

Strategy Council 2010

Investment Strategy and the Government Pension Fund Global

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EXECUTIVE SUMMARY

- The Government Pension Fund Global (GPF) has become one of the leading sovereign wealth funds in the world with a solid reputation in terms of governance, transparency and being a responsible investor. A pronounced increase in assets under management has been coupled with gradual modifications of the investment strategy to reflect the long-term nature of this savings vehicle.
- The purpose of the Strategy Council is to strengthen the legitimacy and foundation of the long-term investment strategy for GPF. The Strategy Council 2010 has focused on an appraisal of relevant investment issues that could lead to higher expected returns by utilising GPF's distinctive features.
- The distinguishing characteristics of the Fund include its large size, its long time horizon, the fact that it does not have specific liabilities (outside the return assumption specified by the spending rule), and its ownership and governance structure. Our proposed future changes focus on taking advantage of the long horizon.
- The long horizon makes the GPF more tolerant of short-term losses than most investors. The simplest way to exploit the above-average risk tolerance would be further raising the equity allocation. However, the Fund is already exposed to concentrated equity market risk. A natural next step is therefore to harvest risk premia from multiple sources, including those related to value and liquidity, as a strategy for accepting additional risk in the portfolio. Such diversification should enhance the Fund's risk-adjusted returns.
- We further recommend an examination of the expected return and risk characteristics of various forms of insurance selling strategies, as well as contrarian asset allocation based on valuation ratios, as ways to exploit the Fund's long investment horizon.
- We recommend that the regional weights in the benchmark should be reviewed. Given the Fund's large size, we do not favour major deviations from market capitalisation weights or, possibly, GDP weights.
- Our comparison with peers suggests at first sight that the GPF has a high equity weighting. However, once private equity is added into the picture, peer funds also have a large commitment to equities. The Fund's move into real estate is in line with peers. Some exposure to infrastructure could be beneficial. We are circumspect about private equity, however, since we are concerned about the difficulty of hiring private equity managers who will, in aggregate, deliver acceptable after-costs performance.
- The fund's entry into illiquid asset classes will reduce the relevance of benchmark and tracking error as risk control tools. Instead of detailed *constraints*, we advocate further *disclosure* on the Fund's varied risk exposures. However, making such information instantly public could hamper the Fund's performance, so there would need to be limits to the speed and comprehensiveness of disclosure.
- Good governance requires that the ownership of fund risk is clearly specified – both the benchmark risk and the active risk. The current arrangement between the Ministry of Finance and the NBIM is commendably clear, except that a decision-making vacuum exists if a need should arise for medium-sized or medium-term deviations from the benchmark. We review alternative ways to fill this vacuum.

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1. Introduction

The Norwegian Government aims for the Government Pension Fund Global (hereafter the GPFG or the Fund) to be the world's best managed fund. The objective of the Strategy Council is to offer independent and critical views on the strategy of the Fund and give advice on how to develop the investment strategy further. While there is an element of guidance on how strategy should evolve in the future, a major intention is to stimulate debate on some of the more important aspects of the management of this large pool of assets. The Strategy Council's deliberations are to be exposed publicly, and it is hoped this will confirm and extend the transparency that characterises the Fund.

In this first report of the Strategy Council we consider some major issues that are likely to be important in understanding the past and in developing the investment strategy further. The Council's formal mandate is reproduced in the box below. Many shorter term and operational matters are beyond the remit of the Council. In addition, the role of active management was the subject of extensive debate in 2009-10 and is on the agenda of the Ministry of Finance for review every four years, so this topic is outside the scope of our report.

