

BOX 4.2 Do fiscal rules and sovereign wealth funds make a difference? Lessons from country case studies

Commodity price movements often induce more procyclical and volatile fiscal policy, which leads to boom-bust cycles and hinders growth in commodity-exporting emerging market and developing economies (EMDEs). In recent decades, many commodity exporters have adopted fiscal rules and established sovereign wealth funds (SWFs) to partly address these challenges. The adoption of these institutional arrangements, as well as their effectiveness in reducing fiscal procyclicality and fiscal volatility, has not been uniform across countries. Overall, fiscal rules and SWFs are found to have been most effective in addressing procyclicality and volatility when well-designed and supported by strong institutions. Chile and Norway, in particular, have managed their commodity exposure relatively successfully owing to their rigorous fiscal frameworks and strong institutions, offering lessons for other resource-dependent countries.

Introduction

Commodity dependence presents substantial challenges for many emerging market and developing economies (EMDEs). Commodity price volatility generally results in unpredictable swings in commodity-related export and fiscal revenues, particularly in countries where commodities account for a large share of fiscal revenue, which leads to volatile and procyclical public expenditure—that is, expenditure that reinforces rather than moderates a business cycle. To manage the impact of commodity price volatility on fiscal policy, commodity-exporting countries have adopted a variety of policy frameworks, such as fiscal rules and sovereign wealth funds (SWFs). Over the past two decades, several countries have also set up publicly funded independent fiscal institutions, such as “fiscal councils,” to monitor fiscal policy. The independent fiscal monitoring institutions are supposed to act as watchdogs by highlighting fiscal risks. However, these policy frameworks and institutions are far from homogenous and often take different forms in different countries.

This box assesses the effectiveness of fiscal rules and SWFs in managing commodity price shocks in selected commodity-exporting countries. It addresses the following questions:

- How do fiscal rules and SWFs differ among commodity-exporting countries?
- How have fiscal rules and SWFs helped in reducing fiscal procyclicality and volatility?

Sovereign wealth funds and fiscal rules

Sovereign wealth funds

SWFs are special purpose investment funds or arrangements that are owned by the government and

are designed to expand national wealth and stabilize business cycles. SWFs hold, manage, or administer assets to achieve financial objectives and employ a set of investment strategies. The objectives of SWFs depend on country-specific circumstances, which may evolve over time. SWFs include:^a

- *Stabilization funds.* These funds are established to insulate the economy from commodity price volatility—for example, the Economic and Social Stabilization Fund in Chile. Revenue flows into the funds when government receipts are above a benchmark and money can be withdrawn from the fund when government revenue is below the benchmark level.
- *Savings funds.* The primary objective of a savings fund is to build wealth for future generations and ensure intergenerational equity in countries that rely on nonrenewable natural resources, such as oil. Examples include the Petroleum Fund in Timor-Leste and the Pula Fund in Botswana. These funds are characterized by fixed inflows of government revenue and discretionary outflows—reflecting a higher tolerance for short-term volatility and a focus on longer-term returns. Savings funds are established when a government can put aside funds for the future and be reasonably confident that the assets in the fund will not need to be liquidated in the short- and medium-run (Al-Hassan et al. 2018).
- *Financing funds.* A financing fund combines the characteristics of a stabilization fund and a savings fund, such as the SWF of Norway. It is fully integrated into the government budget process.

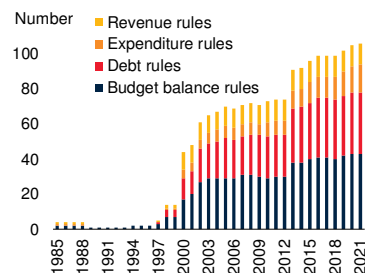
a. Other types of SWFs are reserve investment corporations and development wealth funds. These types of funds are not included in this analysis.

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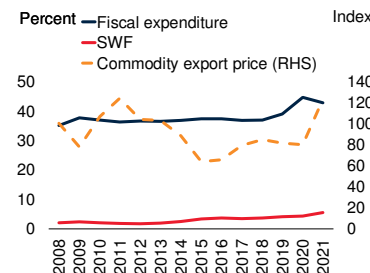
FIGURE B4.2.1 Fiscal rules, fiscal expenditures, and SWFs in commodity exporters

Since the 1990s, the adoption of fiscal rules by commodity exporters has increased, with budget balance and debt rules being the most prevalent type of rules. Sovereign wealth funds in Australia and Norway have consistently accumulated resources in line with their long-term objectives.

