most effective way for the government to raise the contribution to the budget is through a well-designed fiscal regime and its strict application. Previous chapters discussed the fiscal framework, which sets the rules for how much should be spent or saved. They also covered how best to manage and use the typically volatile revenue from extractive industries. That discussion temporarily ignored the fact that the size of the amount to allocate will vary depending on how well the country authorities retain and collect revenue from extractive industries. The total rent a natural resource endowment generates depends on the volume, the cost of production, and the world market price for the commodity. But how much of that rent is captured for the national budget depends on actions by the country authorities. The predominant objective—raising as much revenue as possible—needs to be balanced against other objectives such as employment and income growth, as well as against environmental considerations. Limiting the scope to direct fiscal considerations, this chapter discusses how the fiscal regime and revenue administration in extractive industries can be designed to balance the interests of all stakeholders: government, investors, civil society, and the general public. This analysis and its policy recommendations draw heavily from the recent IMF staff paper on “Fiscal Regimes for Extractive Industries—Design and Implementation” (IMF, 2012a).

Sub-Saharan Africa (SSA) countries need well-designed fiscal regimes to make the most of the revenue potential of their extractive industries. The choice of fiscal regime for extractive industries is important in all resource-rich countries, including advanced and highly diversified economies. But SSA countries have relatively more at stake given the larger share of extractive industries in the overall economy and in fiscal revenue. The key role extractive industries and their revenue can play in economic development in these countries makes the design of the fiscal regime for extractive industries in SSA countries all the more important. Moreover,

as discussed in Chapter 2, large volumes of resources in SSA likely remain to be discovered; and of those already discovered, much remains to be developed. Although the increase in proven reserves and in extraction rates worldwide in recent years is likely due to higher commodity prices and technological change, the design of fiscal regimes and the effectiveness in administering them may also play a role in encouraging further exploration and production in SSA countries.

The share of revenue collected varies widely between types of natural resources and countries, which suggests that potential exists for retention of a higher share of revenue by the government in some countries. Lack of data is a persistent problem and estimates need to be interpreted with caution, but data analyzed by the IMF's Fiscal Affairs Department suggest that governments typically retain a much lower share of revenue from the mining sector (45–65 percent of revenue) than from petroleum industries (65–85 percent) (IMF, 2012a). What explains these differences is not completely clear, although a variety of factors may be at work: the fiscal regimes for the petroleum sector are well established, and the industry benefits from extensive international experience and norms, whereas the mineral sector brings greater nonfiscal benefits and faces more intense tax competition because of the inherent risks (exploration and development risks) and uncertainty about market prices (in particular, lack of spot prices). If the first explanation on differences in fiscal regimes and norms holds, there may be scope to increase effective tax rates in mining in general. In addition, if individual countries' retention rates from petroleum or mining are significantly lower than the above estimates, there is reason to review the fiscal regime for improvements (Box 6.1).

Policy Challenge: Optimizing Tax Revenue

What is special about taxation of extractive industries? All types of industries have tax-relevant characteristics that need to be taken into account and extractive industries are no different. The most prominent characteristics of extractive industries that should be considered, individually or in combination, in designing the fiscal regime include the following (IMF, 2012a):

- *Scope for large rents.* On the one hand, extractive industries are an ideal tax base given their relative size and immobility.
- On the other hand, they also come with a high degree of *uncertainty* about future commodity prices, geology, input costs, and political risks.
- *Asymmetric information.* Investors (often foreign) are much better informed than governments on technical and commercial aspects of their extraction projects.

Box 6.1. Taxation of Extractive Industries: Mozambique

Mozambique is endowed with rich, extensive, and still largely unexploited natural resources (coal, natural gas, mineral sands, hydropower-based electricity, and potentially oil). The coal and gas sectors are entering a period of rapid development and will have a significant macrofiscal impact in the near, medium, and longer terms. Four major natural resource projects (hydropower, coal, gas, heavy sands) are already in production, and several more are in the exploration or development stages (mainly hydropower and gas). Foreign direct investment (FDI) reached just over \$5 billion in 2012, more than double the amount in 2011, with more than 80 percent of the increase in the mining and gas sectors. IMF staff estimates indicate that the natural resource sector could contribute 2 percentage points of additional economic growth each year, and its share could exceed 25 percent of GDP by end-2023 (from less than 7 percent in 2011). Natural resource revenue is very small to date, accounting for less than 4 percent of total revenue in 2011, but could rise sharply to about 40 percent of total revenue by 2023, depending on the scale of development and the regulatory framework adopted for managing revenue.

The Mozambican authorities have taken important steps to ensure that their fiscal regime harnesses future revenue from natural resources. With technical assistance from the IMF and the World Bank, in 2007 the government designed and adopted a mining and petroleum fiscal regime that introduced model contracts. Other best-practice features included the introduction of a progressive system of taxation in the hydrocarbon sector and the adoption of specific incentives for the mining and petroleum sectors, removing these activities from the scope of the more generous investment law.

Enhancing the mining and hydrocarbon fiscal regimes remains a priority for increasing revenue. New legislation is being prepared that aims to bring into one place all key fiscal terms for future mining and petroleum projects, comprising three mechanisms: a royalty to guarantee the government a minimum share of the value of production; a corporate income tax with sector-specific rules (including ring fencing, depreciation rules, taxation of capital gains, and withholding tax rates); and a progressive mechanism (revised for petroleum) to ensure the government captures a higher share as projects become more profitable. The authorities are consulting with all interested stakeholders and aim to finalize and submit the draft legislation to parliament in the first half of 2013.

