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## Resource Resilience: How to Break the Commodities Cycle

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# Resource Resilience: How to Break the Commodities Cycle



A worker cuts a diamond, reflecting Botswana's attempt to control stages of diamond production beyond mining, Gaborone, Botswana, March 18, 2008 (AP photo by Themba Hadebe).

By [Lisa Sachs](#), [Nicolas Maennling](#), May 26, 2015, [Feature](#)

The past year has seen dramatic declines in the prices of global commodities. Between June 2014 and the beginning of this year, crude oil prices fell by 50 percent to around \$50 a barrel. Similarly, mineral prices have seen a drastic fall since the peak of the “[commodity supercycle](#)” in early 2011. Between then and April of this year, iron ore prices fell by 70 percent, coal prices by 54 percent and copper prices by 40 percent.

Many countries dependent on revenues from these commodities have been hit hard. Venezuela [is unable to import food and medicine](#) to satisfy the basic needs of its population due to the lack of petrodollars.

Russia's economy [is expected to contract by 3.8 percent](#) this year, as a result of the oil price fall combined with Western sanctions over the Ukraine crisis, which have sent the ruble tumbling. Nigeria [is slashing its budget](#), which would require a petroleum price of \$122 per barrel to balance out.

Mineral-exporting countries, especially those in developing markets in Africa, have also felt the brunt.

Sierra Leone's two largest iron ore mines had to close in late 2014 after running out of cash and not being able to repay creditors. With iron ore accounting for a quarter of Sierra Leone's economy and half of its exports, the International Monetary Fund [forecasts the economy to contract by 13 percent](#) this year. Mozambique, deemed the most promising source of untapped coking coal, [only exported 7 million tons of coal last year](#)—17 percent of what was projected four years ago—with companies facing an uphill battle just to cover their operating costs. Rio Tinto sold its coal concessions in Mozambique for \$50 million late last year after having acquired them for \$4.2 billion three years earlier. Zambia [saw its fiscal deficit widen](#) due to falling copper prices last year, and the national currency, the kwacha, was the worst-performing currency in Africa.

While the recent fall in prices has been significant across the board, large price fluctuations [are nothing new in the commodities sector](#). The World Bank energy index, for example, fell by 48 percent in 1986 as a result of slowed economic activity in industrialized countries. Similar drops occurred in the metals and minerals index between 1988 and 1993 and the agriculture index between 1974 and 1982.

Over time, commodity price fluctuations are inevitable. This raises the question of what countries dependent on commodity exports can learn from past mistakes, and what measures they can take to build resilience against commodity cycles. This article describes the strategies various countries have employed—including budgeting mechanisms that account for price fluctuations, natural resource funds and economic diversification strategies—and considers the challenges and opportunities of each approach.

### **Managing Revenue Volatility**

A key to breaking the commodity cycle trap is more strategic management of resource revenues. Without a mechanism in place to regulate when and how resource revenues are spent, revenue volatility leads to expenditure volatility. If government budgets are not insulated from revenue volatility, governments will either have to make major budget cuts when revenues decrease from previous years or to borrow against uncertain and unpredictable future revenues.

Annual budget adjustments make development-planning efforts impossible. Infrastructure projects, for example, are multiyear investments and cannot be properly implemented with stop-and-go spending. Massive public sector layoffs or decreasing wages for public servants such as teachers and nurses can

create political crises. Borrowing is one way around this, but borrowing can lead, and has led, to debt crises when the revenues from natural resources consistently fall below forecasts.

Large expenditure increases when new projects come online or prices spike can also be risky if the economy cannot absorb additional government spending. This may result in high inflation rates and real exchange rate appreciation, which in turn can reduce the competitiveness of the non-resource-based tradable sector, thereby increasing a country's dependence on commodity exports.

The Economist [dubbed this phenomenon “Dutch Disease” in 1977](#), after the Netherlands experienced deindustrialization following large gas discoveries in 1959. Dutch Disease can be partly addressed by directing government spending to areas that increase productivity, such as investments in infrastructure, health and education.

However, in countries where short-term budget flows exceed yearly budgetary needs or capacity, or in countries that already provide ample public goods, governments need a mechanism to save commodity revenues until a point where the money can be spent efficiently. The necessity for a mechanism to manage resource revenues increases as resource revenues grow as a percentage of total revenues. For many countries, natural resource funds may appear to be an attractive solution, but they, too, come with a number of challenges.