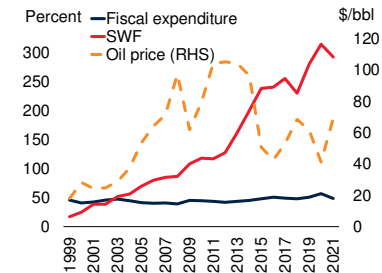
A. Types of fiscal rules in commodity exporters



B. Australia



C. Norway



Sources: Davoodi et al. (2022); Future Fund (website); International Monetary Fund; Norges Bank; World Bank.
Note: bbl = billion barrels; SWF = sovereign wealth fund.

A. Panel shows types of fiscal rules for commodity-exporting countries. The sample consists of four advanced economies and 44 emerging market and developing economies.

B.C. Fiscal expenditure and assets under management of SWFs are expressed as percentages of GDP.

Typically, inflows to the fund come from the resource revenues of the government and the returns on the fund's investments. The outflows are transfers to cover any nonresource budget deficit. As a result, the fund receives positive net transfers if, and only if, the government runs a budget surplus when resource revenues are included. This is not necessarily the case for stabilization and savings funds (for example, that of New Zealand) because these funds are not linked to government budget deficits or surpluses (Al-Hassan et al. 2018). A key feature of the financing fund model is the fiscal policy guideline (or rule) which specifies the desired trajectory of the nonresource budget deficit that is to be financed by transfers from the fund.

Fiscal rules

Since the 1990s, rules-based fiscal frameworks have become increasingly prevalent across the world. Although fiscal rules were designed to be rigid to constrain government actions and promote compliance, these rules have been evolving, especially in response to economic crises (Budina et al. 2013).

There are four main types of fiscal rules, based on the budgetary aggregate they aim to constrain (Davoodi et al. 2022):

- *Budget balance rules.* The objective of a budget balance rule is to constrain the size of the deficit and thereby control the evolution of the debt ratio (for example, Indonesia, Mexico, and Nigeria). Because such rules do not set numerical limits on budgetary aggregates, they are typically considered procedural rather than numerical fiscal rules. If followed properly, they can help prevent debt sustainability issues. However, in some cases, budget balance rules can also induce procyclicality by forcing expenditures to follow revenues, which are usually procyclical.
- *Revenue rules.* These rules set ceilings and floors on revenues and are aimed at boosting revenue collection and/or preventing an excessive tax burden. Most of these rules are not linked directly to the control of public debt because they do not constrain spending. Furthermore, setting ceilings/floors on revenues can be challenging because

BOX 4.2 Do fiscal rules and sovereign wealth funds make a difference? Lessons from country case studies (continued)

revenues often have a large cyclical component—fluctuating in line with the business cycle. Revenue rules alone could result in procyclical fiscal policy because floors generally do not account for automatic stabilizers (such as unemployment benefits) in a downturn and ceilings don't account for them in an upturn. Revenue rules can, however, directly target the size of the government.

- *Expenditure rules.* Expenditure rules set limits on total, primary, or current government expenditures to limit the procyclicality of fiscal policy (for example, Botswana, Chad, and Ecuador). Such limits are typically set either in absolute terms, or growth rates, and occasionally, as a percentage of GDP. The time horizon often ranges between three and five years. Expenditure rules can constrain spending during booms, when windfall revenue receipts are temporarily high and deficit limits are easy to comply with. Such rules, however, are not directly linked to the objective of debt sustainability because they do not constrain the revenue side. Moreover, expenditure rules do not allow much scope for discretionary fiscal stimulus during bad economic times.
- *Debt rules.* These rules focus on long-term sustainability by setting an explicit anchor or ceiling for public debt (often as a percentage of GDP). A debt rule is relatively easy to communicate and, by definition, most effectively ensures convergence to a debt target. However, debt rules do not provide clear short-term guidance for policy makers because it takes time for budgetary measures to affect debt levels.^b Moreover, fiscal policy may become procyclical if the economy is hit by shocks and the debt target, defined as a percentage of GDP, is binding. Conversely, when debt is well below its ceiling, such a rule does not provide binding guidance (Budina et al. 2013).