- *Changing investment and revenue balance over time.* Extractive industries require high, up-front immobile investments that at an early stage become sunk costs. This large initial outlay creates a distinct shift in negotiating power to the benefit of the government. This obvious incentive to the

government to change the rules of the game, and investors' awareness of the incentive, may discourage investment.

- *The large involvement of multinational enterprises* in most countries raises complex cross-border tax issues, and a central role for state-owned enterprises in some countries may lead to further asymmetry of information, unclear responsibilities for taxes and other purposes, and inefficiencies. At the same time, a limited number of actors may give some producers and investors substantial market power.
- *Exhaustibility* of natural resources may be a concern at a project level because early extraction will necessarily lead to less extraction later on.

Ensuring a reasonable government share of economic rents under these conditions is not straightforward, and designing the fiscal regime inevitably involves a number of tradeoffs. Besides the need to balance fiscal effort against other objectives, such as employment creation and environmental concerns, issues also arise over the need to remain internationally competitive. When looking only at fiscal revenue—the focus of this chapter—there is no precise or universal definition of what a reasonable share of the rents might be. But in essence, the government's desire to maximize its share has to be balanced against the need for private investors to have adequate incentives to explore, develop, and produce. Fiscal regimes also need to be tailored to country-specific circumstances and priorities (Table 6.1). Countries vary greatly in reliance on extractive industry revenue, exhaustibility of the resources, and the size and number of extraction sites. Traditions and preferences for the degree of state participation vary and, importantly, institutional and administrative capacity, as well as governance standards vary between SSA countries. Tax practices also differ between oil, gas, and mining. These factors must all be taken into account when determining the fiscal regime.

The fiscal regime can influence the timing of revenue and determine proper risk sharing. In countries with limited or no credit market access, which is still the case for many SSA countries, or with strong political pressure for quick results, governments may prefer to collect a larger share of revenue early in the project cycle. Governments are also generally not as well positioned as companies to absorb the inherent risks. Economic efficiency calls for more risk to be borne by the party better able to handle it, and in developing countries it is often the multinational investor that is able to diversify its exposure. With regard to the fiscal regime, this allocation of risks implies that taxes should be less responsive to changes in prices so the investor gains more when prices go up, but the government is protected when prices go down. This limited progressivity may, however, conflict with the desire for

Table 6.1 Fiscal Objectives and Instruments

Priority	Instrument					
	Signature Bonus	Flat Royalty	Sliding-Scale Royalty	Resource Rent Tax (and Allowance for Corporate Equity)	Corporate Income Tax and Variable Income Tax	State Participation
Maximize government share during project life				X	X	
Secure early revenue	X	X				
Ensure adequate incentives for exploration				X	X	
Visible share of commodity price increases			X			
Establish strategic ownership interest						X
Maximize resource use				X	X	
Minimize administrative burden and risks	X	X				

Source: “Fiscal Regimes for Extractive Industries—Design and Implementation” (IMF, 2012a).

higher revenue when prices go up, and governments may prioritize differently between these two objectives.

Fiscal regimes in both advanced and developing countries therefore vary greatly in their design. Broadly speaking, most countries pursue one of two main approaches to fiscal regimes for extractive industries: contractual schemes (production sharing or service contracts), and tax or royalty systems plus licensing schemes. Production sharing essentially means that the extracting firm as a contractor recovers costs by retaining some of the physical product (equivalent in value) and the remaining product (profit) is shared with the government. Tax or royalty plus licensing means that the firm obtains exclusive rights to produce a resource in a certain area for a certain period and pays taxes or royalties on its profit. A third approach, which could be made fiscally equivalent to the other two approaches, is state participation in the extracting

industries (a point stressed in IMF, 2012a). Indeed, a few countries have opted for schemes in which the extracting partners pay dividends to the government in the form of infrastructure investments or in which the government has created state-owned enterprises to act on its behalf. The differences between these approaches should not be overemphasized because they can each be structured to achieve the same fiscal outcome, and in practice, all use a variety of taxing tools:

- *Bonus payments* (also called signature, discovery, and production bonuses) are single (or sometimes staged) lump-sum payments linked to events or accomplishments. They can be legislated, negotiated, or determined by competitive bidding. Once paid, they constitute a sunk cost for the extracting enterprise.
- *Royalties on gross revenue* provide the government with revenue right from the start of production. A flat royalty (without any adjustments), which is a direct addition to costs for the investor, may render some projects financially unviable. Refinements to make the royalty responsive to profitability (taking into account factors such as price, location, or production levels) also make them more complex. Royalties that vary with price (sliding scale royalty) are another option, but they do not vary with costs and may be subject to frequent adjustments following forecast errors.
- *The corporate income tax (CIT)* is frequently used and ensures that the normal return on equity is taxed just as in other sectors at the same or a different rate. A variable income tax applies a higher tax rate as the ratio of profits to gross revenue rises. It is relatively simple but may introduce distortions (for instance, if a high rate applies to high “accounting profits” early on in the project cycle, before the return has materialized) and may, in combination with deductions for interest, lead to a debt bias.
- *State participation through equity* is used by many countries to secure additional revenue but also for nonfiscal reasons such as the desire for direct government ownership and influence, and transfer of knowledge. However, as minority shareholders governments have little or no control over the payment of dividends versus investment of earnings.

