

Can Sovereign Wealth Funds Mitigate the Negative Impact of Volatility?

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About the authors

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In a nutshell

- *Commodity price volatility harms economic growth of natural resource dependent countries, which tends to result in disappointing long-term economic performance for these countries.*
- *These negative effects operate through lower accumulation of physical capital and lower TFP.*
- *Having a Sovereign Wealth Fund can mitigate such negative growth effects, especially in countries that enjoy higher-quality institutions (and hence less pro-cyclical fiscal policies).*
- *Our results have strong policy implications, including better management of volatility in resource income by setting up forward-looking institutions, and improvements in macroeconomic policy frameworks.*

Does commodity-price volatility slow economic growth?

Commodity-dependent countries are a heterogeneous mix of high-, middle-, and low-income countries that possess a large share of the world's natural resources (90 percent of crude oil reserves for example), and represent close to 20 percent of world GDP and global exports. Natural resource wealth has enabled some of these countries to accumulate substantial assets (placed in Sovereign Wealth Funds (SWFs) in a growing number of countries), and provided a buffer against commodity-price shocks in several cases. However, not all resource-rich countries have been able to leverage their assets to raise long-term economic growth due to several factors, including pro-cyclical fiscal policies (especially in the Middle East), underdeveloped public financial management frameworks, and fragile political systems. For instance, Frankel et al. (2013) show that quality of institutions can play a key role

in making fiscal policy less pro-cyclical, hence turning commodity wealth into a blessing rather than a curse. Moreover, when governments rely heavily on revenues derived from commodities, they are subject to commodity price volatility, which if not managed properly, can result in higher GDP growth volatility and disappointing long-term economic performance.

In a recent paper, we study the impact of commodity price volatility on long-term economic growth in a sample of 69 commodity-dependent countries over the period 1981 to 2014 – see [Mohaddes and Raissi \(2017\)](#). To this end we construct a Commodity Terms of Trade (CToT) volatility measure, based on a monthly country-specific commodity-price index (using prices of 45 primary commodities), that depends on the composition of a country’s commodity export- and import-baskets. We also study the possible growth channels – i.e. total factor productivity (TFP) and physical capital accumulation – through which CToT volatility (and SWFs) affect long-term economic growth.

Table 1: Sovereign Wealth Funds by Origin and Inception

Country	Origin	Inception	Country	Origin	Inception
Algeria*	Oil and Gas	2000	Mongolia	Minerals	2011
Angola*	Oil	2012	New Zealand	Non-Commodity	2003
Australia	Non-Commodity	2006	Nigeria*	Oil	2012
Azerbaijan	Oil	1999	Norway	Oil	1990
Bahrain	Oil	2006	Oman	Oil and Gas	1980
Bolivia	Non-Commodity	2012	Panama	Non-Commodity	2012
Botswana	Minerals	1994	Peru	Non-Commodity	1999
Brunei Darussalam	Oil	1983	Qatar*	Oil and Gas	2005
Chile	Copper	2006	Russia	Oil	2008
Gabon*	Oil	1998	Saudi Arabia*	Oil	1992
Ghana	Oil	2011	Senegal	Non-Commodity	2012
Indonesia	Non-Commodity	2006	Trinidad and Tobago	Oil and Gas	2000
Iran*	Oil and Gas	1999	United Arab Emirates*	Oil	1976
Kazakhstan	Oil	2000	Venezuela*	Oil	1998
Kuwait*	Oil	1953			

Notes: Some countries have more than one fund, here we have taken the inception year to be that of the first fund, which tends to be the main one. * indicates that the country is a member of the Organization of the Petroleum Exporting Countries (OPEC). Source: Sovereign Wealth Fund Institute.

As one of the main short-term objectives of SWFs is to counter the adverse macroeconomic effects of commodity price volatility, we also investigate whether

SWFs have been successful, on average, in fulfilling this objective. To do this we use information from the Sovereign Wealth Fund Institute to identify which of the 69 countries in our sample have established SWFs. We end up with 29 countries with SWFs in our sample listed in Table 1, where we also identify the origin of the accumulated funds as well as the inception year for each of these countries. Interestingly one can see that most of these SWFs (19 out of 29) were set-up using revenues from exports of crude oil and gas and that a large portion (10 out of 29) are established in countries that are major oil exporters and are members of the Organization of the Petroleum Exporting Countries (OPEC), denoted by * in Table 1. It is estimated by the Sovereign Wealth Fund Institute that in late 2016 the total assets of SWFs were around \$7.5 trillion with over 60% of these being funded by oil and gas exports. The prominent examples are Norway’s Government Pension Fund (\$830), Abu Dhabi Investment Authority (\$773), Saudi Arabia’s Fund (SAMA) (\$685), Kuwait Investment Authority (\$592), and Qatar Investment Authority (\$256), with the number in brackets referring to their market values in billions in June 2015. While a few SWFs have existed for over half a century (such as the Kuwait Investment Authority which was founded in 1953), as Table 1 shows a large number of funds have been established (by major commodity exporters in particular) over the last two decades. These SWFs were established for a variety of reasons, ranging from fiscal stabilization (that is to help smooth the impact on government spending of revenues that are large and volatile), to long-term saving for future needs of the economy, or of specific groups such as pensioners, or for future generations. During the most recent oil-price boom (2002-2008) these funds accumulated large assets, have played a key role in reserve management of commodity revenues, and contributed to macroeconomic stabilization in several cases.