As of 2021, budget balance and debt rules were the most prevalent type of rules in commodity-exporting countries. Budget balance rules accounted for about 41

percent of fiscal rules followed by debt rules which were about 33 percent of total fiscal rules (figure B4.2.1.A). Expenditure rules (15 percent) and revenue rules (11 percent) accounted for the rest.

Country case studies

This box analyzes the use of SWFs and fiscal rules in seven diverse commodity-exporting countries: Argentina, Australia, Botswana, Chile, Indonesia, Norway, and Timor-Leste. The analysis aims to include a diverse set of commodity exporters both in terms of the types of commodity exports (agriculture, energy, and minerals) as well as the concentration of commodity exports (that is, single-commodity exporters as well as countries with a more diverse export portfolio). To draw useful insights for resource-rich countries considering adopting fiscal rules and SWFs to mitigate fiscal procyclicality and volatility, the box analyzes countries with well-functioning fiscal rules and SWFs, countries with mixed experiences, and countries without fiscal rules and SWFs. Finally, the sample includes both advanced economies and EMDEs in different geographical regions.

Australia, Chile, and Norway

These countries have designed their SWFs to help manage the fiscal effects of fluctuations in commodity export prices and revenues. Australia and Norway have designed their funds for long-term purposes, while Chile has designed its fund for short-term purposes. These countries have also established fiscal rules and a strong institutional framework that allows them to reduce or avoid fiscal procyclicality (Arezki et al. 2012; Bauer 2014; Frankel 2011). The combination of good institutions, SWFs, and fiscal rules has enabled these countries to manage their commodity-based revenues and create sustainable frameworks. Australia combines well-developed fiscal frameworks with broad principles (for example, on debt sustainability) with more flexible numerical rules or guidelines. Chile and Norway also rely on more flexible guidelines and rules supported by strong institutions and transparency on fiscal plans, and are often regarded as countries with the most successful fiscal frameworks and institutions to manage natural resource wealth (Lam et al. 2023).

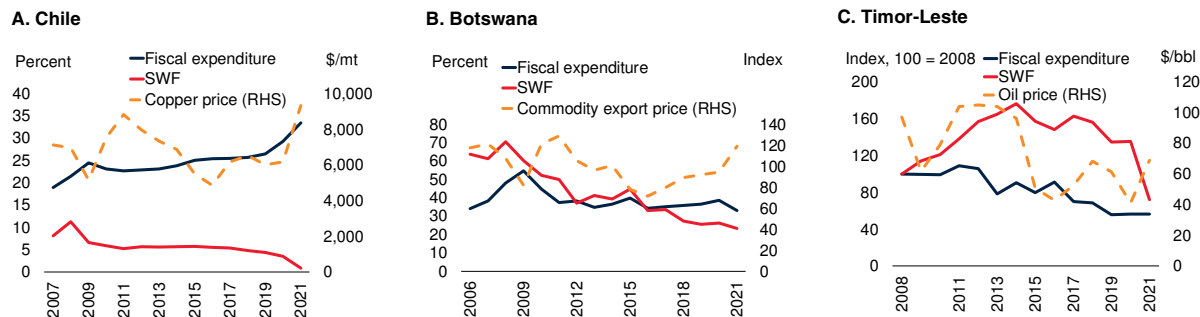
Australia. Australia's commodity exports comprise iron ore, coal, gold, liquified natural gas, and animal meat.

b. Debt levels can also be affected by developments outside the control of the government, such as changes in interest rates and the exchange rate, as well as "below-the-line" financing operations (such as financial sector support measures), which could result in large fiscal adjustments.

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FIGURE B4.2.2 Fiscal expenditures and SWFs in Chile, Botswana, and Timor-Leste

Chile used its stabilization fund as needed during its 2019 social crisis and the pandemic. Botswana and Timor-Leste have demonstrated more procyclical fiscal policy, although fiscal rules have supported the accumulation of sizable financial assets. The quality of institutions seems to play an important role in influencing how these countries manage resource abundance.