Although there is no ideal universal model, international experience suggests a regime suitable to many developing countries would combine a modest royalty, the standard CIT, and a tax targeted explicitly to rents. The royalty ensures some revenue whenever there is production. The CIT ensures that return on equity is taxed at a corporate level just as in other sectors and that

the extracting company is eligible for foreign tax credits if taxed on worldwide income in its home country. The rent tax takes advantage of the specific revenue potential of extractive industries.

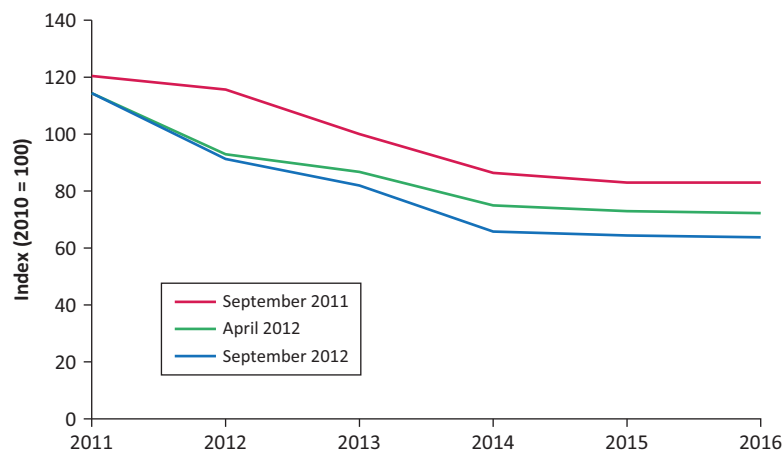
A diagnostic tool developed by IMF staff—the Fiscal Analysis of Resource Industries (FARI) model—can help estimate the government’s tax take under different regimes. This model is now increasingly used by staff working with country authorities on the management of natural resources (Box 6.2). The FARI model is Excel based and enables detailed design, modeling, and comparison of fiscal regimes throughout the entire cycle of individual natural resource projects. It can help guide authorities in their choice of an extractive industries fiscal regime. The model also provides important input as a forecasting tool to guide overall macroeconomic policies.

Box 6.2. The IMF’s FARI Model: Liberia

The IMF staff use the Fiscal Analysis of Resource Industries (FARI) model to project the impact of iron ore extraction on growth, balance of payments, and revenue in Liberia. The model has also been used by the Liberian authorities to guide them during mineral-concession negotiations to measure the impact on revenue of different fiscal terms. The model applies the fiscal terms of the project agreement and uses project- and country-specific data on extraction rates, investment, and costs of production to produce forecasts of the fiscal and economic effect of Liberia’s rising iron ore production (Figures 6.2.1 and 6.2.2).

An advantage of the FARI model is that it provides more realistic estimates of the impact of the mining sector on revenue, GDP, imports, exports, and capital inflows

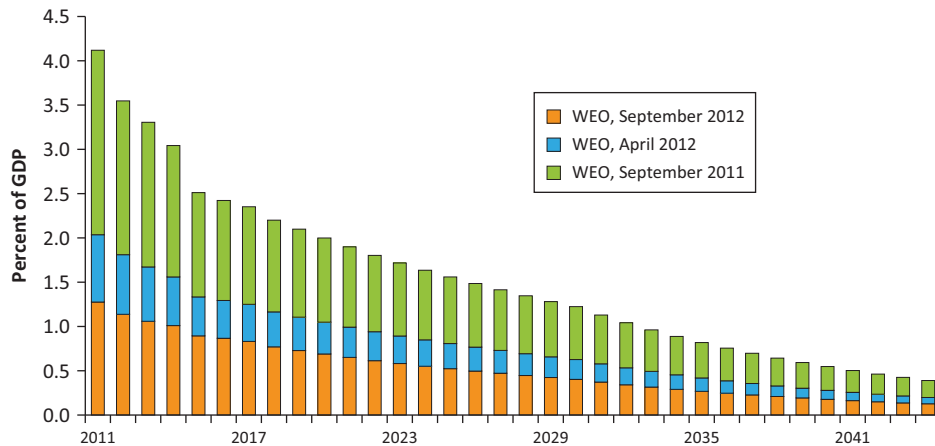
Figure 6.2.1. Iron Ore Price WEO Projections, 2011–16



Source: IMF, *World Economic Outlook* (WEO).

Box 6.2. (continued)

Figure 6.2.2. Liberia: Permanent Income from the Yekepa Project



Source: IMF, *World Economic Outlook* (WEO).

