5

# Natural Resources and Development Strategy after the Crisis

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Recent events have rekindled interest in the role of primary commodities in development. Was the boom in commodity prices from around 2003 through 2008 just a cyclical event, or does it suggest that prices have entered a period of secular strength, driven by factors such as demand in big, fast-growing developing countries like China? It is notable that, while commodity prices fell sharply from their peak in 2008 with the onset of the global recession, they generally remained much higher than previous recession lows, often as high as in 2005–07, a period of robust world growth. Furthermore, prices rebounded smartly during 2009 (figures 5.1 and 5.2).

If a period of sustained commodity strength is imminent, what are the implications for development policies? Development economists have long debated the problems associated with the traditionally high specialization in production and export of primary commodities of most developing countries. Many argue that dependence on primary commodities has proved to be a poisoned chalice or curse for development, which, given

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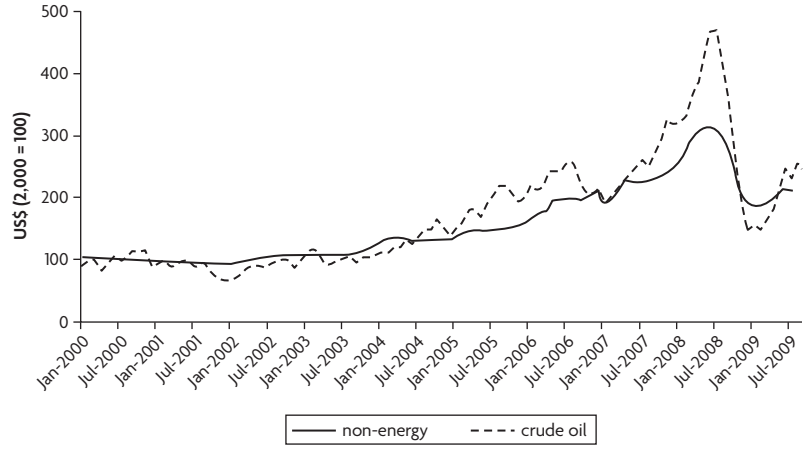
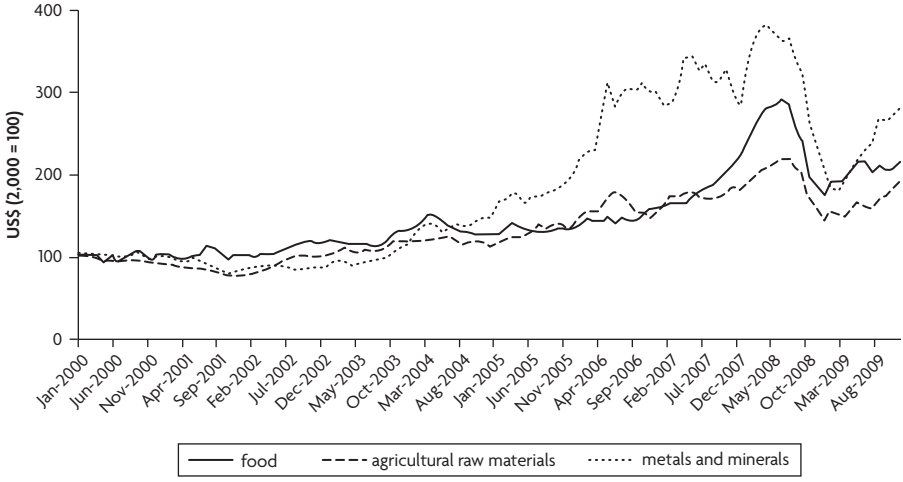
**Figure 5.1 Commodity Price Indexes, January 2000 to July 2009**




*Source:* World Bank data and staff estimates.

**Figure 5.2 Commodity Price Indexes, January 2000 to August 2009**




*Source:* World Bank data and staff estimates.

this view, necessarily entails structural change and rapid industrialization. Others, however, suggest that sustained high commodity prices could reduce the relevance of an industrialization-focused development strategy for commodity-dependent, low-income countries (LICs) (see *Oxford*

*Analytica International* 2009). In this chapter, we briefly review four questions: How dependent are developing countries on primary commodity exports? What is the outlook for primary commodity prices? Is there a natural resource "curse" (or blessing)? What policies can help poor countries best manage commodity resources for long-run development?

## How Dependent Are Developing Countries on Primary Commodity Exports?

If we view developing countries as a single aggregate, then only about 40 percent of their merchandise exports were primary commodities by value during 2005–07, down from around 50 percent in the early 1990s. This aggregate measure can be misleading, however, because it is dominated by a few big economies like China that are almost entirely exporters of manufactures.