Our analysis is presented below in five main sections after this introduction and the background information in Section 2. In Section 3, we discuss the Fund's distinctive characteristics in terms of its size, investment horizon and ability to accept risk. This also includes a review of the investment beliefs governing the GPFG. Section 4 reviews the key features of the Fund that guide us in our strategic evaluation, emphasising two aspects: the implications of financial theory for managing Fund assets, and what the Fund's special characteristics suggest in terms of investment strategy and style. For example, the investor – on behalf of future generations – is the Norwegian Government, so the Fund is not only large, but it has an unusually long investment horizon and there is a tolerance for illiquidity. We use this framework to evaluate a number of investment issues that confront the Fund, emphasizing the range of risk premia that may potentially be harvested by the Fund. In Section 5 we consider the stance taken by the GPFG in terms of exchange rate exposure. In section 6 we evaluate the investment strategy compared with peer investors from other regions. In Section 7, we turn to questions of management and governance of the Fund. We conclude in Section 8 by emphasizing the history-dependent nature of the Fund's investment strategy and the public appetite for risk-taking.

Box: Mandate for the Strategy Council 2010

The purpose of the Government Pension Fund Global is to support government savings to finance the pension expenditure of the National Insurance Scheme and long-term consideration in the spending of government petroleum revenues. The goal for the management of the Fund is to maximise international purchasing power with moderate risk. In this way, we aim to ensure that future generations will be able to derive the maximum possible benefit from our national savings. The goal of good financial return is closely linked to the ambition to be a responsible investor.

Purpose of the Strategy Council

- The purpose of the Strategy Council is to strengthen both the legitimacy and foundation of the long-term investment strategy for the GPFG.
- Through independent and critical reviews, the Council will give advice on how to develop the strategy further, increase transparency and encourage debate on important decisions related to the investment strategy for the Fund.

Measures

- The Council members shall prepare a public report and give a presentation of the report.
- The report shall include a review of the relevance of the analysis of the investment strategy that is presented in the annual reports to Parliament (Stortinget), and advice on how to develop the analysis further. In particular, there should be an evaluation of whether the discussion of the foundation of the Fund's investment strategy, cf. section 2.1 and 2.2 of the [Report No. 10 \(2009-2010\)](#) to the Storting, is appropriate and relevant.
- The primary focus of the report shall be forward-looking.
- The report shall not give an evaluation of the Fund's role in economic policy.
- The report shall not give an evaluation of Norges Bank's operational management of the GPFG.

Priorities for the 2010 report

- The 2010 report will be the first report prepared in this format. This report should give an overview of strategic challenges on the aggregate level. A natural starting point for the Council's report is Norges Bank's letter to the Ministry of Finance 6 July 2010.
- The report should be presented no later than 1 December 2010.

2. Background

GPFG has become a leading sovereign wealth fund (SWF) with an efficient low-cost operation, large size and a high degree of transparency. A month ago, the Peterson Institute released Edwin Truman's book, *Sovereign Wealth Funds: Threat or Salvation?* The book included a scorecard on SWFs. GPFG came out on top of the ranking with a score of 97% and confirmed that the Fund has established a formidable reputation in terms of structure, governance, transparency and responsible investment behaviour.

The initial allocation to the Petroleum Fund (precursor to GPFG) was NOK 2 billion in 1996 and was limited to government bonds in eight countries. Its evolution is described by Governor Svein Gjedrem in a very recent speech, [Perspectives on Managing the Government Pension Fund Global](#). In 1998 the investment universe was increased to government bonds in 21 countries and with a 40% allocation to equities. A combination of a long investment horizon, an expected equity risk premium and desire to further diversify the portfolio all contributed to this change of investment strategy.

Thereafter there were several extensions to the benchmark in the form of adding emerging markets equities, non-government bonds, an increased (60%) allocation to equities, adding small-cap stocks and introducing real estate. New ethical guidelines were also implemented, which led to some companies being excluded from the investment universe. The current strategic asset allocation of the GPFG could be described as broadly in line with the aspirations of modern financial theory, namely, to hold a diversified portfolio that represents the market as a whole.

The Fund's investment returns and operational efficiency are summarised in Exhibit 1. An outstanding year in 2009 offset the disappointments of the preceding crisis period. Over the longer intervals, the Fund generated a positive real return and an excess return that made a valued additional contribution to long-term performance.

Exhibit 1: Annualized performance for GPFG as at 30 September 2010.

