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Fiscal Frameworks for Resource Rich Developing Countries

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EXECUTIVE SUMMARY

This paper examines options for fiscal policy frameworks in resource rich developing countries. In doing so, it reassesses the role of the permanent income hypothesis, especially in low-income countries seeking to tackle infrastructure and development needs by scaling up growth-enhancing expenditure.

The paper concludes that the fiscal policy framework:

- should reflect country-specific factors, which may change over time;
- should promote the sustainability of fiscal policy;
- should be sufficiently flexible to enable scaling up growth-enhancing expenditure, especially in low-income countries;
- should consider absorption capacity constraints and the quality of public financial management systems;
- should provide adequate precautionary buffers in countries that are vulnerable to high volatility and uncertainty of resource revenue; and
- could be supported by resource funds if they are properly integrated with the budget and the fiscal policy anchor.

I. INTRODUCTION

The design of fiscal policy in countries with a large endowment of non-renewable natural resources continues to generate much debate. Large economic rents—bolstered by higher commodity prices and the discovery of new reserves—in many such resource-rich developing countries provide an opportunity to promote economic and social development, build human capital, and reduce infrastructure gaps. Managing those resources effectively is therefore a critical policy issue, but a challenging one as the literature on the “resource curse”² for many countries documents.

Much of the debate on resource management has been dominated by the permanent income hypothesis (PIH) approach, but recent work has questioned its relevance. Recent research has argued that the PIH is inappropriate in low-income countries (LICs) rich in natural resources, as it ignores that these countries are both capital and credit constrained. This suggests that more flexible fiscal frameworks that facilitate scaling up growth-enhancing spending financed by resource revenue are needed. In this context, the IMF has been criticized, including by the Independent Evaluation Office (IEO),³ for being too rigid in underpinning policy recommendations with the PIH.

How could fiscal frameworks for resource-rich countries be made more flexible? This paper tackles the question from a practitioner’s perspective, proposing simple but comprehensive options that also help to anchor fiscal policy.⁴ A guiding principle is for the design to take into account country-specific economic and institutional circumstances, such as resource revenue dependency, reserve horizon, and development needs (Figure 1 and Appendix 1 provide a cross-country snapshot of these three dimensions). The paper shows that simple modifications to fiscal frameworks currently in use allow a more flexible treatment of growth-enhancing expenditure while addressing both the volatility and exhaustibility of resources revenue.

Of course, the ultimate success of a fiscal framework will depend on the political commitment to implement it. This is not trivial as shown by an extensive literature on the political economy of resource-rich countries.⁵ While this note will not delve into political economy considerations, it will provide a concise review of the extent to which countries have been able to comply with their intended frameworks (Section IV).

²A substantial literature documents this phenomenon and offers potential explanations (e.g., Dutch Disease, limited absorptive capacity, rent-seeking behavior, poor institutions). For a recent review, see van der Ploeg (2011).

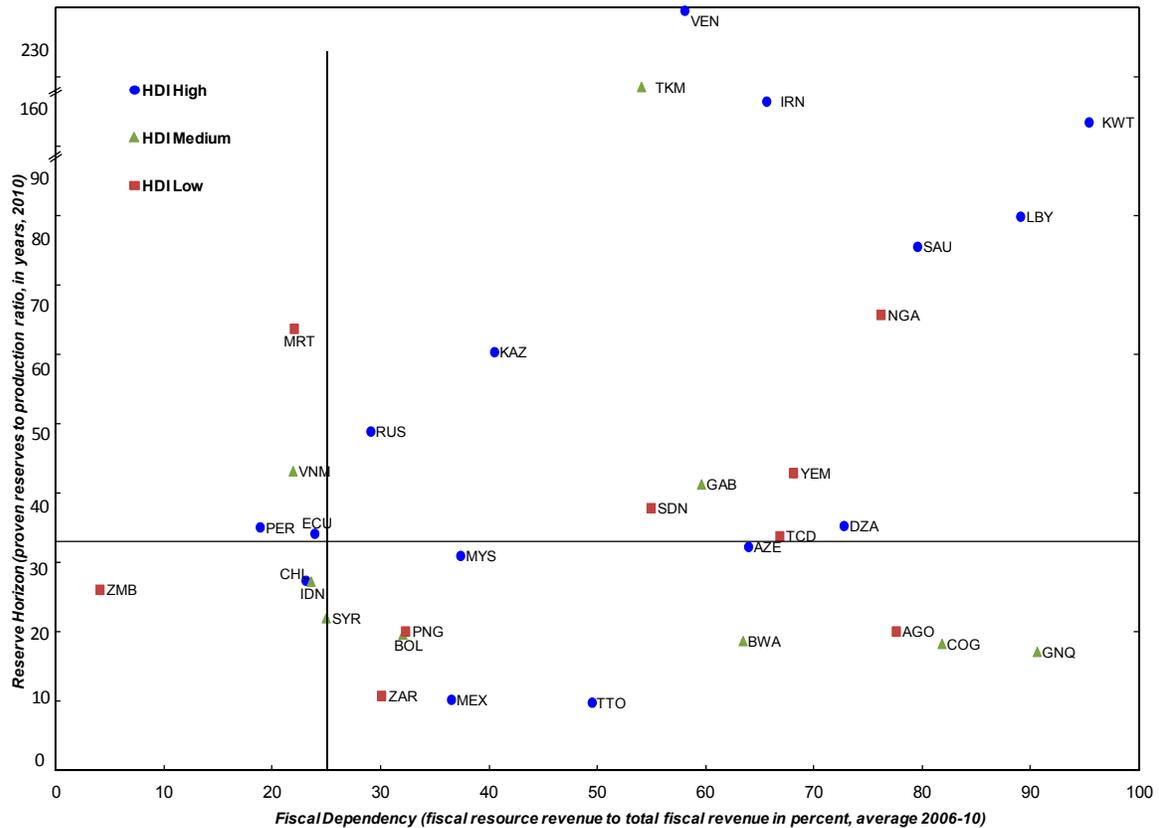
³A recent IEO evaluation on the relevance and utilization of research in the IMF observed that the calculation of PIH-based benchmarks has not always been properly rationalized and adapted to specific country characteristics (see IEO, 2011).

⁴This note focuses on concrete operational design issues. For a review of the macroeconomic performance of commodity exporters during commodity price cycles and model-based simulations of optimal fiscal policy responses to commodity market shocks, see IMF (2012).

⁵See for example Ross (1999). This note abstracts from those political economy considerations.

The paper is organized as follows. Section II discusses the objectives of fiscal frameworks in resource-rich developing countries. Section III addresses the assessment of long-term fiscal sustainability. Section IV considers options for short- to medium-term fiscal anchors and some practical implications of scaling up, revenue volatility and uncertainty, and the use of resource funds. Section V concludes.

Figure 1. Natural-Resource Exporters: A Snapshot



Source: IMF staff estimates

Note: The UNDP Human Development Indicator (HDI) provides an indication of the development needs of a country. The HDI is a comparative measure of life expectancy, literacy, education, and standards of living for countries worldwide. Countries are classified into four quartiles: very high, high, medium, and low HDI. This figure excludes countries with very high HDI (e.g., Norway).

II. FISCAL FRAMEWORK OBJECTIVES

The volatility, uncertainty, and exhaustibility of resources revenues pose challenges for the design of appropriate policy frameworks for resource-rich developing countries.

How to ensure short-term macroeconomic and fiscal stability? How to achieve long-term fiscal sustainability and adequate savings for future generations while allocating sufficient resources to meet development needs? How to address absorption capacity constraints that could limit the quality and effectiveness of scaled-up spending?

A fiscal policy framework should contain several elements: (i) indicators to assess the fiscal stance; (ii) a benchmark for assessing long-term fiscal sustainability; (iii) a rule that anchors the short- to medium-term fiscal policy path; and (iv) the requisite institutional set-up, e.g., the capacity to undertake long-term revenue forecasts and accord a medium-term orientation to the fiscal framework.