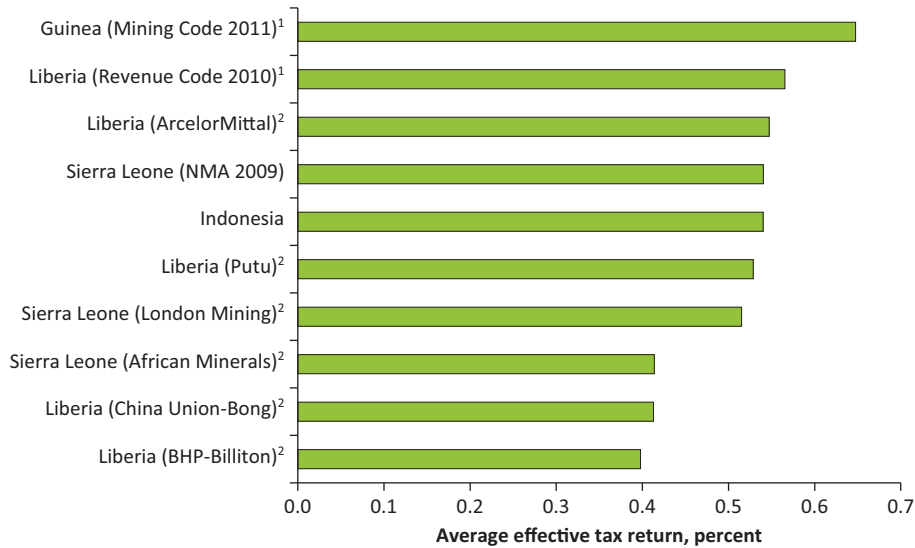
and outflows than do standard simplified aggregate production models because it accounts for heterogeneity across projects (in fiscal terms, prices, costs, and so on) and over time (different phases of production with different effective tax rates). Consequently, the model also helps better estimate the permanent income from iron ore, thus helping gauge the sustainability of fiscal policies.

Moreover, FARI provides a comparison of the fiscal return between the mining tax regime in Liberia, actual concession agreements, and comparable mining regimes. As illustrated in Figure 6.2.3, the effective tax revenue for different Liberian projects varies significantly. These different levels of revenue reflect, in particular, the heterogeneity of risk across projects and the lack of capacity of the government to address these risks for some projects. Moreover, limited access to international capital markets and the high discount rate on consumption results in a strong preference for up-front revenues, such as through signing bonuses and royalties, in the tax regime.

Although it is a very useful model, the project-level data that FARI requires may be difficult to obtain, however, as was the case in Liberia because of its capacity constraints. Moreover, the FARI results are sensitive to forecast errors regarding assumed iron ore prices, phasing of investment, costs of production, and export capacity given Liberia's weak infrastructure, which warrants some caution in interpreting the results.

Box 6.2. (concluded)

Figure 6.2.3. Effective Tax Return under Comparative Fiscal Terms



Source: IMF staff estimates.

¹ Tax return based on revenue Code.

² Tax return based on company-specific contracts.

Policy Challenge: Strengthening Tax Administration

The effectiveness and transparency of the administration of taxes, although essential for both revenue and investors' confidence, is often subpar in SSA. There is no reason for tax administration for extractive industries to be more complex than for other industries; on the contrary, resource extraction usually involves a relatively small number of actors to tax, relative to the general taxable population. Still, although conceptually straightforward, organizing the collection of revenue from extractive industries is more problematic in practice and many resource-rich developing countries perform poorly in this area: they often suffer from overly complex fiscal regimes subject to varying degrees of interpretation and abuse, and at the same time, face weaknesses in capacity to perform routine administrative functions (such as processing and reporting, and payment enforcement) (IMF, 2012a).

Weak general administrative capacity is one reason for poor tax administration. Proper accounting for resource revenue is an absolutely basic and essential task, especially in a poor governance environment. However, with generally weak administrative capacity, these tasks often falter in developing countries,

as do tax enforcement and proper follow-up. These problems are often aggravated by responsibility for tax collection being shared between ministries, agencies, regulators, and state-owned enterprises (SOEs) active in extractive industries. Not only does this overlap blur responsibility and accountability, it also poses a coordination challenge. Regulators and SOEs tend not to be in the habit of self-assessment and lack tax audit capacity (Box 6.3) and, in addition, SOEs having both fiscal and commercial responsibilities is an obvious conflict of interest (IMF, 2012a; Daniel, Keen, and McPherson, 2010).

Strengthening tax administration is therefore crucial to ensuring effective tax collection. Improving tax administration depends on a number of steps, mainly related to strengthening general public administration in various ways, such as improving public financial management, staffing and equipping general administration adequately, and putting in place strong leadership. It may also include rationalization and reallocation of responsibilities, which may encounter strong resistance owing to vested interests. Ensuring transparency to strengthen accountability and good governance are equally essential (Chapter 7).

The IMF provides extensive technical assistance in public financial management, tax policies, and tax administration. In 2010, a multidonor topical trust fund (Managing Natural Resource Wealth–Topical Trust Fund, or MNRW-TTF) was created to provide IMF technical assistance specifically to resource-rich low- and middle-income countries building capacity in fiscal regimes and revenue administration for extractive industries, macrofiscal policies and public financial management, asset and liabilities management, and statistics for natural resources. So far, eight SSA countries have benefited from technical assistance financed by this trust fund and many other countries have received technical assistance on these issues from the IMF with other funding. Altogether, the MNRW-TTF and bilateral support have effectively doubled financial resources available for technical assistance on extractive industry issues.

Box 6.3. Maximizing Revenue: Full Use of Government Audit Rights

After adopting a good fiscal regime, a crucial step for authorities to maximize revenue from the country's natural resource base is to fully use its audit rights. Resource taxes are normally based on self-assessment or self-declaration: companies calculate what they owe, declare this to the tax authorities, and make the payment. The system then calls for the tax administration to challenge these declarations, to make sure no mistakes were made, or worse, taxes were avoided. Contracts and fiscal regimes usually give governments a powerful set of audit rights. Unfortunately, in many countries these rights are underused—audits are not done or done incompetently—sometimes resulting in large revenue losses.

