

# CHAPTER 8 – [www.eisourcebook.org](http://www.eisourcebook.org)

## 8.6 Alternative Means of Addressing Volatility

### 8.6.1 Hedging

Financial instruments such as futures contracts and options (designed to *lock-in* prices on future production) can be used in resource-rich states to reduce the risk of future adverse commodity price movements<sup>1</sup>. For a government or state company, the assumption is that if international energy and mining companies and traders can use hedging strategies to reduce risks from price volatility, why should they not do the same? Instead of trying to cope with the effects of a volatile and unpredictable revenue stream, the aim of a hedging programme is to make the revenue stream itself more stable.

To date, only a very few resource-rich states (such as Mexico and Venezuela) have tried to reduce their exposure to commodity price risk by using these instruments, although a few others, like Kazakhstan and Russia, have considered it<sup>2</sup>. The Mexican experience is the most commonly cited. Each year, the country hedges a large part of its exports of oil (about half of the volume of oil exports) by means of put options to insure against a decline in international oil prices. The Asian put options it purchases have a strike price equal to the oil reference price used in the budget. In practice, the program “has been particularly useful after the collapse of oil prices at the onset of the global financial crisis, when oil prices were 20 percent below the budgeted price”<sup>3</sup>.

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<sup>1</sup> James A Daniel, Hedging Government Oil Price Risk, IMF Working Paper, Fiscal Affairs Department, WP/01/185, November 2001. There are three possible approaches: use of futures to fix now the price a government will receive in the future, giving it certainty about the oil revenue it would receive for budgetary purposes; use of options which would work like the purchase of an insurance policy; and engagement by the government with a financial institution to provide a tailor-made arrangement to hedge the oil price risk according to the government’s risk preferences and the cost of the arrangement (over the counter, including commodity swaps, bonds or loans or combinations of all instruments): see P Daniel, Petroleum Revenue Management: An Overview, p.41 (unpublished).

<sup>2</sup> Colombia, Algeria and the State of Texas are reputed to have experimented with it. The Finance Ministry of Kazakhstan was reported to be in discussions to develop a hedging program with Goldman Sachs in November 2014 due to a fall in oil prices, but by early 2016 had not proceeded with this option: Kazakhstan to Use National Fund for Oil Price Damage Limitation: <http://oilprice.com/Energy/Oil-Prices/Kazakhstan-To-Use-National-Fund-For-Oil-Price-Damage-Limitation.html>, (last visited 12 April 2016) and Russia was similarly reported to be preparing the technical infrastructure necessary to implement an oil hedging programme like that of Mexico. This was very much a matter of preparation for possible future use however: January 22, 2016, Financial Times, ‘Russia considers hedging part of its oil revenues’.

<sup>3</sup> IMF (2015), Fiscal Monitor: The Commodities Roller Coaster: A Fiscal Framework for Uncertain times, p. 22; the program is discussed in detail by Duclaud J and G Garcia (2012), “Mexico’s Oil Price-Hedging Program”, chapter 15 in ‘Commodity Price Volatility and Inclusive Growth in Low-Income Countries, ed by R Arezki, CA Pattillo, M Quintyn, and M Zhu, IMF, Washington DC.

*The main deterrents are political rather than practical.* Governments have no control over the commercial decisions taken about hedging, and are exposed to asymmetric political costs where hedging results in losses: “(f)or an individual finance minister (or head of a state oil producer), the political costs of hedging may outweigh the benefits, even if the economic case is clear”<sup>4</sup>. For example, this can occur when the hedged sales price turns out to be substantially less than the actual future market price; in such circumstances, the responsible authorities may find themselves out of a job; by contrast, they are likely to escape blame when non-hedged prices fall in line with a fall in market prices. It may also be difficult to justify the expense of hedging, which can be considerable (premium payments on over-the-counter transactions, for example). In one notorious instance, the government of Ecuador lost US\$20 million (in 1993 money) to Goldman Sachs through hedging<sup>5</sup>.

*The most significant obstacle of all might be the institutional capacity issue.* Hedging requires substantial specialized technical capacity which is not always available in emerging resource-rich countries. Given the potential scale of losses, it would be extremely dangerous to allow people without such expertise to run a hedging program. An illustration of this was a scandal in Chile’s national copper company, CODELCO, when large losses were found to have accumulated some years ago<sup>6</sup>.

Further, like resource funds, hedging does not stabilize expenditures, directly or indirectly. That would require additional fiscal policy decisions. It is perfectly possible to have a resource fund or to hedge revenues and yet undertake a recklessly pro-cyclical fiscal policy funded, if needed, by borrowing.