### **Natural Resource Funds**

Several resource-rich countries have set up natural resource funds, or sovereign wealth funds, to stabilize government expenditures; to save for future generations; to sterilize capital inflows to avoid overheating the economy; to earmark revenues from the extractive sector for particular purposes; or to ring-fence the revenues to try to avoid mismanagement. Natural resource funds have become increasingly popular around the world; 30 of the 45 funds that are currently active [were established in the past 15 years](#).

However, the objectives of the funds are often unclear, and even when they are clear, the rules are not always followed. While Chile, Norway and Saudi Arabia were successful at using stabilization funds to smooth budget expenditure growth between 2001 and 2013, expenditures in Kazakhstan, Venezuela and Trinidad and Tobago increased and decreased with oil revenues during the same period despite similar stabilization funds.

Kazakhstan, for example, [established its National Fund in 2000](#) to stabilize its budget and save for future generations. While the deposit rules outline that oil and gas revenues should be channeled into the fund, the list of companies whose taxes are deposited can be changed arbitrarily from year to year. Furthermore, the withdrawal rules [have been changed three times in seven years](#), and the lack of independence between Parliament and the management council of the fund impedes effective oversight, resulting in large expenditure swings.

Norway, on the other hand, has been successful in adhering to the withdrawal rules it set in 2001. These [call for a limit on the non-oil structural deficit](#)—the permanent deficit that excludes oil revenues—of 4 percent of the assets of the fund. Since 4 percent is the expected long-term real return on the fund, this rule effectively only allows for the returns on the fund to be spent. Norway’s fund is fully integrated in the government’s annual budget, with supervisory bodies at all levels of the fund management, and Parliament [must approve any withdrawal from the fund](#).

[Canada’s energy-rich province of Alberta](#) illustrates that poorly designed savings funds will not necessarily lead to the stated goal. In 1976, the province [set up the Alberta Heritage Savings Fund](#) to set aside revenues for future generations. But Alberta only made two relatively small deposits between 1987 and 2013, both at times when production and oil prices were at all-time highs. While such spending of resource revenues through the national budget might be justified if targeted at investments that support long-term objectives, in Alberta the majority of the province’s oil revenue spending led to inflation and unsustainable consumption. The fund did not have clear deposit rules, so it could not constrain political pressure to spend rather than save the revenues. The recent oil price drop and the resulting economic slump help explain why Alberta [rejected its conservative governing party](#) earlier this month for the first time in more than four decades, with the province’s new premier-elect pledging to end the boom and bust cycle.

East Timor’s Petroleum Fund, on the other hand, [has been relatively successful](#) at saving oil revenues since setting up institutions to manage them more efficiently. After achieving independence from Indonesia in 2002, and with its infrastructure, education and health sectors in shambles, East Timor established a fund in 2005 to stabilize spending and save oil revenues, following the model of Norway. The deposit rules require all oil and gas revenues to be deposited in the fund, and withdrawals are limited to the interest earned on the petroleum wealth of the country, with excess withdrawals needing approval

from Parliament. The fund was invested in bonds and equities abroad to prevent East Timor's domestic economy from overheating.

In 2011, East Timor [presented a 20-year development plan](#), which foresaw spending a portion of the oil revenues up front in infrastructure and human capital projects. These investments are expected to provide a higher return for the Timorese population than the foreign treasury bonds in which the fund was invested. Moreover, investments in infrastructure and human capital are needed to address critical development needs, including access to health care, education and electricity, as well as to create a foundation for more private sector investment. The challenge for East Timor going forward will be to design robust public investment plans for the additional front-loaded expenditures, and then to return to a sustainable spending path thereafter.

These examples show that natural resource funds are only as effective as the rules that govern them and the adherence of the organizations that manage them. To improve the governance of these funds, the following criteria should be met:

First of all, funds should set up clear objectives, such as saving for future generations or stabilizing budget expenditures. Without such objectives, it is hard to define the rules that govern the fund.

Second, they should establish fiscal rules that are aligned with the fund objectives. These rules, including both deposit and withdrawal rules, should be legally binding for successive governments, so as to act as a commitment mechanism.

Third, funds should establish investment rules to outline where the deposited money can be invested, depending on the risk profile the country is willing to take and whether the fund can only invest abroad or also domestically.

Fourth, funds should clarify institutional structures and rules of conduct. Roles and responsibilities need to be clearly defined in the law, regulations and policy documents. Strong ethical requirements and conflict of interest standards should be enforced.

Fifth, funds must require regular and extensive disclosure audits, as transparency is a prerequisite for accountability and compliance.

And finally, funds must establish strong independent oversight bodies. Internal control mechanisms are often not enough to ensure good governance and compliance. Therefore, external independent bodies should audit policymakers and fund managers to enforce the rules.