The fiscal policy framework should ensure:

- macro-fiscal stability;
- fiscal sustainability for countries with temporary resource revenue flows;
- scaling up growth-enhancing expenditure, which may need to be gradual if absorption and institutional capacity constraints are large; and
- adequate accumulation of precautionary savings.

The precise weight assigned to the above-noted objectives should reflect country-specific characteristics. To illustrate, a simple decision tree can help weigh these objectives across the entire spectrum of resource-rich countries (that is, developing and developed economies) (Figure 2). A special macro-fiscal framework is relevant only for countries relatively dependent on resource revenue (or expected to be so in the future). Setting specific thresholds will necessarily be somewhat arbitrary, but an indicative threshold for revenue dependency could be in the range of 20 to 25 percent of total fiscal revenue.⁶ An indicative threshold for the reserve horizon, which indicates whether the stream of resources revenue can be considered as permanent or temporary, could be set at 30 to 35 years (about one generation). Other country-specific aspects relate to development needs, capital scarcity, and absorptive and institutional capacity. Data show that the capital stock is low in most developing countries, not only because investment has been low but also because of limited institutional capacity to transform investment into capital.⁷

The objectives underpinning a fiscal framework would then vary across the following sets of conditions:

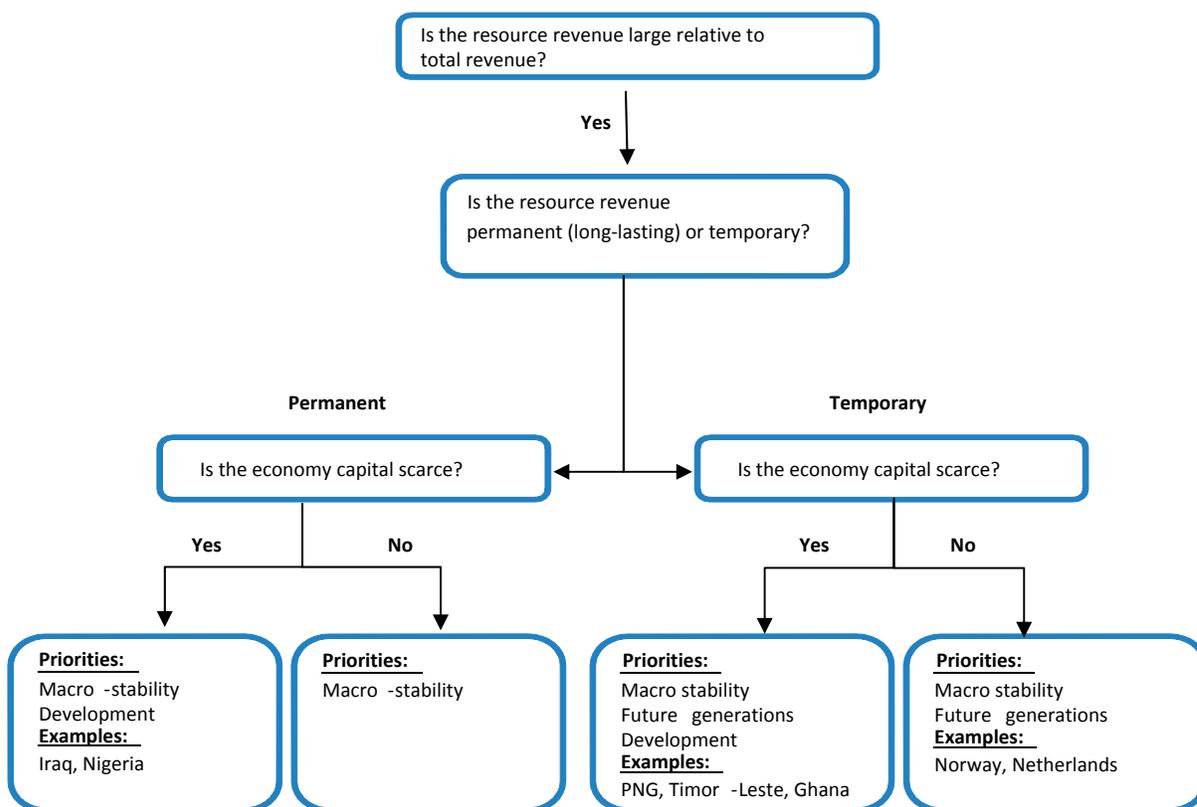
- Resource revenue temporary
 - *Ample capital.* For these countries, the key issue should be to accumulate sufficient financial savings for future generations (e.g., Norway).
 - *Scarce capital.* This group would include many developing countries, including countries that have recently discovered new resources (e.g., Ghana and Uganda). The fiscal framework should balance accumulating financial savings and investing resource revenue domestically to increase non-resource growth.

⁶These thresholds have been used in the IMF's *Guide on Resource Revenue Transparency* (2007) and in other policy papers (e.g., Ossowski and others, 2008).

⁷See Gupta and others (2011), who estimate efficiency-adjusted capital stocks based on an index of public investment efficiency (PIMI) developed in Dabla-Norris and others (2011).

- Resource revenue long-lasting
 - *Ample capital*. The framework should be centered on managing volatility and achieving macro-fiscal stability (e.g., Saudi Arabia, Kuwait, and other Gulf Cooperation Council countries).⁸
 - *Scarce capital*. The key objectives should be to invest revenues domestically while maintaining macroeconomic stability. Gradual scaling up may be needed, given absorption constraints. With a long revenue horizon, sustainability concerns are less pressing (e.g., Nigeria, Angola, Iraq).⁹

Figure 2. Decision Tree to Determine Fiscal Framework Priorities



The country classification can change over time, implying that the primary objectives of the fiscal framework could also change. One reason would be changes to the resource reserves estimates. Many developing countries enjoy significant potential for discovering new resources, which could extend their resource reserve horizon. However, the potential upside is balanced by uncertainty about the extent to which new reserves can be economically developed—this will depend on future prices, costs, technology, and the policy environment. The following principles for estimating reserves seek to balance these: (i) include deposits only with an approved commercial development plan (this avoids framing the policy design decisions on the “unknowns”); (ii) for countries with a more

⁸Countries dependent on natural resources may be concerned about obsolescence (e.g., if technological developments reduce commodity demand), and hence focus on sustainability and economic diversification.

diversified project portfolio, account for *probable reserves* to capture some of the potential upside for additional deposits; and (iii) for countries that rely on only one project, account for *proven reserves* to be more prudent.⁹ This might still require some country-specific treatment when positive exploration activities point to a significant potential for new discoveries.

III. LONG-TERM FISCAL SUSTAINABILITY

The design of the fiscal framework should be guided by an assessment of long-term fiscal sustainability—i.e., whether a government can sustain current spending, tax, and other policies in the long run without threatening its solvency or defaulting on its liabilities or promised expenditures. In the case of resource-rich countries, such an assessment needs to take into account the exhaustibility of the resource revenue.

The standard PIH approach relies on simplifying assumptions. It implies that, for a country with only resource revenues, the intertemporal budget constraint is satisfied when the yearly spending (i.e., the non-resource primary deficit) is limited to the perpetuity value of resource wealth (i.e., the present value of all future resource revenue).¹⁰ Applied this way, the PIH provides a benchmark for the non-resource primary fiscal balance (actually a deficit) that can be financed indefinitely (Box 1). With projections for non-resource revenue, the non-resource primary balance benchmark also provides an estimate of the “sustainable” level of expenditure. As the projection horizon is long, the estimates are sensitive to changes in critical parameters (e.g., the price of natural resources and the discount rate).

The fiscal sustainability exercise for resource-rich countries has typically relied on the permanent income hypothesis. A survey of IMF country papers (see Appendix II) shows that long-term fiscal sustainability assessments in resource-rich countries have relied on the PIH. Since the standard PIH-based benchmark does not capture country characteristics well, applications across countries have relied on ad-hoc refinements (e.g., assuming depletion of resource wealth over a finite period through a time-bound annuity rather than the benchmark PIH perpetuity).¹¹ Importantly, this survey also suggests that the IMF has not advocated PIH-based fiscal anchors for conducting fiscal policy in most countries.