Fiscal and cost audits are the main tools for budget revenue. A fiscal audit checks that the tax declaration complies with all pertinent laws and contractual requirements.

Box 6.3. (concluded)

The cost audit is a prerequisite for the fiscal audit: overstating costs—deliberately or accidentally—means understating profits, and thus tax losses. The higher the marginal tax rates—and for excess-profits taxes they can be well over 50 percent—the greater the temptation for companies to overstate costs. Abusive transfer pricing is an insidious way of doing so.

Audit rights are described in national legislation or contracts (or both). Usually a government can ask for any information it deems pertinent. Companies must keep all records on site, but only for a limited period. After that period, an audit is much more costly and cumbersome. Eventually the audit rights expire; therefore, auditing of resource projects should start as early as during the exploration and development phases. During these phases is when the greatest costs are incurred, to be deducted from revenue many years later, when it may be too late to audit. Companies have rights too: once the audit exercise has ended, even if it was poorly done, the audit rights will expire.

A hard-nosed audit of a sophisticated, well-resourced, internationally operating company poses great challenges to developing country governments. One challenge is human resources. The skills and experience to match those of company specialists are hard to develop and retain. Arguably, talented national staff would be better deployed to improving spending, where they have a comparative advantage, than to collecting resource revenue according to international rules. Outsourcing to specialized firms with solid international reputations is the logical solution, an approach followed in Angola. It may appear expensive, but given the revenue to be gained it has the potential to be highly cost effective. The revenue administration staff should be trained to organize the outsourcing, and they should be capable of taking up with the resource companies any opinions of the auditors on underpayments or other contentious issues. Auditors should comply with the International Standards on Auditing (ISA).

Another challenge is, as always, poor governance. Audits may be neglected as government agencies and companies collude. For instance, government departments may do audits even though they are not qualified, just to collect the associated fees for their staff, and companies may encourage this behavior. Transparency and the involvement of parliament, civil society, and other stakeholders is therefore crucial. Governments could regularly publish an exhaustive accounting of how they used their natural resource auditing rights, and what results they achieved.

Attention must also be given to international issues for extractive industries. International tax issues are not unique to extracting industries, but given the relative importance of extractive industries' revenue in combination with generally weak administrative capacity in many SSA countries, international tax issues become especially pertinent. Examples of international considerations include (Daniel, Keen, and McPherson, 2010):

- *Corporate income tax competition.* A steady decline in CIT rates has been observed in most regions, suggesting increased tax competition owing to globalization. Keen and Mansour (2009) show that this was also the case in SSA in 1980–2005, although by slightly less than in other regions. One may think that resource-rich countries would be less concerned by tax competition given that the resources themselves are immobile until after extraction, but there may be other reasons for concern, such as competition between resource-rich countries for managerial and technical skills, and for foreign investment in resource projects. The threat of tax competition and a “race to the bottom” can, to some extent, be moderated by international cooperation at a regional level, for example, by codes of conduct, treaties, or simply exchange of information. A recent example of such cooperation is the common mining code developed in the West African Economic and Monetary Union.
- *Erosion of withholding taxes by tax treaties.* In negotiating tax treaties, a country may negotiate different withholding taxes with different treaty partners. These differential taxes may become a problem, in particular in developing countries negotiating with resource sector investors who will aim for the lowest available rate among the host country’s different treaties.
- *Transfer pricing.* Transfer pricing means the pricing of goods or services provided between two related parties, for example, between a subsidiary and the company that owns it. Abusive transfer pricing occurs when these prices are misstated to shift the source of profits to the party for which the tax provisions are the most advantageous. This behavior may be difficult to detect and prevent, especially in countries with limited administrative capacity. With useful pricing benchmarks for extractive industries and with transparency, the problem can be mitigated; the Organization for Economic Cooperation and Development has established a set of transfer pricing guidelines (OECD, 2010).
- *Treatment of gains on the transfer of extraction rights.* The argument that the host country should gain from the sale of natural resource assets is clear. The way in which that gain should be manifested and how the legal framework should be designed are less obvious. The sale of an asset presumably reflects the prospect of future rents, and if those rents are adequately taxed it may not be necessary to tax the sale of the asset; in fact, doing so may mean double taxation. Developed countries have chosen different solutions to this problem. Norway, for example, charges taxes only on the rent and not on gains from asset sales, whereas other countries do take gains from asset sales, often with very complex rules. Once the issue of whether to tax the asset sale has been settled, the

question becomes who should levy the tax. Because these transactions often involve nonresident companies, the answer to this second question is not always clear either. The amounts involved in these transactions are often considerable, especially in the context of a developing country, and the issues are often politically charged.

- *Double taxation and foreign tax credits.* A country in which the taxpayer resides has two options for taxing foreign-source income earned by the country's residents. The first option is *worldwide* or *residence* taxation, under which income earned abroad is taxed in the taxpayer's country of residence. A tax credit may be given for taxes paid in the source country. The second option is *territorial* taxation whereby revenue is taxed only in the source country. The existence of two systems means that international companies that operate in a country with territorial taxation, but whose home countries are using worldwide taxation, may be subject to higher taxation in their home country or, in the absence of tax credits, to double taxation. Different types of double taxation treaties can play an important role in addressing these issues.

