68698

DRAFT FOR DISCUSSION

Managing Resource-Induced Volatility in Papua New Guinea: Some Issues for Discussion

East Asia and Pacific Region
The World Bank

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Prepared by Ivailo Izvorski (Lead Economist, EASPR) and Tony Ollero (Research Analyst, EASPR), with background material from Andriy Storozhuk (senior economist, EASPR) and Ali Zafar (consultant). Comments from Laura Bailey, Christos Kostopoulos and Eric Le Borgne are gratefully acknowledged. Norbert Fiess and Emily Sinnott (both senior economists, LAC) provided feedback on Chile's Economic and Social Stabilization Fund. Ekaterina Vostroknutova's shared an advanced draft of a chapter of the forthcoming Lao PDR Development Report.

CURRENCY EQUIVALENTS

(Exchange Rate Effective as of February 2, 2010)

Currency Unit		Kina
US$1.00	=	2.6469

GOVERNMENT FISCAL YEAR

January 1-December 31

ACRONYMS AND ABBREVIATIONS

ABG	Autonomous Bougainville Government
CSF	Copper Stabilization Fund
DSA	Debt Sustainability Analysis
EU	European Union
FDI	Foreign Direct Investment
FEES	Economic and Social Stabilization Fund
GDP	Gross Domestic Product
IMF	International Monetary Fund
LME	London Metals Exchange
MRSF	Mineral Resources Stabilization Fund
MTDS	Medium Term Development Strategy
MTFS	Medium Term Fiscal Strategy
NRF	Nonrenewable Resource Fund
PNG	Papua New Guinea
PNG LNG	Papua New Guinea Liquefied Natural Gas Project
REER	Real Effective Exchange Rate
RERF	Revenue Equalization Reserve Fund
UNCTAD	United Nations Conference on Trade and Development

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Team:	Ivailo Izvorski (TTL), Tony Ollero, Andriy Storozhuk, Ali Zafar.

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Summary

Thanks to fiscal prudence and the substantial buffers built from saved windfall revenues during the recent commodity boom, Papua New Guinea weathered well the global economic crisis. Good fiscal policy before the crisis was helped by adherence to principles that underpinned PNG's Medium-Term Fiscal Strategy for 2008-2012, itself a substantial improvement over the country's fiscal frameworks in earlier decades. The authorities' response to the crisis was also commendable, with counter-cyclical policy helping limit the slowdown of real GDP growth in a year when output and exports contracted sharply in all advanced economies and many developing countries.

PNG's experience with managing resource-induced volatility and developments in other resource-rich economies, suggest that maintaining fiscal and macroeconomic stability is the key precondition for a sustainable increase in living standards and a reduction in poverty. With fiscal policy institutions, rules and incentives organized to help limit the impact of resource volatility on the domestic economy, policymakers' attention can shift more fully to sustainably improve infrastructure, boost the quality of education and workers' skills, improve the business climate and diversify the economy.

Informed by the experience of Papua New Guinea and other countries in managing volatility resource-related flows, this note proposes several issues for discussion and consideration by the authorities. The note also highlights several options which the authorities may consider to bolster their ability to harness resource abundance for the continued dynamic development of the country. What options are pursued and in what fashion are, of course, for the government of PNG to consider. The World Bank can help with further analysis and assist with narrowing the policy options.

The first set of options discussed in the note refers to fiscal rules. Options to consider in helping strengthen the counter-cyclical element of fiscal policy and improving fiscal sustainability include:

- Adjust the non-mineral ongoing deficit rule under the MFTS by the current level of commodity prices relative to a reference level and for the level of economic activity relative to the economic cycle.

- Redefine all rules for the government balance relative to non-mineral GDP to limit further the pro-cyclicality of fiscal policy.

- Introduce a government spending rule to limit possible increases in expenditures relative to GDP over a year or several years. Alternatively, consider introducing a rule to limit the change in the fiscal deficit relative to GDP.

- Recalculate annually the sustainable fiscal balance as part of the regular budget process.

The second set of rules concerns the mechanism for saving resource-related revenues. The authorities are invited to consider the option of creating a single Savings and Stabilization Fund (a sovereign wealth fund). Some steps in this direction include:

- Merge all trust accounts into a single Savings and Stabilization Fund that will also receive all future resource-related revenues.

- Integrate the Fund with the budget and draft governance, disclosure and asset management rules based on international best practice. Chile's Economic and Social Stabilization Fund, Norway's Government Pension Fund – Global, and Australia's Future Fund and Nation-building Funds offer good examples.

- The Fund makes investments only in foreign currencies and is prohibited from purchasing PNG government debt or investing or lending directly domestically. The assets of the Fund should not be pledgeable: the authorities should not be able to borrow against the assets of the Fund pledged as collateral.

- Ensure proper surveillance by parliament, regular audits by reputable internationally recognized firms, and regular disclosure of Fund assets, risks, and investments.

While the authorities are invited to consider the creation of a single Savings and Stabilization Fund as the first-best option for managing resource-related revenues, there are steps that can be taken in improving the efficiency or trust fund accounts if this option is not pursued. Some of these steps include:

- Shift all trust accounts for managing mineral revenues into foreign currency.

- Delegate the management of all trust fund accounts to the central bank. The balances in the accounts can be managed similarly to foreign exchange reserves.

- Fully integrate all trust accounts with the central government budget.

- Introduce uniform rules for governance, disclosure, deposit and withdrawal from all trust accounts.

Chapter 1. Sources and transmission channels of resource volatility

Papua New Guinea is highly vulnerable to volatility in commodity prices owing to the high and rising importance of the mineral resource sector in production, exports and government revenues. Attempts to maintain fiscal discipline and insulate the economy from resource volatility had a mixed record since independence in 1975 until the commodity boom during 2004-2008. Prudent fiscal policies during the boom enabled the authorities to pay down expensive debt and build sizable buffers that helped cushion the impact of the severe global economic and financial crisis that followed. With the projected start of production in 2013-14 by the large liquefied natural gas project (PNG LNG) developed by a consortium led by Exxon Mobil, the authorities face the challenge and opportunity of sustaining fiscal prudence, diversifying the economy, and raising living standards across Papua New Guinea.

Developed by substantial foreign investment and run by international companies which generally operate their projects as enclaves, the extractive sector is the modern part of PNG's dual economy. The local content of exploration, development and production is limited, as is local employment, while the levels of profit repatriation are high. As a result, the government budget (both central and provincial) is the main channel through which mineral revenues reach the domestic economy. Thanks to the high level of extractive industry and related personal income taxes, PNG's government has been able to maintain a relatively high level of government spending of about around 25 percent of GDP given the country's level of per capita income and the size of the formal tax-paying sector. The other part of the economy is still underdeveloped despite the large mineral resources, with almost all of nonmineral GDP generated by agriculture – the bulk of it consisting of subsistence farming that employs three-quarters of the population – and low-value added services that mask poorly paid underemployment (Table 1).

A. Exports of mineral products

Metals (largely gold and copper) and mineral fuels (predominantly petroleum thus far) account for four-fifths of exports and one-third of the economy's value added, and directly provide one-sixth of government revenues. PNG's mineral exports surged 26 percent in dollar terms during the recent commodity boom and are now equivalent to 55 percent of GDP, up from about a third a decade ago (Figure 1 and Figure 2). The share of minerals in exports is expected to grow substantially further once the PNG LNG project starts production.

Figure 1. Mineral exports grew rapidly during the recent commodity price boom …

(in billions of U.S. dollars)

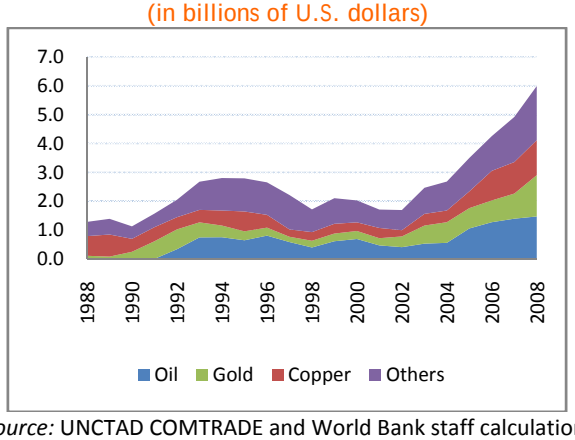
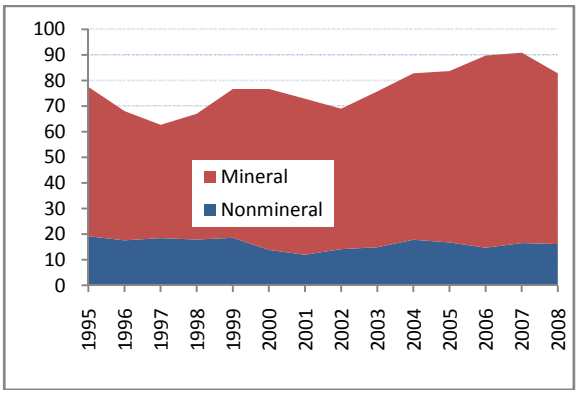


Figure 2. … and dominate PNG's export s

(in percent of GDP)



Source: UNCTAD COMTRADE and World Bank staff calculations.

Table 1. Papua New Guinea: key economic indicators

	2004	2005	2006	2007	2008	2009e
Output, Employment and Prices	(In percent of GDP unless indicated otherwise)					
Real GDP	2.7	3.6	2.6	6.5	6.7	4.5
Tourist arrivals	4.9	17.3	12.2	34.0	10.4	7.0
(in thousands)	59.0	69.3	77.7	104.1	115.0	123.0
Consumer price index (average annual)	2.1	1.7	2.3	0.9	10.7	5.3
Public Sector	(In percent of GDP unless indicated otherwise)					
Government balance	1.6	2.7	6.4	10.3	3.7	-7.4
Nonmineral balance (in percent of nonmineral GDP)	-5.8	-7.6	-9.4	-4.9	-8.5	-13.7
Domestic public sector debt	25.2	22.4	18.0	17.0	14.5	14.8
Foreign Trade, BOP and External Debt	(In millions of U.S. dollars unless indicated otherwise)					
Trade balance	760	816	1,401	1,419	1,603	676
Exports of goods	2,554	3,278	4,207	4,750	5,397	4,197
(percent change y-y)	18.6	28.3	28.3	12.9	13.6	-22.2
Imports of goods	1,794	2,462	2,805	3,331	3,794	3,521
(percent change y-y)	25.0	37.2	13.9	18.8	13.9	-7.2
Current account balance	88	207	128	112	228	-546
(in percent of GDP)	2.2	4.2	2.3	1.8	2.8	-6.7
Foreign direct investment	25.8	67.9	193.1	462.0	277.1	263.2
External debt	2,078	2,021	2,175	1,995	2,004	2,225
(in percent of GDP)	51.8	41.2	38.6	30.7	24.4	27.9
Short-term debt	109	232	167	100	125	110
Debt service ratio (in percent of exports of goods and services)	12.5	9.7	8.3	8.4	6.4	7.4
Foreign exchange reserves	663	765	1,427	2,087	2,093	2,320
(in months of imports of goods and services)	2.8	2.4	3.8	4.8	4.3	5.1
Financial Markets						
Domestic credit (percent change y-y)	0.9	23.7	38.2	34.4	41.0	19.6
Short-term interest rate (in percent, annualized)	3.1	3.8	3.4	4.4	5.6	7.5
Exchange rate (Kina/US$, end-of-period)	3.1	3.1	3.0	2.8	2.7	2.7
Real effective exchange rate (2000=100)	101.0	108.3	101.8	101.4	116.3	116.3
(percent change y-y)	0.9	7.2	-6.0	-0.4	14.6	0.0
Memo: Nominal GDP (in millions of U.S. dollars)	3,927	4,899	5,605	6,387	8,092	8,200

Source: National authorities; IMF; and World Bank staff estimates and projections. e=estimate

Rising gold prices and a surge in external demand led to a pickup in gold production and exports. Shipments abroad of gold rose threefold from the end of the 1990s to 2008, increasing export receipts six times to $1.4 billion (Figure 3 and Figure 4). Gold, the country's top metal mineral export, is mined in

two major fields, the Porgera gold mine in Enga Highlands and the Lihir gold mine in the island off New Ireland.