Sources: Bank of Botswana; Fondo de Estabilización Económica y Social (website); International Monetary Fund; Timor-Leste Petroleum Fund (website); World Bank.
Note: bbl = billion barrels; mt = metric ton; SWF = sovereign wealth fund.

A.B. Fiscal expenditure and assets under management of SWFs are expressed as percentages of GDP.
C. An index for fiscal expenditure and SWF assets under management was constructed starting in 2008.

The country's fiscal framework is based on the Charter of Budget Honesty Act 1998 (Commonwealth of Australia 2014), which provides for "constrained discretion," that advocates a principles-based approach rather than a numerically oriented, rules-based approach. It adds transparency and discipline to the budget formation and execution process (Bhattacharyya and Williamson 2011; Chohan 2017). The Charter defines the principles of sound fiscal management as comprising several components, including an expectation that fiscal policy contributes to adequate national saving and to moderating cyclical fluctuations in economic activity, as appropriate (Chohan 2017). The country's SWF, the Future Fund, was established in 2006 and accumulates revenue from budget surpluses for long-term purposes, such as pensions (figure B4.2.1.B).^c The minister of finance may make certain discretionary transfers from time to time.

c. The Future Fund has also received contributions from the proceeds of the sale of the government's stake in Telstra in late 2006 and the approximately 2 billion shares in Telstra that remained after this sale process. Also, it received contributions from a combination of budget surpluses, proceeds from the sale of the government's holding of Telstra, and the transfer of remaining Telstra shares (Al-Hassan et al. 2018).

Norway. Commodity exports of Norway are concentrated in crude oil and petroleum gas. The country has a SWF comprising two separate investment funds.

- The Government Pension Fund-Global (GPGF), formerly the Petroleum Fund, was established in 1990 to collect revenue from oil-related income sources to support government saving and to promote an intergenerational transfer of resources (Velculescu 2008). In this way, the government's revenue from petroleum production does not enter the government budget directly. Norway's GPGF is the largest natural-resource-based SWF in the world with its latest annual holdings at more than US\$1.2 trillion, equivalent to 256 percent of GDP at the end of 2022 (figure B4.2.1.C).
- The Government Pension Fund Norway (GPFN) saves surpluses of the national insurance scheme and held assets of US\$32.7 billion, or 6 percent of 2022 GDP (Lam et al. 2023).

Political will to turn nonrenewable resources into wealth for future generations paved the road for Norway's fund. The GPGF is fully integrated with the

BOX 4.2 Do fiscal rules and sovereign wealth funds make a difference? Lessons from country case studies (continued)

state budget and builds on existing institutions to strengthen the budget process. It finances the non-oil budget without constraints from any inflow or outflow rules between the fund and the budget. Norway has consistently sustained budget surpluses over the past two decades (except for 2020), with net inflows to the GPFG accumulating over time. The central government in Norway has the so-called “bird-in-hand rule” or “spending rule” (established in 2001), which stipulates that the non-oil structural deficit, and thus withdrawals from the fund over time, should correspond to the estimated annual real return of the fund, which has been 3 percent since 2017.

Norway’s spending rule implies that the non-oil budget, and hence the economy, are isolated from both the large variations in oil revenues that result from oil price fluctuations as well as the volatility in the value of the fund due to variations in stock prices. This, in turn, helps to dampen the cyclical swings in the economy. The linking of the structural, and not the actual, non-oil fiscal deficit to the expected real return on the assets of the wealth fund allows automatic stabilizers to work. Norway (unlike its Nordic peers) does not have a publicly funded independent body to monitor fiscal or other economic policy. Instead, it established a Model and Method Commission in 2011, which advises the Ministry of Finance.

Chile. Chile is the world’s biggest copper exporter—the metal accounts for about half of the country’s total exports. Chile’s fiscal policy management has been anchored on the successful implementation of SWFs, fiscal rules, and the recent creation of a fiscal council. Chile’s SWFs comprise two types of funds.

- The Economic and Social Stabilization Fund (ESSF) was established with the Fiscal Responsibility Law of 2006. The ESSF has been designed for short-term purposes, with the main objective of stabilizing fiscal spending and insulating the budget from economic downturns and volatile copper prices, thus reducing the need to issue debt. Provisions for contributions to and withdrawal from the ESSF are well established in the law and closely tied to the fiscal rules. The ESSF has followed its mandate successfully and helped Chile finance countercyclical fiscal policy when needed. During the pandemic, the

government utilized the stabilization fund to provide fiscal support.