⁹This would draw on a probability-based approach in the extractive industries, where, for proven reserves (P1), there is a 10 percent probability that realized deposits will be less than the reserve estimate; and for probable reserves (P2), there is a 50 percent probability that realized deposits will be less than the reserves estimate.

¹⁰See Barnett and Ossowski (2003). The PIH approach is really a model about the optimal path for consumption; however, a simplifying assumption is usually made to equate consumption with total spending (i.e., both government recurrent expenditure and investment) based on several grounds. First, the convenience of equating the financial return on savings with observable returns on (risk-free) financial investments instead of more uncertain and harder to estimate returns on, say, investments in domestic physical capital. Second, an implied segmentation between current and capital spending (if consumption were equated with the former) would ignore that some current spending also can have a positive impact on growth (and the past experience shows, not all capital spending does) as well as the recurrent cost implications of capital spending.

¹¹Cross-country studies include the IMF’s April 2007 *Regional Economic Outlook: Sub-Saharan Africa*; and Villafuerte and López-Murphy (2010). For country applications, see Basdevant (2008); Carcillo, Leigh, and Villafuerte (2007); Maliszewski (2009); and Velculescu and Rizavi (2005).

As noted earlier, the PIH has been criticized for providing a fiscal benchmark that is too tight for low-income countries. Capital scarcity in LICs implies that the rate of return to capital is likely to be high. At the same time, these countries face difficulty in financing government investment, essential for escaping from a poverty trap (Berg and others, 2012; Collier and others, 2009; van der Ploeg, 2011; and van der Ploeg and Venables, 2011). Low and uncertain returns on foreign assets in the current environment would also make domestic investments relatively more attractive.

Investing more resource revenues domestically could raise potential non-resource growth and create a virtuous cycle of increased fiscal space. The optimal non-resource primary balance is below the level prescribed by standard PIH-based models if the economy starts with a capital stock that is below the “steady state level” and the government is able to realize the fiscal dividends of the additional growth (Takizawa, Gardner, and Ueda, 2004). A resource windfall may also reduce the interest rate that an economy faces in international capital markets, implying that saving to invest in (foreign) financial assets is no longer optimal (Venables, 2010).

The criticism of the PIH points to the need for an alternative approach to assess fiscal sustainability in resource-rich LICs. In the case of non-resource-rich economies, the gross public debt has traditionally attracted the most attention, but there is increasing recognition that the net debt is at least as important an indicator to consider.¹² In a similar vein, resource producers should focus on net wealth—thus taking into consideration not only net assets held in financial instruments but also natural resources in the ground (the present value of the future resource revenue). In countries that are scaling up investment, a more “dynamic” assessment should incorporate the effect of growth-enhancing expenditure on the non-resource growth path. Through the higher growth path, the scaled-up investment could in turn lead to more non-resource revenue, although this will be partially offset by higher operation and maintenance costs. Both effects should be reflected in the long-term projections for the non-resource primary deficit.

A more holistic (but computationally more challenging) approach for fiscal sustainability is to derive long-term fiscal paths consistent with the intertemporal budget constraint. Such a constraint (Box 1) means simply that the present value of the future non-resource primary balances (in absolute terms) must be less than or equal to the net wealth of government. Therefore, non-constant but sustainable non-resource primary balance paths can be derived. The computation of those paths, however, is demanding in terms of data requirements and analysis since it involves estimating the interactions between government spending and non-resource growth and, in particular, the growth impact as well as recurrent and replacement costs of additional public investment.

¹²The traditional focus on gross rather than net debt has stemmed from constraints in the availability of internationally comparable data on net debt. However, where data are available, it is recommended to consider net debt alongside gross debt in assessing fiscal sustainability; See for example the September 2011 Fiscal Monitor (2011a) and IMF (2011b).

Under that approach, countries with substantial net government wealth (both in financial and natural resource assets) could use part of it to build up physical and human capital. In those cases, a more appropriate sustainability benchmark could be a non-resource primary balance path that gradually draws down net wealth and eventually stabilizes it at a lower level. The specific target for where to stabilize long run net wealth is not a trivial question that would require country specific responses.

Box 1. Fiscal Sustainability Analysis for Resource-Rich Countries

The overall fiscal balance for a country with natural resources can be decomposed in any year t into resource revenue (RT_t), non-resource revenue (NRT_t), primary expenditure (E_t), income from the initial stock of financial assets (A_{t-1}), and interest payments on the initial stock of debt (D_{t-1}). In nominal terms, the overall balance can then be written as

$$OB_t = NRT_t - E_t + RT_t + i_t^a A_{t-1} - i_t^d D_{t-1},$$

where i_t^a and i_t^d are, respectively, the interest rate earned on the stock of assets and the interest rate paid on the stock of debt. The overall fiscal balance is equal to the change in net financial assets, $OB_t \equiv \Delta(A_t - D_t)$. The non-resource primary balance is defined as $NRPB_t \equiv NRT_t - E_t$. Resource-rich countries often run overall fiscal surpluses (for example during resource-revenue booms), which enable these countries to accumulate large stocks of financial assets on their fiscal balance sheet at the same time that the non-resource primary balance can be in deficit.

The intertemporal budget constraint requires that the initial stock of net financial assets of the government equals the present value of the cumulative future primary balances. For countries with exhaustible natural resources, this comprises the non-resource primary balance and net resource revenue (only for a fixed period of time, N). Assuming that both financial assets and debt are discounted at the same constant rate, i , and that the no-Ponzi condition holds, one obtains

$$A_{t-1} - D_{t-1} = -\sum_{s=t}^{\infty} \frac{NRPB_s}{(1+i)^{s-t+1}} - \sum_{s=t}^N \frac{RT_s}{(1+i)^{s-t+1}}.$$

The asset the government holds in the form of natural resources is derived from the present value of the future path of resource revenue (the “resource wealth”). The net wealth (W_{t-1}) of the government at the end of period $t-1$, thus, is the initial stock of net financial assets ($A_{t-1} - D_{t-1}$) plus the present value to the government of the natural-resources asset in the ground (V_{t-1}).

$$W_{t-1} \equiv A_{t-1} - D_{t-1} + V_{t-1} = -\sum_{s=t}^{\infty} \frac{NRPB_s}{(1+i)^{s-t+1}}, \quad \text{where } V_{t-1} \equiv \sum_{s=t}^N \frac{RT_s}{(1+i)^{s-t+1}}.$$

There are potentially many alternative paths for the non-resource primary balance consistent with this intertemporal constraint. One of those is the **permanent income hypothesis approach (PIH)**, which provides a simple benchmark through a restrictive assumption in which the non-resource primary balance is constant over time. To be sustained for an infinitely long period, the annual level of the primary balance should be no greater than the return on net wealth (adjusting for inflation,

the notional real return on wealth is the real interest rate $\left(\tilde{r} = \frac{i - \pi}{1 + \pi} \right)$, where π is the constant

long-term inflation rate). In that context, the following rule is consistent with keeping the real non-resource primary balance constant: ($NRPB_t = -\tilde{r}W_{t-1}$). Alternative (more restrictive) benchmarks could be to keep real spending constant per capita or constant as a share of non-resource GDP.

In summary, there are pros and cons with using either the PIH or a broader fiscal sustainability framework to assess long-term fiscal policy. These are outlined in Table 1.

