

Rules-based Investment for Natural Resource Funds

August 2014

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Key messages

- Clear investment rules can enhance natural resource fund investment performance, limit excessive risk-taking and help prevent mismanagement of public resources.
- A fund's policy objective (e.g., saving resource revenues for the benefit of future generations; providing a source of short-term financing to stabilize volatile budgets) should inform its target financial return (e.g., 3-5 percent per year), which is an implicit statement of the fund's risk appetite.
- Most natural resource funds are governed by a set of detailed investment rules that constrain investment decisions. These generally include a target asset class allocation (percentage of investments in cash, fixed income, equities and alternative assets), restrictions on domestic investment, restrictions on risky asset purchases, and restrictions on the use of natural resource funds as collateral to guarantee public debt.
- In practice, there is significant scope for tailoring a natural resource fund's rules-based investment strategy to a country or region's specific needs, expertise and context. However, a large degree of discretion over investments is likely to lead to patronage or mismanagement.

Why are investment rules important?

The governments of resource-rich countries hold approximately \$3.3 trillion in foreign assets in natural resource funds (NRFs). These assets, purchased with the proceeds from oil, gas and mineral extraction and sales, belong to the government and by extension to the citizens of the country or region represented by that government. As such, NRF assets ought to be managed in the public interest and a fund's investment objectives narrowly tailored to policy objectives. For savings funds, objectives may include generating a high rate of return for the benefit of future generations while simultaneously limiting risk in order to protect the public's endowment. Investment rules might thus require an asset allocation that mixes safer, lower-return investments with higher-risk, higher-return investments, while prohibiting the riskiest types of investments (e.g., derivatives). In contrast, a stabilization fund requires assets to be turned into cash quickly to finance budget deficits. In this case, a rule can be crafted that forces investment managers to purchase exclusively or primarily liquid assets (e.g., U.S. Treasury bills).

Investment rules offer an important means of preventing mismanagement and addressing common challenges related to conflicts of interest, lack of managerial capacity and incentives rewarding excessive risk-taking. "Principal-agent" problems, wherein the managers of government assets act in accordance with personal rather than public interests, are a common

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source of conflict of interest. For example, a minister may have an interest in investing in businesses owned by his political allies in order to help him stay in power while the public interest may, depending on the economic context, favor investments in health and education, or in overseas assets for the benefit of future generations or to prevent Dutch Disease. To address this issue, most NRFs prohibit domestic investments.

Lack of managerial capacity to manage funds well or to oversee investment managers can lead to large losses. In this case, rules that limit the percentage of fund assets a single investment manager may control can help spread the risk of large losses due to misconduct or negligence. Similarly, rules can be written to ensure that only qualified managers manage fund investments.

Excessive risk-taking by investment managers can also create challenges. While the executive or ministry of finance is usually responsible for overall management of the NRF and sets investment policy, and the central bank or an independent agency acts as day-to-day operational manager, external managers are often hired to make some or all of the actual investments. Since much of their compensation comes from management fees and they can charge higher fees for trading more complex, higher-risk financial products, external managers have an incentive to push NRFs to invest in risky assets like derivatives.¹ While high-risk/high-return investments may have a place within even a very conservative private institutional investor's overall portfolio, as custodians of public funds NRF managers have a responsibility to safeguard NRF assets and prevent waste or excessive risk-taking. Detailed investment rules, such as those limiting purchases of high-risk assets, can help address excessive risk-taking.

The experience of the Libyan Investment Authority (LIA) under the Gadhafi regime illustrates the risk of failing to address the challenges of conflict of interest, poor managerial capacity and excessive risk-taking. In a prime example of using public funds for personal gain, the LIA invested in opaque hedge funds run by friends of the regime, including a \$300 million investment in Palladyne International Asset Management, a previously unheard-of fund with links to the former chairman of Libya's National Oil Corporation. Despite investing only slightly more than half of these funds, Palladyne recorded more than \$50 million in losses from 2008 to mid-2010. Many institutional investors, including NRFs with riskier investment strategies like Norway's Government Pension Fund Global and the Alberta Heritage Savings Trust Fund (Canada), lost significant amounts from 2008 to 2009 due to the global financial crisis. However, most had recovered all their losses by mid-2010. Several notable NRFs, including Azerbaijan's State Oil Fund, Chile's two funds, Timor-Leste's Petroleum Fund, and Trinidad and Tobago's Heritage and Stabilization Fund, actually made positive returns during the crisis thanks to conservative, low-risk investment approaches.²

Furthermore, the LIA did not carry out its due diligence when taking on risky structured financial products sold by investment banks and hedge funds such as Goldman Sachs, Permal and Millennium Global. For example, Permal was paid \$27 million in fees for managing \$300 million in investments. Rarely do management, transaction or expense fees combined exceed more than a few percentage points, much less reach the 9 percent paid to Permal. In a 2010 internal review, LIA management wrote, "High fees have been directly responsible for the poor results."