- The Pension Reserve Fund (PRF) aims to accumulate resources on a longer-term horizon. The PRF was created to support the state guarantee of pension and disability benefits. The funds’ governance and assets management strategy match international best practices (Lam et al. 2023).

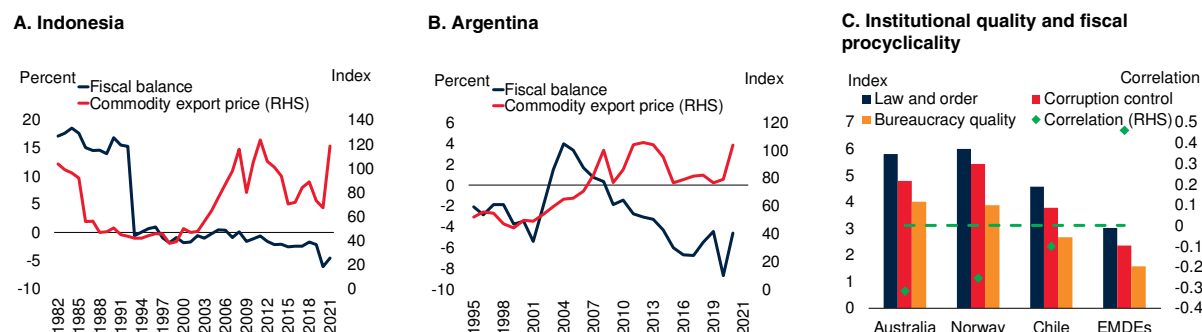
Chile’s fiscal rule, in place since 2001, limits the growth of budgeted central government spending to an estimate of structural revenue growth. The rule’s operation is supported by two expert panels that estimate long-term copper prices and the output gap. According to the rule, the authorities can run a deficit larger than the target if: (1) in a recession, output falls short of its long-run trend, or (2) the price of copper is below its medium-term (10-year) equilibrium (Frankel 2011). The ESSF is closely linked to the structural budget balance rule and has followed international best practices to have a flexible inflow and outflow mechanism, a feature similar to the arrangement in Norway (Lam et al. 2023). In addition to the fiscal rule, in January 2018 Chile created the Autonomous Fiscal Council to replace the Advisory Fiscal Council established in 2013. The new fiscal council also continues to have legal independence, its own resources, and has a broader mandate.

The presence of credible fiscal rules; the strong governance structures that provide the space for their implementation; and the recent creation of competent, independent, and adequately resourced fiscal councils have enabled Chile to develop some of the best fiscal management institutions among commodity-exporting EMDEs (Izquierdo et al. 2008). For example, in the aftermath of the 2009 global recession, Chile was able to conduct a countercyclical fiscal policy and maintain a low risk of debt distress. Government expenditures grew from about 23 percent of GDP in 2012-14 to about 25 percent of GDP in 2015-17 (figure B4.2.2.A). This helped mitigate output volatility, with GDP growth declining by 2 percentage points between 2012-14 and 2015-17, compared with an average decline of 2.6 percent among other metal exporters (Richaud et al. 2019). Chile’s fiscal sustainability was maintained on account of its fiscal rule, which allowed the country to save a substantial proportion of commodity revenues into its SWF during the commodity supercycle (World

BOX 4.2 Do fiscal rules and sovereign wealth funds make a difference? Lessons from country case studies (continued)

FIGURE B4.2.3 Institutional quality and fiscal procyclicality

Indonesia's use of fiscal rules has enabled it to follow a prudent fiscal balance path despite increases in its export prices. Argentina's fiscal balance has been deteriorating since the mid-2000s despite generally increasing export prices. Australia, Chile, and Norway have followed prudent fiscal paths, with a relatively low correlation between government spending and commodity export prices. Establishing sovereign wealth funds and fiscal rules supported by strong institutional frameworks have allowed these countries to reduce or avoid fiscal procyclicality.



Sources: Arroyo Marioli and Végh (2023); International Monetary Fund; PRS Group (database); World Bank.