While meeting these requirements can ensure that resource revenues are managed wisely and are used to support macroeconomic stability, the challenge for resource-rich countries is to become less reliant on a few exported commodities and to diversify into other sectors.

### **Diversifying the Economy**

A more fundamental way for countries to buffer themselves against the commodities cycle is to break their dependence on natural resources by diversifying their economies. There is strong empirical evidence that economic diversification [leads to higher long-term economic growth](#). Ricardo Hausmann and Cesar Hidalgo [have shown that a country's economic growth](#) is determined not only by the amount it exports, but also by the composition of exports. The more complex and technologically advanced the exports of a country, the higher the long-term economic growth is likely to be.

In addition, countries that are diversified are less susceptible to the price and production shocks of a small number of commodities. They will also be better prepared for the eventual depletion of nonrenewable resources. And they will offer better employment opportunities for their people, since the extractive sector is generally not labor-intensive.

Drawing lessons from how the United States and Canada industrialized their economies, Albert Hirschman suggested that policymakers [can leverage three types of extractive sector linkages](#) to promote diversification. First, there are fiscal linkages: the use of revenues from the resource sector to promote other sectors. Second, there are production linkages, including backward linkages through investments in services and goods used to produce the commodities, and forward linkages through investments in services and goods used to process the commodities. Finally, there are consumption linkages: the demand resulting from the incomes earned in the commodities sector. This section will explore all three types of linkage in more detail.

***Fiscal linkages.*** Fiscal linkages consist of channeling the revenues from commodity exports toward other

sectors. Governments may use revenues either to improve the business environment more generally or to target specific sectors.

For example, Malaysia has made use of a combination of these policies to support its long-term development plans since its independence from Britain in 1957. Heavily reliant on rubber and tin exports in the early years of independence, Malaysia used the revenue earnings from these sectors to increase agricultural productivity and reduce poverty. Tin and rubber revenues were used to subsidize and incentivize the development of the palm oil sector and to set up the Palm Oil Research Institute of Malaysia (PORIM) to increase yield rates.

In the early 1970s, Malaysia embarked on an aggressive export-oriented industrialization strategy. Cheap labor, industrial parks and fiscal incentives were used to attract manufacturing companies. In the 1980s, revenues from the oil and gas sector were used to support and provide special treatment to the electronics, transportation and automobile sectors. This was accompanied by policy measures to incentivize skilled immigration, create polytechnic institutions and establish academic institutions with strong ties to Australia and Canada to promote skills and technological transfers. And in 2006, Malaysia embarked on its third industrial development plan, which is set to run through 2020 and targets high-tech industries. These policies have contributed to Malaysia's growth, earning it a spot as one of 13 countries with average growth of more than 7 percent per year for 25 years or more, [as identified by the Commission on Growth and Development](#).

Chile is another country that has been successful at using its resource base to promote other economic sectors. Rather than aiming to move into more complex industrial sectors, Chile has targeted public investments to create thriving pine tree, salmon and wine industries, none of which were traditionally produced in the country. These sectors were supported through incentives such as export subsidies, credit lines, the sharing of startup costs and the promotion of technologies to adapt these agriculture and aquaculture projects to Chile's environment. In 2006, the government established the Innovation for Competitiveness Fund, which channels copper revenues to finance Chile's 15-year Innovation and Competitiveness strategy. As part of this strategy, the government has identified seven clusters with high export potential, including tourism and agriculture, which could be supported and promoted for further diversification efforts. While Chile has experienced solid growth over the past 20 years and was one of Latin America's fastest-growing economies in the last decade, the country still faces the challenges of ensuring equitable and inclusive growth and reducing inequality.



***Production linkages.*** Production linkages, both backward and forward, are the most direct way to leverage the resource sector for broader economic development.

The London-based multinational mining company Anglo American has estimated that in 2013, [about half of its expenditures went to suppliers](#)—five times more than the amount paid to governments. In response to figures like these, governments have pushed for the local procurement of these goods and services through incentives and “local content” regulations.

Norway has been relatively successful at creating backward linkages. The country did not have the expertise to supply offshore oil rigs when oil was first discovered in 1969. In 1972, Norway passed the Royal Decree, requiring that all operations were obliged to source from Norwegian companies unless they were not competitive in terms of quality, service and price. The 1985 Petroleum Act further stipulated local content provisions to be used to allocate licenses in the North Sea.

As a result, Norway’s licensing bidding rounds provided preferential treatment to Norwegian companies in all bidding rounds between 1974 and 1994. The licenses also included provisions requiring the transfer of skills and technologies to Norway’s infant domestic petroleum industry. In 1994, Norway joined the European Economic Area, a single market with the European Union, and as a condition of membership was not allowed to continue with its preferential treatment policies. However, by that point, the backward linkages were already established, and today Norway is exporting its offshore service expertise to the rest of the world.