The LIA also took excessive risks. For example, it invested \$1.2 billion in equity and currency derivatives managed by Goldman Sachs. That investment lost 98.5 percent of its value by June 2010 due to the global financial crisis.³

1 Derivatives are financial instruments that derive their value from other assets, indices or interest rates. They include swaps, futures and options, and are generally considered high-risk investments.

2 P. Kunzel, Y. Lu, I. Petrova and J. Pihlman, "Investment Objectives of Sovereign Wealth Funds: A Shifting Paradigm," *Economics of Sovereign Wealth Funds: Issues for Policymakers* (eds. Udaibir S. Das, Adnan Mazarei and Hand van der Hoorn), Washington D.C.: IMF, 2010.

3 Lina Saigol and Cynthia O'Murchu, "After Gadhafi: A Spent Force," *The Financial Times*, September 8, 2011. <http://www.ft.com/intl/cms/s/0/1b5e11b6-d4cb-11e0-a7ac-00144feab49a.html#axzz2PclPUCQK>.

Constraining fund investment choices is an important means of ensuring that NRFs are managed in the public interest. Clear investment rules, guidelines and targets guard against taking excessive risk, limit the discretionary power of NRF management, and can significantly enhance the transparency and effective monitoring of NRF actions, strategies and performance. This paper describes the policy options for a rules-based investment regime. We discuss setting investment goals and a target return that are consistent with NRF policy objectives. We then go into some detail on specific investment rules, notably setting a target asset class allocation, benchmarking, restrictions on specific types of investments, and restrictions on the use of NRFs for raising public debt. We close with a discussion of portfolio rebalancing.

Setting investment goals and a target return

Natural resource funds may be designed to address one or several of the following objectives:⁴

- **Savings:** Funds may be used to transform natural resources into financial assets and invest them to generate a long-lasting source of government revenue for the benefit of future generations (e.g., Botswana's Pula Fund; Chile's Pension Reserve Fund; the Kuwait Investment Authority; Norway's Government Pension Fund Global; Timor-Leste's Petroleum Fund).
- **Stabilization:** Funds may cover budget deficits caused by unexpected declines in oil or mineral revenues (e.g., Chile's Economic and Social Stabilization Fund; Timor-Leste's Petroleum Fund; Wyoming Permanent Mineral Trust Fund).
- **Fiscal sterilization:** Large sales of oil, gas or minerals draw foreign currency into the country, which can generate inflation or exchange rate appreciation and subsequently harm the economy. Proceeds of natural resource extraction can be invested in foreign assets to help mitigate these effects (e.g., Saudi Arabia's SAMA Foreign Holdings).
- **Development:** Natural resource revenues may be earmarked for specific expenditures, such as health, education or direct cash transfers (e.g., Alaska's Permanent Fund; Texas' Permanent University Fund).
- **Ring-fencing:** Since they are a national endowment and exhaustible, oil, gas and mineral revenues may be treated separately by the government and subject to a higher degree of transparency and oversight than other revenues (e.g., Timor-Leste's Petroleum Fund).

Investment goals often follow from fund objectives. While fund objectives are statements of fund purpose, the investment goals are statements of investment strategies that should be aligned with those objectives. For example, Chile's Pension Reserve Fund is essentially a savings fund and, as such, has a long-term investment horizon. To reflect this, its investment goal is "maximizing the expected return subject to a (clearly defined) risk tolerance." For Chile's Economic and Social Stabilization Fund, which must hold liquid assets to cover its short-term budget financing obligations, it is "maximizing the fund's accumulated value in order to partially cover cyclical reductions in fiscal revenues while maintaining a low level of risk."⁵

4 While most funds have explicit stated objectives, some may behave differently from their intended purpose. For example, the stated objective of the Alberta Heritage Savings Trust Fund (Canada) is long-term savings. However, since the government is not obliged by a fiscal rule to make payments into the fund and has taken a short-term perspective on fiscal policy, little has been deposited over the last decade, despite historically high oil prices.