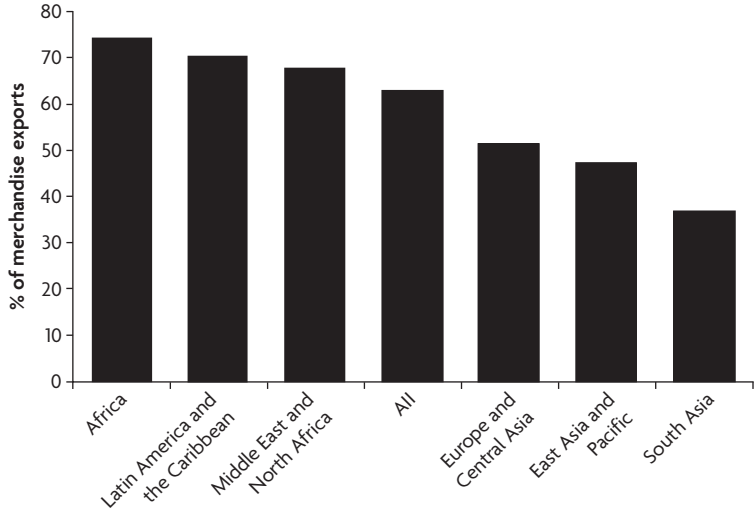
A different picture emerges if we take a *simple average* across developing countries (that is, giving each country an equal weight). Commodities still composed a little over 60 percent of the merchandise exports of the average developing country in the middle part of this decade, although this was down from over 90 percent in the late 1960s.

Looking at the *median*, half of developing countries still have commodity export dependence of over 70 percent. Among LICs, commodity export dependence averages around 75 percent. Viewed by region, Africa, Latin America and the Caribbean, and the Middle East and North Africa are the most commodity dependent, while South Asia, East Asia, and Europe and Central Asia are the least (figure 5.3). So, although declining, commodity or natural resource dependence remains a fact of life for a majority of developing countries.

## What Is the Outlook for Primary Commodity Prices?

In the 1950s, the famous Prebisch-Singer thesis argued that real primary commodity prices (for example, relative to manufactures prices) displayed a long-run *declining* trend. Faced with a resulting steady decline in their terms of trade, developing countries should foster industrialization, following, according to the thinking of the time, an import substitution strategy. During the commodity price spike of the 1970s, on the

**Figure 5.3 Developing Countries: Commodity Exports Share, 2003–07**



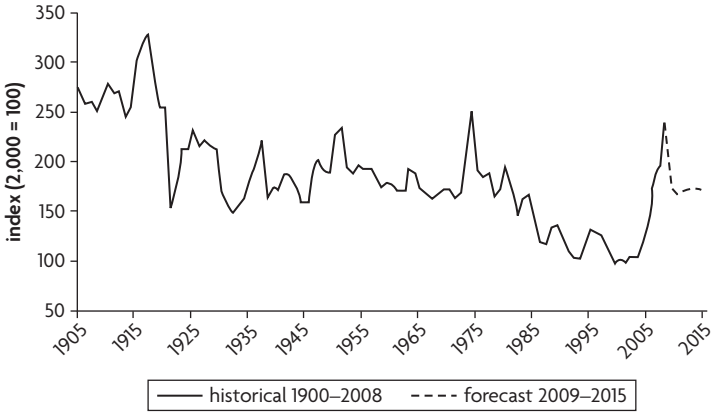

*Source:* World Bank, World Development Indicators database.
*Note:* Simple averages for country groups.

other hand, many analysts argued that permanent natural resource scarcity would result in steadily *rising* real commodity prices.

Based on econometric study of long time series, the present consensus appears to be that real commodity prices do not display any permanent trend or drift over time. Figure 5.4 shows the Grilli and Yang time series of real non-energy commodity prices (updated by other researchers) for 1900–2008 (Grilli and Yang 1988; Pfaffenzeller, Newbold, and Rayner 2007). The series is a weighted index of the nominal prices of 24 non-energy commodities, divided by an index of the unit values of manufactured goods exported from developed to developing countries. Figure 5.4 suggests a definite downward trend, and this appears to be confirmed by regression of the log of the Grilli-Yang series on a deterministic time trend (modeling the error process as a first-order AR1 process) over the period 1900–2008, which yields an estimate that real commodity prices fall on average by 0.5 percent per year, apparently confirming the Prebisch-Singer hypothesis.

