



IMF Working Paper

Setting up a Sovereign Wealth Fund: Some Policy and Operational Considerations

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Abstract

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The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

This paper offers a policy and operational “roadmap” to policymakers considering setting up an SWF. It should also be of interest to policymakers in countries where SWFs are already in place, to review their existing policies and operations. Finally, it offers an opportunity to identify areas where research in macroeconomics and finance should give further answers as to the adequacy of existing practice related to the setting up and management of SWFs, an area where practical considerations often lead theoretical research. For instance, policymakers should optimally consider both their sovereign assets and liabilities together with their macroeconomic objectives, when setting up an SWF.

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GLOSSARY

ALM	Asset Liability Management
BoP	Balance of Payments
GDP	Gross Domestic Product
GIC	Government of Singapore Investment Corporation
KIC	Korea Investment Corporation
SAA	Strategic Asset Allocation
SOEs	State-owned enterprises
SWF	Sovereign Wealth Fund

I. INTRODUCTION

This paper offers a policy and operational “roadmap” to policymakers considering setting up a sovereign wealth fund (SWF). It should also be of interest to policymakers in countries where SWFs are already in place, to review their existing policies and operations. Finally, it offers an opportunity to identify areas where research in macroeconomics and finance should give further answers as to the adequacy of existing practice related to the setting up and management of SWFs, an area where practical considerations often lead theoretical research. For instance, policymakers should optimally consider both their sovereign assets and liabilities together with their macroeconomic objectives, when setting up an SWF.

The paper relies largely on the experience of existing SWFs. Rather than just being a description of what SWFs do, the paper draws on the consistency of SWFs experience with macroeconomic framework and investment objectives. It is also based on our experience with international reserves management, as such macroeconomic and financial theory, when available, support our recommendations.

The “roadmap” starts by taking as a given policymakers’ broad objectives. Typically, SWFs are set up after commodity price booms (or more recently in the case of China, large export booms). Following these large accumulation of international assets, policymakers set up a number of objectives which they deem to be “optimal.” For instance, policymakers may aim at enhancing returns on international reserves, meeting pension liabilities, stabilizing fiscal revenues and investing assets to meet development objectives.

The first set of issues that policymakers will face is to determine whether or not they should set up an SWF to meet their broad policy objectives. In practice, a key question is to determine whether the country has an “adequate” or “optimal” level of international reserves. Even if the country has indeed an “ample” enough level, policymakers will have to decide whether they will use the SWFs assets to meet balance of payments needs, should they materialize. A related question is that of better alternatives to setting up an SWF.

Second, once they have gone ahead and set up an SWF, policymakers will have to decide on a number of operational questions which should be consistent with their broad policy objectives. Operational objectives are needed to derive appropriate investment policy and include funding, withdrawal, and spending rules.

Third, often overlooked but key issues pertain to institutional arrangements. An adequate governance framework will have to give clear indications as to which institution determines the SWF’s policy objectives and overall risk tolerance, its operational objectives, and its investment guidelines (and who will execute the latter).

Finally, given the above, policymakers will have to decide where to invest the SWFs assets, that is its strategic asset allocation, starting with the elaboration of an investment policy. The investment policy should be again consistent with broad policy objectives. The operational objectives will drive the investment horizon, the risk tolerance, and the investment environment (including asset classes and their correlation, asset liability management and

other constraints) which in turn, will determine the strategic asset allocation. Key issues, especially one prone to political pressure is the decision to invest a share of the SWFs assets domestically. In this case, this decision should be considered in the light of the broad policy objectives and the country's macroeconomic policy framework. For instance, avoidance of the Dutch Disease may lead to the decision of not investing domestically. Again, institutional arrangements are important in the context of the SWF's investment policy. For instance, policymakers, although they will bear the responsibility for the performance on the SWFs assets, will have to take a position regarding the use of external managers.

II. WHAT IS A SOVEREIGN WEALTH FUND?

SWFs are defined as a special purpose investment fund or arrangement, owned by the general government.² Created by the general government for macroeconomic purposes, SWFs hold, manage, or administer financial assets to achieve financial objectives, and employ a set of investment strategies which include investing in foreign financial assets. SWFs are commonly established out of balance of payments surpluses, official foreign currency operations, the proceeds of privatizations, fiscal surpluses, and/or receipts resulting from commodity exports.