GPFG	Past 5 years	Past 10 years	Since 1.1.98
Nominal return	3.23%	3.74%	4.81%
Inflation	1.89%	1.92%	1.81%
Management costs	0.11%	0.10%	0.11%
Net real return	1.21%	1.69%	2.85%
Excess return (gross)	0.03%	0.19%	0.29%

Source: NBIM Q3 report as at 30 September 2010

3. The Fund's characteristics and investment beliefs

The distinctive characteristics of the Fund include its large size, its long time horizon, the fact that it does not have specific liabilities (outside the return assumption, cf. 3.2), and its ownership and governance structure, including the demand for transparency. The current 60/40 stock/bond weights are typical for institutional investors. However, it can be argued that the GPFG is *not* a typical investor given its defining characteristics, especially the long investment horizon. Thus, our proposed future changes focus on taking advantage of the long horizon. In thinking about how the Fund should allocate its assets, there are a number of factors that should underpin the analysis.

3.1 Size, horizon and ability to accept risk

First, the underlying investors – the Norwegian Government on behalf of its citizens – have a long investment horizon. This implies little need for liquidity within the Fund. This gives the GPFG a natural relative advantage for harvesting liquidity premia.

Second, this long horizon makes the Fund more tolerant of return volatility and short-term capital losses than most other investors. Consequently, it should lean towards earning higher risk premia, notably through equity investments.

Third, GPFG has to be cognisant of its large size. Institutions with a smaller capital base may more effectively use leverage to scale up certain risk premia that are smaller in absolute size but that offer better reward per unit of volatility; they may also be better able to harvest liquidity premia in niche markets without facing

capacity problems. Leverage can thereby facilitate a more balanced portfolio with exposure to additional sources of return. In GPFG's case, its large capital size makes it less practical to use leverage or to exploit illiquid niche markets in a way that has a meaningful impact on the bottom line.

Fourth, as another consequence of its large size, indices that are not based on market capitalisations may be less appropriate for the Fund than for a smaller entity that does not have capacity issues. The large size pushes GPFG toward market-capitalisation weights, for bonds and equities and even, as we note below, currency exposure. The regional weights in the benchmark indices should therefore be reviewed.

Fifth, the Fund can be an opportunistic seller of liquidity. The Fund can be favoured by illiquidity when many investors wish to take the other side of GPFG's trades. As a large long-horizon investor, the Fund may most effectively earn liquidity and other premia by serving as an opportunistic liquidity provider through contrarian transactions in liquid markets, and through buying unpopular asset classes.

Sixth, as long as oil remains a significant underground resource, the GPFG arguably has less need for inflation hedging than most investors. A deflation scenario is a more damaging tail risk for Norway than an inflation scenario. Nominal government bonds are the best deflation hedges and conversely the assets most subject to inflation risk. It may be reasonable to maintain some amount of government bonds at this stage, despite their low expected returns. Eventually, however, as oil wealth depletes and inflation risks become as important as deflation risks, these bonds could be replaced by assets that provide superior protection against inflation.

Finally, among strategy styles, a value tilt seems more natural for a long-horizon investor than for one with an average time horizon. Value stocks are ones that have typically experienced price declines and waning investor interest. Given the patient, liquidity-supplying and inherently market-stabilizing nature of value strategies, they potentially fit with the long-term objectives of the Fund. Many stocks change their value attributes relatively slowly and (in contrast to, say, momentum trading) the portfolio turnover implicit in a value strategy need not be unacceptably large.

3.2 Investment beliefs

The Ministry of Finance presents the foundation of the investment strategy in two sections of its *Report No. 10*. First, it explains the purpose and characteristics of the Fund and its views on how the markets work; this includes a brief description of the approach with regard to responsible investments. Then the Ministry goes on to discuss the expected long-term real rate of return and the risk in the Fund's benchmark.

The purpose and characteristics of the Fund are summarised succinctly by the Ministry. First, the Fund represents an accumulation of assets that belong to the citizens of Norway. Second, the Ministry is responsible for the management of the Fund. Third, the Fund has a strong capacity for bearing risk; it has a long investment horizon and there is no obvious liability. Last, it aims to achieve the highest possible return consistent with the owners' risk preferences.

