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Sovereign Wealth Fund Asset Allocations—some stylized facts on the Norway Pension Fund Global

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Abstract

The Markowitz portfolio theory has been used during the past six decades by various institutional investors, including sovereign wealth funds (SWFs), to determine their asset allocations. Our analysis of the strategic asset allocation of the world’s largest sovereign wealth fund—the Norway Government Pension Fund Global (GPFG)—demonstrates that it is broadly consistent with that generated by the one-period Markowitz model. GPFG’s investment performance critically depends on its permissible asset classes, risk tolerance and strategies mandated in attaining the set portfolio objectives, such as stability of returns over an assumed time horizon. Also, appropriate asset weight rebalancing has allowed for higher returns and achievement of long-term investment objectives. The obtained asset allocation results need to be compared with those for other SWFs so as to determine whether there is a broader conformity of SWF actual allocations with those proposed by the Markowitz model.

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1. Introduction

Asset management often faces challenges with regard to the risk-return characteristics of asset classes. This is particularly important for SWFs that are owned by governments and are mandated to achieve a certain performance, based on set benchmarks. This challenge has been more pronounced during the last few years, especially after the recent global financial crisis and current low-return environment. In this connection, our investigation shows that the GPFG successfully rode out the recent financial crisis and grew stronger through successive portfolio rebalancing actions. For example, the GPFG progressively took advantage of investment opportunities of mispriced equity assets, with the equities portion increasing to 62.4 percent in the total portfolio in 2009, from less than 41 percent in 2006, which helped achieve historic returns of 25.6 percent in 2009 (GPFG Annual Report, 2009).

The decision to increase the equities share from around 40 percent to 60 percent was made in June 2007, after a long decision-making process involving key stakeholders. The actual change was implemented over the next two years, by June 2009. The Report to Parliament in spring 2007 that led to the change stressed that the decision was based on a long-term view of how this change would affect expected return and risk. This countercyclical investment behavior, which led to an increase in the share of volatile (yet high potential return) assets when other long-term institutional investors tried to contain the equity risk, required strong independent institutional and governance frameworks, which the GPFG had been able to establish before the financial crisis. This behavior also helped avoid the procyclical investment SWF “herding” phenomenon, where asset allocations move in tandem with market fluctuations, as was the case for many institutional investors that increased their fixed-income share rather than the equity share in their portfolios during 2008 and 2009 (Papaioannou et al., 2013).

Asset allocation decisions require in-depth macrofinancial analysis. As a long-term investor, the GPFG’s focus on systematic risk, while allowing flexibility for a given market opportunity with substantial room for adjustment, improved its overall risk-adjusted return. An example of this approach was the GPFG’s decision to enter the global real estate market in 2008, which was not implemented before 2011, right before the international real estate surge in 2012. It should be noted that the long period between the decision to invest in real estate and its implementation cannot only be attributed to an attempt to time the market. As the Norwegian Central Bank is GPFG’s operational asset manager, thorough preparations were also necessary before investing in real estate, a demanding asset class.

Since 2009, asset allocations of many SWFs have been manifesting a significantly increased share in equities over time, while their fixed-income share has been steadily declining (Bodie and Briere, 2013). This has taken place against the background of the current prolonged low-return financial environment. In particular, the GPFG’s long-term portfolio composition has been rebalanced, with its risk appetite being increased. The share of
fixed-income assets in the composition of the GPFG’s total portfolio has gradually been reduced to 37 percent in 2014, from 59 percent in 2006, while the global equity share has substantially increased to more than 62 percent of the total portfolio in 2014 (see Figures 1 and 2). The increase in the equity share in its portfolio, with an increased mean variance for the overall portfolio, did not alter the theoretical return and position on the efficient frontier. As countries’ contributions to global GDP evolve over time, the GPFG’s portfolio adapted to this trend and increased its emerging markets’ share, with careful consideration of its historically high level of risk. In this regard, the extent of correlation and possible causality in the GPFG’s portfolio investments, in response to increasing market volatility, needs to be examined further.