With a capacity to operate over a long-term investment horizon, SWFs are less risk averse compared to agencies managing traditional foreign exchange reserves. The definition of an SWF excludes, inter alia, foreign currency reserve assets held by monetary authorities only for the traditional balance of payments (BoP) or monetary policy purposes, operations of state-owned enterprises (SOEs) in the traditional sense, government-employee pension funds, or assets managed for the benefit of individuals. While SWF is an all-encompassing term, it covers a group of heterogeneous funds that have existed for years. What these funds have in common is the public ownership and the fact that these funds are often established to meet a macroeconomic purpose, though these purposes may at times be multiple in nature (e.g., savings and fiscal stabilization).

III. WHEN TO SET UP AN SWF?

Some commodity exports based funds have been in existence for several decades with the goal of managing a portion of the countries' foreign exchange revenues. More recently, a number of countries have also set up SWFs using fiscal surpluses and accumulated foreign exchange reserves. Despite this experience, there are no theoretical models yet for deciding when to set up an SWF.

From asset-liability and public debt management perspectives, ideally, the government should approach its balance sheet in entirety, identifying all financial assets and liabilities, including commodity values in the ground and future tax revenue. It can then optimize its asset allocation choices based on such an approach. However, in practice, governments approach the establishment of an SWF in a more ad hoc basis and when a critical mass of

² See IWG (2008).

balance of payment or fiscal surpluses is reached. This explains, in a large part, why SWFs are typically set up after commodity price booms, such as during the seventies and again in the last few years.

From a practical viewpoint, this approach taken by countries can be explained, perhaps, by the concept of mental accounting. Coined by Richard Thaler (1980), mental accounting is one of the assumptions underpinning behavioral finance. Compared with a traditional investment approach, which assumes that investors perceive their assets as fungible, behavioral finance assumes that investors tend to group their assets in a number of non-fungible accounts, and make decisions differently depending on the purpose for setting up the account.

This concept could be applied to understand how a country divides its pool of sovereign assets. For example, when a country discovers an oil reserve, it may trigger a process of considering the implications of such a new wealth. It may consider what is the “adequate” level of revenues so that the “excess” revenues can be set aside.³ Likewise, if a country is in the process of accumulating foreign currency reserves, it may earmark them for meeting liquidity needs with a high priority for safety, similar to an individual’s account set up to purchase necessities. Policymakers are ready and willing to take more risks only after sovereign assets reach an adequate level and are considered to be ample. It is at this stage that policymakers tend to, in practice, allocate excess reserves in a different account, with a higher risk tolerance, following different investment policies. So, the question becomes one of determining when the reserves are adequate.

A. When are a Country’s Reserves Adequate?

Typically, ample official reserves are a signal to assess if reserves should be managed and invested differently and its alternate uses. How should this assessment of ample reserves be made? At what point can reserves be invested differently? Since there are significant benefits to reserves, especially in terms of reducing external vulnerability and providing country insurance, this level needs to be carefully assessed. Thus, before other institutional considerations are made, the “adequate” or “optimal” level of reserves should be established and agreed between the central bank and the government.

From a crisis prevention perspective, the most relevant indicator for emerging market economies is the ratio of international reserves to short-term external debt.⁴ For countries with uncertain access to international markets, a simple benchmark is the one that targets the coverage of short-term external debt of all residents and in all instruments and currencies measured by remaining maturity. This means that a country with a balanced current account and no capital flight will have sufficient reserves to cover its obligations for a full year even

³ See Bartsch (2006) for an example of estimating excess revenues to be set aside in a stabilization fund, and Leigh and Olters (2006) for an example of determining excess revenues from an intergenerational perspective.

⁴ See IMF (2001) and IMF (2000), and empirical results in there, e.g., Bussière and Mulder (1999).

if it is cut out of external capital inflows. Other factors have an impact as well. Higher levels of reserves would be preferable in countries with large external current account deficits, overvalued exchange rates, high levels of short-term public domestic debt, derivative positions of the public sector, and weak banking systems.

Considerations that limit the need for reserves include a flexible exchange rate regime, management of the actual exchange rate policy in a manner that discourages high foreign exchange exposure by the private sector, a public sector that borrows in domestic currency from non-residents, sound private sector risk management, sound banking supervision, and government's ability to borrow quickly and in large amounts from non-residents.

In addition to the empirical work based on estimates of the depth of a crisis, there are insurance models that try to answer the question of the optimal level of reserves in a cost-benefit (optimizing) framework, such as the Jeanne-Ranciere (2006) and Jeanne (2007) models. In these frameworks, reserve assets can help reduce the probability and cost of a crisis in terms of output loss but the typically low return of these assets implies an opportunity cost of holding them.

B. What are the Options in Case of Ample Reserves?

The next step in deciding on whether to set up an SWF is to review the origins of the ample reserves, the longevity of these sources, and the other assets and liabilities of the sovereign to make a judgment as to whether there are no better alternatives than setting up an SWF. Sovereign foreign asset accumulation typically comes from a few main sources.