However, it is now well understood that attempts to assess long-term trends on the basis of visual inspection and simple time series models can be misleading, especially if the series in question are so-called unit root processes. In this case, processes without any deterministic trend

**Figure 5.4 Real Non-energy Commodity Prices, 1900–2015**




*Sources:* Grilli and Yang 1988; Pfaffenzeller, Newbold, and Rayner 2007. World Bank estimates 2004–08; and forecasts 2009–15.
*Note*: Deflated by unit value of manufactured exports.

can yield apparently significant but actually spurious regression results. Cuddington, Ludema, and Jayasuriya (2007) carefully survey econometric studies of the Grilli-Yang series through 1998. Their overall conclusion is that, although there is clear evidence of a structural break in 1921, it is not possible to reject the unit root hypothesis for real commodity prices. There is also no evidence of drift, either positive or negative. We find essentially the same results for the Grilli-Yang series during 1900–2008.

Thus, on the basis of statistical properties alone, we have little reason to expect real commodity prices to trend either up or down in the long term. It is a feature of unit root processes, however, that series with this property are highly correlated over time. So it is quite possible for commodity prices to move significantly lower or higher for substantial periods even in the absence of a long-term trend or drift, such as the long period of unusually low prices from the mid-1980s through the 1990s. Again, on the basis of statistical properties alone, one would not be surprised to see a sustained period of high prices following the low prices of the 1980s and 1990s.

Are there plausible fundamental economic factors to support such an outlook? The price of commodities relative to the price of manufactures can be usefully analyzed in terms of supply and demand—that is, the supply of commodities *relative to* the supply of manufactures, and the demand for primary commodities *relative to* the demand for manufactures.

On the supply side, if long-term productivity growth in agriculture and minerals is less than in manufacturing, then other things being equal, one would expect agricultural and mineral prices to rise relative to those of manufactures. But there is little evidence to suggest that productivity growth in commodities sectors is significantly different from that in manufactures, so this is unlikely to influence relative prices either way (World Bank 2009). It is true, however, that investment in new capacity in energy and minerals was cut substantially when prices were low in the 1980s and 1990s and is recovering only slowly due to skill shortages, technical difficulties in developing new reserves (for example, deep offshore), and political uncertainty in regions with new reserves. Biofuel subsidies have also helped switch grain acreage away from food to fuel use, providing a major reason for the steep grain price hikes from 2005 through the early part of 2008. Over the longer term, though, one would expect a more copious supply response, as skill shortages and technical difficulties are overcome and new reserves and acreage are brought into production.

Relative demand for commodities could also rise in the medium term to the extent that world growth after the financial crisis is more dependent on developing countries and demand in these countries is more commodity intensive than elsewhere. In the longer term, however, production processes in developing countries will continue to become more efficient in terms of raw material consumption, approaching developed country levels, while relative final demand for commodities like food will continue to decline due to low-income elasticity relative to things like services. Evidence suggests that real commodity prices are affected by monetary conditions (Frankel 2008). Since commodities are traded in flexible price markets, their prices tend to overshoot in response to monetary changes relative to general manufactures and services prices, which adjust more sluggishly. Commodity prices will tend to be high when real interest rates are low and monetary conditions lax, as at present, since inventory carrying costs are low and there is more incentive to leave depletable natural resources in the ground. In the longer term, however, general price levels and real interest rates can be expected to rise, removing the overshooting in real commodity prices.

So both supply and demand factors could support the present, relatively high level of real commodity prices in the medium term, although these factors will tend to dissipate in the longer term. Current World Bank

forecasts are consistent with this scenario, projecting only a gradual easing in real commodity prices from existing levels by 2015. Forecast real prices in this period are in fact squarely in the range that prevailed from the 1920s through the early 1980s (figure 5.4). If correct, this means that commodity exporters are likely to face a more benign medium-term price environment than in the 1980s and 1990s.

## Is There a Natural Resource "Curse" or Blessing?

The short answer is "no," or rather, "it depends." A survey of the large and rapidly growing empirical research in this area suggests that, in the words of a recent World Bank report, natural resources are "neither curse nor destiny" (Lederman and Maloney 2007). Studies of the relationship between natural resource abundance and growth have, however, often tended to generate disparate and sometimes contradictory results. The influential study by Sachs and Warner (1995) is representative of results that find that natural resource abundance has a strong *negative* impact on growth. Lederman and Maloney (2007), on the other hand, challenge the Sachs and Warner findings on measurement and econometric grounds and find natural resource abundance to have a *positive* effect on growth.

A recent effort to reconcile such apparently disparate research findings (Collier and Goderis 2007) observes that, first, negative long-term growth effects are mostly related to oil and minerals—concentrated "point source" resources that can easily become the object of rent-seeking and redistributive struggles (including armed conflict). On the other hand, there is little evidence of negative growth effects related to high prices for agricultural commodities, which are generally more open to competitive entry. Second, high oil and mineral prices mostly have a negative impact on long-term growth in exporting countries *with bad governance.* They have a significant *positive* impact on growth in exporting countries with good governance. This finding suggests that continued high commodity prices in the next few years could provide valuable resources to accelerate economic and social development in commodity-exporting countries with good policies and governance.