Figure 3. Gold export volumes have recovered …
(in thousands of try oz)

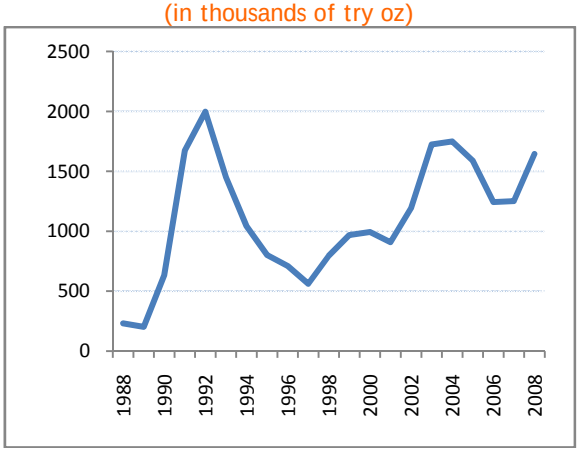
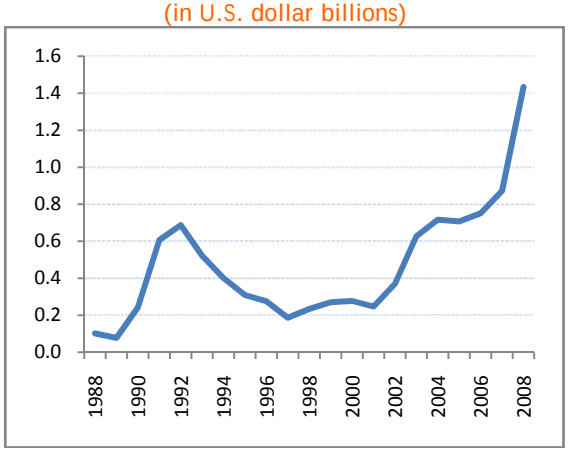


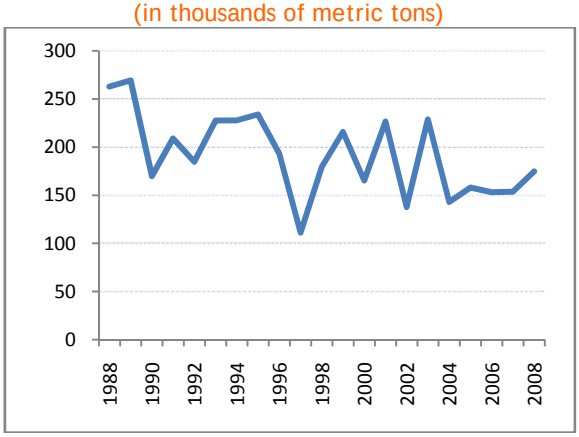
Figure 4. … and gold export receipts doubled
(in U.S. dollar billions)



Source: UNCTAD COMTRADE and World Bank staff calculations.

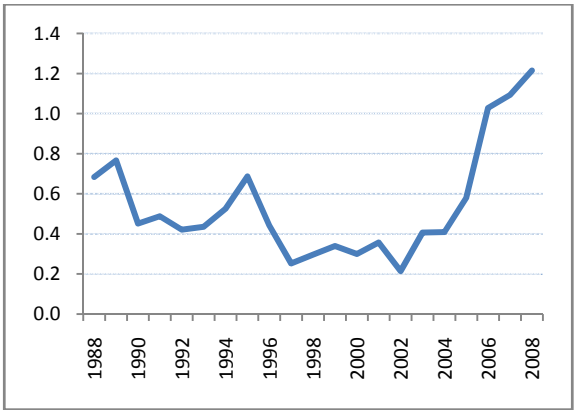
Receipts from copper exports tripled during 2004-2008 to $1.2 billion, thanks to a sharp increase in international prices despite steady export volumes (Figure 5 and Figure 6)**.** After a decade of large fluctuations in volumes, the surge in prices during the recent boom helped keep production steady at OK Tedi, the single copper mine now in operation. Similarly to gold prices, copper prices rose markedly during the commodity boom, with prices on the London Metals Exchange (LME) more than tripling from $1780 per metric ton in 2003 to about $7000 on average in 2008.

Figure 5. Copper ore export volumes stabilized during the commodity boom …
(in thousands of metric tons)



Source: UNCTAD COMTRADE and World Bank staff calculations.

Figure 6. … allowing copper export receipts to triple
(in billions of U.S. dollars)



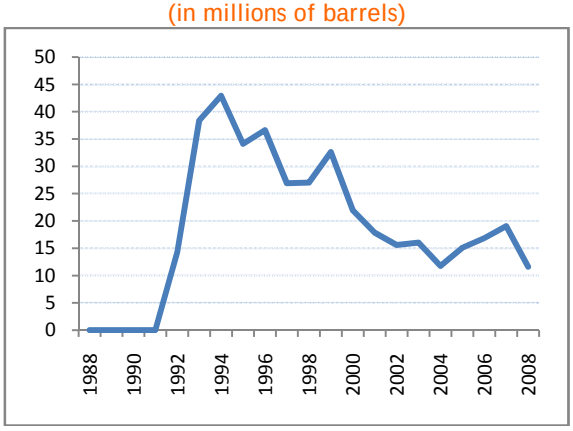
Source: UNCTAD COMTRADE and World Bank staff calculations.

Exports of oil also rose threefold during 2004-2008 to $1.5 billion, due to the surge in prices and despite declining volumes. Exports of refined products amount to $0.2 billion of the total. PNG is ranked 70th in the world in terms of proven oil reserves of about 88 billion barrels (bbl). Although export values were at record highs in 2008, volumes shipped have been on the decline since 1994, as production at new fields has offset only partly declining output at aging fields (Figure 7 and Figure 8). The country has three main production fields: Kutubu, Gobe, and Moran. Production at Moran began in 2005, initially

more than offsetting output at the older Kutubu and Gobe fields. A fourth field, SE Mananda, began production in 2006 but output has been limited to about 60,000 barrels of oil per.

Figure 7. Crude oil export volumes have declined steadily …

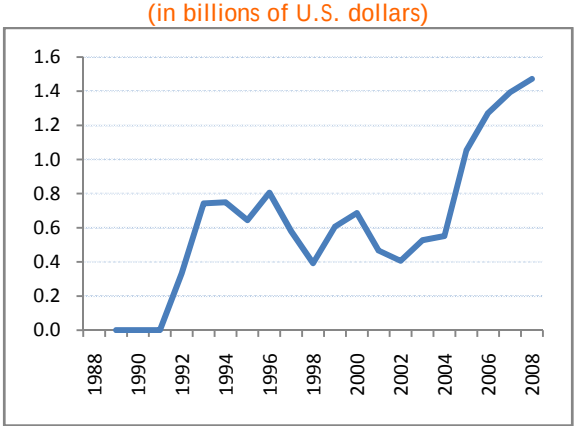
(in millions of barrels)



Source: UNCTAD COMTRADE and World Bank staff calculations.

Figure 8. … yet petroleum export earnings have tripled on rising prices

(in billions of U.S. dollars)



Source: UNCTAD COMTRADE and World Bank staff calculations.

Attempts to harness PNG's abundant natural gas reserves brought little success until recently. The Hides gas and condensate field in Southern Highlands was discovered in late 1987, with possible natural gas reserves equivalent to more than one-fourth of the country's total. Production in 2008 was only 100 million cubic meters, however, and exports were nil. A gas pipeline project to Australia was abandoned in early 2007.

The role of the resource sector in the economy – and prospects for real GDP growth, the balance of payments, tax revenues and jobs - will increase further once the PNG LNG project comes into operation in 2013-2014. The PNG LNG project focuses on the development of the country's natural gas fields in the Southern Highlands and the Western Province of PNG, with plans to transport the natural gas via a pipeline to an LNG facility near Port Moresby for liquefaction, storage and shipment to markets overseas.[1] Current projections suggest that the project is expected to yield natural gas amounting to more than 50 million barrels of oil equivalent, leading to average annual export revenues at about $3 billion, or more than double the record high export values in 2008. A partner in the consortium estimates that by 2017 the project could turn PNG into the second-largest LNG producer in East Asia, after Malaysia and past Indonesia. About 12,000 workers are projected to be employed in the production, but the share of local residents is unclear. Recent estimates suggest that during the construction phase through 2014 real GDP could increase by 0.8 percentage points a year before rising by 25-30 percent subsequently at peak production. The GNI, by contrast, is projected to increase by much less, or about 9 percent overall, because of the substantial income outflows.[2] While the implications for fiscal revenues are still uncertain and contingent on international natural gas prices, they are likely to be substantial and amount to a few percentage points of GDP starting perhaps in 2016-17 according to current projections by the PNG Treasury.

[1] The PNG government will own 16.6 percent of the project and landowners 2.8 percent. ExxonMobil (USA) as the lead owns 41.5 percent of the private venture and other oil companies account for the rest. Also see the official web site of the consortium, www.pnglng.com.

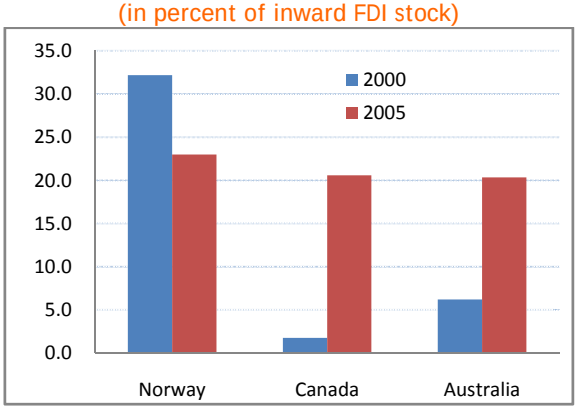
[2] IMF (2009).

B. Investment in mineral projects

The mineral resource sector has accounted for much of the foreign direct investment in PNG and a substantial share of the fixed investment (Figure 9 and Figure 10). With the start of development of the PNG LNG project, inflows of foreign direct investment (FDI) and domestic fixed investment should surge further both in nominal terms and relative to GDP.

Figure 9. Extractive industries account for a large share of FDI in resource-rich industrial countries …

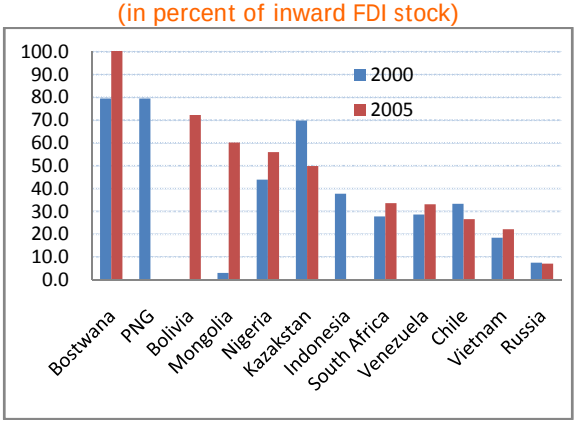
(in percent of inward FDI stock)



Source: UNCTAD.

Figure 10. … and for a much larger share in PNG and other resource dependent developing countries

(in percent of inward FDI stock)

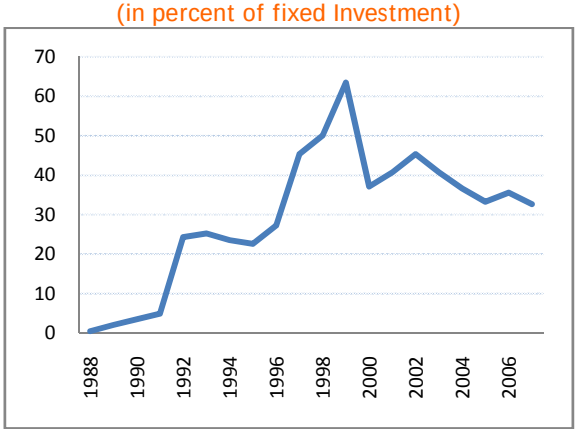


Source: UNCTAD.