The source of ample reserves can be capital inflows, mopped up through issuing central bank liabilities, and some times through issuance of government paper. In this case, the central bank and or the ministry of finance have to weigh the longevity of these inflows in deciding whether the stream of inflows is sufficient to invest assets over a longer term and with greater risk.

Foreign asset accumulation could also reflect the general fiscal budget surpluses, privatization receipts or surpluses related to revenues from booming commodity exports, in which case the initial or anticipated reserve build-up will, typically, have a counterpart in government deposits with the central bank.⁵ Based on these individual sources of flows, an assessment can be made whether these are one-off and small or likely to continue over time.

A first option, and this applies in either case, of reducing or matching external debt obligations is a straightforward way of using ample reserves to reduce currency mismatches and carry costs. For instance, prompted by negative income results in 2004 and 2005 as a result of both the carry cost and currency revaluation, Banco de Mexico has used excess

⁵ SWFs from public savings and privatization are more akin to non-renewable resource funds, as they represent an increase in net financial wealth.

reserves to repay loans from the Inter-American Development Bank and the World Bank, in essence shrinking the overall balance sheet.⁶

A second option is to start managing reserves on the central bank balance sheet with a long-term perspective. Often reserves are split into tranches, and the investment tranche could be amplified and its mandate expanded to a longer horizon. For instance, the Hong Kong Monetary Authority separates foreign reserves into two portfolios, Backing Portfolio and Investment Portfolio.⁷ Assets in the Backing Portfolio are invested in highly liquid and short-term U.S. dollar-denominated fixed income securities. While assets in the Investment Portfolio are invested in a more dynamic way, including investment in equities. Typically, however, the limited tolerance for reporting losses, combined with marked-to-market accounting standards, may limit the risk and the size of the investment portfolio.⁸

A third option is to set up an SWF, be it on the central bank balance sheet, or as a separate institution. This is usually done when the first options are exhausted or when there is a clear source and objective of increasing reserves. For example, net commodity exporting countries facing a large and prolonged commodity price boom may have few other sound options but to set up an SWF as they typically have limited external government debt left and an important macro aim is to reduce the volatility of government revenues and limit Dutch Disease effects of crowding out the private sector that come about if commodity revenues are rapidly spent.

C. What if BoP Crises Call for Liquidity Support from the SWF?

Providing liquidity during a balance of payment (BoP) crisis is the objective of a country's official foreign currency reserves, and not that of a typical SWF. Contingent call for liquidity support could potentially prevent the SWF from pursuing long-term investment horizon and holding less liquid assets. If the SWF needs to provide BoP support, a clear policy and supporting rules and procedures should be established consistent with that purpose. This promotes transparency and accountability of the SWF.

Some countries do set up some arrangements for assets in SWFs to be used for BoP purposes. For example, the Pula Fund in Botswana has agreed trigger points that allow the fund to be drawn from in the event that macroeconomic policy adjustments have proved insufficient to stabilize the reserve level in the Liquidity Portfolio.⁹ In the case of Korea

⁶ See Ortiz (2007).

⁷ See IMF (2005).

⁸ We abstract from the option to reduce excess reserves through an appreciating currency and (or) assume that the exchange rate is already optimally managed.

⁹ See Mohohlo (2007).

Investment Corporation (KIC), assets are qualified as reserve assets and could be used for BoP purposes.¹⁰

Typically, commodity funds also result in disbursements when commodity prices are weak and thus tend to support balance of payments even when they have no explicit balance of payments support function.

IV. WHAT ARE AN SWF'S OBJECTIVES?

A. Can SWFs be Distinguished by Their Stated Policy Objectives?

In line with the sources of their funds, SWFs can be distinguished along their objectives. The IMF broadly distinguishes five types of SWFs: (i) reserve investment corporations that aim to enhance returns on reserves (ii) pension-reserve funds; (iii) fiscal stabilization funds; (iv) fiscal savings funds; and (v) development funds that use returns to invest for development purposes.¹¹

Pension reserve funds seek to build assets to cover an identified liability often related to an aging population. An aging population is a cause of future economic vulnerability and expenditure, often related to entitlements that were funded by a pay-as-you go system resulting in high economic and social cost. A prudent response to such challenges is to accumulate assets now so as to offset the projected higher liability related to sustaining pensions and social welfare in the future. This approach can be found, for example, in Australia, Ireland, New Zealand, and Chile.¹² Depending on the macroeconomic framework, these assets can often be invested abroad, so that they can be disinvested and used for imports when the domestic population comes of age.