There are several considerations to keep in mind when evaluating the ways in which natural resource abundance *can* lead to worse economic performance, especially under conditions of poor governance.

First, because of political economy reasons, countries with weak governance are more likely to adopt poor economic policies to manage commodity booms, contributing to significant misallocation and mismanagement of resources. For example, politicians may expand public spending and employment excessively and too rapidly, with the aim of increasing their patronage networks and improving their chances of staying in power, while resources shift out of productive activity into unproductive rent-seeking activity. (Mehlum, Moene, and Torvik 2006; Robinson, Torvik, and Verdier 2006.) Poor fiscal policy indeed appears to be at the heart of economic mismanagement in the wake of natural resource booms. Studying natural resource boom episodes in the 1970s and 1980s, Gelb and Associates (1988:139) concluded that "the most important recommendation to emerge from this study is that spending levels should have been adjusted to sharp rises in income levels more cautiously than they actually were."[1]

Second, natural resource booms create complicated problems in macroeconomic management that are challenging even in economies with good governance and capable institutions, and much more so in economies without these advantages. One of these issues is the so-called Dutch Disease effect, which refers to the change in the structure of production of the economy that is predicted to occur in the wake of a favorable shock such as a large natural resource discovery or a rise in the international price of an exportable commodity that is perceived to be permanent. Such structural changes are expected to include, in particular, a contraction or stagnation of other (non-natural-resource) tradable sectors of the economy, such as manufacturing, and to be accompanied by an appreciation of the country's real exchange rate.

How do such structural changes occur? When studying Dutch Disease, the economy is typically modeled as consisting of three sectors: the natural resource sector, the non-resource tradable sector (usually understood as agriculture and manufacturing), and the nontradables sector (including nontradable services and construction), as in Corden and Neary (1982). The prices for both the natural resource and the non-natural-resource tradables sectors are set in the world market, while those in the nontradables sector are set in the domestic economy. The real exchange rate is defined as the price of nontradables relative to the price of tradables.

There are generally two types of effects leading to Dutch Disease and real exchange rate appreciation:

- The *spending effect*, where increased domestic income from the booming natural resource sector generates higher spending on domestic goods (as well as imports), leading to higher prices and output in the nontradables sector. Wages in the economy also tend to rise, squeezing profits in sectors of the economy that are internationally tradable but that are not based on natural resources, such as manufacturing, where prices are largely fixed at international levels. With increased inflation in nontradables prices, there is an appreciation of the real exchange rate and an output contraction in non-resource-tradables sectors like manufacturing.[2]
- The *resource movement effect*, which takes place when a boom in the natural resource sector attracts capital and labor from other parts of the economy, tending to reduce output in the rest of the economy. In particular, reduced output in the nontradables sector causes the price of nontradables to rise relative to those of tradables, whose prices are set in the world market. This effect is less likely in low-income economies, where most inputs used in the natural resource "enclave" are imported from abroad.

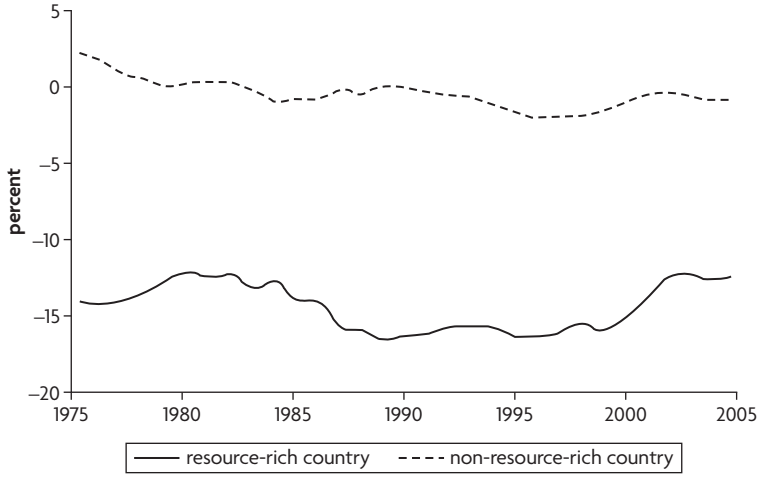
Both effects result in a fall in the output share of non-natural-resource tradables relative to nontradables and in a real exchange rate appreciation, that is, a rise in the price of nontradables relative to that of tradables.