5 Ministry of Finance, Chile, "About the Funds." <http://www.hacienda.cl/english/sovereign-wealth-funds/about-the-funds.html>.

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Investment goals are simply general policy statements. To operationalize them, they are often expressed as an explicit target return (e.g., a long-run real return of 3 percent annually). While it may seem counterintuitive, most NRFs start with a targeted percentage return and work from that figure toward an articulation of risk appetite (tolerance for short-term volatility, losses and illiquidity), rather than the reverse.⁶ In a sense, the target return is an implicit statement about risk tolerance; the higher the target, generally the greater the probability of price volatility, the less the liquidity, the longer the maturity or the larger the potential losses.⁷ Most institutional investors make their target return explicit, although NRFs have not universally used this practice.

Historically, the real return target (after accounting for the effects of inflation) of most long-term institutional investors has been around 4-6 percent per annum. An independent study commissioned by the Norwegian government to evaluate its NRF against global peers found that the peer group (consisting of various long-term investment funds) had a median target return of 5 percent per annum.⁸ The Norwegian Government Pension Fund Global has a real return target of 4 percent. The Kuwait Investment Authority (KIA) has a “target rate of return and a risk profile that would seek to enable KIA to double asset-under-management within ten years,” which equals a 7.2 percent compound annual growth rate.⁹ Alaska’s Permanent Fund targets a long-run real return of 5 percent.¹⁰

In practice, NRFs with a savings and investment purpose will typically have a higher target return than stabilization funds. This is because the former has a longer investment horizon and greater tolerance for risk (periodic volatility) than stabilization funds with short investment horizons, little appetite for volatility and a much greater need to hold liquid assets. Funds that have more of a developmental purpose tend to place less emphasis on target returns, although they express some long-run expected return criteria for domestic infrastructure investments.

Detailed investment rules

Most natural resource funds are governed by a set of detailed investment rules that constrain investment decisions. In practice these rules may be articulated in petroleum or mineral revenue management legislation (e.g., Ghana’s Petroleum Revenue Management Act or Timor-Leste’s Petroleum Fund Law) and/or in an NRF’s investment guidelines, investment mandate or investment policy documents (e.g., Chile’s Pension Reserve Fund Investment Guidelines or Norway’s Management Mandate for the Government Pension Fund Global). The following elaborates on the more common rules.

Asset Allocation

The single most important decision an NRF’s overseers and operational managers will make in terms of the fund’s long-run risk and return characteristics is the specification of its strategic asset allocation. An investor’s strategic asset allocation is its long-run target allocation to various asset classes, each of which has its own risk-return characteristics (shown in Figure 1):

- **Cash:** Highly liquid and low-risk, low-return assets such as money market instruments (e.g., short-term government bonds) and bank deposits

6 Liquidity is the ability to turn an asset into cash immediately.

7 Expected return is a function of risk—financial instruments and asset classes that are more volatile, less liquid and have longer maturities generally have higher expected returns. Investors are compensated for bearing these risks. Therefore, the target return is implicitly (and sometimes explicitly) a statement of the fund’s risk appetite. For instance, for some truly long-term investors, such as university endowments with highly diversified portfolios, the real return target can be as high as 10 percent. But these funds’ tolerance for short-term volatility, holding illiquid assets and assuming a long-term investment horizon is greater than for investors with lower target returns.

8 “Norwegian Government Pension Fund Global Investment Benchmarking Results,” CEM Benchmarking, 2012. http://www.regjeringen.no/upload/FIN/Statens%20pensjonsfond/2012/GPFG_2010_investment_benchmarking.pdf.

9 Kuwait Investment Authority, “Overview of the Kuwait Investment Authority,” http://www.kia.gov.kw/En/About_KIA/Objective_Strategy/Pages/default.aspx.