Table 1. A Comparison of Benchmarks to Assess Long-Term Sustainability

	PIH-based benchmark	Fiscal sustainability framework— government net wealth
Pros	<ul style="list-style-type: none"> ✓ Simple to apply if estimates of long-run resource wealth are available ✓ Based on optimality considerations (under restrictive assumptions) ✓ Preserves resource wealth ✓ Provides long-term benchmark for fiscal sustainability 	<ul style="list-style-type: none"> ✓ Based on intertemporal budget constraint ✓ Consideration given to growth impact as well as recurrent and replacement costs of additional investment ✓ Provides long-term benchmark for fiscal sustainability
Cons	<ul style="list-style-type: none"> ✓ Incompatible with LIC characteristics (capital scarcity, credit constraints) ✓ Preserving resource wealth may not be optimal for LICs ✓ Is ill-suited to assess investment as, strictly interpreted, the framework is based on theory of consumption 	<ul style="list-style-type: none"> ✓ Application is more complex, as it requires estimating interaction with non-resource growth ✓ More demanding data requirements and analysis ✓ Requires country-specific assessments of the optimal level of net wealth

IV. SHORT- TO MEDIUM-TERM FISCAL ANCHORS

Fiscal anchors in resource-rich countries can take the form of either non-resource balance rules or resource price-based rules.¹³ Both sets of rules deal well with the management of short- to medium-term demand. The non-resource primary balance rule offers the added feature of directly tying the short/medium-term to the long-term sustainability benchmark. The choice of anchor could also be influenced by the level of resource revenue dependency as higher dependency should increase the incentive for governments to shield their expenditure plans from (total) revenue volatility. Box 2 explores options for the choice of an appropriate indicator, while Appendix III provides relevant country examples of fiscal anchors specifically tailored to resource-rich countries. It also reports information on the extent to which countries have been able to comply with their fiscal frameworks. Many rules have not been followed or have even been abandoned (e.g., Azerbaijan, Ecuador, Nigeria), while others have been relatively successful thanks to strong political support and embedded flexibility (e.g., Chile, Norway).

¹³A recent discussion of the experience with fiscal rules more generally can be found in IMF (2009).

Box 2. Fiscal Indicators for Resource-Intensive Countries

A critical issue when designing a fiscal framework is the choice of fiscal indicator around which any rules or guidelines will be framed.

The **non-resource primary balance** (the primary balance minus (net) resource revenue, preferably scaled to non-resource GDP¹) is the key fiscal indicator in resource-dependent countries. It measures the underlying fiscal policy stance and government domestic demand and can be compared against a benchmark for long-term fiscal sustainability. In addition, setting fiscal policy on the basis of this indicator can help delink policy from the volatility of resource revenue. This fiscal indicator can be anchored either by a PIH calculation or by other macroeconomic concerns.

The overall (or primary) balance, common in countries without natural resources, is used in fiscal rules that limit the government's net financing requirement or that assess fiscal vulnerability. However, these indicators can be procyclical in resource dependent countries: with rising resource revenues, a fiscal expansion (increase in spending) can be masked by an improving overall balance. However, the overall balance does provide an indication of the change in net financial assets and related fiscal vulnerabilities and gross financing needs in the event of declines in resource revenue.

The **current balance** excludes public investment from the overall balance. A practical drawback of this indicator is that it fails to provide a clear anchor for fiscal policy. It also ignores difficulties in classifying current and capital expenditure, leading to incentives for creative accounting.

The **domestic balance** (the overall fiscal balance excluding transactions with the rest of the world) excludes resource revenue and the import content of government expenditure, particularly of investment outlays, which tend to be highly import intensive. This approach can be attractive for scaling up investment expenditure. In addition to the potential loss of a fiscal anchor, however, a practical problem with this formulation is the difficulty of measuring the import content of government expenditure, potentially generating incentives for creative accounting as under the current balance rules.

¹Given the large volatility of resource GDP (that spills over into total GDP), indicators and targets should ideally be expressed in terms of non-resource GDP. Otherwise, particularly in countries where resource GDP is a large fraction of total GDP, the authorities would have to introduce a fiscal adjustment in response to (large) declines in resource prices.

A. Options for Fiscal Anchors

Non-Resource Primary Balance Rules

Rules for the non-resource primary balance, based on PIH, provide an explicit link to the exhaustibility of resource revenue. This is relevant for countries with a relatively short reserve horizon for resources. Alternative PIH rules have varying implications for the government's non-resource balance or spending path. For example, a PIH rule that keeps spending constant in real terms (as in Timor-Leste's framework) provides a more front-loaded spending path than one that keeps spending constant relative to non-resource GDP.

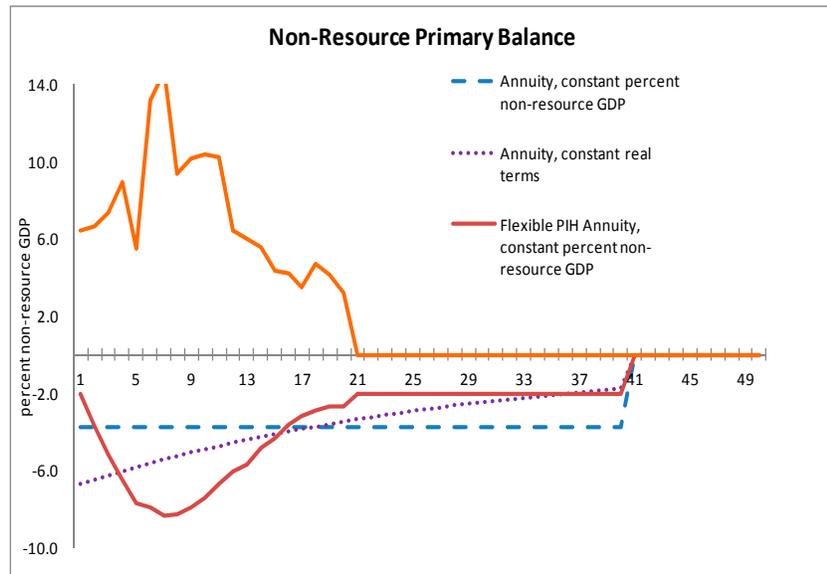
The design of a PIH-based fiscal anchor can be challenging in practice. Spending paths derived from a PIH framework could change dramatically from one year to the next if revenue forecasts are volatile. This highlights the importance of strengthening the capacity

for revenue forecasting; new tools and techniques developed by the IMF could help in this respect.¹⁴

While the standard PIH is inadequate for LICs, a modified version of the PIH can be designed to accommodate scaling-up of capital expenditure. This should allow a more front-loaded spending path “financed” by resource revenue that may be offset by lower spending in the future. Such a *modified PIH* approach needs a

transparent procedure to approve scaled-up capital expenditure if economically justified. The expenditure path would no longer be smoothed, but fiscal policy would remain anchored within an estimate of the long-term sustainable use of resource revenue (see Figure 3). A stylized example is given in Box 3 (which reflects some features of the PIH approach in Timor-Leste).

Figure 3. Simulations of Alternative Anchors



Another departure from the PIH approach would involve limiting the optimization horizon to a finite number of years.¹⁵ This implies that the resource wealth will be depleted after a certain number of years rather than being maintained for all future generations. With this anchor, public expenditure would also be more front-loaded. Adhering to this fiscal policy anchor will require a gradual fiscal adjustment at some future point to avoid an abrupt fall in the non-resource primary balance after the end of the finite optimization period.

¹⁴Resource revenue forecasts should be prepared in a bottom-up approach based on individual projects—this captures both the evolving revenue path over the life of the project and any project-specific fiscal terms that might be in place. The forecasting framework should include the preparation of sensitivity analysis to varying assumptions regarding price, cost, and production. Sensitivity analysis will provide policymakers with a better sense of the country-specific vulnerability to uncertainty and hence will suggest how much weight to attach to the precautionary saving motive in the design of the fiscal framework.

¹⁵With a bounded annuity rather than a perpetuity.

Box 3. An Example of a Modified PIH with Scaling-Up of Capital Spending

The PIH framework in Box 1 can be modified to accommodate the scaling-up of capital spending. As an illustration, assume that government front-loads investment spending above the baseline forecasts by I'_t . The additional front-loaded capital spending could be financed by “saving” less natural resource revenue during the scaling-up period. In this case, the accumulation of financial assets (A) would be lower during the scaling-up period than in the baseline. The higher capital spending would also directly reduce the non-resource primary balance ($NRPB$), i.e., relative to the baseline, the deficit in the scaling-up period will be larger by the amount of I'_t .