Given the low capital and investment intensity of the nonmineral part of the economy, overall investment has been strongly affected by the life-cycle of mineral projects. Inflows of foreign direct investment spiked in years associated with the construction of mining and oil facilities: the Porgera gold mine (completed in 1990), the Kutubu oil field (1992), the Lihir gold mine (1997), the Gobe oil field (1998), the Moran oil field (2001), and the SE Mananda oil field (2006) (Figure 11 and Figure 12).

Figure 11. With mineral projects attracting large inflows of FDI and FDI accounting for much of private investment, …

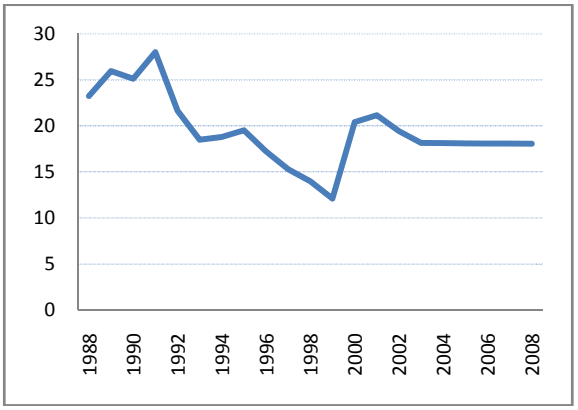
(in percent of fixed Investment)



Source: UNCTAD and World Bank staff calculations.

Figure 12. … fixed investment in PNG has fluctuated in line with mineral project life cycles

(in percent of GDP)



Source: PNG authorities and IMF and Bank staff calculations.

Extensions of the life of the mines and the fields, either through a discovery of additional reserves or through improvements in production methods, have provided opportunities for additional investment flows. Operations in the Porgera gold mine commenced in 1990 and were due to cease in

2006 with the processing of stockpiled ore continuing until 2012. The mine's life has been recently extended with the discovery of additional 7 million ounces of proven ground gold reserves. In the Lihir gold mine, Lihir Gold Ltd, Australia's the second largest gold mining company, has embarked on a $0.9 billion expansion of the refining plant with construction work currently progressing. The expansion will add production of 240,000 oz a year. The life of PNG's only operating copper mine at OK Tedi has recently been extended by two years, and feasibility of exploration of three new ore bodies which would extend the mine to 2018 is under consideration. These options would require further investment.

Private investment is set to surge again with the start of the PNG LNG project. Current projections suggest that the total costs, including interest and finance charges, will amount to more than $18 billion. The consortium is reported to have successfully arranged for $14 billion in financing after concluding a 20-year supply agreement with Tokyo Electric Power Co. Current estimates indicate that 85 percent of the project cost would be incurred during the construction phase (2000-2014) and 15 percent during the production phase. Capital investment would absorb 55 percent of the total cost.

Expectations of sustained increase in global demand for mineral resources and the likelihood that commodity prices will remain elevated is helping build up PNG's mineral investment pipeline. While the PNG LNG project is the most visible, several other ventures to further exploit the country's mineral resources are underway or are reported to be under consideration. China Metallurgical Construction Group Corp. is building a $1.7 billion nickel mine and processing plant in PNG, the Ramu Nickel Project, which will supply stainless steel to China. The Chinese state enterprise, which owns the majority of the venture, raised $2.8 billion in an IPO last year to help fund its overseas mine projects. Australia's Marengo Mining Ltd plans to develop PNG's copper deposits at Yandera. Construction of the mine is estimated to cost $1 billion and the company sold $13.6 billion in new shares last year for this and other projects. Australia's Xstrata Plc, the world's fourth largest copper producer, said that the initial development study of its PNG Freida River Copper Project will be completed in mid-2010 and it may consider building a plant to process as much as 50 million metric tons of copper ore a year. Xstrata, which holds 76.2 percent of Frieda River, said it may increase its estimate of the metal resource at the project after the results of recent drilling tests indicate that the mine will be richer than initially thought. It also announced plans to increase capital spending globally by 89 percent to $6.8 billion in 2010. Australia's Newcrest Mining Ltd, Australia's largest gold mining company, said it was developing projects in PNG.

C. Commodity price volatility

Movements in commodity prices have buffeted PNG's economy. Prices have declined from the record highs reached in 2008, but their level and volatility remain substantially elevated relative to historical averages (Figure 13- Figure 18). With the global economy converging to a new equilibrium after the recent economic and financial crisis, commodity price volatility is likely to remain high and perhaps increase in the near future.

Production or other problems in mine operations have injected another element of volatility to production and export patterns in PNG. Production in the Porgera gold mine fell in half during 2004-2006 to 540,000 oz in 2006 because a pit wall collapsed. Production in the Lihir gold mine fell to 550,000 oz in 2003 after exceeding its 600,000 oz target in the previous two years because of metallurgical problems. Production recovered to 650,000 oz in 2006. Then again, production dropped in the third quarter last year, unfortunately at a time of buoyant gold prices, due to plant maintenance.

Figure 13. Gold prices have risen sharply …

(in U.S. dollars per troy ounce)

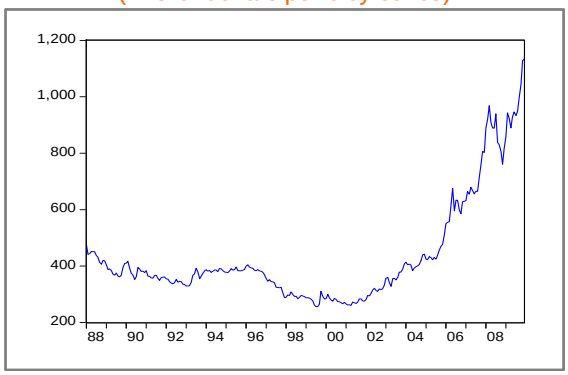
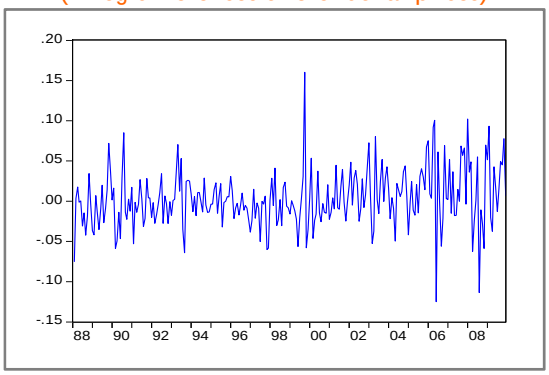


Figure 14. … and so has their volatility

(in log-differences of U.S. dollar prices)



Source: Haver Analytics and World Bank staff calculations. Note: Methodology as in Vostroknutova (2009), Lao CEM.

Figure 15. Copper prices have risen substantially again …

(in U.S. dollars per metric ton)

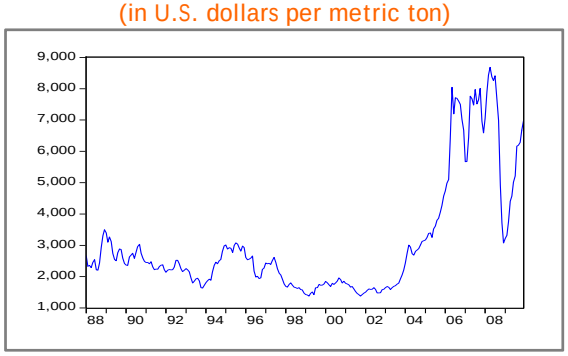
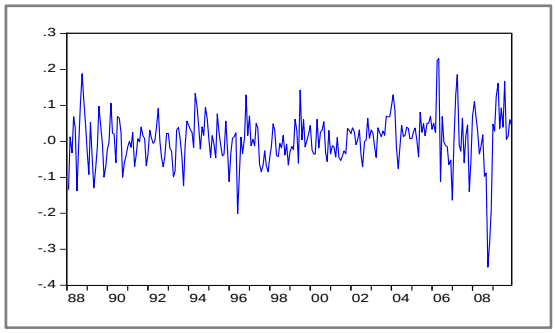


Figure 16. … driving price volatility markedly higher

(in log-differences of U.S. dollar prices)



Source: Haver Analytics and World Bank staff calculations. Note: Methodology as in Vostroknutova (2009), Lao CEM.

Figure 17. Oil prices have also rebounded partly…

(in U.S. dollars per barrel)

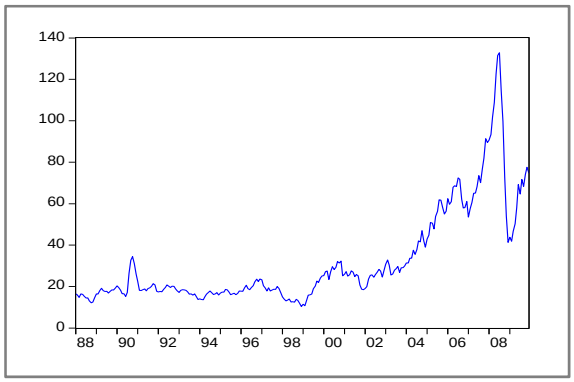
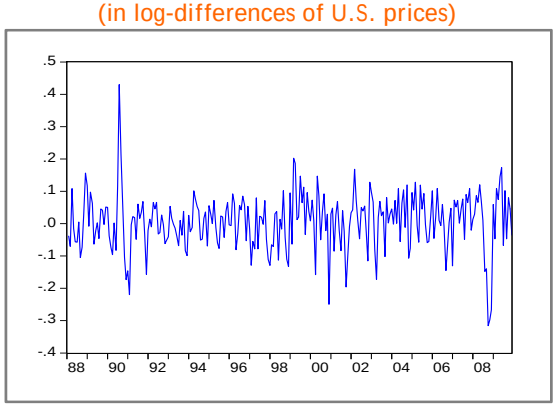


Figure 18. … but there is little evidence that price volatility has dampened

(in log-differences of U.S. prices)



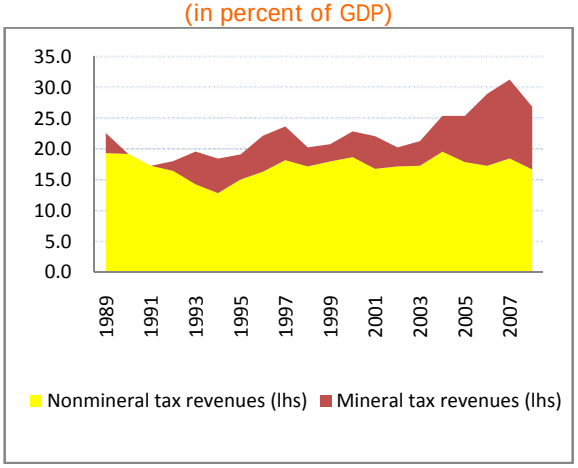
Source: Haver Analytics and World Bank staff calculations. Note: Methodology as in Vostroknutova (2009), Lao CEM.

D. Mineral tax and non-tax revenues

The share of mineral revenues in PNG's budget increased during the boom. Mineral revenues averaged about 4 percent of GDP during 1990-2003, before surging to an average 10.6 percent of GDP in 2004-08.[3] After peaking at more than 14 percent of GDP in 2007, the share of mineral revenues fell in 2008 and 2009 (Figure 19, Figure 20 and Table 2). Until revenues from the PNG LNG start flowing later in the decade, the share of mineral revenues in the budget may approach historical averages.

Figure 19. Mineral tax revenues surged during the boom …

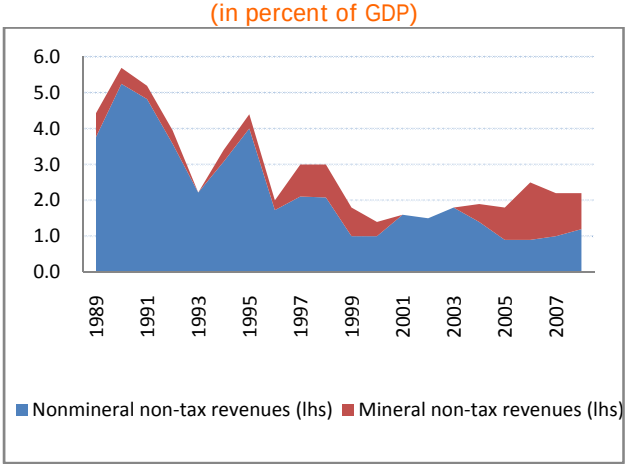
(in percent of GDP)



Source: PNG authorities and Fund/ Bank staff calculations.