In managing the Fund, there are some fundamental requirements that must be met. First, there should be effective control of operational risk. Second, investments must be made responsibly. Third, the Fund should take advantage of being a large and long-term investor. Finally, the Fund should follow good governance principles.

Report No. 10 explains how the investment strategy is based on a set of core assumptions: a belief that markets are largely efficient; a commitment to diversification; a focus on gaining from risk premiums; a clearly articulated benchmark; care in selecting and monitoring asset managers, especially for less liquid assets; and integration of responsible investment into the Fund.

Overall, we find the report's discussions about the Fund's investment strategy both appropriate and relevant. Still, we suggest several avenues for the future – both in terms of substantive investment strategies and the communication and educational aspects of these reports.

GPFG's investment strategy has produced results in line with what could be expected, despite the exceptional financial market downturn of 2008. The relative performance of NBIM showed a positive contribution from

inception to the end of September 2010. We advocate development of investment strategies that best utilize the distinctive features of GPFG. We also support the Fund’s efforts to remain at the forefront of responsible investing and active ownership.

We believe there is further potential to exploit the defining characteristics of GPFG and especially the long horizon.

There are a number of modifications to the investment strategy that could be contemplated given the above distinctive features of GPFG and expected risk premia:

- Accept higher risk (from various sources)
- Expand exposure to illiquid assets
- Extend rebalancing to become more pro-actively contrarian
- Develop various forms of insurance selling

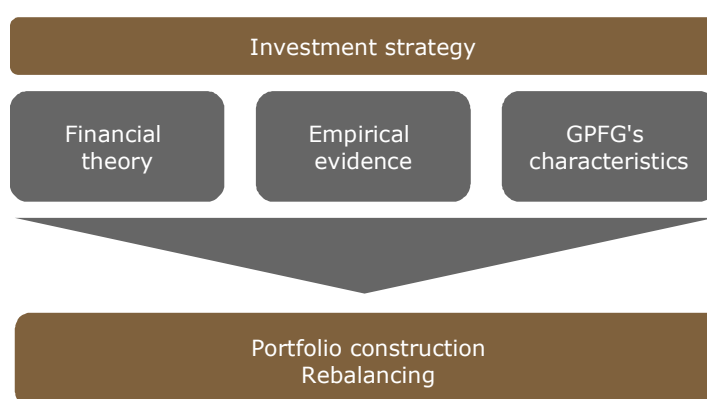
These issues will be discussed and expanded below.

Such modifications would enhance the likelihood of achieving a 4% real return over the very long run. The spending rule of 4% may be interpreted as an implicit long-term real return target for GPFG. This target is more challenging in the current investment climate when real long-term yields are low. For example, “riskless” real long-term yields have fallen from 4% to almost 0% during the past decade.

No safe strategy currently exists to achieve a 4% real return. To make the 4% target conceivable over a long horizon, investors must accept a reasonable probability of lower returns or of actual losses over a shorter horizon. The fact that the Fund is not obliged to achieve 4% real return every year, or even every decade, enables greater risk-taking in the GPFG portfolio. An explicit target, to be achieved every year, would entail a de-risking of GPFG and subsequently lower expected returns.

The above ideas could be developed and incorporated into the investment beliefs of GPFG. They may serve as powerful metaphors in focusing the efforts of the investing activities. This could involve elaborating the fundamental assumptions discussed in section 2.1.2 of *Report No. 10*. Exhibit 2 shows one way of structuring the investment beliefs. Subsequent reports might fruitfully expand the discussion about risk premia related to stocks and bond, dynamic strategies and how these could be implemented in the portfolio in a meaningful manner. This could involve making additional judgements about which strategies should have a more prominent role in the construction of the portfolio, and which strategies should be discarded.