For the intertemporal budget constraint to hold, two effects need to be taken into account. The first reflects the fact that net wealth (W'_t) is now lower, given that the stock of financial assets is lower than in the baseline. Therefore, the PIH rule ($NRPB_t = -rW'_t$) implies the need to have higher non-resource primary balances in the future to offset the impact of the front-loaded spending.

The second effect takes account of the potential growth impact of the scaled-up investment. If the front-loaded investment impacts growth positively by, say, an extra rate of γ' , the future path of the $NRPB$ will be affected. On one hand, the higher investment would increase the operation and maintenance expenditure (σ), worsening the $NRPB$. On the other hand, the higher growth will lead to higher non-resource tax revenues (τ'), improving the future path of the $NRPB$.

Thus, if the “fiscal” return on the scaled-up domestic investment is equal to, or even larger than, the forgone return on financial assets, the net wealth after the investment scaling-up could be higher than in the baseline ($W' \geq W$). When applying the PIH-rule, the sustainable level of the non-resource primary deficit could therefore be at least equal to that in the baseline. On the other hand, if net wealth is lower ($W' < W$), the future path of the $NRPB$ would have to be higher (i.e., the deficits would have to be lower) than in the base case when applying the PIH rule.

Non-resource balance targets can also be derived with a shorter-term perspective. In addition to insulating fiscal policy from the volatility of resource revenue, such targets can aim at managing short-term demand. Determining a path for the non-resource balance also facilitates the preparation of medium-term expenditure plans; this is an advantage relative to price-based rules for example, which can introduce some volatility in spending plans from one year to the next (the more so the higher resource revenue dependency).

- The simplest approach is to link the non-resource balance (or rather, deficit ceilings) to conservative estimates of the resource revenue over the medium term. This could incorporate a path for expenditure scaling-up. An example of this is Papua New Guinea’s five-year medium-term fiscal strategy that sets a ceiling for the non-mineral deficit in line with an estimate of “normal” mineral revenue over that period (plus a fraction of windfall revenues).
- A more rigorous approach is to determine non-resource balance targets in line with absorptive capacity. The impact of the fiscal policy stance should be assessed against key macroeconomic indicators, like inflation, the real exchange rate, and interest rates. A first approximation to that is through the analysis of historical data and the empirical linkages between observed non-resource deficits and those macroeconomic indicators. More

sophisticated approaches involve the use of macroeconomic model-based scenarios. Financial programming or dynamic stochastic general equilibrium (DSGE) models can be useful in that regard.

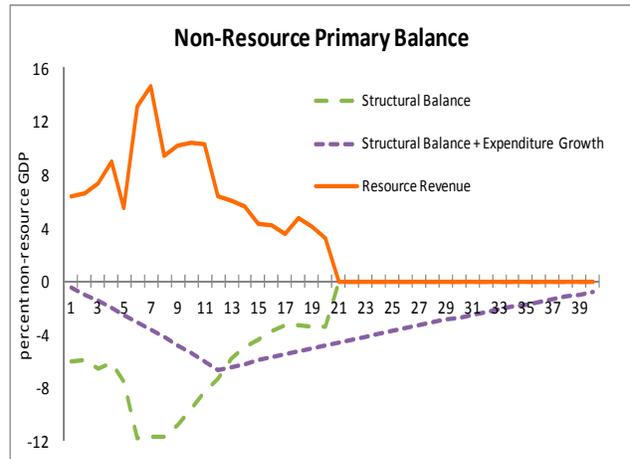
Performance of non-resource balance rules has been mixed. Norway’s framework has been quite successful, while Timor-Leste’s one has been tested lately in the context of a substantial scaling-up of public investment. Ecuador’s rule was abandoned, while Papua New Guinea’s framework has been largely followed though with some volatility in spending as the rule is expressed in terms of total GDP figures (rather than non-resource GDP). A drawback of using a non-resource balance type of fiscal rule is the fiscal framework may not be intuitive to a broader audience (“why remove all resource revenue from fiscal indicators?”), partly because they would imply large deficits even if the overall fiscal position is in surplus. This element may complicate communication of fiscal policy.

Resource Price-Based and “Structural” Balance Rules

Resource price-based rules rely on smoothed resource revenue and (adjusted) fiscal targets to delink expenditure from resource price volatility (Figure 4). This approach deals explicitly with resource price volatility, letting the standard overall fiscal balance move with the swings in resource revenue; however, it in principle ignores exhaustibility issues and changes in resource production and fiscal regimes. Commodity reference prices can be calculated by formulas or, as in Chile, by an independent committee. Price formulas can be a moving average either of past prices or, as in Mexico and Trinidad and Tobago, of past spot and futures (markets) prices.¹⁶ Chile’s *structural balance* rule is a more refined version of a price-based framework, as it includes an adjustment of non-mineral revenue for the economic cycle. If the economic cycle is not well defined, this additional adjustment may in practice have to be ignored. This is exactly what Mongolia did in its more recent fiscal framework (Appendix III) while still calling it a “structural” rule, although the only adjustment relates to resource prices.

Price-based or structural fiscal targets can be more readily articulated on the basis of short-term considerations. To that effect, similar approaches as described above for non-resource balances can be applied. However, long-term fiscal sustainability considerations can be introduced into the framework through more ambitious targets (say, a “structural” *surplus* rather than a *balance*). Then savings will have to be accrued over time (e.g., as in Chile in the

Figure 4. Simulations of Price-Based Rules



¹⁶The latter would make the rule more credible by reducing the gap between the current and the formula-derived price. Bartsch (2006) shows the tension in price formulas between price smoothing and forecasting errors.

early and mid 2000s). Alternatively, floors on the overall balance (or ceilings on public debt) could be added as safeguards for fiscal sustainability. Scaling up objectives within this framework could be accommodated by specifying targets or paths as informed by absorption capacity analysis.¹⁷

Price-based rules are less common than traditionally believed. Many countries try to smooth resource revenue for budget formulation, but do not set associated ex-post fiscal targets (e.g., resorting to supplementary budgets to spend “additional” resource revenue). Again, the actual performance of these rules has been mixed: while it is the cornerstone of a prudent fiscal policy in Chile, it has not been strictly followed in Nigeria due to pressures to spend any additional resource revenue or accrued financial savings.

Expenditure Growth Rule

An *expenditure growth* rule can limit the growth of government spending in nominal or real terms or in percent of non-resource GDP. Such a rule is desirable when scaling up expenditure in the presence of absorption constraints (Berg and others, 2011) and if the volatility of resource windfalls requires precautionary saving (van der Ploeg, 2011). The advantages of such a rule are its visibility and that it can be related to the economy’s absorption capacity. However, this approach is more effective if it complements an overall-balance rule (like that in Peru, where the expenditure growth rule has been critical in maintaining a prudent fiscal policy) or a “structural” rule (as in Mongolia starting in 2013).¹⁸ Relative to a simple structural balance rule, the increase in spending would be more gradual, and buffers would be built in the presence of volatile and uncertain revenue. Adjustments to the expenditure growth limits should ideally be informed by an analysis of absorption capacity. To accommodate a preference for investment expenditure, growth limits could be set higher for capital expenditures than for current expenditures.

Non-Resource Current Balance Rule

Under the *non-resource current balance rule*, both capital spending and resource revenue would be excluded from the fiscal targets, an approach akin to a golden rule.¹⁹ Recent literature (e.g., Collier, 2011) has emphasized the merits of using resource wealth to invest in physical assets with high yields in terms of non-resource productivity and growth (and non-resource fiscal revenue). The justified focus on public investment could also be construed as supporting the implementation of non-resource current balance rules. Such a formulation, while theoretically sensible, is problematic from a practical perspective since it does not provide a meaningful anchor for fiscal policy (as witnessed in the case of Equatorial

¹⁷Mapping price-based or structural rules into their corresponding non-resource balances can help guide the incorporation of long-term fiscal sustainability and absorption capacity constraints into the choice of targets.