Figure 20. … and so did non-tax receipts, including dividends

(in percent of GDP)



Source: PNG authorities and Fund/Bank staff calculations.

Figure 21. Spending broadly tracked structural revenues during the boom, but surged afterwards */

(in percent of non-oil GDP)

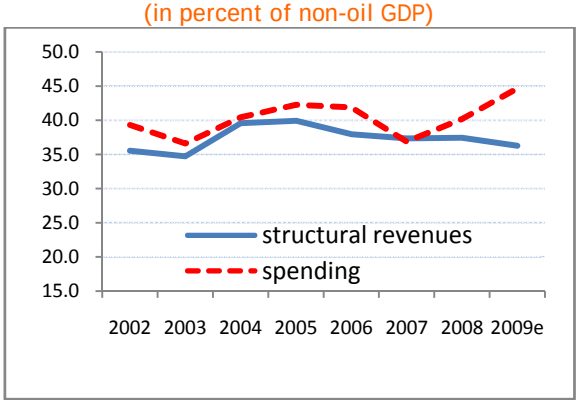
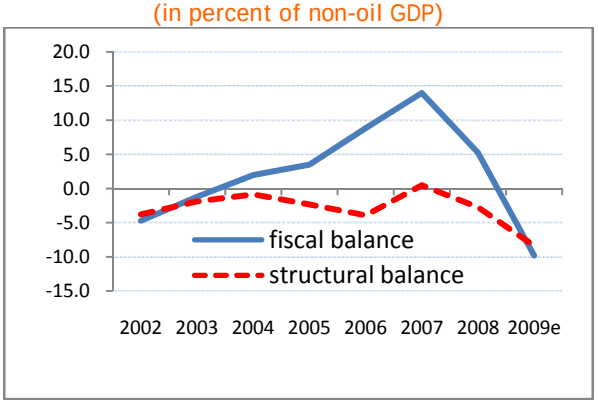


Figure 22. The structural balance fluctuated substantially less than the actual balance */

(in percent of non-oil GDP)



Source: PNG authorities and World Bank staff calculations.

*/Structural revenues: the sum of non-mineral revenues and "normal" mineral revenues assumed equal to 4 percent of GDP as under the MTFS. This calculation is only for illustration, as the "normal" revenues are probably of a different magnitude.

[3] Mining and petroleum companies are subject to different rates of taxation than non-resource companies. Resident mining and all gas companies pay corporate income tax at the rate of 30 percent of gross profits (as do non-resource companies), but non-resident mining companies are taxed at 40 percent and petroleum companies at 50 percent if they began operations before 2001 (30 percent for operations that began between 2003-2007), and 45-50 percent for others. There is a 10 percent mining levy for mining companies that expired in 2008. Royalties amount to 2 percent of f.o.b. sales for mining companies (gross sales for natural gas and petroleum companies). For more details, see IMF (2009c).

After averaging about 1 percent of GDP during the 1980s, the fiscal deficit rose sharply in the late 1990s and fluctuated substantially with revenues. Despite frequent efforts at expenditure control, government spending was broadly stable as a share of GDP from the mid-1990s until the early 2000. The decline in commodity prices after the 1997-98 Asian financial crisis was not offset by spending restraint, leading to substantial fiscal difficulties. The pro-cyclicality of fiscal policy eased substantially during the recent commodity boom as the authorities saved a substantial part of the surge in mineral revenues, and during the subsequent period of declining mineral revenues (Figure 21 and Figure 22). The deficit is estimated to have risen sharply in 2009, with the nonmineral budget balance widening to almost 14 percent of nonmineral GDP from 8.5 percent in 2008.

Table 2. Papua New Guinea: Fiscal Developments

	2003	2004	2005	2006	2007	2008	2009e
Total revenues and grants	**35.4**	**42.4**	**45.8**	**50.7**	**50.9**	**45.4**	**34.8**
Mineral revenues	5.5	7.8	11.1	18.3	18.9	13.7	3.9
Mineral and petroleum tax	3.8	6.2	9.3	15.6	16.9	12.6	3.8
Mining and petroleum income	0.7	0.6	1.2	2.2	1.6	1.0	0.1
Mining levy	1.0	1.0	0.6	0.5	0.4	0.1	0.1
Other domestic revenues	23.1	26.4	23.7	25.1	26.7	25.3	25.4
Grants	6.7	8.3	11.0	7.3	5.2	6.4	5.6
Total expenditures	**36.6**	**40.4**	**42.3**	**41.9**	**36.9**	**40.2**	**44.6**
Total expenditures (gov't definition)	36.6	40.4	45.7	47.2	49.6	49.8	35.6
Recurrent	26.1	27.5	26.2	24.2	25.3	24.2	23.2
Interest	7.2	3.7	2.9	2.5	2.7	2.4	2.3
Development	10.5	12.9	16.1	12.5	9.6	10.5	12.4
Domestic funds	2.0	3.2	3.7	3.8	3.5	3.3	8.3
Infrastructure tax credits	0.4	0.3	0.2	0.2	0.1	0.2	0.2
Additional priority expenditures	0.0	0.0	3.4	10.5	14.6	15.1	0.0
of which:							
Net transfer to trust accounts	0.0	0.0	3.4	4.6	8.7	6.8	-9.0
Debt prepayments	0.0	0.0	0.0	0.8	4.0	2.8	0.0
Budget balance	**-1.2**	**2.0**	**3.5**	**8.8**	**14.0**	**5.3**	**-9.8**
(In percent of overall GDP)	-1.0	1.6	2.7	6.4	10.3	3.7	-7.4
Non-mineral actual balance	-6.8	-5.8	-7.6	-9.4	-4.9	-8.5	-13.7
(In percent of overall GDP)	-5.5	-4.7	-5.8	-6.9	-3.6	-5.9	-10.3
Memoranda:							
End-year balance in trust accounts	0.0	0.0	3.4	7.8	15.7	20.8	10.2
(In millions of PGK)	0	0	400	968	2,176	3,233	1,716
GDP (in millions of PGK)	12,567	12,652	15,195	17,132	18,716	22,246	22,362
Nonmineral GDP (in millions of PGK)	10,316	10,261	11,640	12,448	13,819	15,572	16,774

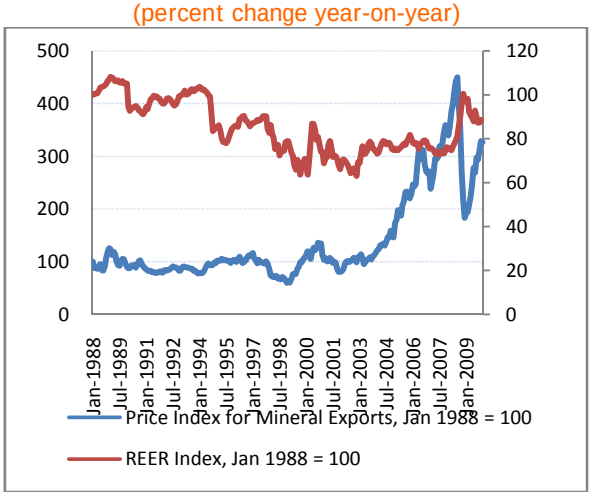
Source: National authorities; IMF; and World Bank staff estimates and projections. e=estimate

E. Is there evidence of Dutch disease in PNG?

Is the rising share of the mineral resource sector to be taken as evidence of a Dutch disease?[4] Sharp increases in PNG's mineral export price have been associated with a substantial rise in the country's real exchange rate (REER) index. In January 2004-July 2008, for instance, the correlation of the monthly changes in the two indices advanced to 0.44 (Figure 23 and Figure 24). Nonetheless, the level of the real exchange rate appears to have dropped after the commodity boom ended in mid-2008.

Figure 23. The real exchange rate appreciated during the recent commodity price boom …

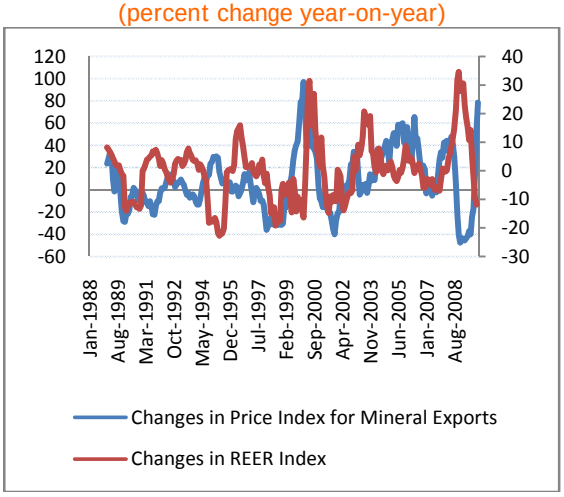
(percent change year-on-year)



Source: Haver Analytics and World Bank staff calculations.

Figure 24. … increasing the correlation between changes in the export price and the REER indices

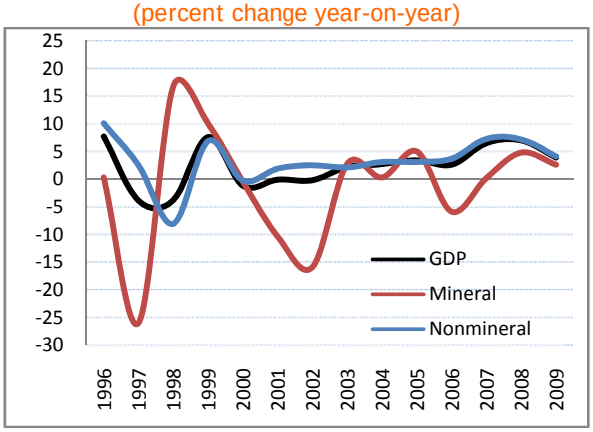
(percent change year-on-year)



Source: IMF and World Bank staff calculations.

Figure 25. But the evidence on mineral versus non-mineral sector growth is mixed …

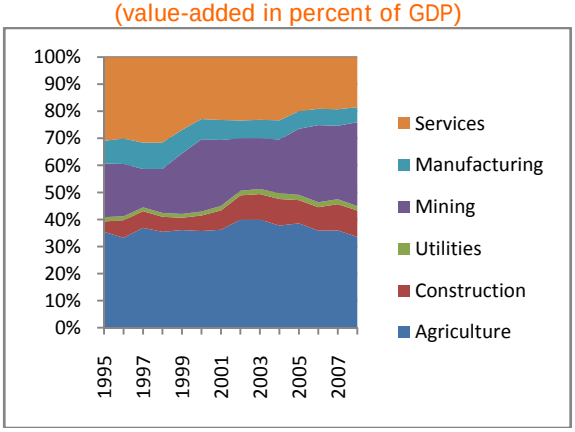
(percent change year-on-year)



Source: PNG authorities and Fund/Bank staff calculations.

Figure 26. … although the mineral sector continues to dominate manufacturing and services

(value-added in percent of GDP)



Source: PNG authorities and Fund/Bank staff calculations.

While there may have been evidence of Dutch disease in the late 1990s, it is hard to find such evidence in recent years. In 1998-2000, mineral export prices rose, the real exchange rate appreciated

[4] Dutch disease refers to the rapid increase in wealth due to a positive shock either from either a resource discovery, the surge in the price of a commodity export or, more generally, large inflows of foreign capital. If the inflow of foreign exchange is converted into domestic currency and boosts spending in the non-tradable (services) sector, the real exchange rate appreciates ("spending effect"). At the same time, productive resources will shift to the non-tradable sector and the booming mineral sector, shrinking the non-mineral sector ("resource movement effect").

and growth in the non-mineral sector lagged that of the mineral sector. In 2004-08, however, when mineral export prices were accelerating and the real exchange rate was strengthening, growth in the non-mineral sector led that of the mineral sector (Figure 25 and Figure 26).