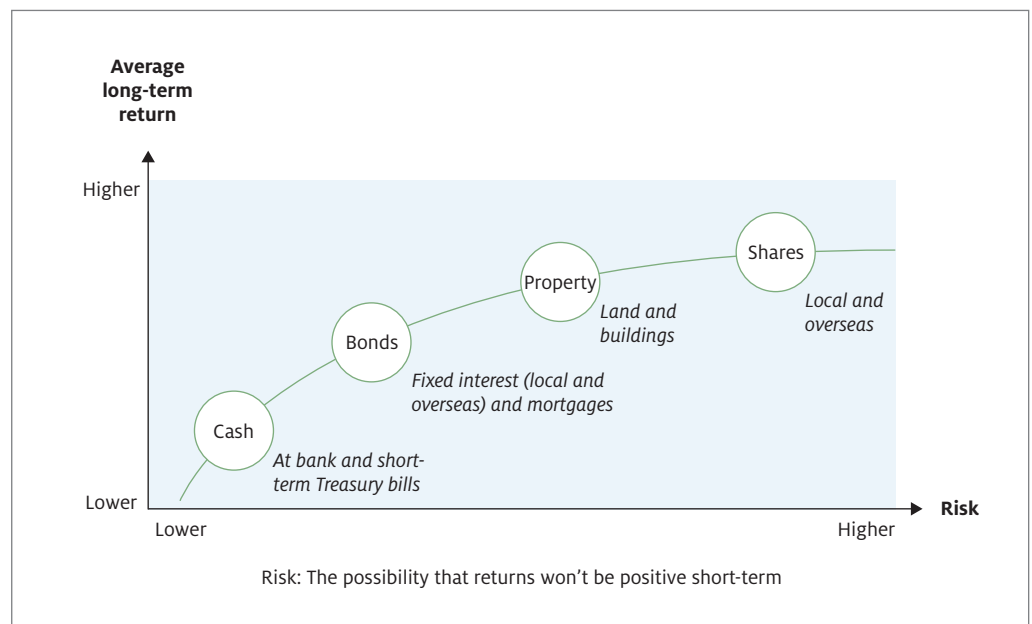
10 Alaska Permanent Fund Corporation, “Investments.” <http://www.apfc.org/home/Content/investments/investIndex2009.cfm>.

- **Fixed income/bonds:** Other debt instruments with slightly more risk and return (e.g., investment-grade government or corporate bonds)
- **Equities:** Stocks in companies with varying degrees of risk and return
- **Alternative assets:** More volatile and complex assets with higher long-run expected returns, such as real estate, infrastructure, derivatives and private equity¹¹

Research suggests that more than 90 percent of the variation in investment performance over time is explained by strategic asset allocation.¹² Asset allocation is generally a “top-down” decision made by the executive or through legislation, as opposed to a “bottom-up” approach where changes are made by day-to-day operational managers based on market prices. In some cases, asset allocation decisions may also rest with the operational manager, but they will always need approval from some legislative or executive authority, such as parliament and/or a minister. Asset allocation should be a medium- to long-term decision that requires extensive research and consultation between stakeholders; typically an NRF’s strategic asset allocation will only be reviewed every two to four years and is often left unchanged at these intervals.

A fund’s asset allocation is directly derived from its purpose, investment objective and target return. A more risk-averse investor, with shorter horizons and a high preference (or need) for liquid assets, would favor a relatively higher allocation to bonds and cash (or money market instruments). A stabilization fund for example, needs access to funds at short notice to stabilize fiscal revenues in the event of anticipated shocks in commodity prices and cannot afford sharp fluctuations in the value of its portfolio. Stabilization funds would therefore want to avoid investing in volatile assets (e.g., listed equities) and illiquid assets (e.g., alternative or private assets, such as private equity and real estate).

Figure 1:
The Risk-Return Profile
of Major Asset Classes



11 The term “alternative assets” covers many different types of assets, the common characteristic being that they are traded in private, not public, markets. Some of these assets have higher risk-return characteristics.

12 R. Ibbotson and P. Kaplan, “Does Asset Allocation Policy Explain 40, 90, or 100 Percent of Performance?” *Financial Analysts Journal*, 2000, Vol. 56, No. 1: 26-33.