Fiscal stabilization and fiscal savings funds are often related to commodity related wealth. There are fundamentally two issues with commodity wealth. First, prices are often very volatile compared to other income streams; and, second, quantities are often highly discontinuous, especially in smaller countries with limited resource capacity.

Saving funds generally focus on intergenerational equity and transfers. Especially for countries that have limited natural resources or face great uncertainty as to the future size of commodity streams, spreading this wealth over generations and sustaining future income from extraction of non-renewable resources is a key objective of many governments. Intergenerational equity focuses on benefiting the current and future generations as equally as possible. This may be done by setting up an endowment type fund that converts a finite

¹⁰ See Rhee (2007).

¹¹ See IMF taxonomy of SWFs in *Global Financial Stability Report*, October 2007, Annex 1.2.

¹² See <http://www.futurefund.gov.au/faqs>, <http://www.nprf.ie/home.html>, <http://www.nzsuperfund.co.nz/>, and <http://www.hacienda.cl/publicaciones.php?opc=redirect&id=10260&actual=95> for these funds' policy objectives.

(extractive) asset with an infinite string of financial cash flows to benefit the present and all future generations.

Commodity extracting economies may be able to stabilize the fiscal impact of fluctuating commodity prices via fiscal stabilization funds designed to smooth boom/bust cycles (e.g., Trinidad and Tobago¹³). In some economies, saving assets abroad in an SWF can assist in mitigating Dutch Disease and related macroeconomic consequences. At times, stabilization funds grow beyond what is needed for stabilization purposes, especially when prices are elevated over a prolonged period, and are consequently redesigned as stabilization and savings funds (e.g., Russia¹⁴).

Indeed, as seen in the recent period, objectives for setting up SWFs may be multiple, or changing over time. For example, some countries set up funds for both stabilization, and savings objectives. As circumstances change, the objectives of the funds may do so as well. This is especially true for natural resource exporting countries. Initially, a stabilization fund is established to smooth fiscal revenue or sterilize foreign currency inflows. As the assets in the fund continue to grow beyond the level needed for the purpose of stabilization, country authorities may revisit the objectives and redesign the structure of the fund to broaden the objective.

It is important though to recognize that the SWF's policy objective and activities should be consistent with a country's overall macroeconomic framework. This is because the SWFs' assets, and the returns it generates, impact on a country's public finances, monetary conditions, the balance of payments, and the overall balance-sheet. They may also affect public sector wealth and impact private sector behavior. Therefore, appropriate coordination between the SWF and the fiscal and monetary authorities is critical to achieve a country's overall policy objectives in the context of which an SWF is established.

B. How to Formulate Operational Objectives to Achieve Policy Objectives?

While the broad policy objectives of SWFs are sufficient to motivate their set-up, they need to be supplemented with an operational objective to help derive an appropriate investment policy and asset allocation strategy.

For stabilization funds with the policy objective of smoothing government revenue, a typical formulation calls for saving commodity revenue if the actual commodity price exceeds a certain reference price, based on a long-term trend, and withdrawing from the fund if the actual price drops below the reference price (e.g., Algeria and Russia).¹⁵

¹³ See Ossowski *et al* (2008).

¹⁴ See IMF (2008a).

¹⁵ See Ossowski *et al* (2008).

For savings fund, the operational formulation of the objective to spread wealth across generations is often the most concrete. Such funds generally aim to maximize the real annual payout per capita or the payout as a share of gross domestic product (GDP). Depending on the size of population growth and real GDP growth, the variations in formulating the underlying objective, can have profound implications.¹⁶ A country with a declining population while GDP is growing rapidly, so transfers in line with GDP imply far larger distributions to distant generations. Even more important can be the assumptions about the discovery of future wealth. In practice, several large economies have, over time, found new natural resource deposits that replace those exploited. Ignoring this basic fact could lead to the accumulation of too high a sum of financial assets, as the commodity wealth is massively underestimated.

Funds (or reserve investment corporations) that aim to enhance the return on funded assets tend to maximize returns subject to a given risk tolerance. The expected additional return is a function of the risk that the government or the owner is willing to take. The operational objective can be formulated as a return objective based on an assessment of historic data on the trade off between enhanced return and risk. As the longevity of these funds is not always clear, the risk tolerance and investment horizon often remain implicit.