Note: EMDEs = emerging market and developing economies.

A,B. Fiscal balance as a percentage of GDP.

C. The institutional quality indexes give higher scores to countries with better metrics. "EMDEs" shows the simple average of 68 commodity-exporting countries across the three indicators from 1990-2019. The correlation is calculated between the GDP and the real government expenditure of a country after using the Hodrick-Prescott filter to remove the trend component of the time series.

Bank 2017). Part of these savings were drawn down to boost the economy in the wake of the global financial crisis. More recently, the SWF was crucial in financing a big fiscal stimulus package during the COVID-19 pandemic.

Botswana and Timor-Leste

Botswana. Diamond mining is the dominant economic sector in Botswana. The government established a sovereign wealth fund—the Pula Fund—in 1994 to serve both as a savings fund and as a short-term stabilization fund. The main objective of the fund is to put aside part of the income from diamond exports to benefit future generations. Another objective is to provide a stabilization mechanism for the government budget and foreign reserves during an economic downturn or slump in mineral prices. For example, the Pula Fund helped stabilize revenue and output during the 2007-09 global financial crisis. During 2008-10, the fiscal deficit in Botswana averaged about 9.4 percent of GDP, as mining revenues declined, and expenditures surged because of an increase in infrastructure spending to offset the adverse effects of the global economic

downturn and to boost long-term productivity (figure B4.2.2.B). The government financed this deficit by drawing upon savings from the Pula Fund and issuing new debt (World Bank 2016).

To prevent excessive spending and bolster fiscal sustainability, the government has established a set of fiscal rules, which have been mostly set in terms of non-binding political commitments. Botswana has four main rules, which target public spending, the fiscal balance, and debt:

- An indicative expenditure rule, the Sustainable Budgeting Index (SBI), was established in 1994 to ensure that mineral revenue is directed toward investments and savings, rather than consumption (Apeti, Basdevant, and Salins 2023; Kojo 2010). The SBI computes the ratio of recurrent spending (excluding development spending) over non-diamond revenue, with the objective of keeping the ratio below 1. Adhering to this rule sets aside diamond revenue to finance the accumulation of financial assets and development spending.

BOX 4.2 Do fiscal rules and sovereign wealth funds make a difference? Lessons from country case studies (continued)

- There is an indicative target on the composition of spending, which specifies that development spending should be at least 30 percent of total spending.
- An indicative target of a nonnegative fiscal balance was established in 2003.
- Foreign and domestic debt are each prohibited from exceeding 20 percent of GDP.

Surplus fiscal savings are deposited into the Pula Fund, which invests in long-term instruments overseas, and dividends from these investments are paid to the Treasury.

However, Botswana's fiscal framework has limitations. The sustainable budgeting principle does not directly incorporate a sustainability concept, and the Pula Fund has been reducing its overall size with withdrawals that are far larger than its inflow (Basdevant 2008; Jefferis 2016). The Pula Fund is not governed by clearly defined withdrawal or deposit rules, with deposits determined by the size of the budget surplus and withdrawals determined by the size of deficits (Markowitz 2020). On balance, however, Botswana has run a fairly prudent fiscal policy, avoiding many pitfalls experienced by other commodity-dependent countries. The strength and stability of Botswana's institutions have been key in achieving this success (Kojo 2010; Richaud et al. 2019).

Timor-Leste. Offshore oil and gas reserves are the main sources of Timor-Leste's resource revenues. The Petroleum Fund (PF) was established in 2005 to collect oil revenues and is managed by the central bank. The PF primarily invests in offshore assets, such as U.S. Treasury bonds. The PF's only expenditures are transfers to the budget, payment of operational management fees, and refunds of overpaid taxes. The government has adopted two fiscal rules to guide the use of oil revenue although these rules are not binding.

- The Estimated Sustainable Income (ESI), established in 2005, is a mechanism for integrating the Petroleum Fund and the budget. The ESI is calculated as 3 percent of total wealth plus the present value of projected future oil receipts. That combined amount is what the government is

authorized to spend each year. The value of future oil receipts is determined using the U.S. Energy Information Administration's forecasts for West Texas Intermediate crude oil. Transfers exceeding the ESI are allowed only if the government provides a justification that is approved by Parliament. The requirement is designed to constrain the government's ability to spend government resources without considering long-term fiscal sustainability (Apeti, Basdevant, and Salins 2023).