Chapter 2. Lessons from PNG's past episodes of resource-induced volatility

The impact of natural resources on a country's economic and social development is highly dependent on the quality of institutions and policies. In this sense, natural resource endowments are "neither curse nor destiny" --- they provide a stable foundation for development where institutions and polices are sound. Resource abundance alone does little to boost growth prospects and economic development, however. PNG's long history as a mineral resource enclave, including its efforts in operating the Mineral Resource Stabilization Fund and the trust fund accounts, provides valuable lessons the authorities are building on as they prepare for the start of production and the flow of resource-related revenues from the PNG LNG project this decade.

The key lessons that emerge from PNG's history of resource-induced volatility focus on the primacy of maintaining fiscal and macroeconomic stability. Once a stable macroeconomic environment has been created and fiscal policy is effective in limiting the impact of resource volatility on the domestic economy, policymakers' attention can shift more fully to sustainably improve infrastructure, boost the quality of education and workers' skills, improve the business climate and diversify the economy.

F. Four periods of dealing with resource volatility

Developments from independence until the 1989 Bougainville crisis

From independence in 1975 until 1989, the Bougainville Copper Limited (BCL) copper mine provided the bulk of export earnings and fiscal revenues. In 1984 a second major project, the Ok Tedi copper mine, came into operation but tax revenues began to flow only in the mid-1990s. From independence until the mid-1990s the government pursued a 'strong kina' policy by fixing the exchange rate, first to the Australian dollar and later to a currency basket. To stabilize and partially save mineral revenues, a special Mineral Revenue Stabilization Fund (MRSF) was set up in 1974 (see below for more discussion). Because of institutional weaknesses and domestic politics, however, the Fund achieved only limited success in mitigating the impact of natural resource volatility on the economy. In part due to an appreciating but volatile kina, economic growth was sluggish during the period, averaging only 1.4 percent a year while the population was rising by 2.5 percent annually.

The economic boom and bust of the 1990s

Economic volatility in PNG increased sharply during the 1990s. The economy was buffeted by a number of shocks, including a civil conflict around the BCL benefit sharing that began in 1989. The conflict resulted in the closure of the mine, the main source of budget revenue at the time, leading to a difficult macroeconomic adjustment. In the first half of the 1990s, however, the oil fields in the Southern Highlands and the Porgera gold mine were commissioned and tax revenues from the Ok Tedi copper mine started flowing in. Economic growth revived strongly over a period of about 4 years. Based on the expectation of additional extractive projects coming on stream in the medium term and mineral revenue increasing, the government adopted a highly expansionary fiscal policy, including by drawing down resources from the MRSF to finance larger recurrent budget spending and borrowing against the Fund's assets as collateral. The procyclical fiscal expansion in the context of a fixed exchange rate resulted in an

unsustainable drain on foreign exchange reserves that led to the disorderly abandonment of the exchange rate peg in late 1994.

The difficult economic adjustment following the 1994 kina devaluation was exacerbated by inconsistent macroeconomic policies and low commodity prices. From 1995 until 2002, the economy contracted by 0.5 percent a year on average, with positive growth recorded in only two of the eight years. As a result, PNG's per capita GDP dropped from about $1,000 in current prices in the first half of the 1990s to $510 by late 2002, a level last reached at the time of independence in 1975. Inflation, meanwhile, soared before peaking at 15.6 percent year-on-year in 2000. The exchange rate – floating by that period - continued to depreciate, falling by about a third by the late 1990s. The macroeconomic mismanagement was exacerbated by the political instability, with frequent changes in government. Pressure to draw down the Mineral Revenue Stabilization Fund was heightened, resulting in the ultimate closure of the Fund in 2001 (see below).

Recovery through prudent management of the 2004-08 commodity boom

PNG's macroeconomic management improved substantially during the 2004-08 commodity boom. Despite the surge in fiscal revenues, the government capped growth in spending, limited the non-mineral fiscal deficit close to the estimated long-term sustainable level of about 5 percent of non-oil GDP, saved windfall mineral revenues and paid off expensive external debt. Whereas in the ten years prior to the start of the boom in 2004, extractive industry revenues contributed about 5 percent of GDP to the budget, their share almost tripled relative to GDP by 2007 and was still an oversized 10 percent of GDP in 2008.

Prudent management of the terms-of-trade windfall during the boom, together with overall improved macroeconomic policies and discipline, helped real GDP growth surge to 6-7 percent a year by 2008, the highest in a decade. The level of GDP per capita also doubled to $1,050 by 2008. PNG's external position strengthened considerably with foreign exchange reserves peaking at $2.7 billion in August 2008, equivalent to about 5 months' import cover.

The response to the global economic crisis

PNG appears to have weathered the economic crisis better than many countries in the region, with real GDP growth slowing to 4.5 percent in 2009 as estimated by the government. Based on trading partner data, exports fell 22 percent in U.S. dollar terms during the first eight months of the year.[5] The two major petroleum companies nonetheless managed to secure new financing arrangements in early 2009, even at the height of the crisis, sustaining production. And the preparation of the PNG LNG project continued, culminating in its approval in late 2009.

Much of the credit for weathering the crisis goes to the government's loose fiscal policy made possible by fiscal prudence during the recent commodity boom. For 2009 as a whole, the nonmineral fiscal deficit appears to have widened to 14 percent of nonmineral GDP compared with a deficit of 3.6 percent in 2007. The government financed the sharply wider deficit in 2009 by drawing down funds from the trust accounts. During January-September alone, the government reports that drawdowns amounted to about 8 percent of GDP.

[5] Based on trade data from five countries (Australia, Japan, the Philippines, Korea and China) that account for four-fifths of PNG's exports.

While larger than budgeted fiscal easing has been warranted, the likely size of the fiscal expansion pushed the limits of the Medium-Term Fiscal Strategy. An important lesson from this experience is the need to devise a more flexible fiscal rule than the one currently established in the MTFS, and Chapter 3 presents several options on this issue.

The larger development spending during 2009, moreover, provides an important impetus for the government to consider the need for strengthening the process of evaluation, approval, execution and monitoring of public investment projects. Given the substantial infrastructure needs of the country and the scope for fiscal revenues to surge once the PNG LNG project comes fully into operation, attention to reforming public investment planning will help improve the efficiency and efficacy of government spending and help with the ongoing internal integration of Papua New Guinea.

G. Exploiting more fully the country's resource abundance

PNG has diversified its mineral resource base from dependence on gold and copper with the robust exploitation of oil resources in the 1990's and with the imminent start of developing natural gas reserves.[6] There have been other steps in that direction as well. The Napa Napa oil refinery was completed in 2004 and part of production is for domestic consumption, hitherto met with imports. A nickel mine and processing plant in Ramu will commence PNG's first commercial production of nickel and cobalt in 2010.

The exploitation of natural resources in PNG is challenging given the country's mountainous terrain and poor infrastructure. The Western province, for example, an important mining region and the of the OK Tedi mine, has access to substantial royalties from mineral projects. Efforts to improve the maintenance of the road network have been stepped up only of late, however.

PNG's customary system of landownership make it difficult to purchase or lease land for economic purposes and to compensate the true landowners with royalties from mining and oil operations. Only some 3 percent of the land in PNG is in private hands. The remainder, unalienated land, is owned under customary title by traditional landowners**,** but the precise nature of this communal ownership system varies from one culture to another. Identifying the members of customary landowning groups and therefore the legitimate owners of land is problematic and hinders investment and development projects. Disputes between mining companies and landowner groups, for instance, often devolve on the issue of whether the companies entered into contractual relations for the use of land with the true owners.

H. Lessons from the operation of the Mineral Resource Stabilization Fund

The authorities set up the MRSF in 1974 through a legislative act to help stabilize revenues from gold and copper mining and, after 1992, petroleum.[7] At the time the MRSF was established, PNG also began to try to stabilize the prices for coffee, cocoa, copra and palm oil through the creation of commodity price stabilization funds.

[6] This diversification has not reduced the overall vulnerability to commodity prices, however. During 1983-2009, for example, the (pair-wise) correlation between the monthly international prices of PNG's main exports amounted to 0.82- 0.86.

[7] This section is based in part on information from the PNG Treasury and from Davis et al (2001).

The MRSF received resource-related revenues and made transfers to the Treasury on the basis of both rules and discretion. Every year, the Fund's Board – composed exclusively of government officials – made medium-term price projections and estimated the amount to transfer to the budget using a five-year fiscal sustainability framework.

Observers have assessed the performance of the MRSF as mixed. There were several factors.

- Firstly, while initially the Fund was set up in foreign currency in line with best practice, it was subsequently converted into kina. The public purse was, as a result, not protected from the depreciation of the local currency and the low domestic interest rates earned on the Fund balances. A similar problem has characterized the experience with trust fund accounts.

- Secondly, the Fund's Board comprised exclusively government officials that found it difficult to resist government pressure for larger withdrawals when they ultimately started coming in the 1980s. The initially rigorous Fund rules, and especially the limit that restricted the amount transferred to the Treasury not to exceed the transfer in the previous year by more than 20 percent, were relaxed in 1986 through an amendment of the act that established the MRSF, leading to increasingly larger withdrawals from the Fund.

- Thirdly, the Fund was not well integrated with the budget and overall fiscal policy. The government, moreover, began borrowing against Fund balances, including from the central bank, boosting the level of expensive government debt.

- Other than the design issues, difficulties in making price projections escalated with the oil crises in the 1970s and the high inflation and severe recession in the U.S. in the early 1980s. Similarly, in the late 1980s and early 1990s, expectations were of sizable surpluses by the end of the 1990s. As a result of large withdrawals, depressed prices and smaller revenues, however, MRSF's balances began declining during the 1990s. The government ultimately concluded that the Fund was not successful in insulating spending from fluctuations in commodity prices or curbing undue political influence on spending decisions. The MRSF was closed in 2001 and the remaining balance were used to pay down expensive government debt owed the central bank.[8]

I. PNG's experience with trust fund accounts

After the closure of the MRSF, the PNG authorities began saving windfall revenues in trust fund accounts held in domestic currency with the domestic banks or with the central bank. As of late, there are about 20 accounts in which windfall revenues are saved, accounting for just a small fraction of the 216 trust accounts that exist for managing projects and helping carry over funds from one fiscal year to the next. The use of trust fund accounts for budgetary purposes was established in PNG under the 1995 Public Finances Management Act. The goal was to insulate funds, including mineral revenues, from budgetary politics and spread expenditures over a number of years given concerns that unspent resources in the government Revenue Fund will be used for other purposes. These concerns were especially strong in relation to development resources because of the poor planning and implementation capacity of the line ministries. The growth of the trust accounts has paralleled the recent economic boom.

The importance of the trust accounts has been significant. Balances in trust accounts rose from the equivalent of about 2 percent of GDP at the end of 2005 to about 14.3 percent at the end of 2008. The nearly PGK3.8 billion ($1.4 billion) in mineral revenues paid into trust accounts during the commodity

[8] See also Davis et al. (2001) and World Bank (2003).

boom was intended to both pre-fund social and economic development projects and pay off more expensive external debt. In the first nine months of 2009, however, the government withdrew PGK1.7 billion from the trust accounts, equivalent to about 8 percent of GDP, to fund a stimulus spending plan, and deposited another PGK400 million in excess mineral revenues, reducing the balances on trust accounts to PGK2.1 billion, 6 percent of GDP, in end-September 2009.

Whether for saving mineral windfalls or for general fiscal management, the use of trust fund accounts has been suboptimal. From a general fiscal perspective, spreading government funds across many trust fund accounts impedes governance, transparency and does not provide adequate information to understand and plan the fiscal stance. While the authorities have been publishing annual trust account summaries, doing so is not legally required. The management responsibilities for the accounts are unclear, and development of the trust fund approach to managing windfall revenues remains *ad hoc.*

The shortcomings related to the use of trust accounts for saving mineral revenues are also numerous and equally serious. Firstly, the decision to hold trust fund accounts in domestic currency does not help limit pressure on the currency from volatile commodity-related revenues, exposes the authorities to substantial exchange rate risk, and complicates macroeconomic management. Secondly, the yield on most accounts is reported to be lower than 1 percent a year in nominal terms, resulting in a negative return in real terms after adjusting for inflation. To mop liquidity, the central bank has been issuing securities yielding 5-7 percent, while the commercial banks have used the money in the trust accounts to buy PNG Treasury securities yielding 10-12 percent. As a consequence, the authorities have been incurring substantial fiscal losses. Thirdly, trust fund accounts represent a large and unstable source of funding for the commercial banks, and the sharp drawdown during 2009 must have exerted substantial pressure on PNG's financial institutions.