Utilizing a novel panel-data estimation technique, the empirical results, based on our sample of 69 countries over the period 1981 to 2014, show that a highly-volatile CToT harms economic growth of natural resource dependent countries. This is primarily due

to price volatility, which has been intrinsic in commodity markets. Examining the channels through which these effects operate, our empirical evidence suggests that CToT volatility is associated with lower accumulation of physical capital, lower TFP, and thereby weaker growth. The negative association between CToT volatility and TFP growth lends itself to the argument that natural resource abundant countries have fewer possibilities for technological progress. Moreover, while a commodity price boom increases the physical capital stock, higher volatility of commodity prices significantly reduces it. Therefore, capital accumulation seems to be another important channel through which volatility affects GDP per capita growth (See Cavalcanti, Mohaddes and Raissi (2015) for details). In general, economic agents tend to save less in commodity abundant countries because they perceive the revenues from primary commodity exports to be a permanent stream of future income. Moreover, the uncertainty arising from commodity price volatility might suppress the accumulation of physical capital by risk averse investors. Finally, terms of trade volatility adversely affects capital accumulation and growth by raising the country's default risk, hence widening the country spreads, and lowering its borrowing capacity.

Do SWFs help mitigate the negative growth effects of commodity price shocks?

Nonetheless, there are significant differences across countries as some economies have been able to grow strongly and sustainably through multiple commodity price cycles (e.g. Chile and Norway), while many have not. Trying to explain these variations in performance, we show that having a SWF can mitigate such negative growth effects, especially in countries that enjoy higher-quality institutions (and hence less pro-cyclical fiscal policies) – see next section. In other words, countries that have a SWF, on average, performed better when it comes to mitigating the negative growth effects of CToT volatility and managed to sustain a higher level of capital accumulation in the face of the extreme volatility in resource revenues. Put differently, one is better able to dampen the

negative long-run growth effects of CToT volatility with a well-functioning SWF that can effectively deal with the adverse effects of (excess) commodity price volatility – add to the fund when commodity prices are high and transfer less to it or even withdraw from it when prices are low to smooth expenditure.

For instance, oil exporters in the Persian Gulf, enjoyed a substantial increase in their SWFs assets while oil prices were high for most of the past decade, but more recently many of them have dipped into their SWFs following the collapse in oil prices since 2014. Rather than cutting back on public expenditure (social welfare programs, public salaries, and infrastructure spending), many governments either withdrew money from their funds (such as Russia and Saudi Arabia) or alternatively transferred less revenue to these funds. To give a concrete example, since 1976 the Kuwaiti government has by law transferred a minimum of 10 percent of all state revenues to the Future Generation Fund (FGF). However, with oil prices having been high for almost a decade it was announced in March 2013, following an Amir budgetary decree, that the minimum contribution is to be increased to 25 percent. But the following year oil prices fell sharply and remained low, and so the decision was reversed and the contribution to the FGF was cut back to 10 percent from fiscal year 2015/16.

Is there a potential role for institutions and policy frameworks?

Given the large heterogeneity within the 29 SWF countries in our sample, a follow-up question is the potential role of institutions and policy frameworks, and in particular fiscal policy, in dampening the negative effect of CToT volatility. The results illustrate that within the SWF sample, countries with stronger institutions, have been better able to mitigate the negative growth effects of CToT volatility. Given that countries with weak political institutions are more prone to wasteful spending and pro-cyclical policies, long-term stabilization savings and sound institutional frameworks are also essential for

dampening the negative effects of CToT volatility via less frequent “stop-go” cycles in public investment and by enhancing productivity.

Overall, the results suggest that while volatility represents a fundamental barrier to economic prosperity, the establishment of SWFs, as well as appropriate institutions, can help mitigate the negative effects. Therefore, creating a mechanism of short-term management of commodity price volatility through stabilization funds should be a priority for commodity dependent countries, complemented by well-functioning public financial-management systems.

What are the macroeconomic policy implications?

The undesirable consequences of commodity price volatility can be avoided if resource-rich countries are able to improve the management of volatility in resource income by setting up forward-looking institutions such as SWFs, or adopting short-term mechanisms such as stabilization funds with the aim of saving when commodity prices are high and spending accumulated revenues when prices are low. The government can also intervene in the economy by increasing public capital expenditure when private investment is low, using proceeds from the stabilization fund. Alternatively, the government can use these funds to increase the complementarities of physical and human capital, such as improving the judicial system, property rights, and human capital. This would increase the returns on investment with positive effects on capital accumulation, TFP, and growth. Improving the functioning of financial markets is also a crucial step as this allows firms and households to insure against shocks, decreasing uncertainty and therefore mitigating the negative effects of volatility on investment and economic growth.

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