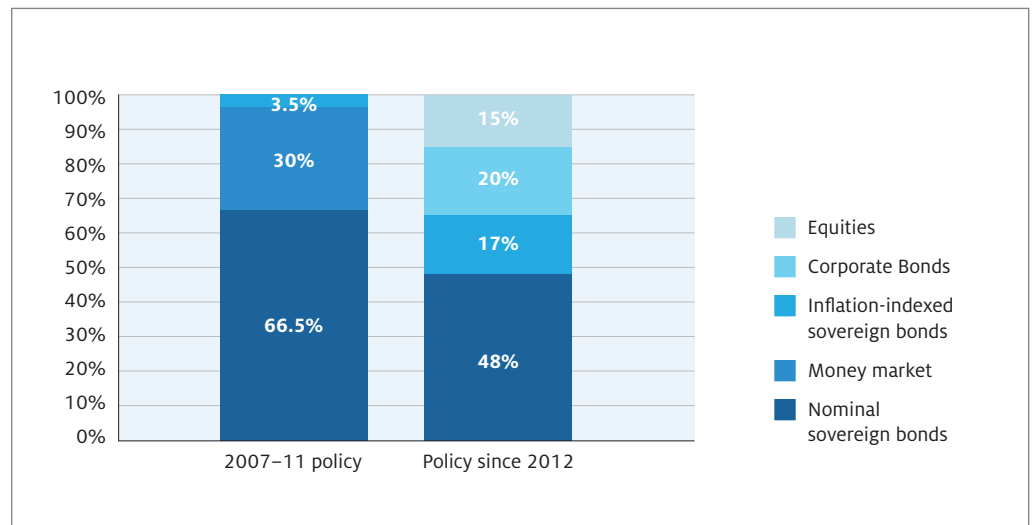
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In contrast, a long-term savings fund would be able to afford some degree of volatility and illiquidity and could therefore adopt a more diversified, higher-risk portfolio. In practice, however, many savings funds choose to invest in a smaller set of asset classes, for at least two reasons. First, public authorities lack the expertise to engage in complex trading operations. Second, it is often politically unfeasible to incur the occasional losses that inevitably come with investing in higher-risk, more volatile alternative assets.

Chile’s Pension Reserve Fund, for example, invests only in bonds and equities despite being a long-term savings fund, though it has a high degree of diversification within those two asset classes. With the bond portfolio, the fund has allocations to nominal and inflation-linked sovereign bonds as well as agency and corporate debt. Its equities investments are in global stocks, which means the fund has a very large degree of geographic diversity in its equity portfolio.

Figure 2:
Changes to the Strategic Asset Allocation of the Chilean Pension Reserve Fund

Source: Ministry of Finance, Chile



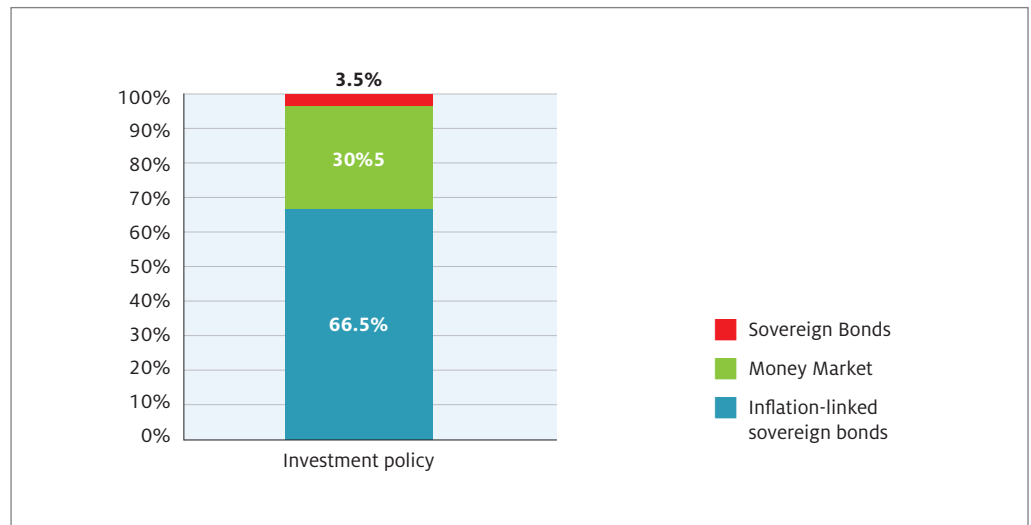
It is interesting to note that the fund made small changes to its strategic asset allocation in 2012 from the one that applied since its inception in 2007. The fund reduced its holdings of sovereign bonds, completely moved out of money market instruments, and made first-time allocations to equities and corporate bonds. The change to the strategic asset allocation, shown in Figure 2, was made because the Ministry of Finance and the fund’s management felt that the fund had the required risk appetite to allocate part of the portfolio to more risky asset classes, such as corporate bonds and equities, in order to generate a higher long-run return. The fund’s 2011 annual report stated that the new strategic asset allocation was “more in line with the return objectives and risk profile” of the fund and “more consistent with the underlying liability that needs to be financed in the future.”¹³