Another shortcoming – and it relates not only to the trust accounts but also to the Mineral Revenue Stabilization Fund – is the inadequate disclosure regime, including among local governments. To date, no known project financial reporting of the trust account withdrawals in 2009 have been filed or made public. There is also concern that some of the use of trust accounts in 2009 was not fully consistent with the MTFS. There was no mechanism to ensure that resources were directed toward public investment in priority areas.

Some have claimed that the use of trust accounts helped reduce popular pressure for spending the windfall revenues and has smoothed spending over time. The claim is based on the earmarking of resource for a development purpose (infrastructure, education, or others) even if spending is planned to be undertaken over the medium term.[9] Arguments in favor of this claim include the slow rate of disbursement in some accounts given limited administrative capacity in some line ministries. These arguments are more properly addressed in the overall fiscal context, however. Others have claimed that trust fund accounts are used simply to carry over revenue from one year to the next. This is also problematic, as it removes funds from overall fiscal management control and countrywide fiscal prioritization. Given the size of these funds, the macroeconomic impact is substantial if a line ministry or agency decides to spend or delay outlays financed from a trust fund account.

The authorities are mindful about the need to address the shortfalls of using trust fund accounts for saving and managing resource revenues. Gradual improvements to the current model are possible and could yield positive results. For example, measures could include shifting the resources from domestic currency into foreign exchange, moving the trust accounts from the commercial banks to the central bank, and legislating regular and detailed publication of information. While implementing these measures will be better than preserving the *status quo*, much inefficiency will remain – and it can be tackled only

[9] Batten (2008).

through a more comprehensive reform, including by merging all trust fund accounts into a single Fund (see below).

J. Strengthening the Medium-Term Fiscal Framework

An important lesson from PNG's recent experience is the importance of a credible and robust medium-term fiscal framework for maintaining fiscal and macroeconomic stability. PNG's Medium-Term Fiscal Strategy 2008-2012 improves substantially on previous strategies, including by setting forth non-mineral fiscal rule in line with best practice (see Chapter 3 for more details). The rule limits the ongoing non-mineral deficit to 4 percent of GDP a year, with "ongoing" referring to current outlays and capital spending on projects that have already started. The ongoing non-mineral deficit is defined as the difference between "normal" revenues (structural revenues in the economic literature or in other countries) and overall spending, and normal revenues equal to the sum of non-mineral revenues and an estimate of trend mineral revenues based on average price levels during 19199-2003 and the projected price for 2010-2012.

The MTFS stipulates that up to 30 percent of additional mineral revenues – revenues larger than 4 percent of GDP - be used for debt reduction and the remainder for public investment. The additional public investment is limited to 4 percent of GDP a year, provided spending is directed toward achieving goals under the country's Medium-Term Development Strategy. Amounts of excess revenue not spent are saved in trust fund accounts. In summary, the MTFS limits the non-mineral balance to 4-8 percent of overall GDP. Under the 2010 budget, the government intends to use all of the additional mineral revenues for investment projects and none for debt repayments.

Building on PNG's positive experience and developments in other countries, the rules under the MTFS could be improved, along with the institutional framework for saving mineral revenues. This is the topic discussed in the next Chapter.

Chapter 3. Institutional structures and arrangements for managing resource volatility

Building on PNG's recent experience and informed by developments in other resource-rich countries, the authorities face the challenge and opportunity of strengthening further the rules and institutions of good fiscal policy and management of resource windfalls. The projected start of production by the large PNG LNG project holds substantial promise for PNG's citizens if managed wisely. Risks to macroeconomic stability and future prosperity will increase, however, if spending increases by more than is sustainable. Additional challenges are likely to result from the sustained or perhaps increased volatility of commodity prices in the near- to medium-term, reflecting the convergence of the global economy to a post-crisis equilibrium and the withdrawal of monetary and fiscal stimulus.

Good fiscal policy and the saving and management of revenues from exhaustible resources need to be seen in the context of the overall fiscal framework. That framework includes, but is not limited to, a good taxation regime for the natural resource sector, comprehensive government budgets, thorough costing of all government programs, budget and spending transparency, stronger medium-term fiscal and expenditure frameworks, and a robust regime for public investment planning, execution and monitoring. This section will focus only on the fiscal rules and institutional arrangements for saving and managing resource-related revenues.

The rest of the chapter is organized as follows. Section A discusses the key concept of a sustainable long-term fiscal balance in a resource-rich economy. The discussion should help with the calculation and sensitivity analysis once data becomes available. Section B discusses fiscal rule framework, including a structural balance rule which formalizes the sustainable long-term fiscal balance, government spending rule, and a debt rule. Section C discusses Natural Resource Funds, including PNG's experience with the Mineral Revenue Stabilization Fund from 1974 until 2001 and trust fund accounts thereafter. Section D concludes the chapter.

A. Fiscal policy for a resource-rich country

This section focuses on the general principles and rules related to the formulation of optimal fiscal policy in PNG and the calculation of the long-term sustainable fiscal stance. Regardless of government preferences on sharing the country's wealth between current and future generations, the level and profile of extraction and macroeconomic policies to diversify the economy, the sustainable long-term fiscal stance is best expressed as the noninterest (primary) non-mineral fiscal balance measured relative to non-mineral GDP.[10] A fiscal rule based on the sustainable long-term fiscal stance, corrected for the current level of commodity prices relative to a reference level, or for the state of the economy in the business cycle, provides one important tool for governments in resource-rich countries to introduce counter-cyclical fiscal policies.

Lack of data on the forthcoming PNG LNG project does not allow a reliable calculation of the sustainable long-term balance at the time of this writing. As a result, the section discusses the key inputs and issues in calculating the balance. Detailed quantitative analysis of the long-term balance could be undertaken if data become available from the government and the PNG LNG project partners.

[10] Issues related to the system of taxation that helps collect a particular level of non-oil revenues or to the choice between current and capital expenditures are of crucial importance, but are not the focus of the discussion.

The conceptual approach to estimating the sustainable long-term balance

It is by now a standard to think of the wealth of a resource-rich country as the sum of the country's existing financial wealth and the mineral wealth underground, the latter expressed as the present discounted value of future resource-related revenues. How to share the overall wealth across generations, how much natural resources to extract and how to prepare for the time when the physical commodities are exhausted are some of the key decision a government needs to make. The optimal fiscal policy is then derived as a path for the noninterest (primary) non-resource balance over time.[11]

There are two principal approaches to sharing resources between current and future generations. The *permanent income* approach calls for preserving the overall stock of wealth – the sum of the financial assets accumulated thus far and the mineral reserves underground – and using in every period only the permanent income that wealth yields. Calculating the overall wealth is demanding and depends on many important assumptions. These include the recoverable level of reserves – both identified and likely to be identified through future work, the production profile over time, the cost for extracting the reserves, the projected future prices, and the appropriate discount rates. As a result, even calculations that acknowledge the substantial uncertainties in all assumptions are subject to large estimation errors. In the case of PNG LNG, for example, the development of the field may change estimates of its potential reserves, the ease of exploitation, and the potential production profile. Therefore, the permanent income rule offers a general useful benchmark that informs the decision process, but it would be unwise to use the precise calculation for practical purposes.

The *bird-in-the-hand* approach, meanwhile, prescribes that every year governments use no more than the annual return on the already accumulated financial wealth. This rule - successfully used by Norway's Government Pension Fund–Global (the former Petroleum Fund) - is more restrictive than the permanent income rule, but it is also useful as a practical benchmark. In case of large future resource flows, as in PNG, the rule will substantially undershoot what could be a sustainable sharing of resources with the current generation, however.

Modifications of the two approaches are possible but need to be considered with caution if there is more limited administrative and absorption capacity. The permanent income rule implies that wealth is shares equally between current and future generations. Governments in countries with large development needs may feel that larger spending in current periods than implied by the permanent income rule is fairer and decide to devote larger resources to strengthening the country's infrastructure and human capital. While such a line of reasoning may be appealing in principle, in practice governments find it difficult to revert to a lower level of use of permanent wealth in future.

Inputs needed for calculating the sustainable balance

In addition to making choices on the key issues articulated in the previous section, the calculation of a sustainable fiscal balance requires detailed data inputs.

Firstly, realistic assumptions on the resource flows and commodity prices are crucial. Besides quantities, estimating commodity prices has proven to be a process typically fraught with great uncertainty. Many calculations in resource-rich countries have resulted in unreliable estimates due to unrealistic price projections, often influenced by inflated expectations about the pace of extraction of

[11] See Barnett and Ossowski (2002), Budina and van Wijnberger (2007) for examples.

natural resources or about future prices. Research and practical experience suggest using longer-term moving averages to project prices, weighing less recent price increases. Ley (2008) in the case of Zambia's copper fund, advises to estimate a long-term average in log terms and drop the positive drift term (about 1 percent a year) to arrive at a more conservative estimate.

Second, the analysis needs to take into account the institutional framework for managing resource revenues and, at the same time, help derive the rules for that framework. That framework will naturally formalize the authorities' strategy for using natural resources, including the crucial decisions on how to share the resource wealth over generations.

Thirdly, a realistic macroeconomic framework is crucial for the analysis. That framework needs to project consistently the interactions between the resource and non-resource sectors and present realistic growth rates. The treatment of the exchange rate is also of utmost significance – and it will allow the authorities to take into account the need for consistency between fiscal and monetary policies. Typically, countries with large resource-related inflows have experienced significant pressure on the real exchange rate to appreciate. Such pressure is likely to be moderated should resources are managed offshore. Even then, capital inflows may well surge in anticipation of stronger economic activity in the future. Tighter monetary policy in an environment of strong and rising capital inflows may add to pressure for real appreciation, asset price bubbles and balance of payment risks.

The sustainable fiscal balance, properly tested for sensitivity to the assumptions and analyzed against past developments, is a key component for the practical implementation of prudent fiscal policy. For that purpose, the long-term balance needs to be translated into a fiscal rule by allowing adjustments for short-term fluctuations in commodity prices and the economic cycle to allow for countercyclical fiscal policy. This is the focus of the discussion in the next section.

B. Fiscal rules: good fiscal policy in practice

Fiscal rules are broadly defined as limits or restrictions on fiscal discretion, signaling the commitment of the government to particular set of fiscal policies. More narrowly, fiscal rules are limits on fiscal indicators, such as the fiscal balance, taxes, the growth or composition of spending, and government debt or borrowing. Fiscal rules differ based on whether they are established by law (typically, in an organic budget law or fiscal responsibility legislation) and whether they have numerical values. Rules also differ by the coverage of the government sector they refer to. Rules covering the general government rather than just the budgetary central government offer scope for more comprehensive government control, but they may suffer from data delays that hamper prompt corrective action. Narrowly-defined rules, by contrast, can easily be evaded as governments can shift spending from one level to another.

As with every commitment device, robust definitions are needed to signal credibility, but overly rigid or complex rules often become unsustainable. A similar trade-off exists between accuracy and simplicity, especially in countries with limited capacity and transparency. More accurate or counter-cyclical rules (such as those that adjust for the business cycle) are data-intensive and may produce a rule that may not command enough credibility if the quality of the data is patchy.

Overall, the record on fiscal rules is somewhat mixed despite the good intentions. Analysis of fiscal rules in the EU, for example, for all levels of government, suggests that they have been associated with

positive fiscal outcomes for the EU on average.[12] For some countries, however, EU's Maastricht Treaty (now Lisbon Treaty) and the Stability and Growth Pact (SGP) have not been effective in keeping fiscal deficits below 3 percent of GDP. Greece, for example, has exceeded this threshold in every year since 2000, as has Hungary since its EU accession in 2004.[13]

Fiscal rules are neither sufficient nor necessary for prudent fiscal policies. This consideration is especially relevant for countries with less developed fiscal institutions and weaker implementation capacity, where the commitment mechanism of the rules needs to be supplemented by additional institutional arrangements, procedures and incentives to provide for sound fiscal policy (Box 1).

Box 1. When Do Fiscal Rules Work?