¹⁸In Mongolia, an expenditure growth limit was added to a structural balance rule (focused on “long term” prices) to account for potential changes in production volumes.

¹⁹For resource rich countries, this rule is often referred to as a Hartwick rule. This underpins fiscal policy in Equatorial Guinea and the “sustainable budget index” rule in Botswana.

Guinea where capital spending has grown substantially and dwarfs current spending levels). First, other types of government expenditure, for example on education and health, may also have a positive impact on potential growth. This could imply that a much wider category of growth-enhancing spending should be excluded. But the wider the scope for excluding some expenditure from the constraints of the fiscal rule, the less relevant the rule becomes. Second, the special treatment for capital expenditures fragments the budget. Best practice for budgeting is to develop an integrated budget framework that combines both capital and recurrent expenditure; it assesses all spending proposals consistently and selects capital projects after taking into account their full recurrent cost implications. A separate treatment or status of capital expenditure (or other priority spending) could lead to de facto parallel budgets. In addition, it will also provide strong incentives to camouflage recurrent expenditures as capital spending or to choose projects even if they may not produce strong benefits. Third, a resource boom could lead to a capital expenditure boom and a budget that becomes volatile and procyclical.

B. Other Considerations for the Design of Fiscal Anchors

Scaling-Up of Expenditure

As noted earlier, one key element when considering scaling-up is the institutional and absorptive capacity. This implies that the pace of scaling-up of expenditure may need to be tempered if there are macro and micro *absorption capacity constraints*. At the *macro level*, spending resource windfalls can increase nontradable prices, leading to a real appreciation of the currency and a resulting decline in non-resource output (Dutch disease). At the *micro level*, domestic supply constraints and shortcomings in institutional capacity increase the cost and reduce the efficiency of capital investment. From a macro perspective, a sense of the importance of absorption constraints can be drawn from models (DSGE or financial programming) or indicators like inflation, congested harbors, blackouts, and reports of skill shortage.²⁰ From a micro perspective, the quality of the government's investment process, as measured by surveys (e.g., PIMI, PEFA), can provide relevant information.

Bolstering public investment management capacity is critical to ensure that scaled-up spending will yield the expected growth benefits. Project proposals should be carefully appraised and the capacity for project implementation strengthened, including by improved procurement practices. These reforms should be implemented in the context of wider public financial management reforms that provide a credible medium-term orientation to the budget (Rajaram and others, 2010).

It is not easy to measure the benefits of domestic investment. A domestic investment project may provide broad economic benefits, but judged from the narrower fiscal

²⁰Berg and others (2012) present a DSGE model suited to analyzing the macro implications of scaled-up investment in a resource dependent country. Financial programming is used to assess the consistency of macro policies with macroeconomic stability over the short and medium term. In setting fiscal targets, policymakers could derive insights from applied models (e.g., DSGE) if they remain mindful that any model will rely on stylized scenarios with simplifying assumptions (e.g., on the split between current and capital spending) that may not be fully implementable in practice.

perspective, the return to the government will be either from user fees on the project or from higher tax revenue if the investment generates growth. The fiscal balance will improve only if the government can internalize the benefits from the investment projects through those channels. This means that in countries with low non-resource tax ratios (reflecting either policy choices or weak tax administration), the additional growth impact of the investment has to be very strong to have a discernible impact on the non-resource primary balance.²¹ Of course, while a focus on fiscal sustainability is critical, this should not be seen as justifying suboptimal fiscal policies, for example, imposing user fees or ad hoc taxes where these have limited economic rationale.

Using more “accommodative” targets to scale up expenditure, including through borrowing, is not a trivial exercise. In countries with large absorption constraints, a gradual increase in the non-resource deficit targets would help absorb the additional spending. Either a structural balance or a flexible non-resource deficit rule can include an expenditure growth cap. Initially, this could be set at the non-resource GDP growth rate²² and then gradually increased as absorption constraints are reduced. Large and lumpy investment projects would be better accommodated by widening the fiscal deficit target for a given period if the investment is found to be economically beneficial. More generally, a fiscal framework can be adapted to allow for some debt accumulation within explicit limits.²³ But the case for borrowing, including through a collateralization of future resource revenue, should be carefully and comprehensively assessed, as it can turn out to be expensive and risky.

Resource Revenue Volatility and Uncertainty

The design of the fiscal anchor should take into account the volatility and uncertainty of resource prices and production.²⁴ This implies that part of any resource revenue windfall should be saved and possibly drawn upon during a resource “bust.” Moreover, the higher the dependency on resource revenue, the stronger is the case for precautionary saving.

The need for precautionary saving depends on the expected behavior of commodity prices and the planning horizon (which can differ across both commodity types and countries). The theoretical literature has contradictory findings: for example, Bems and Carvalho Filho (2011) find a relatively small need for precautionary saving, while Cherif and Hasanov (2012) point to larger precautionary saving when volatility and uncertainty are high. The desirable size of buffer-stock savings can be explored by stochastic simulations. Such a

²¹Using panel data for oil exporting countries, Bornhorst, Gupta, and Thornton (2009) find a negative relationship between government revenues from natural resources and from other domestic sources.

²²Using either the projected medium-term growth rate or, if available, the potential growth rate.

²³Many African countries have recently been able to obtain loans from China and other emerging market creditors, including through collateralization of resource revenues.

²⁴In a recent study of crude oil prices, Hamilton (2009) finds that the statistical evidence is consistent with the view that the price of oil in real terms seems to follow a random walk without drift. A prediction of the price of oil one quarter, one year, or one decade ahead would not be at all naïve if its forecast in each instance was the current price—though the enormous uncertainty would still most likely make the forecast wrong!

simulation done for Nigeria suggests that the country would need to have a precautionary buffer stock of 60 percent of annual oil revenue to be reasonably confident that a smooth government spending path can be maintained over three years. While countries could borrow or rely on contingent financial instruments (e.g., market hedging), the cost of this could be high compared with self-insurance embedded in the fiscal policy design.²⁵

The fiscal anchors discussed above can all be refined to take into account the need to build precautionary savings. Fiscal targets under price-based or structural rules could be made more ambitious (e.g., targeting a structural surplus); a prudential factor could be built into PIH-based frameworks by applying a larger discount to derive more conservative spending paths and overall fiscal surpluses; or overall balance floors could be added to generate fiscal savings.

To be credible and lasting in an uncertain environment, fiscal anchors and associated targets need to be flexible. There is a tension here: Rigid fiscal rules have a high risk of becoming obsolete; at the same time, too much discretion will undermine credibility. The following practices can be considered:

- The focus should be on procedural rules rather than on fixed numerical targets; for example, Chile’s framework identifies the fiscal variable to be targeted (structural balance) and lays out the process by which specific targets are determined;
- The reliance should be on a “flexible” guideline instead of a rule (e.g., Timor-Leste and Norway); and
- There should be explicit revision clauses (e.g., targets to be reassessed every four years).

The Role of Resource Funds

The focus on the role of resource funds can sometimes outweigh the attention given to the overarching policy anchor. Numerous papers advocate the establishment of resource funds in the face of sharp increases in resource revenue. Some countries are also setting up resource funds for various reasons (e.g., Nigeria), and others are considering it. Hence, clarifying the potential role of resource funds is a critical element in the design and implementation of the fiscal framework.

Resource funds can be useful tools for macro-fiscal management in resource-rich countries.²⁶ However, resource funds should not be confused with the fiscal policy, or the funds’ inflow-outflow rules with fiscal rules. Some countries (e.g., Ecuador, Ghana, Mexico) have introduced resource funds in the hope that removing “high” revenue from the budget

²⁵See IMF (2011c) for a discussion on the role and potential for contingent financial instruments in managing volatility in low-income countries.