The operationalization of the objectives of pension and other liability focused wealth funds follows the asset liability management (ALM) approach applied by pension funds. In contrast to reserve investment corporations, the horizon over which the liabilities materialize is often well identified. This allows for the explicit maximization of the net value of the fund (in essence the net present value of the investments minus expected payments for the liabilities) over the identified time horizon subject to risk tolerance. In practice, this process is also summarized in the formulation of a concrete return target as the operational objective (e.g., Australia, and New Zealand).¹⁷

V. WHAT ARE THE FUNDING, WITHDRAWAL, AND SPENDING RULES OF AN SWF?

A. Rules for Transferring Funds between an SWF and its Owner

Policies and rules for an SWF's funding, withdrawal, and spending operations should be clear and consistent with the purposes of the fund. An SWF with a *stabilization objective* usually has clearly laid out rules for the deposit and withdrawal of resources. Savings types of SWFs receive contributions from excess revenues, but their purpose is to spend earnings or profits so as to share wealth with future generations. While fiscal processes often call for some flexibility in the withdrawals from these funds—so as to avoid borrowing—this approach can result on posing constraints on the investment process. It may be best to

¹⁶ The maximization of the payout as a share of GDP is akin to the common practice of targeting a sustainable nonoil (or other commodity) budget deficit, which is then supplemented with a steady withdrawal from the SWF based on its long-term expected income.

¹⁷ See <http://www.futurefund.gov.au/faqs> and <http://www.nzsuperfund.co.nz/index.asp?pageID=2145831973> for their return objective.

provide the SWF with a clear investment mandate without the need to keep liquidity for unpredictable calls by the government, but allow it to invest in government bonds if it sees fit and is consistent with the macro framework.¹⁸

Savings SWFs are often integrated in the general budget framework, given their centrality for determining sustainable expenditure, through an explicit link between fiscal policy and the accumulation and return on the financial assets. One example is Norway's Government Pension Fund-Global.¹⁹ The fund is an integrated part of government finances. The accumulation of capital in the fund consists of the net cash flow from all petroleum revenues plus the return on the fund's assets. The outflow of the fund is a transfer to the budget to finance the non-oil budget deficit. Furthermore, the fund also plays a role in the fiscal guideline for the state budget, which states that the structural oil-adjusted budget deficit shall over time correspond to the expected real return on the capital of the fund.²⁰

Some SWFs directly pay dividend to the citizens or to the government. Alaska's Permanent Reserve Fund pays an annual dividend to the population based on a fraction of the fund's realized earnings.²¹ Half of the average realized income for five years is distributed for this purpose according to state law. Other funds allow a great deal of discretion for the government. In the case of Government of Singapore Investment Corporation (GIC), the Constitution provides that part of the investment income on Singapore's reserves can be taken into the government's budget to support spending on the government budget; specifically, the Constitution allows the government to spend up to 50 percent of the "Net Investment Income" derived from past reserves.²²

¹⁸ Indeed, reflecting such considerations, some SWFs have relatively hard rules for the deposit and withdrawal of resources. In the case of Russia, for example, the amount of oil and gas proceeds in excess of the amount transferred to the budget is channeled to the Reserve Fund until it reaches 10 percent of GDP (see IMF (2008a)). If after all these operations, there is an excess, then it is channeled to the National Wealth Fund. Reserve Fund assets may be used to cover financing needs in case no sufficient oil and gas revenues are transferred to the budget in the first place (i.e., to cover federal budget deficit in unfavorable conditions). In addition, the Reserve Fund capital can be transferred to make early debt repayments. Withdrawals from the Reserve Fund should be approved by the federal budget law for the corresponding fiscal year and planning period.

¹⁹ See Ossowski *et al* (2008).

²⁰ New Zealand's Superannuation Fund is a good example of pension-reserve funds. It aims at paying yearly superannuation entitlements. Depending on the expected shortfall, which fluctuates annually based on actual returns and evolving liabilities, the government needs to make annual capital contribution to the fund according to over time close the funding gap. (See New Zealand (2006).) Australia's Future Fund states that no withdrawal is allowed until 2020 (see <http://www.futurefund.gov.au/faqs>).

²¹ See Cowper (2007).

²² See http://www.ifag.gov.sg/mof/apps/fcd_faqmain.aspx.

VI. SOME CONSIDERATIONS IN DETERMINING THE INSTITUTIONAL STRUCTURE?

A. SWFs as a Unit within a Central Bank or the Ministry of Finance, or, as a Separate Legal Entity?

SWFs could be set up as separate legal entities, as a unit within the central bank, or within the Ministry of Finance. Regardless of the governance framework, the operational management of an SWF should be conducted on an independent basis to minimize potential political influence or interference that could hinder the SWF in achieving its objectives.

SWFs established as separate legal entities usually have a governance structure that differentiates an owner, a governing body(ies), and operational management of the SWF. The operational independence could be embedded in the rules and procedures for appointment and removal of the members of governing body. Where the SWF is a unit within a central bank,, the operational independence could be embedded in a clear legal foundation and internal governance structure, where the decision making framework and oversight functions are clear and the relationship between the principal (owner) and its agent is well-established. Funds established within a ministry of finance often could have less operational independence and such a set up would only be appropriate for very specific investment mandates with narrowly defined mandates—such as some stabilization funds that invest in moderate duration bond portfolios. Still, there should be a clear separation between the unit that executes and those involved in oversight.