The asset allocation of Chile’s Economic and Social Stabilization Fund is naturally much more conservative, given its need for low risk and liquid assets. Consequently, it invests 66.5 percent in sovereign bonds, 30 percent in money market instruments and 3.5 percent in inflation-protected bonds, whose interest payments are not fixed but rather rise and fall with changes in the inflation rate (see Figure 3).

13 Ministry of Finance, Chile, *Sovereign Wealth Funds Annual Report 2011*.

Figure 3:
Strategic Asset
Allocation of the
Chilean Economic
and Social
Stabilization Fund

Source: Ministry of Finance, Chile



One way of ensuring that investment managers manage well within the constraints imposed on them by the asset class allocation is to select a series of benchmarks for each asset class. The benchmark is usually an index that reflects market performance so that the government and oversight bodies can measure investment manager performance against a market average, thus improving manager accountability.

Benchmark indexes help explain why returns may be high or low for any given period. For example, if the fund is down 5 percent over a period that the benchmark is down 5.6 percent, the investment performance may be deemed satisfactory. In contrast, if the fund is up 8 percent over a period that the benchmark returned 13 percent, investment performance may be deemed unsatisfactory (or at least require some detailed explanation).

Table 1:
Chilean Pension Reserve
Fund: Strategic Asset
Allocation and Benchmarks

Source: Ministry of Finance, Chile

Strategic asset allocation		Benchmarks
Asset class	Percent of total	
Nominal sovereign bonds and related assets	48%	Barclays Capital Global Aggregate: Treasury Bond Index (unhedged)
		Barclays Capital Global Aggregate: Government-Related (unhedged)
Inflation-indexed sovereign bonds	17%	Barclays Capital Global Inflation-Linked Index (unhedged)
Corporate bonds	20%	Barclays Capital Global Aggregate: Corporate Bond Index (unhedged)
Equities	15%	MSCI All Country World Index (unhedged with reinvested dividends)

In practice, NRFs disclose varying degrees of detail around their benchmarks. The NRFs of Alaska (USA), Alberta (Canada), Azerbaijan, Chile, Kazakhstan and Norway make detailed disclosures, not only of the benchmarks for each asset class but also of the funds' historic track record in managing funds relative to those benchmarks (see Table 4 for Chilean strategic allocation and benchmarks). Other NRFs, such as the Kuwait Investment Authority and Botswana's Pula Fund, provide some disclosures around the benchmarks they have selected for their funds but little information on the fund's actual investment performance relative to the benchmark.

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Like nearly all NRFs, the Chilean Pension Reserve Fund primarily takes a “passive approach” to investing, meaning that the fund’s internal and external managers need to closely follow their respective benchmarks. The fund is not allowed to deviate from the benchmark by more than 0.5 percent on its sovereign bond portfolio, 0.3 percent on its equity portfolio and 0.5 percent on its corporate bond portfolio.

The main implication of sticking very closely to a benchmark is that it forces investment managers to “follow the market” rather than invest counter-cyclically by buying certain assets when their prices are falling and selling when their prices are rising. In order to outperform the benchmark by some margin, some funds use external private-sector managers to try to add some degree of value through active management—external managers are given a benchmark and some degree of flexibility in deviating from it in order to generate additional returns over the market. In practice, however, most NRFs only allow small deviations around conservative benchmarks (relatively small tracking errors). Only a very few, such as the Libyan Investment Authority under the Gadhafi regime, or the Kuwait Investment Authority, engage mainly in active management.¹⁴

Eligible Assets and Permitted Trading Strategies

An important part of a rules-based investment strategy is clear and unambiguous guidelines stating which asset classes (e.g., equities, fixed income, real estate) the NRF can invest in and which trading strategies the NRF is and is not permitted to use. This involves a trade-off between giving investment managers higher degrees of flexibility (and the ability to potentially generate higher returns) and the avoidance of certain financial instruments that are deemed too risky or complex (such as certain derivatives and structured financial instruments).