- The second rule is a political commitment to maintain a ceiling on the cost of external debt at 3 percent per year. It requires the government to benchmark the costs of external borrowing against the average rate of investment returns of the PF.

Channeling all oil revenues into the PF and requiring that the ESI rule is consistent with the sustainable use of funds should, in principle, mitigate the impact of oil price cycles on fiscal expenditure. However, the escape clauses have hindered the effectiveness of Timor-Leste's fiscal frameworks. Until 2008, government spending of oil revenue was conservative and transfers to the budget to finance the non-oil budget deficit were lower than the ESI. As a result, the net assets of the Petroleum Fund grew rapidly from US\$371 million in 2005 to US\$4.2 billion in 2008, the equivalent of 647 percent of non-oil GDP.

However, beginning in 2009, the country started to withdraw funds from the PF in excess of the ESI to finance large infrastructure projects (IMF 2012b). This led to a significant slowdown in accumulation of assets, but the PF still reached a level of about US\$19 billion in 2020. Since the global financial crisis, expenditures have followed oil prices closely (figure B4.2.2.C). Additionally, systematic excess withdrawals have been authorized in recent years, even prior to the pandemic. Given the low expected remaining lifetime of the country's oil fields, the PF is at serious risk of being depleted within the next decade (World Bank 2021).

In sum, escape clauses and weak institutions have diminished the effectiveness of fiscal rules in both Botswana and Timor-Leste, even when the rules were well-designed for long-run sustainability.

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Argentina and Indonesia

Indonesia. The main commodity exports of Indonesia are crude oil, gas, coal, palm oil, and rubber. Indonesia established a fiscal rule in 2003, which stipulates a fiscal deficit ceiling of 3 percent of GDP and a debt ceiling of 60 percent of GDP. At that time, the government's deficit was 1.7 percent of GDP, debt was at 57 percent of GDP, and the economy was well on its path to recovery after the Asian financial crisis. The aim of the fiscal rule was to solidify these gains and to promote future fiscal discipline by enacting these fiscal responsibility criteria into law (Blöndal, Hawkesworth, and Choi 2009). The rules have been respected and only temporarily lifted during the pandemic within legally pre-established norms.

Although Indonesia's fiscal rule has provided a solid nominal anchor and has safeguarded debt sustainability, fiscal spending has not been disconnected from the commodity price cycle (figure B4.2.3.A; Ismal 2011). For example, over 1993-2008, fiscal policy in Indonesia was not countercyclical (IMF 2009). The factors underlying limited fiscal responses to output fluctuations originated from structural weaknesses in public finance management and a lack of budget flexibility. This weakness included a high dependence on revenue from natural resources, narrow and volatile tax bases, low discretionary spending, and problems with budget execution.

Additionally, like many EMDEs, Indonesia relies on external financing which tends to be procyclical. Liquidity constraints, particularly during downturns, weaken the government's ability to run an expansionary fiscal policy to offset the effects of an economic slowdown. For example, during the 2007-09 global financial crisis, Indonesia's external borrowing spreads increased sharply, by nearly 1,200 basis points, much higher than its regional peers—Malaysia, the Philippines, and Thailand (IMF 2009). Another factor contributing to fiscal procyclicality is the high subsidy component of the budget, particularly energy subsidies, which leaves little room to respond to the economic cycle. However, the subsidies bill has been declining since 2015 owing to a series of reforms.

Argentina. The country's commodity export basket is based on agricultural goods. Unlike the other countries

analyzed here, Argentina has neither a sovereign wealth fund nor a set of fiscal rules. Fiscal policy in Argentina has been highly procyclical, with expenditures growing closely in line with commodity export prices during the commodity price cycle of the 2000s (Kaminsky 2010; Tenreyro 2012). The lack of strong institutions and fiscal rules contributed to a deterioration in fiscal outcomes once the commodity price boom ended (figure B4.2.3.B). As a result, the country has faced persistent fiscal challenges in the past decade (IMF 2020).

Conclusions

This box analyzes the experiences of selected commodity-exporting countries, all but one of which adopted fiscal rules and SWFs, in managing commodity price shocks. Insights from these case studies lead to the following conclusions.