Empirical evidence on the size of Dutch Disease effects has tended to be mixed, but recently, Ismail (2010) presented strong evidence on the impact of oil price shocks, using detailed disaggregated sectoral data for manufacturing and allowing for the possibility that the extent of Dutch Disease will depend on the capital intensity of the manufacturing sector and the economy's openness to capital flows. Ismail finds that, in general, a 10 percent increase in an oil windfall is associated with a 3.4 percent fall in value added across manufacturing sectors. Such effects are larger in economies that are more open to capital flows and in relatively less-capital-intensive manufacturing sectors, consistent with the theoretical model developed in the study. One of the measurement issues with Dutch Disease is the difficulty in finding the counterfactual size of

the tradables sector, that is, how large the tradables sector would have been in the absence of natural resources. We use the Chenery and Syrquin (1975) norms approach to estimate a norm for the size of the tradable sector (manufacturing and agriculture) for all countries over time, after controlling for factors such as per capita income, population, and a time trend. Figure 5.5 shows the difference between the actual size of the tradable sector (as defined) and the Chenery-Syrquin norm for both resource-rich and non-resource-rich countries. For the purpose of this figure, resource-rich countries are defined as those in which the resource sector produces more than 30 percent of gross domestic product (GDP). On average, the tradables sector in such countries is lower than the norm by around 15 percent of GDP.

Is the change in economic structure that comprises Dutch Disease a concern for development and welfare? After all, an increase in national wealth associated with a natural resource discovery or a permanent improvement in the terms of trade is, on the face of it, a positive development, allowing higher incomes and consumption of both nontradables and tradables (the latter in part through increased purchasing power over imports). Rents from mineral resources can provide resources for

**Figure 5.5 A Measure of Dutch Disease: Difference between Actual and Normative Size of the Tradable Sector, 1975–2005**



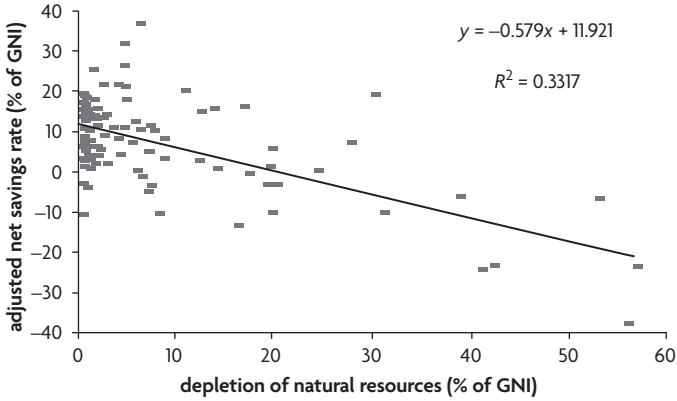

*Source:* Authors' calculations based on Chenery and Syrquin 1975.

investment in public goods and other development expenditures that would otherwise have been unaffordable. Analyzing the historical development of several European countries and the United States, Gelb and Associates (1988:33) conclude that "there is evidence that, at least in some cases, high-rent activities… have provided an important stimulus to growth," a point also confirmed in the historical review by Lederman and Maloney (2008). Dutch Disease effects are of concern, however, if one believes that sectors like manufacturing have some special characteristics that stimulate higher overall long-term growth, for example, increasing returns to scale, learning by doing, or abundant positive technological spillovers. Evidence that manufacturing possesses these special characteristics is mixed, but there is fairly robust evidence for the proposition of a negative relation between real exchange rate overvaluation and growth. Perhaps among the most carefully designed and well known of these studies is that of Aguirre and Calderón (2005). Others include Razin and Collins (1999); Prasad, Rajan, and Subramanian (2006); and Williamson (2008).

Other macroeconomic management problems related to natural resources are the result of the volatility of primary commodity prices. Volatility in natural resource revenues can drive volatility in government spending and real exchange rates, with the resulting uncertainty damaging investment and growth. Another related way in which commodity price volatility may affect growth is by fostering overborrowing. High commodity prices in the 1970s encouraged many resource-abundant countries to borrow heavily from abroad to finance large investment projects and high public consumption. When prices plunged in the 1980s, these countries were left with balance-of-payments crises and unsustainable external debt levels. Again, it is critical to note that the actual extent of Dutch Disease effects, volatility, and overborrowing will depend to a large extent on policies—for example, on the extent to which cautious fiscal policies are able to moderate aggregate demand pressures, smooth volatility in government revenues, and curb external overborrowing.