Fiscal rules are effective only when they are supported by other changes in budgeting including:

- lengthening the time frame from a single year to the medium term;
- baseline projections (or forward estimates) of future budget conditions;
- estimates of the impact of policy changes on future budgets;
- procedures for monitoring budget out-turns and for taking corrective action when necessary; and
- enforcement mechanisms to assure that opportunistic politicians do not breach the rules.

Fiscal rules will not make much of a difference if the budget horizon is limited to a single year, monitoring and enforcement are weak, and future impacts are ignored when budget decisions are made. Fiscal rules also depend on political leaders who are willing to operate within the constraints, even when they are thereby compelled to take unpleasant actions such as reducing services or boosting taxes. When political will is lacking, as is often the case, compliance will be weak. But if political rules work only when politicians want them to, why have them at all? If political support is forthcoming, rules are unnecessary; if it is not, rules will not work. I will return to this issue later in the paper. For the present, however, it suffices to aver that rules

Four interlocking lines of reasoning feed into the fiscal rules movement. One is the argument that sound budget procedures often produce unsound budget outcomes. The second is burgeoning evidence that budgeting in democratic countries is inherently biased to produce expansionary outcomes. The third is the realization that abandonment of strict balanced budget rules has left budget-makers without firm guidance on appropriate fiscal aggregates. The final strand is a body of research which argues that differences in budget outcomes among countries are due to differences in the rules under which governments make tax and spending decisions. These strands have fused together to build a strong case for fiscal constraints to offset the perceived defects of conventional budgeting.

Source: Allen Schick, 2003, "Chapter 1 The Role of Fiscal Rules in Budgeting," OECD Journal on Budgeting, volume 3, No. 3, OECD.

Important institutional arrangements for strengthening the credibility of fiscal rules are provided by a robust Medium-Term Fiscal Framework and a Medium-Term Expenditure Framework, accompanied by a fiscal responsibility legislation and a fiscal risk statement. The fiscal framework typically lays out the projected path for government revenues and expenditures based on a clearly articulated set of assumptions. The expenditure framework, on the other hand, lays out in detail the composition of government spending. The fiscal responsibility legislation focuses on transparency and

[12] See Debrun (2008).

[13] Moreover, government debt in many EU countries remains above the 60 percent limit in the SGP. In 1997, 12 out of the current 27 member states had debt exceeding 60 percent of GDP. The number declined in half by 2001, thanks to sustained fiscal consolidation efforts even after countries joined the eurozone in 1999 (for Greece, 2001), before rising again to 10 by the end of 2009, suggesting limited progress over a decade. The median level of debt has declined consistently, however, and is down to about 48 percent of GDP from 58 percent a decade ago.

governance and sets explicit responsibilities for the fiscal authorities. The fiscal risk statement is a detailed assessment of the risks that may affect the government's fiscal outcome, including, for example, a quantification of the impact from macroeconomic developments, public enterprises, local levels of government and extrabudgetary funds, contingent liabilities and others. Australia and New Zealand were the pioneers of fiscal risk statements and the key proponents until recently. But many developing countries have introduced fiscal risk statements, including Brazil, Colombia, Indonesia (2007), Thailand (2008) and Pakistan.[14]

Fiscal balance rules

A wide variety of fiscal balance rules exist. Some set limits on the *overall fiscal deficit* (as in the European Union's Growth and Stability Pact, the province of Alberta in Canada, Peru and India), the *current balance* or the *fiscal deficit excluding government investment spending* (Brazil, India and Venezuela), or the *cyclically-adjusted balance* (Chile, Sweden, and the UK). Some rules are set in cyclically adjusted terms in a multi-year context (New Zealand, Estonia, European Union) to allow scope not only for the operation of automatic stabilizers, but also for active countercyclical discretionary action.

For resource-rich countries, the relevant rule sets a limit on the noninterest (primary) non-mineral balance, often adjusted for fluctuations in commodity prices or the business cycle. (Fiscal balances adjusted for the level of output or commodity prices relative to an equilibrium level are called *structural balances*, and the paper will refer to the rule as a *structural balance rule.*) This rule helps limit the pro-cyclicality of fiscal policy in two ways: firstly, by removing the mineral balance (as discussed in the calculation of the sustainable long-term balance), and secondly by allowing for larger (smaller) deficits in times of lower (higher) commodity prices and slower (stronger) economic growth. Fiscal policy with a structural balance rule will need to be supported by a stabilization fund, as discussed in the following section. (The stabilization fund can also serve as a saving or financing plan, there is no need for separate funds.)

The following examples offer a flavor of the different ways structural balance rules can be formulated:

- Norway has a fiscal balance rule limiting the *non-oil structural deficit* to 4 percent of the capital of its wealth fund in line with the bird-in-the-hand approach. There are no specific adjustments to the rule, and compliance is left to government discretion – of course, with proper surveillance by parliament and strict audit.

- Chile introduced a *structural surplus* rule of 1 percent of GDP in 2001 and formalized it into the country's fiscal responsibility legislation in 2007. The surplus is adjusted annually for the level of copper prices (the key mineral resource) relative to a reference price estimated by a panel of experts and for the level of GDP relative to trend. This rule offers a relevant and important lesson for the improvement of PNG's structural balance rule.

The rules under the MTFS as described in the previous Chapter are a substantial improvement over the historically volatile pattern of fiscal policy in PNG. To continue the excellent progress made under the MTFS, there are several options that could be considered to help refine and deepen the effectiveness of the authorities' management of mineral wealth:

[14] See IMF (2009) for an overview.

- The overall limit on the non-oil deficit could allow for annual adjustments for the level of commodity prices relative to a reference level and for the level of economic activity relative to the business cycle. Care needs to be exercised not to sacrifice simplicity for difficult-to-attain accuracy, however, until reliable data on the business cycle is available.

- The MTFS could provide for regular annual calculations of the *normal mineral revenues*.

- The limits on the non-oil balance could be re-defined relative to non-oil GDP and set excluding interest payments.

- Back-of-the-envelope calculations suggest that a fiscal deficit of 4-8 percent of GDP may not sustainable in the current environment. A more conservative estimation of the level of *normal revenues* as per the MTFS (structural revenues in the literature) may be attempted to help ensure fiscal sustainability. Under the MTFS, the authorities have committed to revisit the rule this year.

- There does not appear to be adequate control to ensure that all resources withdrawn from the trust accounts used to save mineral revenues are for public investment spending in the priority areas of the MTDS. This issue is discussed in more detail in the section on Nonrenewable Resource Funds.

Government expenditure rules

Rules on government expenditures are also diverse. Some countries limit overall *general government spending* (Bulgaria at 40 percent of GDP), others have limits on expenditures other than for interest payments, or *primary outlays* (Argentina, Ecuador, Peru, Sweden), interest payments (Colombia), and the wage bill (Brazil, Colombia). It is important to recognize that these are *limits* rather than targets for government spending and as such allow both for countercyclical fiscal policy and for government discretion to keep expenditures lower if efficiency and effectiveness cannot be assured. Setting expenditure targets in line with potential GDP growth (Ecuador) can help support a neutral stance with respect to the cycle.

There are two areas for the consideration of the authorities related to PNG's level of government spending. Firstly, sustainability of the level of spending implied by the deficit rule articulated in the MTFS could be reexamined. Secondly, fiscal revenues are likely to surge when the PNG LNG project comes into operation later this decade. Unless checked, the surge in revenues will likely lead to a rapid increase in spending – and such an increase has typically challenged economic stability in other countries. A rule limiting the increase in *(primary) government spending relative to GDP* to a couple of percentage points a year or over a few years could be considered. (If the authorities decide to also address issues of macroeconomic and fiscal sustainability, an alternative rule limiting the increase in the *non-mineral primary deficit* could also be examined.) Such a spending rule will help the authorities limit spending when production volumes surge. The structural balance rule, by contrast, is generally devised to smooth expenditures should prices – not volumes - rise more than a threshold.[15]

[15] The authorities in Mongolia are also considering adopting a similar rule given the projected surge in copper production at the large Oyu Tolgoi copper mine in the medium term.

Government debt rules

Many governments have introduced limits on the level of government debt. There is substantial evidence that rules on government debt help limit borrowing and the increase in borrowing costs. In New Zealand and the United Kingdom, the government is required to set a medium-term ceiling for the debt ratio and an adequate floor for public net worth. EU's Maastricht criteria and the excess deficit procedure that each member state must abide to limit general government gross debt to 60 percent of GDP, barring exceptional circumstances. To avoid free-rider behavior, Brazil sets debt limits for each level of government. In Poland, the constitution limits government debt to 60 percent of GDP, while the Public Finance Act prescribes detailed measures to be undertaken if government debt exceeds 50 percent of GDP and then 55 percent of GDP.

PNG has reduced government debt substantially from about 71.5 percent of GDP in 2002 to about 30 percent in 2008. The favorable recent history notwithstanding, the 2010 budget predicts additional mineral revenues of PGK 502 million but allocates them fully to public investment, programmed through the Development Budget. Given the significant amounts involved in financing the government's equity stake in large projects such as the PNG LNG, and the need to make decisions on financing government stakes in upcoming large projects, the authorities may want to introduce a limit on government debt to help manage competing pressures. One of the considerations in setting the debt limit could be the thresholds used for the purposes of the IMF-World Bank low-income country DSA framework. For a country rated as a weak performer for policies and institutions, as is PNG at present, the threshold for the present value of government debt is 30 percent of GDP. For a medium reformer, however, the ratio rises to 40 percent. Should the authorities decide to pursue such an option, setting the specific value will require further detailed analysis.

C. Nonrenewable Resource Funds

Many countries faced with managing large, uncertain and volatile revenues from exhaustible natural resources have established a saving or stabilization Nonrenewable Resource Fund (NRF).[16] The international experience has been broadly positive and even setbacks in several countries provide valuable lessons that could be used to help the PNG authorities improve the management of resource-related revenues and bolster the effectiveness of fiscal policy (Box 2).

NRFs are entities that receive all resource-related revenues, including but not limited to corporate income taxes, royalties, and dividends.[17] There is a substantial variety in the main objectives and design features of NRFs created since the early 1970s across the world. Some of the key types of funds are listed below:

- Some countries, including PNG and Chile, established *Stabilization Funds* to help reduce the impact of volatile revenues on the economy. Some Stabilization Funds have price or revenue thresholds (*Contingent Stabilization Funds*, as in Russia and Kazakhstan) and are designed to accumulate resources when either the price or the revenues are above a certain threshold and transfer resources to the budget when below the threshold.

[16] The term Nonrenewable Resource Fund is used generically in this note.
[17] The discussion is informed by Davis, Jeffrey et al. (2001)

Box 2. Objectives and Design Features of Selected Nonrenewable Resource Funds

Country/State	Name	Stated Objectives(s)	Date Established	Accumulation Rules	Withdrawal Rules	Control
Alaska(U.S.)	Alaska Permanent Fund	Savings	1976	50 percent of certain mineral revenues (increased from 25 percent in 1980).	Principal (inflation-adjusted since 1982) invested permanently. Use of earnings decided by Governor and Legislature.	Independent Trustees, ultimately Governor and Legislature.
Chile	Copper Stabilization Fund; since 2007, Economic and Social Stabilization Fund and Pension Reserve Fund	Stabilization	1985, activated in 1987	Until 2007, based on a reference price determined by the government. Since 2007, all resource revenues flow to the budget.	Transfers to the budget (and extra budgetary lending) based on discretionary reference price determined by the government.	Ministry of Finance, Central Bank, and state copper company (CODELCO).
Kuwait (GRF)	General Reserve Fund	Stabilization and savings	1960	Residual budgetary surpluses.	Discretionary transfers to the budget.	Minister of Finance, Central Bank governor, and other officials.
Kuwait (RFFG)	Reserve Fund for Future Generations	Savings	1976	10 percent of all government revenue.	Discretionary transfers to the budget (with National Assembly approval).	Minister of Finance, Central Bank governor, and other officials.
Norway	State Petroleum Fund; since 2001, Norway Government Pension Fund - Global	Stabilization and savings	1990, activated in 1995	Net government oil revenues.	Discretionary transfers to the budget to finance the non-oil deficit (approved by Parliament).	Ministry of Finance.
Papua New Guinea	Mineral Resources Stabilization Fund	Stabilization	1974, closed in 2001	Government mineral revenues.	Government discretion though based on estimates of long-run prices.	Government.
Venezuela	Macroeconomic Stabilization Fund	Stabilization	1998	Since 1999, 50 percent of oil revenue above reference values set by decree for 1999-2004.	Transfers to the budget and other state entities based on reference values, set by decree for transfers	Parliament and the Executive.