Another consideration is the cost. Setting up a fund with a separate legal entity has sunk costs. SWF as a unit in the central bank (or ministry of finance) could use existing resources, including a portfolio or debt management capacity. Therefore, it could be more cost-efficient if a small size fund is managed within an existing institution and make use of existing infrastructure and human resources. However, if investment mandates are more advanced it is may be better to have a clear separation, particularly as the culture and pay structure within existing institutions may hamper an efficient functioning. In addition, activities of the unit in the central bank should not impact the central bank’s income statement and balance sheet as its owner is the government, who takes a return as well as its related volatility.

B. How are the Decision-Making Hierarchy and Lines of Reporting Organized?

A well-defined organizational structure could establish a clear separation of responsibilities and authority. In doing so, this creates a decision-making hierarchy that limits risks by ensuring the integrity of, and effective control over SWF management activities. Usually four types of decision making can be distinguished: (i) determination of the policy objectives and overall risk tolerance; (ii) determination of the operational objectives; (iii) determination of the strategic asset allocation (SAA), including allowable deviations form benchmarks and their reflection in investment guidelines; and (iv) the operational execution of investment decisions in compliance with investment guidelines. How these levels are separated in specific SWFs depends on the nature and objective of the SWF. In some cases, the second level of decision making is merged with the third level of decision making. However, generally the decision on the SAA is the responsibility of the organs of the SWF.

The line of reporting usually is consistent with the institutional structure. In the case where an SWF is a unit in the central bank, the Ministry of Finance often reports to Parliament on the activities of the fund based on audited financial statements of the fund. In cases where the SWF is a separate legal entity, it typically reports to the government represented by the Minister of Finance for its performance. Separate legal entities often have the most explicit reporting requirements. Timely and accurate reporting of SWF activities to the owner or the appropriate national agencies helps ensure that SWF operation is integrated into the macroeconomic policy making process.

VII. WHAT DETERMINES THE INVESTMENT POLICY?

A. What are the General Considerations in Designing an SWF's SAA?

Devising a SAA is a dynamic process as well as a result. SAA is an integrative element of the planning step in portfolio management. In a SAA, an investor's operational objectives are integrated with expectations about the risk/return characteristics of different asset classes, including the correlation between asset classes and the fund's liabilities. The expectations of the asset classes should be consistent with macroeconomic projections and constraints (e.g., profit growth is in the long-term bounded by GDP growth). By combining asset classes with low or negative correlation, the investor may achieve diversification benefits. Also, from a sovereign perspective, it would also make sense to look for asset allocation with offsetting characteristics to the economic risk profile of the country. The result is a set of portfolio weights for the different eligible asset classes reflective of the investor's objectives and risk tolerance.²³ The SAA is expressed in strategic benchmarks allowing for the measurement, attribution and assessment of return. The SAA is typically reviewed periodically or when an investor's objectives change significantly. In the early days of an SWF, there is a need to be cautious as experience is accumulated and positions are being built up.

The operational objectives drive the investment horizon, which in combination with the risk tolerance and investment environment are the key determinants of the strategic asset allocation. These key ingredients, investment horizon, risk tolerance, asset classes and their correlation, ALM, and other constraints are detailed below.

Investment horizon

The investment horizon reflects the time that the fund is expected to be used and the period over which the return is to be maximized. Each of the operational objectives specified above implies an investment horizon. For intergenerational funds and pension funds the horizon is typically very long, for stabilization funds the horizon is relatively short depending on the average commodity price cycle. For return focused funds, the time horizon is more fluid and

²³ In some cases where the SWF operates like a private equity fund, the focus is not on the asset classes, but on specific holdings, their distribution across sectors and countries, and the choice between holding cash equivalents and being invested.

depends on whether the focus is on keeping the funds forever (endowments), or on depleting the funds through interventions/withdrawals.

In practice, there are also other uncertainties that need to be taken into account in deriving the investment horizon. In particular, the size of reserves of natural resources may be uncertain or there may be unusual (politically motivated) claims on the funds. Typically these forces work in opposite directions. Resources that are depleted are often replaced by discoveries of new deposits, especially in larger countries, and this lengthens the time horizon. Over the existence of the fund there may be political changes with parties taking a dimmer view on the need to save for future generations, which uncertainties reduce the investment horizon.