Exhibit 2; Investment beliefs



4. Alternative approaches to asset management

In this section, we discuss a series of issues that are important components of the Fund’s investment strategy. We start in Section 4.1 with a discussion of risk factors and asset based investment management. In Section 4.2 we discuss approaches to improving the investment performance of the GPFG through efficient harvesting of risk premia, both the traditional rewards for exposure to equity market volatility and bond market duration, and other factors that drive financial market returns. In Section 4.3, we consider how the Fund can exploit its size and long investment horizon to pursue contrarian strategies that can enhance long-run expected returns.

4.1 Risk factors and asset based investment

The traditional approach to building investment portfolios has been a simple asset based approach. The building blocks in the portfolio are individual assets such as stocks and bonds, categorized in groups based on instrument type and geographical location. The benchmark relates to such groups of individual assets.

Theoretically, this approach is in line with the idea that the only priced risk factor is an asset's beta coefficient – its sensitivity to market movements, according to the Capital Asset Pricing Model (the CAPM) – and that the non-systematic part of the portfolio's total risk can be reduced by diversifying across many individual assets. Under such circumstances, the grouping of assets based on instrument type and geographical location can be motivated by the different systematic and unsystematic risk characteristics of the assets. For instance, international stocks typically tend to correlate less with each other, as compared to stocks traded in the same national market.

However, since the 1980s, the CAPM's single-factor approach has been challenged by empirical findings, supporting multiple asset characteristics that are associated with risk premiums. These risk factors include value, size, and liquidity, as well as returns to more active styles of investment such as momentum strategies and carry trading. This presents us with alternatives to the asset based approach: to focus on multiple risk factors, or investment styles, when building up a well-diversified investment portfolio with a good return for a given level of risk.

4.1.1 Multiple risk factors

As a fund that prides itself on using modern approaches to investment management, it might seem appropriate for the GPF to switch its asset based approach to one that elevates systematic risk factors and management styles to being at the heart of the Fund's organisational and managerial structure. This presents a big challenge, however: how to define and restrict the universe of factors and styles which are to underpin Fund strategy. This challenge exists because the empirical support for the profitability of the newer risk factors and investment styles is not clear-cut. Even well documented stock-market patterns, such as the value-stock premium and the small-stock premium, which have been evident over long historical periods, suffer reversals, especially around market crises. There are few factors – some would say there are no factors – that are economically meaningful and persistent over time. On the other hand, even estimates of the equity risk premium are not robust over time and across markets, so we cannot dismiss the importance of other return factors.

At the same time, there is no clear criterion as to how risk factors should be measured. To illustrate this dilemma, consider how stocks from both large and small national markets might best be grouped into securities that, in a global context, are deemed to be low-capitalisation. A minnow in the United States could be among the giants of a smaller market. In other cases, a factor based approach may correctly categorise investments according to helpful risk attributes, yet present difficulties in implementation. For instance, some real estate assets are similar to stocks while others behave more like bonds, yet both might best be managed by professionals with skills in property investment.

The Fund's large and growing size poses an additional problem in a management style more explicitly based on multiple risk factors and on returns from investment style. Being such a large actor means that the Fund may significantly influence asset prices if it implements substantial swings in relation to certain segments of the market. Low-capitalisation equities can experience noticeable buying or selling pressure, and if the Fund were to become an influential owner in small firms or a transient owner of fast-moving stocks, management costs could increase and corporate control questions could become more demanding. A major commitment to momentum trading could have an even more marked, and undesirable, impact on the market.

Yet, despite the problems in defining systematic risk factors, it seems clear that part of the Fund's performance is attributable to risk factors other than beta risk. [Ang, Goetzmann and Schaefer](#) (AGS) calculated in their 2009 report to the Ministry of Finance that more than two thirds of the variation in the Fund's overall excess return can be explained statistically by systematic risk factors; they also show that factors such as liquidity and volatility have been important, and that the Fund already has a higher exposure to relatively small companies than the benchmark. In the current asset based approach, some of the additional risk exposure has been provided via active management, namely through systematic deviations from the

Fund's benchmark. The asset based approach thus does not exclude fund managers from taking advantage of multiple risk factors and returns to style. When weighing the pros and cons of a factor based approach against those of an asset based approach, we believe that the asset based approach is the preferred one.