First, *SWFs and fiscal rules differ among countries in objectives and design*. SWFs can have a long-term purpose (such as the accumulation of pension funds) or a short-term one (such as dampening the impact of temporary economic shocks). Some rules are designed to make an SWF sustainable, others to make them accessible when needed (Bauer 2014; Richaud et al. 2019). This aspect plays an important role in procyclicality because the criteria governing accessibility will determine the extent to which a government can access funds (and spend them). The sustainability conditions might also impose a limit on the amount that can be used even in times of need.

Second, *when supported by well-designed fiscal rules and institutions, SWFs can help reduce procyclicality*. International experience suggests that a strong political commitment to fiscal discipline, as well as strong institutions of good governance, are needed for SWFs to work well. Countries with good corruption control and law and order have been able to construct effective SWFs that reduce procyclicality by serving as a buffer against revenue volatility or as a source of financing during downturns (figures B4.2.3.C). In the cases of Norway (oil) and Chile (copper), commodity revenues are channeled directly into the SWFs, severing links from resource revenue to government spending. These funds are then available for specific purposes under certain conditions, avoiding or limiting fiscal

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procyclicality. In other cases, despite the presence of well-designed rules, the existence of escape clauses and weak institutions can render SWFs less useful (Perry 2007). These observations are in line with the findings of the analysis in this chapter, which shows that weak institutions limit the ability of governments to follow countercyclical fiscal policy despite having fiscal tools at their disposal.

Finally, *commodity-exporters without SWFs or robust fiscal rules are more prone not only to procyclical fiscal behavior but*

also to debt sustainability issues. In both Indonesia and Argentina, the two countries without an SWF in the sample, fiscal policies have been procyclical.^d While Indonesia has benefited from a set of rules aimed at debt sustainability, the absence of rules in Argentina has allowed more discretionary spending policies that have contributed to successive crises.

d. Indonesia established a SWF in 2021 that leverages state assets as well as public and private investment for infrastructure spending. It is not designed for fiscal stabilization.

ANNEX 4.1 Determinants of fiscal procyclicality

Cross-country regressions for commodity exporters are used to identify the main drivers of fiscal procyclicality. The dependent variable is the correlation between the cyclical components of real government spending and real GDP. The explanatory variables capture each of the four explanations for the existence of procyclical fiscal policy: the financial openness index; the political constraints index; the standard deviation of GDP; and control of corruption. Each of these four variables is significant and three of the four coefficients have the expected sign (table A4.1.1). More financial openness and better control of corruption reduce procyclicality while greater output volatility increases procyclicality. However, the effect of the political constraints index is counterintuitive, suggesting that either the “voracity effect” does not hold or that the political constraint index is not an appropriate proxy for the detrimental effects of more fiscal claimants on available resources. When all these variables are included together, they are jointly significant.

Robustness checks. In line with Lane (2003), GDP per capita, size of the public sector relative to GDP, and openness (sum of exports and imports as a percentage of GDP) are used as controls in the regression one at a time. GDP per

capita is significant at the 5 percent level but the two other control variables are not significant. In all three cases, the *F*-test for the joint significance of the four relevant explanatory variables is significantly different from zero at least at the 10 percent level.

The cross-country regressions are also used to analyze the role of institutional variables in driving fiscal procyclicality, as highlighted by the correlations reported in figure 4.4. The role of sovereign wealth funds (SWFs) and fiscal rules is also explored. To capture SWFs, a dummy variable is included that takes the value of 1 if a country has a SWF, and 0 otherwise. SWFs can play an important role in reducing procyclicality because these funds are designed to save during commodity price booms and dis-save during price slumps (Asik 2017). Results show that higher government stability, better law and order, and the presence of SWFs and fiscal rules all tend to reduce fiscal procyclicality (table A4.1.2). Overall, the analysis provides evidence that better institutions are associated with lower fiscal procyclicality.

Although fiscal rules may reduce procyclicality, the existence of fiscal procyclicality may prompt policy makers to adopt fiscal rules. To account for this potential endogeneity, instrumental variable estimation (two-stage least squares) is used with bureaucracy quality (from the PRS database) as an instrument.