²⁶Resource funds, i.e., the ones linked to fiscal resource revenues, have many names depending on their specific objective: stabilization funds, liquidity funds, savings funds, funds for future generations, or even sovereign wealth funds. In this note we abstract from these terminologies and focus on the role of funds for overall macro-fiscal management in resource dependent countries.

and placing it in a fund will help moderate expenditures and reduce policy discretion by creating a liquidity constraint or by influencing the political process. However, the empirical evidence (both case-studies and econometric) finds no significant differences in the stance of fiscal policy of countries with funds with rigid inflow-outflow rules (e.g., tying the government to transfer to the fund resource revenue in excess of a certain threshold, irrespective of the actual fiscal position) relative to others.²⁷ A factor partially explaining this finding is the lack of borrowing constraints, which allows governments to borrow to finance the transfers into the resource funds, creating tensions in government asset and liability management.²⁸

Resource funds should be seen as complementary policy tools. The sustainable and durable accumulation of financial assets in a fund with self-insurance or intergenerational objectives should be derived from the actual fiscal surpluses.²⁹ The role of a resource fund should be to:

- support the implementation of sound fiscal policies (e.g., financing countercyclical policies);
- enhance the transparency and credibility of fiscal policy, making resource revenues and associated savings more visible; and
- maximize the yield of the associated government's financial savings in line with the overarching fiscal policy objectives.

Therefore, resource funds should be integrated into the budget to ensure its integrity and protect its role as the mechanism to set expenditure priorities and allocate public monies. Resource funds should not have authority to spend outside the budget. One particular practice to be avoided is the creation of “development funds.” These funds are sometimes rationalized as parallel “islands of excellence” to overcome public financial management (PFM) weaknesses in the budget process or to escape capture by powerful political groups.³⁰ However, such development funds tend to fragment the budget process and policy decision-making, weaken the control of fiscal aggregates, as well as reduce the credibility and even the quality of the regular budget. Rather than looking for quick fixes, PFM weaknesses need to be tackled holistically. If there is nonetheless a strong need (particularly for political economy reasons) to visibly show that resource revenue and the resource fund's assets are “directly” contributing to social welfare, development funds should be conceived only as a sort of “communication or transparency device” with no capacity to spend.

²⁷Bacon and Tordo (2006); Davis and others (2003); Ossowski and others (2008); and Villafuerte, López-Murphy, and Ossowski (2010).

²⁸IMF (forthcoming) offers a comprehensive discussion of these issues as well as institutional and governance aspects of resource funds.

²⁹Countries might opt to pay down public debt rather than to accumulate financial assets. Such a strategy can be justified not only on purely financial grounds (i.e., borrowing rates higher than lending ones) but to reduce the country's interest premium and thereby foster private sector growth. Although, maintaining (some) domestic debt can be justified in terms of capital market development and interest rate benchmarking.

³⁰See for example Collier (2011).

V. CONCLUSIONS

This paper proposes the following principles to guide the formulation of fiscal policy frameworks in resource-rich developing countries:

- The fiscal policy framework should reflect country-specific characteristics like revenue dependency and volatility as well as the resource revenue horizon, which may change over time.
- The framework should ensure the sustainability of fiscal policy. Benchmarks of sustainability can be derived from a PIH framework or from a broader focus on stabilizing government net wealth (in some cases at a level below today's net wealth).
- Policymakers can choose alternative fiscal anchors, either primarily addressing fiscal sustainability concerns (e.g., PIH-based rules) or focusing more on short-term demand management (e.g., a price-based or structural balance rule). Country characteristics should guide the choice of the appropriate fiscal anchor (Table 2).
- Fiscal frameworks should be sufficiently flexible to enable the scaling-up of growth-enhancing expenditure, especially in LICs.
- In countries with large absorption constraints, the pace of scaling-up may have to be gradual, while public financial management systems are reinforced and domestic supply constraints softened.
- The volatility and uncertainty of resource revenue is critical for the design of fiscal frameworks, and having sufficient precautionary fiscal buffers is critical. Technically, a strong revenue forecasting framework needs to be developed and spending plans framed in a medium-term perspective.
- The credibility and transparency of the fiscal policy framework can be supported by a well-designed resource fund, but the latter cannot be a substitute for an appropriate policy framework nor a panacea that obviates the need to strengthen overall fiscal management capacity. Funds need to be fully integrated with the budget and the fiscal framework.

Table 2 summarizes the discussion on fiscal frameworks for resource-rich countries by providing an illustrative classification. Two critical dimensions are the country's capital scarcity and the horizon of resource reserves. Judgment calls are needed to determine the relative importance of these dimensions for a specific country. Country characteristics can also change over time, requiring a reassessment of the appropriateness of the fiscal framework and associated anchors and targets. Ultimately the political process and societal preferences will determine how these principles are applied, while the success for implementation of a fiscal framework will hinge on the political commitment.

Table 2. Fiscal Frameworks for Resource-Rich Countries

FISCAL POLICY INDICATORS		
Fiscal balances	Non-resource primary fiscal balance Overall fiscal balance	
FISCAL SUSTAINABILITY BENCHMARKS		
Long-term fiscal sustainability benchmark	PIH perpetuity/annuity Net wealth stabilization/convergence	
FISCAL POLICY ANCHOR/RULE (Short to medium term)		
	Capital scarce	No scarcity of capital
Long-lasting resources	Flexible non-resource primary balance rule plus expenditure growth cap Price-based rule (overall balance) plus expenditure growth cap	Non-resource primary balance rule Price-based rule (overall balance) plus expenditure growth cap
Short-lasting resources	Flexible non-resource primary balance rule plus expenditure growth cap Modified PIH-based framework (non-resource primary balance)	PIH-based framework (non-resource primary balance)

Appendix I. Resource-Dependent Countries: Descriptive Statistics

Country	Resources	Resource exports	Resource revenue	Commodity	Reserve	GDP Per Capita	Development	Overall
		in percent of total exports	in percent of total fiscal revenue	Revenue to Total GDP	horizon (in years)	PPP Level	level, HDI	PIMI score (0-4)
		avg 2006-10	avg 2006-10	avg 2006-10	R/P ratio	2010	2010	
Algeria (DZA)	Oil	98	73	29.7	35.2	6,950	High	...
Angola (AGO)	Oil	95	78	35.0	20.0	5,632	Low	...
Azerbaijan (AZE)	Oil	94	64	25.6	32.2	10,033	High	1.5
Bahrain (BHR)	Oil	81	82	23.1	16.7	26,852	Very high	...
Bolivia (BOL)	Gas	5	32	11.3	19.5	4,592	Medium	2.4
Botswana (BWA)	Diamonds	66	63	22.6	18.6	15,489	Medium	2.4
Brunei Darussalam (BRN)	Gas	96	90	45.2	...	48,892	Very high	...
Cameroon (CMR)	Oil	47	27	6.0	...	2,170	Low	...
Chad (TCD)	Oil	89	67	15.2	33.7	1,698	Low	1.0
Chile (CHL)	Copper	53	23	6.2	27.3	15,002	High	...
Congo, Republic of (COG)	Oil	90	82	32.6	18.2	4,427	Medium	0.5
Dem. Rep. of Congo (ZAR)	Minerals & Oil	94	30	3.0	10.7	328	Low	...
Ecuador (ECU)	Oil	55	24	7.4	34.1	7,776	High	...
Equatorial Guinea (GNQ)	Oil	99	91	31.2	17.1	18,143	Medium	...
Gabon (GAB)	Oil	83	60	18.4	41.2	15,021	Medium	1.0
Guinea (GIN)	Mining Products	93	23	3.7	...	1,046	Low	1.1
Guyana (GUY)	Gold & Bauxite	42	27	7.7	...	6,964	Medium	...
Indonesia (IDN)	Oil	10	23	4.5	27.2	4,394	Medium	1.5
Iran (IRN)	Oil	79	66	17.3	134.9	10,865	High	...
Iraq (IRQ)	Oil	99	84	69.2	150.0	3,538
Kazakhstan (KAZ)	Oil	60	40	10.5	60.3	12,603	High	2.4
Kuwait (KWT)	Oil	93	95	61.9	114.2	37,849	High	...
Libya (LBY)	Oil	97	89	55.5	79.8	13,805	High	...
Mali (MLI)	Gold	75	13	3.2	...	1,252	Low	2.2
Malaysia (MYS)	Oil	8	37	8.2	30.9	14,670	High	...
Mauritania (MRT)	Iron Ore	24	22	5.7	63.6	2,093	Low	1.7
Mexico (MEX)	Oil	15	36	8.0	10.1	14,430	High	...
Mongolia (MNG)	Copper	81	29	10.0	...	4,006	Medium	1.7
Nigeria (NGA)	Oil	97	76	21.7	65.6	2,422	Low	1.1
Norway (NOR)	Oil	62	29	15.3	13.6	52,013	Very high	...
Oman (OMN)	Oil	73	83	37.0	20.3	25,439
Papua New Guinea (PNG)	Minerals & Petroleum	80	32	9.6	20 (gold)	2,300	Low	...
Peru (PER)	Minerals	8	19	3.8	35.0	9,330	High	2.6
Qatar (QAT)	Gas	88	58	22.6	143.7	88,559	Very high	...
Russia (RUS)	Oil	50	29	11.0	48.8	15,837	High	...
Saudi Arabia (SAU)	Oil	87	79	42.0	75.5	23,826	High	...
Sudan (SDN)	Oil	97	55	10.8	37.8	2,492	Low	1.1
Suriname (SUR)	Minerals	11	29	8.3	...	8,924	Medium	...
Syrian Arab Republic (SYR)	Oil	36	25	5.7	21.9	5,208	Medium	...
Timor Leste (TLS)	Oil	99	70	60.9	...	2,861	Medium	...
Trinidad and Tobago (TTO)	Gas	38	49	17.4	9.7	...	High	1.1
Turkmenistan (TKM)	Oil	91	54	10.6	149.6	6,785	Medium	...
United Arab Emirates (ARE)	Oil	41	76	24.3	100.0	48,821	Very high	...
Venezuela (VEN)	Oil	93	58	18.7	226.7	11,829	High	...
Vietnam (VNM)	Oil	14	22	5.7	43.1	3,134	Medium	...
Yemen (YEM)	Oil	82	68	22.0	42.8	2,598	Low	0.8
Zambia (ZMB)	Copper	72	4	0.8	26.0	1,512	Low	1.9