4.1.2 Asset based investment

There are nevertheless some problems and issues that arise in an asset based framework. Two of these are associated with the performance evaluation of the Fund, and risk management. We will also deal with the issue of whether it would be useful to classify assets into real and nominal assets.

Performance evaluation should ideally take into account multiple risk factors, and returns to style. If that is not done, then fund managers can utilize these regularities to create apparently superior performance which really reflects exposure to systematic risks that are not fully captured by the performance measures. If fund managers are unduly rewarded for such risk taking, then that creates excess costs for the Fund.

Turning to risk management, while the Fund may reap benefits from systematic risks and returns to style, they also increase the variability of returns – at least in the short run. The risk management system of the Fund should be such that it both gives a good picture of the overall riskiness of the Fund, as well as imposing limits on excessive risk taking. Only to a limited extent is exposure to systematic risk factors identified by traditional risk measures such as volatility. If the Fund intends to take advantage of active management, the current system, based on tracking error, should be complemented with other monitoring mechanisms. The analysis of AGS (2009) suggests that more emphasis should be put into measuring the Fund's riskiness using multiple dimensions of risk. We believe that these issues can be addressed adequately within an asset based framework, though portfolio performance analytics will have to be enhanced to embrace multiple risk factors and style trading.

It is common in the world of endowment asset management to distinguish between real and nominal assets. Real assets are a claim on productive capacity, typified by ownership of businesses, timber, resources, land, gold, and other tangible assets. Nominal assets provide a monetary cash flow, the value of which is subject to erosion if there is inflation or currency debasement. Yet if the benchmark is based on asset classes and not on factors, labelling certain assets as real and others as nominal is not necessarily helpful. Notably, labelling stocks as real assets and bonds as nominal assets does not make them purely so. For example, stock market returns and valuations have surprisingly strong relations with the inflation level. Both deflations and high inflations have coincided with low equity market valuations. To assess the real and nominal components of each asset class, empirical analysis would be required; yet the evidence from existing studies is mixed, and is sensitive to the length of the investment horizon, the historical window that is used, and the statistical methods used by the researcher.

Many prominent endowments were forced to borrow in the capital markets in the aftermath of the financial crisis of 2008. A strong tilt towards illiquid assets made them vulnerable when markets dried up and they subsequently had to borrow to keep the endowments running. These institutions were forced to raise cash to pay for operating expenses and for commitments to private equity investments. Their relative weightings in assets classified according to their capacity to protect beneficiaries from accelerating inflation were not crucial. The key factor in 2008 was not inflation-protection, but exposure to factors that are linked to asset marketability.

4.2 Risk and risk premia

The long horizon makes the GPFG more tolerant of short-term losses than most investors. The simplest way to exploit the above-average risk tolerance would be further increases in the equity allocation, say, from 60% to 70%. However, the Fund is already exposed to concentrated equity market risk. A natural next step is therefore to harvest risk premia from multiple sources as a strategy for accepting additional risk in the portfolio. Such diversification across return sources should improve the Fund's risk-return tradeoff. This section reviews the diverse sources of risk premia.

Traditionally, investors have focused on the equity premium as the key source of excess returns. In the classic theory of finance, the equity premium was the *only* way investors could boost their portfolio's expected returns – by switching cash or bonds into equity markets and by overweighting stocks that are sensitive to

equity market movements (i.e., high-beta stocks). However, the underlying assumptions of this body of theory – a single factor determining asset prices, market efficiency, and constant expected returns – have been challenged by market behaviour, and a broader perspective is warranted.

Multiple return sources appear to influence asset prices. The main guidance from theory is that required risk premia should be especially high for investments that tend to lose money in “bad times.” In the traditional theory, bad times correspond to periods of equity market decline; in more general models, bad times may include recessions, financial crises, liquidity shortages, and so on. Academics still debate whether excess returns are determined by rational or by irrational behaviour by investors. Both sources of return probably matter. Moreover, the expected rewards for various risk exposures can fluctuate over time.