Finally, in addition to problems of short-term economic management, natural-resource-abundant countries also face important longer-term questions about the optimal pace at which to deplete their resources today and the amount to save for the welfare of future generations.[3] An important metric here is whether the country's economic strategy is *sustainable*,

**Figure 5.6 Natural Resource Depletion and Net Savings Rates, 2007**




*Source:* World Bank, World Development Indicators database.
*Note:* GNI = gross national income.

meaning one that transfers sufficient capital to future generations to allow them to achieve at least the same level of welfare as current generations. From this perspective, natural resources can be viewed as part of a country's overall capital stock, alongside its physical capital stock (such as existing machinery and buildings) and intangible capital (including human capital, social capital, and other factors such as the quality of its institutions). To increase its overall capital stock, a country's investment in its physical, human, and other capital must be larger than the depreciation of that capital, including the depletion of its natural resources. This measure of countries' *adjusted net savings rates* is shown on the vertical axis of figure 5.6. The horizontal axis shows countries' annual depletion of their natural resources (principally oil and minerals, together with a measure of forest depletion). The figure suggests that countries with high rates of natural resource depletion are often on unsustainable development paths: they are not saving enough to cover the depletion, resulting in negative adjusted net savings rates.

## What Policies Can Help Poor Countries Best Manage Commodity Resources for Development?

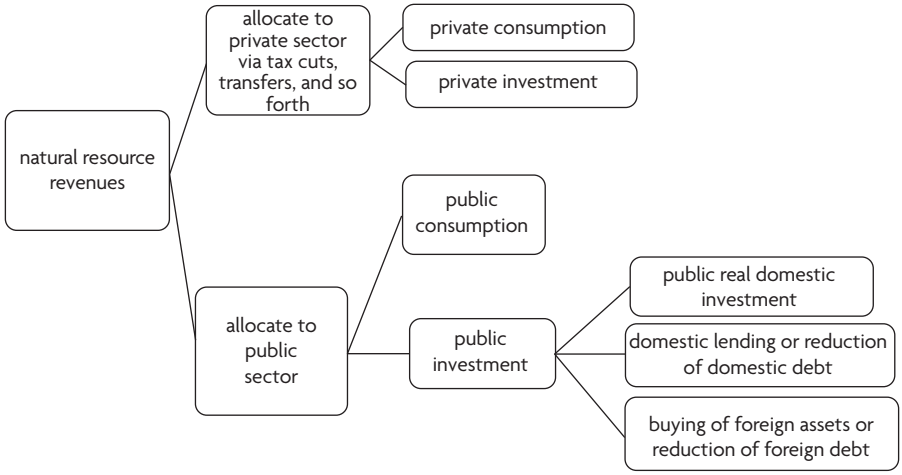
First, given the evidence that issues of governance are at the root of economic problems associated with natural resource abundance, efforts to

enhance transparency and strengthen checks and balances concerning all aspects of natural resource extraction and use are clearly vital. Those aspects include the terms of contracts with companies engaged in resource extraction or operation, ongoing monitoring of operations, and the collection and use of government taxes and other revenues from natural resources. Broad global efforts like the Extractive Industries Transparency Initiative can play a part, as, at the domestic level, can anti-corruption reforms, measures to improve transparency and scrutiny by civil society and media, procurement reforms, strengthening of formal audit, parliamentary scrutiny, and so on. Equitable sharing of benefits across regions, ethnic groups, and so forth can also help reduce the danger of civil strife over resources.

An institutional innovation that has attracted much recent attention is the use of a separate (extra-budgetary) Natural Resource Fund (NRF) to facilitate good management of revenues. Experience suggests that the establishment of such funds can help buttress the right policy mix but that, by themselves, they are no substitute for sound overall fiscal and economic management. While NRFs are sometimes created to protect resource revenue from political pressure and potential waste and corruption, and this argument has its merits, an NRF of itself will not prevent such waste and abuse unless it is part of a broader effort to strengthen governance and integrate the fund within an overall fiscal policy framework. Chile's Economic and Social Stabilization Fund (which replaced its Copper Stabilization Fund in 2007) provides an example of a well-managed NRF that meets these conditions, one that we return to below.

Second, in addition to governance issues, attention also needs to be paid to the actual substance of economic policy decisions about the allocation of natural resource revenues between consumption and savings of various kinds. These decisions will help determine how well the country is able to handle the macromanagement problems associated with natural resource abundance, such as Dutch Disease and commodity price volatility, and the impact of natural resources on the country's longer-term growth and poverty reduction efforts. Figure 5.7 provides a schematic of basic choices open to the government, for example, whether to return revenues to private citizens (via tax cuts, transfers, or an equal "citizens' dividend," which will then be reflected in private consumption and investment) or to retain resource revenues in public hands, which

**Figure 5.7 Government Choices in Allocating Resource Revenues**




*Source:* Authors' preparation.

then need to be allocated between public consumption and various kinds of public investment (or net asset accumulation). The potential advantages from a direct transfer or dividend to citizens should not be overlooked. It allows an immediate increase in consumption utility for the poor and provides them with resources to overcome liquidity constraints and undertake their own potentially high-return microinvestments. Such transfers or dividends also give citizens a stake in the country's natural wealth and an incentive to demand and monitor good governance of the resources. Concerns about the macro impacts of direct transfers to citizens can in principle be addressed through offsetting fiscal policy, for example, through reductions in public spending.