Sources: IMF staff estimates; BP 2011 Statistical Review of World Energy ; UNDP Human Development Index; Gupta et al., 2011

Appendix II. Survey on IMF Advice to Resource-Dependent Countries

This appendix summarizes information extracted from selected IMF country reports on a limited sample of resource dependent countries over 2004–11. The survey’s objective is to check the nature of IMF staff policy advice on resource management, in particular, the reliance on PIH models and, more generally, other types of fiscal frameworks, indicators, and fiscal rules. The survey comprises a total of 39 staff reports from 17 countries including low-income (LIC), middle-income (MIC), emerging-, and advanced-resource dependent countries from different regions.

Our main finding is that in most of these countries, the IMF did not advocate the PIH model as the main policy target or fiscal rule to be followed. Eight out the seventeen surveyed countries discussed the PIH model. However, in only six of those countries (Azerbaijan, Gabon, Norway, Republic of Congo, Russia, and Timor-Leste) the (non-oil) fiscal indicator derived from a PIH model is used as an actual target for a program or surveillance. In the other countries, policy advice focused on the use of different fiscal indicators not based on PIH considerations, such as price-based rules. In most of the country reports surveyed, medium-term fiscal frameworks are suggested by staff.

Appendix Table 1. Survey on IMF Advice to a Sample of Resource-Dependent Countries

Country	Use of Permanent Income Hypothesis (PIH) Model		Use of Price-Based Fiscal Rule	Use of Medium-Term Framework	Main Fiscal Indicator is the Non-Resource Balance
	Included in the Fiscal Framework	Indicator of Long-Term Sustainability			
Angola		X		X	X
Azerbaijan	X	X			X
Cameroon				X	X
Chad		X		X	X
Chile			X		X
Congo, Rep. of	X	X		X	X
Equatorial Guinea		X		X	X
Gabon	X	X			X
Ghana				X	
Nigeria		X	X	X	X
Norway	X	X			X
Papua New Guinea				X	X
Peru				X	
Russia	X	X			X
Timor-Leste	X	X		X	X
Trinidad&Tobago		X	X	X	X
Venezuela		X			X

Note: In some countries, the use of the PIH changed during the reviewed 2004–11 period, so the current use of the PIH may differ.

Appendix III. Elements of Fiscal Frameworks in Selected Resource Intensive Countries

Country	Rule PIH	Framework Non-PIH	Resource Fund ¹	Description
Azerbaijan	X		R	A non-oil balance guideline (2004) consistent with constant real consumption out of oil wealth. Never observed. More recently reliance on ad-hoc balanced budget oil price. Complemented by state oil fund.
Chile		X	F	Structural balance guideline (institutionalized in 2006 fiscal responsibility law). Adjustment by long-term price of copper and molybdenum (10-year forecast) as determined by an independent committee. Targets have been changed over time. Supported by two funds (stabilization and savings).
Ecuador		X	R	Various rules (e.g., non-oil balance, expenditure growth) that were mostly not observed. More recent rule states that current spending cannot exceed permanent revenue (a sort of "golden rule"). Oil funds abolished in 2008.
Equatorial Guinea		X	R	Guideline establishing that current expenditures should be limited to non-oil revenue has led to very high capital expenditure levels. CEMAC convergence criteria: include various fiscal targets (e.g., a non-oil balance target). It has a fund for future generations.
Ghana			R	A recent petroleum revenue management framework built around a stabilization fund and a heritage fund. Benchmark oil revenue is calculated at a 7-year moving average, with 70 percent used to finance the budget. Remaining revenue allocated in fixed proportions to the funds. No fiscal anchor limiting budget deficit.
Mongolia		X	R	A ceiling on the structural deficit with structural mineral revenues estimated using a 16-year moving average of mineral prices. Combined with a ceiling on expenditure growth defined by the non-mineral GDP growth rate (useful when structural revenue is growing fast). The structural balance target can be changed every four years. Flows to a stability fund linked to difference between actual and structural revenues. This framework will start in 2013.
Nigeria		X	R	3 percent of GDP deficit ceiling for federal govt. computed at budget oil price (not strictly followed). Budget oil price set every year in political negotiations, including with sub-national governments. Excess crude account receives "windfall" revenues; ad-hoc withdrawals.
Norway	X		F	"Bird-in-hand" fiscal guideline: the cyclically adjusted non-oil central government deficit as 4 percent (the expected long-run real rate of return) of the SWF assets. Guidelines are flexible: temporary deviations permitted over business cycle or if large changes in SWF value. Very strong political consensus.
PNG		X		5-year medium-term fiscal strategy that sets a ceiling to the non-mineral deficit in line with "normal" mineral revenue. A portion of "windfall" mineral revenue (70 percent) can be spent up to a non-mineral deficit ceiling of 8 percent of GDP. It was largely followed, but volatile real expenditure growth due to swings in total GDP.
Russia	X		R	The budget code includes a long-term nonoil deficit target of 4.7 percent of GDP that was suspended in 2009. Annual budgets underpinned by rolling three-year medium-term fiscal frameworks. Two oil funds (stabilization and savings).
Timor-Leste	X		F	Fiscal guideline based on PIH framework (constant in real terms). Non-oil balance set in line with estimated sustainable income (ESI), which is calculated annually as 3 percent of the sum of the petroleum fund balance and the present value of expected future petroleum receipts. Deficits can exceed the ESI if properly justified and approved by Parliament. More recently, government has scaled up public investment so that total spending amounts to more than twice the level of the ESI.

¹ Resource funds can be an account or a statutory legal entity. R = contingent (i.e., linked to threshold values) or revenue-share (i.e., flows in proportion to total revenue) funds. F = flexible (i.e., financing, linked to the overall fiscal position) funds.

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