4.2.1 Premia in the stock and bond markets

The equity risk premium refers to the expected or realized excess return of stocks relative to default-free fixed interest securities. Historically, the annualised return on stocks has been several percentage points higher than the annualised return on short- or long-term government bonds. Dimson, Marsh and Staunton (hereafter, DMS) examine stock market performance over the 110 years since 1900. In DMS (2010) they estimate that the return on global equities, measured in US dollars, was 3.7% per year higher than government bonds and 4.4% higher than Treasury bills. Equity returns exceeded bonds, bills and inflation in all 19 countries included in their study. Such evidence has been one key rationale for the GPF’s increasing equity allocation over time.

No consensus has yet been formed on which factors, beside the equity premium, drive asset prices. We first discuss static holdings within the stock market. Across stocks, there is little evidence that high-beta or high-volatility stocks earn larger returns than their peers: some studies even report to the contrary. There is also scant evidence that static subsets of the market, such as particular industry groups, earn superior long-run returns. The same is true for particular countries; in fact, DMS report that even emerging markets as a group have not outpaced developed markets over a multi-decade perspective. Outperformance seems period-specific.

Across bonds, historical experience suggests that extending maturity or duration can moderately boost expected returns, as can buying credit-risky corporate bonds instead of government bonds (which until recently were deemed virtually free of default risk). Each premium has several names but we call them the term premium and the credit premium. The case for positive term and credit premia is supported by empirical evidence: positive average realized excess returns over long histories and, typically, positive forward-looking yield spreads.

The theoretical case is stronger for the credit premium. Besides the sheer default risk of corporate bonds and other non-government bonds, the lesser liquidity and bad timing of losses – partly captured by a positive beta relative to the equity market – justify higher required returns.

In contrast, the theoretical case for a positive term premium is ambiguous because investors with long-dated liabilities may deem long bonds as riskless. Additionally, since the late 1990s government bonds have exhibited a negative market beta, and thus exceptional safe-haven characteristics. Looking at standalone risks, long bonds are clearly more volatile, less liquid and more exposed to inflation than short bonds. But as inflation receded, the inflation risk premium dwindled; and the deflation-hedging attractions of long bonds began to augment investor demand for these securities. Even before the recent large-scale public bond purchases, the prospective term premium had become small, maybe even negative.

For investors who rule out leverage, the expected magnitudes of long-run term and credit premia are small compared to the equity premium. But looking beyond asset classes or static asset sectors can reveal further sources of systematic return. Certain dynamic strategy styles and risk factors have earned reasonably consistent rewards over the long haul. We discuss them next.

4.2.2 Value, size, liquidity, momentum and other style premia

Ilmanen (2011) and DMS (2002, 2010) provide extensive literature summaries on investment style premia, and we refer the reader to these publications for references. The most prominent source of systematic return is the value premium. Value stocks have market prices that are low, relative to fundamentals such as company

earnings, dividends, or book value. The value premium is the long-run outperformance of value stocks compared to their more richly valued peers. In other asset classes, including currencies, there is mild evidence that relatively undervalued assets outperform in the medium term. Both irrational and rational influences may underlie the value premium.

The size premium has been known for even longer, though historically it has been less consistent. Small-capitalization stocks have tended to outperform large-capitalization stocks, at least on paper. Trading costs on small-cap stocks are higher, which makes it harder to harvest any size premium. This finding also suggests that the long term outperformance of small-cap stocks may reflect no more than fair compensation for their illiquidity.

Liquidity is a multi-faceted concept that is hard to define and measure, and liquidity-related premia inherit these features. These premia reflect compensation for illiquidity as a characteristic (reflecting trading costs and ease of trading) as well as a risk factor premium for the tendency of illiquid assets to perform poorly during bad times such financial crises and bear markets. Academic studies attempt to isolate the pure liquidity premium element in stocks or bonds, with mixed success. As already noted, empirical credit premia and size premia may partly reflect liquidity premia. Presumably such premia are much higher outside publicly-traded markets, for example in real estate, infrastructure and private equity. Recent evidence includes Chen, Ibbotson and Hu (2010) and Naes, Skjeltorp and Odegaard (2011).