At a very general level, these decisions need to be guided by a comparison of the government's social discount rate (which measures the value it puts on consumption today compared to consumption at later dates) with the rates of return available on various kinds of investment, for example, the return on foreign assets, the return from reduction of foreign debt (not generally the same thing in developing countries), and returns to domestic public and private investments. A commonly used benchmark for fiscal policy in a natural-resource-rich economy is the *permanent income rule*. Under this rule, the country should save all

resource revenues over and above a certain permanently sustainable increase in the level of consumption, which is equal to the annuity value of the country's natural resource wealth.[4] In practice, the rule often leads to a recommendation to establish a Natural Resource or Sovereign Wealth Fund that invests in foreign assets, the returns from which can support spending on the government's non-natural-resource fiscal budget.

The permanent income approach addresses several of the key issues associated with natural resource fiscal management. It is by definition a sustainable policy in that it converts a temporary, exhaustible stock of natural resources into a stock of financial assets that generates a permanent income stream. Since the policy calls for saving a substantial proportion of natural resource revenues, it reduces the pressure of rising domestic demand that leads to real exchange rate appreciation and Dutch Disease effects. By smoothing expenditures, the policy also moderates the problems caused by volatility in natural prices and revenues. Experience during the 2008–09 global financial crisis showed how a well-managed NRF or Sovereign Wealth Fund based on permanent income ideas can assist countercyclical macrostabilization policies. During the boom period before the crisis, when copper prices were extremely high, Chile's Economic and Social Stabilization Fund saved a high proportion of the surge in revenues, reaching savings of 12 percent of GDP at the end of 2008, even after paying down public debt. During the crisis, Chile was then able to undertake robust increases in countercyclical spending and even to provide resources to finance reconstruction in the wake of the devastating, magnitude 8.8 earthquake of February 2010.

There is nevertheless something anomalous about viewing the permanent income rule as a long-term development strategy, with poor capital-scarce countries financing investments in rich countries through sovereign wealth funds. Several analysts have argued that the permanent income rule is optimal only under special circumstances that do not apply to most developing countries; essentially, these conditions are the ability to freely borrow and lend at the world rate of interest, which would result in foreign and domestic rates of return becoming aligned (Collier and Venables 2008; Van der Ploeg and Venables 2009). Most developing countries, however, are characterized by restricted access to world capital markets, capital scarcity, and potentially high rates of return on domestic investment, especially if the government is able to

efficiently supply scarce public infrastructure and to improve the investment climate to raise returns on private investment. Under these circumstances, a more optimal strategy would be to devote a larger portion of resource revenues to high-return public domestic investments, leading to higher growth and, ultimately, a higher value of consumption than under the permanent income strategy.

Evidently, much of the success of a strategy oriented more toward domestic investment will depend on how efficiently public investment funds can be allocated and managed to achieve high returns in practice. So, third, reforms to strengthen public investment management, cost-benefit analysis, monitoring and evaluation, and budget processes and institutions provide another crucial element of a successful natural-resource-based development strategy. To the extent that it will take time to develop a pipeline of good projects and to strengthen public investment management capacity, it may be prudent for the country to initially continue to invest most of its revenues in foreign assets, but to then increase the proportion invested domestically, in line with domestic absorptive capacity.

We conclude that booming commodity revenues raise difficult challenges that, if not adequately addressed, can harm long-term development. However, with good policies, governance, and management, such revenues can also be a valuable platform from which to accelerate overall economic and social development.

## Notes

1. A stronger version of the political economy channel argues that natural resource booms can even lead to a worsening of governance, for example, a "voracity effect" as political actors race to seize and spend natural resource revenues before others do, provoking more intense political, bureaucratic, and even violent conflicts for control of natural resource revenues (Tornell and Lane 1999). The evidence for this hypothesis is mixed.
2. This is the so-called spending effect cause of Dutch Disease. A so-called resource-movement effect can also cause Dutch Disease when the boom in the natural resource sector attracts labor and capital away from other parts of the economy.
3. Heal (1996) discusses alternative interpretations of sustainability.
4. The permanent income approach to fiscal policy in natural-resource-abundant economies is studied in more detail in Van Wijnbergen (2008); Davis, Ossowsky, and Fidelinom (2003); and Barnett and Ossowski (2002).

## References


Aguirre, A., and C. Calderón. 2005. "Real Exchange Rate Misalignments and Economic Performance." Central Bank of Chile Economic Research Division. Santiago. April.

Barnett, S., and R. Ossowski. 2002. "Operational Aspects of Fiscal Policy in Oil-Producing Countries." IMF Working Paper WP/02/177, International Monetary Fund, Washington, DC.