For gas producers hedging presents far fewer problems. Many long-term gas contracts are in practice ‘internally hedged’: they set fixed prices with an escalator or are linked to a basket of fuels with a floor and ceiling, or they prescribe a portion of annual sales to be made at an initially fixed price.<sup>7</sup>

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<sup>4</sup> Daniel, J. (2003). Hedging Government Oil Price Risk. In: Davis, J., Ossowski, R., and Fedelino, A. (eds.). *Fiscal Policy Formulation and Implementation in Oil Producing Countries*. Washington, D.C.: IMF Media Services Division, 373.

<sup>5</sup> Financial Times, 22 January 2016: ‘Russia considers hedging part of its oil revenues’.

<sup>6</sup> Between 1993 and 1994, Davila (the Company’s former chief of the Future Markets department, conducted several deals, mainly copper transactions, without a production backup and at a price that was lower than the Company’s official quotation, generating total losses of US\$218.3 million: Santiago Times, ‘Codelco recovered 47 percent of losses generated by Davila’, 17 March 2003.

<sup>7</sup> Daniel, P. (2007) *Petroleum Revenue Management: An Overview*, ibid, p.42.

## 8.6.2 Economic Diversification

One response to volatility is to introduce a diversification policy. It can include “prudent macroeconomic management over the resource cycle to help stabilize the economic setting for the traded sectors”<sup>8</sup>. However, experience to date among high rent producing countries with low linkage levels is not encouraging. Extreme price cycles have proved very challenging to oil exporting countries in particular, as they try to sustain investment in the non-oil traded sectors, which tend to become destabilized by large swings in the real exchange rate. Even the poster child of success in avoiding the resource curse, Botswana, has been challenged in this respect<sup>9</sup>. Malaysia and Indonesia stand out as exceptions however, with the latter shifting towards manufactured exports over time<sup>10</sup>. Malaysia had a broad resource endowment and a favourable economic location, like Indonesia. The latter had a large, low-cost supply of labour which encouraged the shift to low-wage manufacturing and exports, while investing strongly in agriculture to ensure a cheap food supply. Chile, Sri Lanka and Thailand are other examples<sup>11</sup>.

In this respect, institutional quality is important since manufacturing is more transactions-intensive in the local economy than subsistence agriculture or offshore infrastructure: it needs a business environment in which contracts will be enforced after they are concluded, and assurance that the rule of law will provide elementary levels of security. Where such institutional quality is lacking, the discovery of large-scale extractive deposits offers an opportunity for a country to develop it, either by creating a special development zone for this purpose or by ramping up the quality of the state institutions and its delivery of services to the economy. Policies “to reduce this institutional gulf ... are therefore of the utmost importance for diversification policy”<sup>12</sup>

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<sup>8</sup> Gelb, A (2011). Economic Diversification in Resource-Rich Countries, in Arezki et al (2011), 55-80 at 64. See also: OECD/United Nations (2011). Economic Diversification in Africa (looks at the economies of five African countries and analyses their diversification profiles and strategies, noting that the small size of some African economies means there are benefits in terms of economies of scale from regional initiatives, and opportunities from South-South linkages); for the Middle East, see Martin Hvidt (2013) ‘Economic Diversification in GCC Countries: Past Record and Future Trends’, LSE/Kuwait Programme on Development, Governance and Globalisation in the Gulf States, No 27.

<sup>9</sup> “The mining sector continues to be the backbone of Botswana’s economy, despite efforts to diversify”: Botswana’s Mineral Revenues, Expenditure and Savings Policy: A Case Study, Africa Natural Resources Center (2016), p. 7.

<sup>10</sup> RWI, ‘Diversification in Resource-Dependent Countries’, June 2012: this includes case studies of Azerbaijan, Botswana, Chile, Indonesia, Kazakhstan and Malaysia. It finds that firm commitments, sound macro-economic policies, investments in infrastructure and strong institutions are critical to success.

<sup>11</sup> I Coxhead (2007), ‘A New Resource Curse? Impacts of China’s Boom on Comparative Advantage and Resource Dependence in Southeast Asia’, World Development, vol 35, No 7, pp.1099-1119.

<sup>12</sup> Gelb (2011), p.67.

There is a large body of literature that addresses the development of domestic linkages between the mining sector and the wider economy<sup>13</sup>. This linkage is also given much emphasis in the *African Mining Vision* and similar declarations<sup>14</sup>. Key elements mentioned in **Chapter 5** and revisited in later chapters were policies on local content and resource corridors.

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<sup>13</sup> For example, IFC (2013), *Fostering the Development of Greenfield Mining-Related Transport Infrastructure through Project Financing*, Washington DC; and other literature cited in **Chapter 2** and **9** of the *Source Book*.

<sup>14</sup> See the literature review in Chapter 2 of the *Source Book*.