From an oversight and governance perspective, this decision requires careful consideration of whether the fund has the technical capacity to adopt complex investment practices. If they are well understood and carefully monitored, complex instruments and strategies, such as derivatives, leverage and short-selling, can help manage risks and enhance returns. However, very often they introduce significant operational and default risk, incur high management fees and become tools for excessive speculation.

Countries with NRFs employ several different types of detailed constraints on investments:

- **Restrictions on domestic investment:** With very few exceptions (Azerbaijan; Iran), natural resource funds are explicitly prohibited from investing in domestic assets. There are at least three reasons why. First, investing in the country would undermine any fiscal sterilization objective. In countries like Botswana, Chile, Norway, Timor-Leste and Trinidad and Tobago, policymakers have argued either that the domestic market is too small to absorb all resource revenues or that resource revenues needed to be placed outside the country in order to reduce pressure of the local currency to appreciate or cause inflation, thereby aggravating the Dutch Disease. Second, spending directly out of the natural resource fund could lead to bypassing the normal budget process. This could result in inconsistencies with the budget and circumvention of controls and safeguards such as project appraisal, public tendering and project monitoring. Third, spending directly out of the natural resource fund could bypass parliamentary, auditor, media or citizen oversight. As a result, funds can become an easy source of patronage or financing for investments that support the political goals of fund managers.

¹⁴ Wharton Leadership Center (2010), *The Brave New World of Sovereign Wealth Funds*. http://knowledge.wharton.upenn.edu/papers/download/052810_Lauder_Sovereign_Wealth_Fund_report_2010.pdf.

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- **Minimum credit rating:** The Investment guidelines or revenue management law may specify minimum credit ratings for debt instruments that carry default risk. The major rating agencies, Fitch, Moody's and Standard & Poor's, all rate the credit quality (risk of default) of borrowers—the countries, companies and agencies who issue bonds and other debt instruments that NRFs invest in. Many NRFs are only allowed to buy bonds issued by borrowers with “Investment Grade” or “A- or higher” ratings from at least two of the major ratings agencies. This ensures that risk of default by the NRF's debtors is kept very low (although this also reduces returns). The same principles apply to the management of credit or default risk among the NRF's counterparties—the banks and custodians that trade and hold the NRF's assets. For example, the investment guidelines or NRF law may specify that transactions are only allowed with intermediaries that have a high credit rating, implying low risk of default. The Norwegian Government Pension Fund has mandated that “counterparties for unsecured deposits shall have a long-term credit rating of at least AA-/Aa3/AA- from at least one of the following three agencies: Fitch, Moody's or Standard & Poor's.”¹⁵
 - **Restrictions on private market instruments:** Publicly traded instruments—stocks and bonds that are traded on public exchanges—have features that are desirable from a transparency and risk perspective. They can always be priced (their value can be determined at any point in time, because buyers and sellers interact through public exchanges to determine prices), trading volumes are much higher (so that there are always buyers and sellers for marketable securities), and there is no risk that a counterparty or investment partner will default. In practice, NRFs may look to start trading only in public assets and only gradually make allocations to private assets. The Norwegian Government Pension Fund Global, for example, made its first allocation to private assets (real estate) in 2011, almost two decades after the fund's inception. The Ministry of Finance, which oversees the fund, argued that the fund should target a maximum allocation to real estate of 5 percent of the overall portfolio (although by the end of 2012, only 0.7 percent had been allocated to real estate, given the long lead times associated with these investments).¹⁶
 - **Restrictions on other high-risk instruments:** Over-the-counter currency derivatives (futures, options) can help protect a portfolio against unwanted risks for exchange rate movements, if they are well understood and are used appropriately. But they also introduce bilateral counterparty risk because they are traded between two financial institutions rather than on an exchange and are often relatively complex and opaque. The key considerations for authorizing the use of derivatives are whether the fund has the requisite technical knowledge to understand the risks and obligations associated with these contracts and whether the investment guidelines ensure that the derivatives are being used for hedging (insurance) rather than speculative purposes.
 - **Currency restrictions:** Some countries restrict investments to assets denominated in convertible currencies or specific currencies. For example, Botswana's Pula Fund makes fixed income investments denominated in only convertible currencies, mainly the U.S. dollar, the Euro, pound sterling and yen. Chile's Economic and Social Stabilization Fund has a currency allocation of 50 percent in US dollars, 40 percent in Euros and 10 percent in yen. The rationale for this type of rule is that assets denominated in convertible and abundantly traded currencies can be traded or turned into cash relatively quickly.