These arguments can be reflected by assigning a larger discount rate to future inflows (effectively assigning a lower probability to them), or by taking a more agnostic approach and reducing the investment horizon, thus reducing the horizon over which one is maximizing the return.

Risk constraint: capital preservation

The risk tolerance is a key constraint on the maximization of the expected return over the investment horizon. The risk constraint is based on the ultimate stakeholders' willingness and ability to take risk. Ideally, the risk preference focuses on the entire investment horizon, and can take the form of a maximum acceptable deviation at the points of withdrawals and the risk/return trade offs at these points. In other words, there is less of a need to be concerned about daily volatility if the investment horizon is a year. For example, the value of the investment can increase and decrease daily by 10 percent but the key aspect is the value in a year's time when the withdrawal takes place.

However, in practice, investors may (the typical end stake holder) have some concerns about short-term volatility. A typical constraint in new SWFs is therefore the sponsor's desire to preserve capital. A capital preservation objective is equivalent to zero tolerance for negative returns, in either nominal or real terms. If formulated with regard to the start of the Fund this constraint has a time dimension: over time a buffer is built up to allow more risk. In other words, adding this constraint of capital preservation allows an easing into a risk tolerance that is more reflective of the real investment horizon. In this regard, an early start with investing resources to build up a buffer, having an oversight body with experienced and respected professionals, and educating lay stakeholders can help limit the cost imposed by this additional constraint.

Asset classes and their correlation

The return over the investment horizon is maximized subject not only to the risk tolerance, but is also to expected asset class returns. The number of choices of investment instruments and asset classes is very large allowing near infinite portfolio combinations. To be operational, investors in practice limit themselves to investing in specific asset classes because they broadly display the same properties.

Typically, a short investment horizon results in a high allocation to fixed income assets with predictable returns. Funds with the objective to insulate the budget from commodity price volatility usually have a shorter time horizon because the cycle over which the stabilization objective is shorter, and it may be difficult to estimate the size of the optimal required buffer and withdrawal and transfer rules may not be adhered to—as practice shows. As a result, they are generally required to have a conservative SAA with a low risk-return profile.

However, ALM considerations (see below) may imply the use of some long-term asset classes with low or negative correlation to the exposure (e.g., a modest proportion of long-term bonds and equity that is inversely correlated with oil prices). Funds with longer investment horizons allow for a broader asset allocation to most asset classes. However, proper understanding of all eligible asset classes is important. Some classes can be very complex, and while management of these assets can be delegated, the wealth fund as the principal owner of the assets will remain exposed to, and responsible for, the investment risk. This stresses the need for sound risk management system and equipped with related systems and human resources. As a general rule, asset classes that are not adequately understood should be excluded.

Especially for funds whose owner is exposed to large-scale commodity price risks, a proper consideration of asset classes and their correlation is important. For example, oil funds should take into account the future revenue stream associated with the oil in the ground, which is equivalent to having a large oil price sensitive financial asset. A balanced portfolio will therefore usually require having assets that are inversely related with oil prices. This may be specific stocks (e.g., car industry or airlines) or asset classes (long-term bonds which may increase in price if the oil prices fall, to the extent this has a dampening effect on inflation).

Asset liability management

The return over the investment horizon, net of any withdrawals, and including non investment income is maximized subject to the risk tolerance and asset class returns. Recognizing not only future revenues (e.g., commodity taxes) but also future liabilities allows for a better determination of the SAA. As noted above, pension funds focus on maximizing the net value of a fund. This allows a consideration of the correlation between asset prices and liabilities as one input in the portfolio optimizations. Similarly, it is useful to recognize any current liabilities, notably for reserves build through sterilized intervention, if they are not yet covered by the reserves that remain on the central bank's books.

Currency composition

The choice of currency composition depends on the objective and the liability structure of the SWF. In the case of managing sovereign wealth with a stabilization objective, a sharp drop in commodity export prices and revenues may require a withdrawal of fund which entails short investment horizon and high liquidity constraints. As a result, sovereign wealth with stabilization objective implies choosing a currency composition that is negatively correlated with the commodity price. This is most likely to weigh the basket in favor of the countries

that import the most (relatively) of the commodity. Countries should, in general, not invest the assets in the currency to which its own currency is pegged. The reason is that the risk is then passed on to another part of the sovereign's own balance sheet (the central bank) and thus not laid-off.

Managing sovereign wealth with liabilities need to consider the correlation of the liabilities with the foreign currencies. Thus, pension and fiscal savings funds are designed to support future imports, they can be invested in currencies of countries from which the SWF countries' citizens obtain their imports. However, over a long time horizon, when import patterns shift, general diversification arguments may become more important.