Sources: Davies et al (2001), Norway central bank, and World Bank staff.

- Other countries have set up *Savings Funds* with the goal of saving the resource-related wealth for future generations (Australia's Future Fund and Timor-Leste's Fund). *Financing Funds* (as in Norway, where the authorities transfer budget surpluses to the Fund and use up to 4 percent of the Fund's assets to finance the non-oil deficit; or as in Australia's Nation-building Funds established

from the start of 2009) could be considered a version of the Savings Fund. *Financing Funds* may not provide the discipline that many developing countries need to limit the effect of resource volatility on the budget and the economy while saving resources for the future. However, their explicit integration with the budget makes them cases of international best practice, a feature that has led practitioners to explicitly recommend having such integration for all new funds created, whether saving, stabilization, or financing.

- Most countries have set up *Stabilization and Savings Funds* that combine the stabilization and saving goal. In the Pacific, such Funds include Kiribati's Revenue Equalization Reserve Fund (RERF), the Compact Trust Funds (CTFs) of the Marshall Islands and Micronesia set for the years after 2023, and the Trust Funds of Tonga and Tuvalu.[18]

Governance, transparency and commitment to sound fiscal policy

Clear governance and transparency arrangements for the NRFs are critical for ensuring that the government does not have influence on the Fund beyond those legally required. The law establishing the Fund should clearly spell the Fund's objectives, rules, governance structure and set clear guidance to prevent conflicts of interest. The law also needs to set strict requirements for regular disclosure of Fund assets, returns, outflows and inflows, general asset allocation, the level of risk the Fund is allowed to take, and other key developments. Clear rules for changing the statute of the Fund and the mechanism for saving and withdrawal are also needed, as are regular audits by internationally recognized companies and routine performance evaluations. Australia's Future and Nation-building Funds, Chile's and Norway's Funds all offer relevant examples of drafting and implementing robust governance, transparency and disclosure standards.

Establishing a NRF with a clear governance structure is important, but country experience suggests that no institutional arrangement can function without steady and sustained political commitment to good fiscal policy. While countries with such a commitment could in principle manage resource-related flows without the structure of the NRF, it is often the case that governments are better able to resist spending pressure if there are constraints on resource-related revenues. Such constraints, moreover, help limit discretion in periods of rising commodity prices when distinguishing between temporarily and permanent factors becomes especially problematic.

The Fund and the budget

The Fund needs to be fully integrated with the government budget. Such integration allows for unified control and prioritization of government spending and their financing and helps ensure that all expenditures are subject to the regular budgetary approval process. The government, moreover, has maximum impact on the overall fiscal stance.

This approach argues against having two or more separate budgets – one financed from nonmineral revenues and the other from the Fund (or from trust accounts). All revenues need to pass through the budget. When expenditures do take place off budget these outlays need also be subject to the same parliamentary control as regular budgetary spending. All spending, moreover, needs to be executed by the Treasury.

[18] See also Le Borgne and Paulo Medas (2007).

The existence of a Fund should not imply that a new institutional mechanism is created. In some countries, specifically Norway, the Fund is a separate entity in name only, i.e., it is a virtual fund. For this to be possible, however, there has to exist an entity that can carry out asset management functions under delegation from the government (the central bank, in the case of Norway). All other issues relevant to a Fund as a separate legal entity remain, including governance arrangements, transparency, reporting requirements, and rules for deposits and withdrawals.

Asset Management Strategy

Since NRFs hold substantial assets, their investment strategy needs to be crafted carefully and reviewed periodically. The strategy, usually prepared by the Ministry of Finance, needs to define the level of risk and diversification for the Fund, prudential investment rules, possible time horizon and even the desired level of liquidity. The asset management strategy of Norway's Government Pension Fund – Global presented below offers a valuable example. Chile's Economic and Social Stabilization Fund also has a transparent investment policy: two-thirds of the assets are held in foreign government inflation-indexed bonds, about 30 percent in foreign money market funds and 3.5 percent in other sovereign bonds.[19] Australia's Future Fund and Nation-building Funds offer a broader investment mandate: an average return of at least inflation plus 4.5-5.5 percent a year for the Future Fund, and 0.3 percent above the Australian three-month bank bill swap rate while minimizing the probability of capital losses over a 12 month horizon.[20]

To help limit exchange rate volatility and curb pressure on macroeconomic and monetary policies, the Fund is best invested in foreign currencies abroad. This is an especially relevant consideration for PNG, given the negative experience with the MRSF and the trust accounts held in local currencies with the domestic banking system. The Fund should also not investment in the government's own securities denominated in foreign currency, as this will create a substantial conflict of interest and circumvent the guidelines on financing the budget through transparent and well-defined withdrawal rules. Moreover, the Fund should not be permitted to borrow or lend, and its assets should not be used as collateral for government borrowing. All government borrowing, moreover, needs to be centralized in the Ministry of Finance/Treasury.

Country experience: Norway and Chile

Norway

Norway is one of the best examples for designing a NRF. In Norway, the world's sixth largest oil exporter and second largest natural gas exporter, the government deposits excess mineral revenues into the Government Pension Fund-Global (former Petroleum Fund set up in 1990). With assets of about $475 billion at the end of 2009, the Fund is the world's second largest sovereign wealth fund after Abu Dhabi. The strict accountability and transparency rules of the fund have become the *de* facto international standard; the Fund, moreover, is known for its stated and implemented policy on ethical investment. The key characteristics of the Fund are:

- **Basic operational framework**: The fund is fully integrated with the government budget. By law, the government transfers all oil-related revenues to the Fund. The transfers from the Fund to the

[19] For details, consult: http://www.hacienda.gov.cl/english/fondos_soberanos/politica_de_inversiones.php.
[20] See: http://www.futurefund.gov.au/__data/assets/pdf_file/0018/3546/15333_FF_AR_WEB.pdf

budget are for financing the non-oil fiscal deficit, and the law explicitly forbids the use of funds for purposes not prioritized in the regular budget processes. In 2001, the parliament approved new fiscal guidelines that require the annual transfers from the Fund to the budget (for financing the non-oil deficit) to correspond to the expected return on the Fund, or 4 percent. It is expected this guideline to be met over the business cycle, allowing, as a result, for larger transfers during a recession and smaller transfers in good times. For example, during the 2003 downturn the transfers were higher than 4 percent and after 2006 they were lower.[21] Some authors have argued that given population ageing and intra-generational equity, Norway should withdraw less from the Fund at present.

- **Management**: The government has delegated the operational management of the Fund to the central bank, with a mandate stipulated by the Ministry of Finance.[22]

- **Asset management**: The strategy of the Ministry of Finance is reflected in a benchmark portfolio that forms the basis for the central bank's management of the Fund. The bank selects a portfolio that tracks within a stipulated margin of error the returns on the benchmark portfolio. The capital is invested in non-Norwegian financial instruments (bonds, equities, money market instruments and derivatives), and in 46 developed and emerging equity markets and 21 currencies for fixed income investments. The central bank manages the Fund partly internally and partly by engaging external managers.

- **Reporting and auditing**: The central bank reports quarterly to the Ministry of Finance. The submissions of the ministry of finance and other information about the Fund published in the bank's quarterly and annual reports is on the central bank's web site.[23]

Chile

Chile also presents another relevant example of a combination between a NRF and a fiscal rule, together with MTEF and a fiscal responsibility law that have evolved over time. Chile's experience also highlights the key importance of a fiscal rule in contributing to fiscal sustainability and achieving counter-cyclical policy response.

Chile established a Copper Stabilization Fund (CSF) in 1985 after a surge in commodity prices. The national copper company (CODELCO) saved in the Fund all copper-related revenues if prices exceed a reference price level. Until the mid-1990s, the reference price was set by the authorities and followed a ten-year moving average. After the Fund ran into difficulties in the late 1990s the reference price was revised to be below the moving average. If the copper price exceeded the reference price by $0.04-0.06 a pound, half of the copper company's revenue was deposited in the Fund; if prices exceeded the reference price by more than $0.06 a pound, all of the revenues were transferred. There were symmetric rules for withdrawals from the Fund.[24] The drop in commodity prices after 1998, and the government use of Fund resource to subsidize gasoline prices, resulted in sharp drawdowns in a development similar to that in PNG. In 2002, the government replenished CSF's resources and the reference price for copper was set to be below the ten-year average.

[21] Gjedrem (2008).
[22] See the web site of Norges Bank, the central bank of Norway, http://www.norges-bank.no.
[23] See: http://www.norges-bank.no/templates/article____41212.aspx).
[24] Davis, Jeffrey et al (2001).

The 2007 Fiscal Responsibility Law created two sovereign wealth funds: the Economic and Social Stabilization Fund (FEES) into which the CSF was merged and the Pension Reserve Fund.[25] The law also provided that all resource-related revenues are paid directly into the budget and not into the Fund. Budget surpluses net of the mandatory contribution to the Pension Reserve Fund and possibly to the central bank are paid annually into the Stabilization Fund.

In 2000 Chile's government introduced a fiscal rule that targeted a central government structural surplus equivalent to 1 percent of GDP. The rule was established by a government decree and not by law and signaled the government commitment for 2000-2005. In 2007, the authorities decided to modify the rule to better capture the cyclical variations in copper prices and the level of GDP relative to trend. The rule was also enshrined into the Fiscal Responsibility Law. In an effort to ameliorate the negative effects of the economic and financial crisis on domestic demand, the authorities reduced the target for the structural surplus from 1 percent of GDP to 0.5 percent in 2008 and further to nil in 2009. The authorities are likely to revert to a positive structural balance later this year.

D. Implications for Papua New Guinea

The PNG authorities have made substantial progress toward a more robust and sustainable fiscal policy by the enactment and implementation of the Medium-Term Fiscal Framework for 2008-2012. Experience from PNG and other country suggests some options for the consideration of the government. These options include modifications to the existing structural balance rule and the introduction of expenditure and debt rules.

An improved fiscal framework will work best if supported by a single Savings and Stabilization Fund into which all trust fund accounts are merged. The interests of all citizens will be protected best if the Fund is fully integrated with the budget and has well-defined governance and disclosure rules. The Fund's assets could initially be managed by the central bank.

It is possible to establish a Savings Fund to safeguard resources for future generations, separate from the Stabilization Fund that supports the fiscal framework and the structural balance rule. If such an option is pursued, the Savings Fund, similarly to the Stabilization Fund, needs to be fully integrated into the budget and have the same robust governance, transparency and asset management guidelines to ensure the citizens of PNG reap the full benefits of the country's natural resources.

Participation in world-recognized frameworks for transparent and effective management of mineral wealth can further support the specific revenue management frameworks selected by the government of Papua New Guinea. Countries with commitments to international frameworks like the Santiago Principles and the Extractive Industries Transparency Initiative (EITI) are able to anchor their national choices and mechanisms in a larger context which provides proven credibility with investors and credit rating agencies. In this regard, further action by the PNG government to pursue their stated interest in joining EITI could provide additional benefits in terms of long-term positioning of the country as a major minerals exporter.

[25] The Pension Reserve Fund is tasked with meeting pension commitments after 2016.

E. Conclusion and next steps

Informed by international experience and developments in PNG since independence, this note reviews some of the issues relevant for saving and managing natural resources and liming resource-induced volatility. These issues could serve as a useful basis for discussion of options the government of PNG could pursue as it emerges from the economic and financial crisis and looks forward to the start of operation of the PNG LNG project.

Although the wealth of international experience suggests several key areas for the attention of the authorities, many issues can be addressed only on the basis of detailed projections about future resource flows and investment outlays. The appropriateness of specific rules or the combination of rules will also depend on other steps to enhance the fiscal framework. The World Bank can provide more detailed analysis, expertise and recommendations should such data become available.

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