15 Norges Bank Investment Management, “Investment Mandate,” September 2, 2009. http://www.norges-bank.no/Upload/77273/4_mandate.pdf.

16 Norges Bank Investment Management, *Government Pension Fund Global Annual Report 2012*.

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Additional Investment Rules to Prevent Debt Crises

- **Restrictions on using the fund as collateral on general government debt:** A multi-billion-dollar natural resource fund can be used to secure government loans. In brief, the government can promise creditors that if it defaults on its debt, the NRF assets can be used to pay them back. This is particularly useful for credit-constrained governments, those that are charged high interest rates or those that have been locked out of international financial markets because of weak government finances. However, this strategy also puts natural resource revenues at risk, especially if the government has a tendency to default. It also encourages overborrowing.

In the past, governments in Algeria, Cameroon and Venezuela have used their oil revenues as collateral and borrowed excessively, only to face debt crises when oil prices and revenues declined. A similar trend is occurring today in countries like Kazakhstan, despite historically high oil prices. One solution has been to restrict either part of all of a natural resource fund from being used as collateral. For example, the Timor-Leste Petroleum Fund used to be prohibited from being used as a guarantee on public debt. Currently 10 percent of the Fund may be used as collateral. This reduces interest rates on loans yet protects 90 percent of the fund from any potential consequences of poor public financial management.

- **Restrictions on taking on debt:** Most NRFs are prohibited from using leverage, meaning that they cannot use fund assets to borrow money to purchase additional assets. While using leverage may increase financial returns, it also creates a risk that the additional investment will lose money, risking not only that asset but also additional fund principal required to pay off creditors. These restrictions essentially prevent managers from risking large losses on public funds.



Portfolio rebalancing

A final rule that applies to NRFs with long-term investment horizons and a diversified portfolio (i.e., the fund invests in a mix of asset classes) relates to rebalancing the portfolio. Over time, the divergent performance of the various asset classes in the NRF's portfolio will mean that its effective asset allocation drifts away from its strategic asset allocation. For example, if a fund decided on an allocation of 60 percent in equities and 40 percent in bonds at the start of a five-year period, and stocks then significantly outperformed bonds over that period, the fund's effective allocation at the end of period would be more than 60 percent in equities (due to faster capital growth in the equity portfolio).

The process of rebalancing ensures that the fund's overall portfolio is periodically returned to its target long-term strategic asset allocation. In practice, there are a number of technical considerations to take into account in the process of portfolio rebalancing. For example, how often should the fund rebalance, and should rebalancing be done at certain time intervals or should it be based on upper or lower limits for particular asset classes? Rebalancing rules have long been associated with sound risk management and the generation of higher long-run returns for long-term investors. A number of NRFs have clear and transparent rebalancing rules that form a key part of their overall investment strategy.

In its annual report for 2012, the Norwegian Government Pension Fund Global disclosed extensive information around its rebalancing rule. It is expressed as follows:

“The rule specifies a limit for how far the equity allocation in the benchmark index may deviate from the strategic allocation before rebalancing must be performed. The limit is set at 4 percentage points, which means that if the equity allocation in the benchmark index is less than 56 percent or more than 64 percent at the end of a calendar month, it will be returned to 60 percent at the end of the following month.”¹⁷

The fund stated that its rebalancing rule was a “strategy that mechanically buys shares after prices have fallen, and sells following an upsurge in prices”—that is, the fund has a rule that forces it to go against the current in the markets and buy stocks when most investors are selling (and vice versa).

Conclusion

Investment rules have a disciplining effect on internal and external portfolio managers. If properly communicated and disclosed, the fund's investment rules contribute in a meaningful way to the governance, transparency and accountability of a NRF and, most important, promote understanding and agreement between oversight bodies, the fund's management and members of society around what the fund is expected and able to do. In practice, there is significant scope for tailoring the rules-based investment strategy of a natural resource fund to the specific needs, expertise and context of each country or region. However, a large degree of discretion is likely to lead to patronage or mismanagement.

¹⁷ Norges Bank Investment Management, *Government Pension Fund Global Annual Report 2012*.

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