Chenery, H., and M. Syrquin. 1975. *Patterns of Development, 1950–1970.* London: Oxford University Press.

Collier, P., and B. Goderis. 2007. "Commodity Prices, Growth and the Natural Resources Curse: Reconciling a Conundrum." Working Paper 276, Centre for the Study of African Economies, Oxford.

Collier, P., and A. Venables. 2008. "Managing Resource Revenues: Lessons for Low Income Countries." Paper for the Africa Economic Research Consortium 2008 Annual Conference, Nairobi, September 15–17.

Corden, W. M., and P. J. Neary. 1982. "Booming Sector and Deindustrialization in a Small Open Economy." *Economic Journal* 92 (December): 825–48.

Cuddington, J. T., R. Ludema, and S. A. Jayasuriya. 2007. "Prebisch-Singer Redux." In *Natural Resources: Neither Curse Nor Destiny*, ed. D. Lederman and W. F. Maloney. Washington, DC: World Bank; and Stanford, CA: Stanford University Press.

Davis, J. M., R. Ossowsky, and A. Fidelinom, eds. 2003. *Fiscal Policy Formulation and Implementation in Oil-Producing Countries.* Washington, DC: International Monetary Fund.

Frankel, J. 2008. "The Effect of Monetary Policy on Real Commodity Prices." In *Asset Prices and Monetary Policy*, ed. J. Campbell. Chicago: University of Chicago Press.

Gelb, A., and Associates. 1988. *Oil Windfalls: Blessing or Curse?* Washington, DC: World Bank; and New York: Oxford University Press.

Grilli, E. R., and M. C. Yang. 1988. "Primary Commodity Prices, Manufactured Goods Prices, and the Terms of Trade of Developing Countries: What the Long Run Shows." *World Bank Economic Review* 2 (1): 1–47.

Heal, G. 1996. "Interpreting Sustainability." Paine Webber Working Paper Series in Money, Economics, and Finance PW-95-24, Columbia Business School, New York.

Ismail, K. 2010. "The Structural Manifestation of the 'Dutch Disease': The Case of Oil Exporting Countries." IMF Working Paper 10/103, International Monetary Fund, Washington, DC.

Lederman, D., and W. F. Maloney, eds. 2007. *Natural Resources: Neither Curse nor Destiny.* Washington, DC: World Bank; and Stanford, CA: Stanford University Press.

———. 2008. "In Search of the Missing Resource Curse." Policy Research Working Paper WPS 4766, World Bank, Washington, DC.

Mehlum, H., K. Moene, and R. Torvik. 2006. "Institutions and the Resource Curse." *Economic Journal* 116 (508): 1–20.

*Oxford Analytica International*. 2009. "Commodities Force Re-think on Growth." August 18.

Pfaffenzeller, S., P. Newbold, and A. Rayner. 2007. "A Short Note on Updating the Grilli and Yang Commodity Price Index." *World Bank Economic Review* 21 (1): 151–63.

Prasad, E., R. Rajan, and A. Subramanian. 2006. "Foreign Capital and Economic Growth." Paper presented at a Federal Reserve Bank of Kansas City Conference, Jackson Hole, WY, August 25.

Razin, O., and S. M. Collins. 1999. "Real-Exchange-Rate Misalignments and Growth." In *The Economics of Globalization: Policy Perspectives from Public Economics*, ed. A. Razin and E. Sadka. Cambridge, U.K.: Cambridge University Press.

Robinson, J. A., R. Torvik, and T. Verdier. 2006. "Political Foundations of the Resource Curse." *Journal of Development Economics* 79 (2): 447–68.

Rodrik, D. 2007. "The Real Exchange Rate and Economic Growth: Theory and Evidence." John F. Kennedy School of Government, Harvard University, Cambridge, MA.

Sachs, J. D., and A. M. Warner. 1995. "Natural Resource Abundance and Economic Growth." NBER Working Paper 5398, National Bureau of Economic Research, Cambridge, MA.

Tornell, A., and P. R. Lane. 1999. "The Voracity Effect." *American Economic Review* 89 (1): 22–46.

Van Der Ploeg, F., and A. Venables. 2009. "Harnessing Windfall Revenues: Optimal Policies for Resource-Rich Developing Economies." Working Paper 2571, CESifo Group, Munich, Germany.

Van Wijnbergen, S. 2008. "The Permanent Income Approach in Practice." Unpublished paper, PREM Network, World Bank, Washington, DC.

Williamson, J. 2008. "Exchange Rate Economics." Working Paper 2, Commission on Growth and Development, Washington, DC.

World Bank. 2009. Global Economic Prospects *2009: Commodities at the Crossroads*. Washington, DC: World Bank.