Recommended Reading

Daniel, Philip, Michael Keen, and Charles McPherson, eds., 2010, *The Taxation of Petroleum and Minerals: Principles, Problems and Practice* (Abingdon: Routledge). ISBN: 9780415781381.

International Monetary Fund, 2007a, *Guide on Resource Revenue Transparency*, available at <http://www.imf.org/external/np/fad/trans/guide.htm>.

International Monetary Fund, 2010, *Managing Natural Resource Wealth (MNRW-TTF)*. Topical Trust Fund Program Document, available at <http://www.imf.org/external/np/otm/2010/110110.pdf>.

International Monetary Fund, 2012a, *Fiscal regimes for Extractive Industries—Design and Implementation*, IMF Policy Paper, August 15 (Washington: International Monetary Fund). <http://inec.usip.org/resource/fiscal-regimes-extractive-industries-design-and-implementation>.

Keen, Michael, and Mario Mansour, 2009, “Revenue Mobilization in Sub-Saharan Africa: Challenges from Globalization,” IMF Working Paper 09/157 (Washington: International Monetary Fund). www.imf.org/external/pubs/cat/longres.aspx?sk=23124.0.

Organisation for Economic Co-operation and Development (OECD), 2010, *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*, (Paris: OECD), available at www.oecd.org/ctp/transferpricing/transferpricingguidelinesformultinationalenterprisesandtaxadministrations.htm.

Safeguarding the Public Interest

Good governance is critical to ensuring that the state gets a fair financial return from the exploitation of its natural resources and that resource revenue is effectively and fairly used. Although the effects of waste and abuse of public assets are particularly large in resource-rich developing economies, their capacity to prevent or prosecute abuse tends to be limited. Opportunities for corruption are magnified by the limited number of players involved, the technical complexity of resource operations, and the size of resource rents that can be captured. Meanwhile, the loss of revenue can impede development policy and expose the economy to external volatility.

Safeguarding the public interest requires action across the whole value chain of extractive industries. From the granting of exploration and development rights, to the sharing of rents and profits, to the monitoring of subsequent public expenditure or savings, national authorities need to actively close off opportunities for corruption and abuse. For instance, a lack of competition in the granting of mineral rights both constrains the state's ability to ensure efficient production and presents potential for corruption through insider deals. Similarly, failing to provide adequate resources for tax administration gives free rein to well-informed producers to exploit tax loopholes. Yet such deficiencies may not be evident to the general population because, as long as some positive benefits are visible from resource revenue, less attention may be paid to lost opportunities and waste.

Policy Challenge: Establishing Credibility and Support for Institutional Change

A commitment to transparency and accountability is generally the key to improved governance. Again, this commitment must apply to the whole of the value chain. Before the extraction process starts, an open and competitive bidding system for exploration and production rights, with full access to relevant data, will attract the most efficient operators and limit the potential for political connections or bribes to determine the granting or terms of contracts. Further down the chain, publication of authenticated reconciliations of company payments to governments with revenue receipts by governments will help ensure that money is not misappropriated or diverted to other uses (Box 7.1). And to promote efficient and fair use of the

Box 7.1. Oil Revenue Certification: The Republic of Congo

Oil revenue accounts for nearly 80 percent of the Republic of Congo's total government revenue. In response to weaknesses in most areas related to the country's oil management and, in particular, the monitoring of oil-related production and receipts, the Congolese authorities established a quarterly certification process, which is conducted by external auditors. The certification process is not an "audit" strictly speaking but a report prepared by an independent audit firm hired by the government and published on the Internet.

The certification process involves the use of a monthly oil-revenue model, which was developed by the first firm hired by the authorities several years ago. The model uses fiscal parameters (tax, royalties, dividends, and so on) from all of Congo's production-sharing contracts, as well as the actual costs of oil production and oil prices, to generate a precise revenue stream owed to the government. Using the model, the auditor also (1) compares the volume of oil owed to the government (based on the production-sharing contracts) with the amount declared by the oil companies, and comments on any discrepancies; and (2) identifies the amount of cash revenue that should accrue to Congo's state treasury. The certification reports attempt to verify all information against independent sources: statements from banks and terminal operators, shipping documents, information from the SNPC (state-owned oil company) and private oil companies, information from the treasury, independent reports on shipments and storage, and international exchange rates. But it cannot dissect all individual transactions. The auditor reports differences that cannot be explained as "discrepancies."

In principle, Congo's oil certification process can be a good model for other countries with weak capacity and governance concerns. However, the effectiveness of the process depends not only on the competence and independence of the auditing firm, and the accuracy of the information provided, but also critically on the government's active follow-up, because oil contracts can change frequently. Without such information, the nature of the discrepancies will not be known and, more important, missing data would make the process less useful.

revenue, provision of adequate internal and external audit capacity, together with open scrutiny by parliament of the audit reports, will reduce the scope for wasteful spending or fraudulent payments.

The international community is supplying an increasing amount of support for capacity building in transparency and governance.

- One element is the codification of good practices in this area, summarized in the IMF *Guide on Resource Revenue Transparency* (IMF,

2007b), which has become the major source for guidance and examples in resource-rich countries. The *Natural Resource Charter* (Natural Resource Charter, 2010) also seeks to encapsulate best practice.