Fewer countries have successfully implemented forward linkages, associated with the processing of raw commodities. One exception is Botswana. Botswana is often hailed as one of the best performers in sub-Saharan Africa, with high economic growth rates and prudent macroeconomic management. However, the country has been highly dependent on exports of raw diamonds since its independence from Britain in 1966, and various diversification attempts have failed. This can largely be traced back to the country’s having few comparative advantages. It is landlocked, with two-thirds of its territory covered by desert, and it has a small internal market.

Since the 1980s, Botswana has attempted to develop a diamond cutting and polishing industry. Originally, De Beers, the major diamond producer in the country, argued that the cutting and polishing industry

would not be economically viable, and therefore did not support the government's efforts. Only in 2005, when De Beers had to renew its 25-year mining license, was the government able to pressure the company to commit to treat the diamonds in-country. Sixteen cutting and polishing companies were licensed to operate in Botswana, with allocation of raw diamonds dependent on the hiring and training of Botswanan nationals.

In 2013, De Beers [moved its global sorting, aggregation and sales operations](#) from London to Gaborone, making Botswana the new trading hub for rough diamonds from its own mines and those in neighboring Namibia and South Africa, and even from as far away as Canada. In the long run, Botswana aims to attract jewelers and retailers to build up sufficient expertise to sustain this activity even when rough diamond production in the country falls.

Indonesia has taken more drastic measures to process its minerals in country. The government imposed export taxes on unprocessed minerals in 2009 and an export ban in 2014. Industry strongly pushed back on the ban, particularly because the country lacked the requisite beneficiation capacity, including infrastructure and skilled labor, and both production and exports fell as a result. However, despite the global commodity price fall, the policy has had some success, with 11 new nickel smelters [scheduled to be built in Indonesia](#) in the coming years. Newmont Mining Corporation, one of the fiercest critics of the government policy, is also moving ahead with its expansion plans for an Indonesian copper smelter. While Indonesia's bold policy decision set back the mining sector and the economy in the short run, it remains to be seen whether it will benefit the country's diversification strategy in the long run.

***Consumption linkages.*** Consumption linkages arise with the demand for goods and services from incomes earned in the commodities sector. In the 1960s and 1970s, import-substitution policies in Chile and Malaysia, for example, targeted consumption linkages by increasing the price of imported goods through tariffs and nontrade barriers. However, these policies have largely been abolished since the early 1980s, as it has become widely acknowledged that the long-term benefits of an open economy outweigh those of protecting domestic producers from international competition. With falling logistics and transportation costs and the abolition of import-substitution policies, consumption demand has increasingly leaked abroad via imports.

However, there is space for governments to target sectors that benefit from natural protective barriers.

These may include service sectors that require a local presence, agricultural produce that is highly perishable and construction materials that have high transport-to-value ratios, such as cement.

There is no one set path for resource-rich countries to diversify into other sectors. Production and consumption linkages can be more straightforward because of their connection to an “anchor project,” but countries that have been relatively successful at diversification have also done so through fiscal linkages. It is important that targeting policies are not made on an ad hoc basis, but are based on an assessment of comparative advantage that accounts for policy goals, future prospects and regional market growth. It is important that such policies are flexible and are reviewed on a regular basis to reflect economic developments and to avoid supporting failing sectors.

### **Lessons Learned**

For resource-rich countries to break the commodities cycle, prudent macroeconomic management is a prerequisite. This entails controlling revenue volatility from export earnings and keeping a close eye on inflation and exchange rates to prevent the economy from overheating and other tradable sectors from suffering. Well-governed natural resource funds can help by smoothing government expenditure, sterilizing the economy from resource revenues and helping to earmark resource revenues for investment projects that increase productivity.

Diversifying out of the commodities sector is a difficult undertaking, and not many countries have succeeded. Most have not been able to secure macroeconomic stability in the first place, in part because the temptation to spend available revenues is strong.

There is no single diversification path, as the optimal strategies largely depend on a country’s comparative advantages and bargaining position. Botswana, for example, was only able to drive a hard bargain to move downstream because it is the second-biggest diamond producer in the world, and De Beers could not afford to lose access to such an important source.

What is certain is that breaking the commodity cycle requires fiscal discipline, a medium- to long-term development plan, integrated governmental policies to capture available linkages and targeted sectoral support. What is also certain is that commodities booms inevitably turn to busts, as the recent price downturn has once again illustrated. When they do, the importance of breaking resource dependency becomes clear.

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