2. A Stylized Efficient Frontier

The efficient frontier\(^1\) of long-term investors may be tested by market volatility. For the GPFG, the dynamics of global economic integration and various market shocks have challenged its optimal asset allocation, especially with regard to investing in line with the efficient frontier allocations of other long-term institutional investors. Despite these challenges, the GPFG’s efficient frontier has demonstrated a broad conformity with asset allocations being generated by a simple one-period Markowitz model. Further, the flexibility in the GPFG's asset allocation allows higher-yield results and generates optimal outcomes (see Figure 3). The GPFG’s case has illustrated that countercyclical portfolio rebalancing has played an important role in accomplishing the set portfolio objectives, e.g., stability of risk-adjusted returns over time (Ang et al., 2009). Examples of countercyclical asset allocation (e.g., increased share of high-volatility assets with consequent reduced share of less volatile fixed-income assets during periods of market crisis) have been observed over time (see Figures 1 and 2).

Illustrative calculations indicate that, given a return level, risk can be reduced by 0.3 percent if the equity share is reduced by 5.9 percent, while the fixed-income share is increased by 2.0 percent and the real estate portion is reduced to almost zero in the overall portfolio. These results depend on the sample period used (1998–2013) and the asset classes included in the calculation of the efficient frontier. In this connection, it should be noted that the 1998–2013 was an extraordinary good period for fixed income portfolios, given falling interest rates. Of course, this may not be the case in the future. Accordingly, it may be questioned whether a close-to-zero share for real estate is a sound assumption going forward. Further, the efficient frontier may have been different if more than three asset classes had been included in its derivation, e.g., if private equity and infrastructure had been added.

The GPFG’s actual investment portfolio, which is broadly consistent with the one-period Markowitz-generated efficient frontier, takes into account social, ethical, and environmental considerations. The investment universe and permissible asset classes are scrutinized by Norway’s parliament. The fund is a signatory of the United Nation’s

\(^1\) The efficient frontier is the set of optimal portfolio compositions with highest perceived return and lowest risk level.
Principles of Responsible Investment (PRI), which advocate a greater focus on environmental, social and corporate governance issues than on pure returns on investment. The GPFG has a Council of Ethics that frequently reviews the Fund’s global investments with respect to an adopted ethical guideline framework, without considering the yield implications. Under the guidelines, companies are to be excluded if they produce or sell weapons to specific states. Companies may also be excluded if they contribute to an unacceptable risk or are responsible for grossly unethical activities. Thus, the total number of companies excluded from the allowed investment portfolio reached 55 in 201, 56 in 2012, and 60 in 2013 (GPFG Council on Ethics Report, 2013).

The rationale for responsible investments is based on the premise that: “… organizations that manage environmental, social and governance (ESG) factors effectively are more likely to endure and create more value over the long-term than those which do not” (GPFG Strategy Council Report, 2013). Examples of companies that are excluded from the GPFG’s investment portfolio are: all tobacco producers, due to human health concerns; certain mining companies, due to alleged environmental damage; and companies involved in the production of nuclear arms. While the GPFG has been consistently adhering to its ethical and transparent investment principles, its investment activities have not precluded it from generating long-term returns well within its set objectives (Clark and Monk, 2010).

3. Challenges in SAA Optimization

There are several challenges in carrying out an SAA optimization, including the decision on admissible asset classes, selection of benchmarks, determination of risk tolerance levels on different asset classes, performance measurements, application of accounting standards, accepted rating(s) for investment instruments, and related market predictions. In the case of the GPFG, the Ministry of Finance ultimately sets the benchmark indexes for investment portfolio compositions and global mandates, considering market weights (GDP weights). The GPFG benchmark indexes are open to changes, so as to support an active asset management framework that ensures higher returns over time.