- A second strand is the provision of technical assistance, particularly in tax policies, contracts, regulation, public financial management, and asset management.¹
- A third approach is the encouragement of peer support, such as the Extractive Industries Transparency Initiative (EITI), in which 37 resource-rich countries were participating as of March 2013, including 20 from SSA.
- A fourth dimension recognizes explicitly that international companies and governments suffer from the same deficiencies in governance and are equally responsible for facilitating corrupt practices and restricting access to information about their activities and payments. Legislation to prevent abuse and publish payment records is now becoming more extensive among resource-importing countries. The U.S. Dodd-Frank Act is a case in point.

Some governments have put transparency at the forefront of their arrangements for managing new resource revenue. Liberia, the first country in SSA to become compliant with the EITI, enshrined its commitment to the EITI in law as it recovered from civil war. In Asia, Timor-Leste decided to complement its early compliance with the EITI by adopting five transparency pillars (see Box 7.2).

Policy Challenge: Stronger Governance and Transparency

On what issues should policymakers in natural resource exporters focus their efforts to strengthen governance and transparency? Priorities for action will differ substantially across countries. New entrants into the natural resource sector, for instance, may concentrate on the clarity of the legal framework for mineral extraction, whereas more established oil exporters may need to give attention to stimulating public debate on alternative fiscal options as revenue declines. Approaches will also vary according to history, culture, and legal framework. But some common themes can be identified by clustering action

¹ The multidonor Managing Natural Resource Wealth–Topical Trust Fund has recently enabled a substantial increase in IMF support in this area.

Box 7.2. Timor-Leste's Five Principles for Governance and Transparency in the Management of Natural Resources

In 2010, Timor-Leste was the first country in Asia and the third in the world to be declared fully compliant with the EITI (see Box 7.3). Since then, the country has decided to extend its formal commitment to better, more transparent, and more inclusive management of natural resource revenue by adopting a five-pillar Model of Transparency:

Adherence to Global Standards includes full compliance with the revenue verification and participation requirements of the EITI. All receipts from taxes and royalties from oil extraction are transferred to the Timor-Leste Petroleum Fund. To provide full accountability for resources, the inflow of funds and their consistency with payments reported by extraction companies are monitored by a board with representatives from other countries, donors, extractive industry companies, civil society organizations, investors, and international organizations.

Best Practice in Sovereign Wealth Management is ensured by the rules governing the Petroleum Fund and the fiscal framework, as described in Box 3.4 in Chapter 3.

Education and Information is fostered by broadcasting through radio and TV (about half of the population is illiterate) the 13-day parliamentary debate on the budget with ministers proposing and defending their budgets.

Accountability and Accessibility is ensured by the establishment of the Timor-Leste Transparency Portal (www.transparency.gov.tl), which is a gateway to four specialized portals focusing on transparency in the budget, procurement, government results (financial and physical progress on major projects in accordance with priorities in the national Strategic Development Plan), and aid management (information on past, current, and future donor support).

Communications and Good Governance is strengthened by the publication on the official government website of all decisions by the Council of Ministers (the highest decision-making body in the country) within two days of the weekly council meetings.

areas within the four primary pillars of fiscal transparency: (1) clarifying roles and responsibilities, (2) opening processes for determining the collection and use of revenue, (3) disseminating fiscal information actively, and (4) strengthening oversight.

Roles and Responsibilities

The starting point is a clear legal framework that establishes with what entity the ownership of natural resources resides and what powers different

levels of government have to grant rights of extraction, to tax, and to regulate. To limit possible abuse arising from uncertain and unclear roles and responsibilities, the following action should be taken:

- Procedures for awarding licenses and contracts should be open and nondiscretionary. All potential participants need to have full access to relevant technical information and knowledge of the tax regime that will be in operation. Angola and Nigeria, for example, have opened up their licensing rounds by publishing draft contracts and awarding at least some tenders on the basis of single-variable bids. Good practice also calls for publishing all contracts, a process followed in some periods by the Republic of Congo.
- A national resource company that has policy or regulatory roles should not also engage in commercial activities. Although some countries minimize the potential for conflicts of interest by separating responsibilities within the national resource company, convincing operating partners or competitors that the national company's privileged position is not being abused is always difficult.
- If the government has equity stakes in the resource sector, it should explain how these stakes contribute to an effective balance of control, revenue maximization, and efficiency in the sector.
- Any requirements placed on national or private natural resource companies to carry out noncommercial activities on behalf of the government without reimbursement should be clearly identified. Such activities might include training, infrastructure development, or community support. Unless explained in budget documentation, these activities can obscure the government's spending priorities and the allocation of resources.

Revenue Collection, Spending, and Savings

Pressures to spend resource revenue as soon as it is received and suspicions that the country is receiving less than it should will always be present. Carefully explaining why the government is being prudent about volatile and exhaustible natural resources and publishing evidence that resource wealth is being fairly and effectively managed can calm these concerns:

- The government's fiscal framework should include a clearly defined role for resource revenue, recognizing its exhaustibility and volatility, and institutional rules and structures that promote fiscal sustainability, as described in Chapter 4. Clear statements of the objectives and rules will help to protect resource-derived wealth from pressures for short-term plundering.