Other considerations

Liquidity requirements

If outflows are certain in terms of time and amount, then the required amount could be set aside and invested in liquid assets with matching cash flows or risk characteristics as the liabilities. This generally follows from ALM considerations in which the outflows are seen as liabilities.

Legal and regulatory constraints

Legal and regulatory constraints vary. Usually legislation specifies permissible asset classes that a fund can invest in. Typically, funds are not allowed to invest domestically given the potential impact on the inflation and exchange rate, and some funds are not allowed to invest in private equity, real estate, or hedge funds. Also, legislation may disallow the use of derivatives and swaps. The potential for risk taking is further constrained if a capital preservation objective is put into legislation.

Ideally legislation is generic and focuses on overall objectives, allowing for the derivation of the appropriate SAA by qualified and authorized bodies, rather than specifying specific asset classes. This is especially important as legislation is often set up during early stages of funds, when there are limited buffers and there is limited experience among the stake holders.

B. What are the Considerations for an SWF to Finance Domestic Projects?

The decision of investing a part of the assets domestically depends on the purpose of the SWF. If the SWF has developmental objective, it could invest domestically. However, its operation must support and be consistent with the country's macroeconomic policy framework. Using assets in SWFs to purchase domestic inputs could stimulate domestic demand, and put upward pressure on prices. This may result in an appreciation in the real effective exchange rate, with adverse consequences for exports and growth. On the other hand, sterilization of domestic input financing could lead to higher interest rates and crowd out private sector investments. Thus, while the new domestic project could add to output, it may also through the real exchange rate undermine private exports and domestic investment, often the real sources of growth.

Even if SWF financing is utilized for domestic projects which would clearly augment growth prospects with positive externalities, it is arguable that these projects should be formed in the government fiscal policy and budget. If spending is allowed to take place outside the budget, issues of fiscal accounting and transparency could emerge, which could undermine budgetary control, imply unequal treatment of different types of spending, and could lead to mismanagement of funds and waste.

C. What are the Considerations when an SWF Hires External Asset Managers?

External managers could bring expertise and access to new markets. External managers may have skills that an SWF lacks, or they may provide a means of lowering operational risk due to lack of adequate human or information technology resources. They may have skills and established systems for undertaking investment activities in specialized instruments and markets for which the SWF does not wish to develop a capacity or has operational constraints. Most importantly, delegation of the execution of investments to external managers allows the SWF to focus on the SAA—which is the predominant source of return—and manager selection. For advanced asset classes the acquisition of in house expertise can be especially costly and not efficient especially in low-income countries. External managers can also be subject to greater competition and harsher regimes for ending mandates than internal managers. If a similar portfolio is already managed internally, the external managers may also provide an additional benchmark for evaluating SWF's own investment activity. Finally, external managers can also play a role in the training of the SWF staff.

The ultimate responsibility for the performance on the assets managed externally is entirely that of the SWF. The SWF or the government still bears all the risk—market, credit, and liquidity risks—no matter whether assets are managed internally or externally. Accordingly, the SWF should make sure that the risks taken by external managers are within the SWF's overall tolerance for these risks. In particular, the strategic asset allocation, reflected in clear benchmarks for the currency composition and investment risk profile (duration, credit, etc.) remains the SWF's owner's responsibility.

Furthermore, the SWF needs to specify the allowed degree of deviation by the external managers from these benchmarks in taking positions to try to outperform the benchmark. In that regard, the risk parameters that are to be used to measure and report on risks should be clearly specified, as well as the instruments that the external managers are allowed to use. It is crucial that the risks involved in the portfolios managed externally are evaluated in conjunction with the risks on portfolios that are internally managed, so that a global view of the risks of the SWF is obtained.

Another issue is the number of external managers to use. When active management is pursued, it is in general preferable to employ several managers to diversify risk against a bad performing manager. However, a too large number of managers increase the administrative burden and the total cost of fees owing to the generally digressive fee framework with the size of the portfolio.

VIII. CONCLUSION

In conclusion, this paper discusses a number of policy and operational considerations that are relevant when assessing the merits of setting up an SWF. It offers a “roadmap” to policymakers considering setting up an SWF and would be of interest to policymakers in countries where SWFs are already in place to review their existing policies and operations. It starts by discussing whether or not policymakers should set up an SWF and what are the other options. Once they decide to set up an SWF, they will face a number of operational questions ranging from institutional arrangement, fiscal rules, to appropriate investment policy. This paper offers an opportunity to identify areas where research in macroeconomics and finance should give further answers, for example, the level of adequate reserves or revenues, the optimal level of foreign debts that a country should hold and not use foreign assets to repay, and in general the theory on the sovereign asset liability management.

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