The adoption of a comprehensive framework for timely portfolio rebalancing is another challenge in managing a diversified global portfolio. The GPFG’s performance illustrates the possibility of enhancing overall returns with a lower risk level, through a rebalancing of asset classes that is in line with market trends. This adjustment involves dynamic asset allocations that allow funds to rebalance in line with their strategic policy/benchmark target compositions. To ensure the appropriate timing and frequency of asset weight changes, especially in response to intense market volatility, a strong institutional development and risk management framework is required, along with close monitoring of market developments. For the GPFG, the changes in asset allocation to increase the equity composition over time have paid off significantly in recent years, yielding higher returns. In particular, in 2013, the investment portfolio provided an exceptional performance of 15.9 percent, following actions that deviated from the benchmark index, mostly driven by the investments in North American and European equities (GPFG Annual Report, 2013).

Despite its long-term investment horizon, the GPFG appears to be resilient to market volatility, based on VaR analysis (GPFG Report to the Storting, 2014). As the recent global financial crisis has showed, it is not possible to fully assess ex ante the market risk from emerging external shocks, which can then become a major challenge in the investment rebalancing process. In this regard, the GPFG’s broad diversification approach (i.e., global GDP-weighted diversification) is justified, especially in view of the size of the fund. Although our analysis indicates that the GPFG’s current asset allocation is broadly consistent with that of the Markowitz approach, it also highlights that there is room to reduce risk by curtailing the equities share, even though past experience has shown that the GPFG is able to effectively absorb market risk.

Sovereign wealth funds’ asset allocations need to be frequently reassessed. Especially, a low-return environment may significantly affect a fund’s portfolio composition and return on assets. The GPFG’s portfolio composition indicates continuous adaptations in the dynamics of its strategic asset allocation, while its efficient frontier illustrates the constraints on its effective portfolio diversification from low returns of fixed-income assets. Also, it should be noted that restrictions in the investment mandate to allocate a certain portion of the portfolio to specific assets, e.g., public investments, services, or energy and infrastructure projects, may impose a significant constraint to the efficient frontier. In turn, the risk tolerance level, risk-adjusted returns and portfolio rebalancing may need to be
appropriately modified, while frequent stress testing should be used to improve the optimal SAA. In general, funds should rebalance their portfolios as needed, typically following changes in global macroeconomic and market conditions, and assess their performance regularly.

In its annual report on the management of the GPFG in 2013, Norges Bank stated that it continued to adapt the portfolio to environmental and social risks that could have had an impact on the Fund’s return. Subsequent portfolio modifications were based on sector and company analyses intended to identify business models deemed to be less sustainable. The Norges Bank’s risk assessment of sectors that pose particular environmental challenges resulted in divestment of its holdings in 27 companies.

4. Concluding Remarks

Our study shows that (i) the strategic asset allocation of the GPFG broadly conforms with that of a Markowitz efficient frontier; (ii) a countercyclical active asset management framework or flexibility in benchmark deviations has worked well in the case of a large SWF that aimed to enhance long-term returns over time; and (iii) socially responsible investments have not apparently distorted the asset allocation returns and efficient frontier over time.

The GPFG’s rebalancing regime with a fixed-equity allocation has served it well, especially during 2001–2002 and 2007–2009. A strong institutional framework and discipline have helped GPFG to stay the course during the crisis. An important factor for a successful rebalancing is to ensure that key governing bodies, like the Parliament in GPFG’s case, are aware of the risks involved with investments in volatile equity markets. Transparent governance, along with identification and communication of associated risks, has contributed over time to strong public support for GPFG’s long-term investment strategy, with an equity portion of 60 percent being kept even during the recent global financial crisis.

Similar analyses of the investment portfolios of other SWFs could be undertaken to examine whether there are commonalities in their investment behavior with that of the GPFG. If such a pattern could be established, we could argue for a broader conformity of SWFs’ investment allocations with those proposed by the Markowitz theory.

References