- Special attention should be paid to tax administration and public financial management systems because of the stresses induced by large and concentrated revenue streams.
- The government should produce regular reports showing all revenue associated with resource extraction and how the revenue has been collected and managed. To guard against theft of company tax and other payments before they have reached the treasury, participation in the EITI offers countries a useful structure for reconciling payments made and received (Box 7.3).
- Mechanisms to invest and manage the proceeds from revenue extraction—whether in financial assets (such as a sovereign wealth fund) or in physical investment (including public infrastructure)—should be subject to transparent operational rules that provide well-targeted managerial incentives and are fully integrated with fiscal policy.

Information Provision

The publication of the government's budget proposals offers a good opportunity to enhance accountability for resource revenue. If the legislature, civil society, and the general public are given a clear and comprehensive picture of the contributions made by the extractive sector, with policy proposals and prospects, it is more likely that mistakes will be corrected and good alternatives will be considered. Full disclosure requires the following:

- Release of in-depth information about all past resource-related transactions and balances, including debt (with any collateral), assets (funds or deposits and “wealth in the ground”), and quasi-fiscal activities.
- Detailed reporting by national resource companies on their objectives, activities, governance, finances, relationships with the private sector, and contributions to government revenue.
- Discussion of how expected future developments, including contingent liabilities and other risks, will support the government's fiscal policy objectives and contribute to fiscal sustainability.
- In-year reports to provide assurance that transparency is being maintained and to allow continued tracking of developments.

These reports should include regular publication of data on mineral extraction, prices, and revenue payments (at least monthly in the case of hydrocarbon production). Nigeria's national oil company publishes monthly production figures, albeit with some delay.

- Independently verified reconciliations of company resource revenue payments with government revenue receipts, preferably as recorded in budget documentation. EITI reports offer an ideal medium for reconciliation. Active dissemination of all such information through the Internet, press, TV, radio, and international publications. Fiscal information in Burkina Faso is widely promulgated.

Oversight

Without competent and honestly run public financial management and tax administration systems, resource revenue will be plundered and wasted. The following should be in place to help buttress these institutions:

- Internal control and audit procedures provide a first line of defense. They should cover all parts of the revenue chain, including national resource companies and asset management. Autonomous agencies, such as the Nigeria Economic and Financial Crimes Commission, can supplement their work. Any scope for discretion by tax officials should be limited and clearly understood.
- External arrangements may provide a useful supplement to national independent oversight mechanisms, such as a national audit office, which are often limited in capacity or autonomy. International companies may, for instance, be used to conduct independent financial and effectiveness audits. The EITI process provides an internationally recognized framework for reporting company revenue payments.
- Resource companies—including national resource companies—should follow internationally accepted accounting and auditing standards, including on publication. The home countries of many international resource companies also set anticorruption standards; reporting requirements on revenue payments are now also being legislated in the United States, through provisions in the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act, and in Europe.

Box 7.3. Extractive Industries Transparency Initiative (EITI)

Some 20 countries in sub-Saharan Africa were participating in the EITI as of March 2013. Seven of these countries were, or will soon become, major oil producers. The remaining countries, with more limited known reserves of hydrocarbons, look instead to metals, precious stones, or timber as sources of current or future natural resource revenue.

The EITI provides participating countries with a credible mechanism for informing their citizens and the international community about their annual revenue from natural resources. Launched in 2002 as a pioneer multistakeholder initiative involving governments, companies, and civil society, the EITI offers a standardized methodology for compiling data on what governments say they receive from natural resource extraction and what extraction companies say they pay to governments. Regular country EITI reports explore any apparent differences between government and company data and provide background information about the relevant extractive sectors.

EITI participants are designated as either “candidate” or “compliant” countries. To achieve EITI compliance, countries must satisfy a validation mechanism that sets minimum standards for EITI reports including frequency, coverage, data verification, and involvement of civil society. By March 2013, 11 countries in SSA had satisfied these requirements. EITI reports are accessible via www.eiti.org.

EITI compliant countries in SSA (March 2013) were Burkina Faso, the Central African Republic, the Republic of Congo, Ghana, Liberia, Mali, Mozambique, Niger, Nigeria, Tanzania, and Zambia.

EITI candidate countries in SSA (March 2013) were¹ Cameroon, Chad, Côte d'Ivoire, the Democratic Republic of the Congo, Guinea, Madagascar, São Tomé and Príncipe, Sierra Leone, and Togo. Candidate countries are implementing EITI, but do not yet meet all of the requirements.

¹ Madagascar and Sierra Leone were temporarily suspended from candidate status pending “resolution of the current international situation” in Madagascar and “remedial actions to achieve compliance” in Sierra Leone.

Recommended Reading

The principal source for good practices on safeguarding the public interest in resource-rich economies is the IMF *Guide on Resource Revenue Transparency*. It comprehensively covers governance issues across the whole extractive sector value chain, from contract and license awards through revenue collection to expenditure management. It is organized according to the IMF *Code of Good Practices on Fiscal Transparency* and identifies the need for clarity on roles and responsibilities, budget processes, public availability of information, and assurances of integrity. The *Natural Resources Charter* covers similar ground, including a multilevel guide to best practice for governments handling large natural resource discoveries.

The Extractive Industries Transparency Initiative (EITI) has published important materials on the measurement and reconciliation of resource revenue data, including the EITI source book and advancing the EITI in the mining sector. EITI reports can be accessed via www.eiti.org. Many of the civil society groups supporting the EITI have themselves produced important analytical and reference material, including Revenue Watch and Global Witness.

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