Momentum strategies have been profitable in many markets. Momentum gains arise when assets that have outperformed peers over the past few months display some tendency to keep outperforming. Only investors that face low trading costs can exploit such patterns. Momentum patterns are more likely driven by irrational than rational influences.

Carry trades – that is, yield-seeking strategies – tend to add value in the long run. The best-known carry strategy is in currency markets and involves buying currencies with high interest rates and selling currencies with low interest rates. The empirical success of carry strategies reflects, at least in part, required risk premia because the asymmetrically large losses for carry strategies tend to coincide with bad times such as financial crises. The same is true for index volatility selling strategies, the purest form of writing financial catastrophe insurance.

The list does not stop there. Other return predictors – for example, related to companies' asset growth or net issuance – have been documented. The return sources listed above are, however, better established and more carefully studied than other factors. A key question is whether these sources of return are potentially exploitable as drivers of the Fund's investment performance.

4.2.3 Relative importance of returns factors

All these return factors can have a marked impact on investment performance. For example, the *size effect* – the tendency of smaller companies to move together and experience stock market performance that systematically deviates from their larger brethren – is well documented and will likely persist in the future. Whether or not the Ministry mandates a strategic tilt towards particular factors, the asset management style chosen by a manager can have a profound impact on performance. We therefore urge further reporting by NBIM to the Ministry of the Fund's tilt towards a selection of return factors.

What is open to debate is whether each return factor will provide a forward-looking premium. To continue with our example, the existence of a size premium – an expectation of superior performance by smaller companies – is uncertain. It is conceivable that the size premium could be negative over long intervals. Given the abundance of potential return sources, scepticism is warranted for several reasons. First, data-mining by thousands of motivated researchers inevitably uncovers spurious regularities in historical data. Such patterns of investment performance cannot be expected to persist beyond the study period. Second, opportunities uncovered on paper may not have been exploitable in practice due to trading costs and other market frictions. Third, even if excess profits existed in the past they may have been competed away after their existence became widely known.

How can one be more confident that a perceived regularity in financial markets is not an artefact of data-mining? Three factors help rule out spurious relations: solid theoretical foundations; the robustness of the

empirical evidence; and continued profitability on an out-of-sample basis (that is, using data from periods or markets other than those that revealed an apparent regularity). Real-world trading experience helps assess the drag from costs and frictions. Supportive forward-looking valuations make it more likely that the opportunity will be sustained and has not been competed away.

What about the factors discussed above? Each of the return sources above is supported by reasonably robust success in other markets and other time periods after the regularity was publicly identified. Thus, each of them merits consideration as a potential component of diversified long-horizon portfolios, although reasonable observers may debate and disagree on each case. Arguably, size may have the least consistent premium over time and momentum may have the weakest theoretical foundations, at least if each return source needs to be justified as a rational risk premium.

To conclude this section, we report in Exhibit 3 the historical returns estimated over the longest interval for which data is available. We stress, however, that even estimates over long windows are period-specific. Especially when looking beyond asset class premia, and focusing on factors in returns, extrapolation requires particular caution, and attention should be given to contemporary levels of valuation. Adjusting for over-fitting and trading costs reduces returns, especially on the momentum and carry strategies below.

Exhibit 3: Long-term evidence on risk premia

Premium	Data source	Average reward	Period	Source
Equity premium	US stocks vs bills	5.2%	1900–2009	DMS 2010
Term premium	US bonds vs bills	1.0%	1900–2009	DMS 2010
Credit premium	US corporates vs Treasuries	0.4%	1926–2009	Ilmanen 2011
Value premium	UK value vs growth	2.9%	1900–2009	DMS 2010
Size premium	UK small vs market	2.4%	1955–2009	DM 2010
Momentum premium	UK winners vs losers	10.3%	1900–2009	DMS 2010
Carry premium	Currencies	6.1%	1983–2009	Ilmanen 2011

Note: These rewards are in all cases equal to the geometric differences between two annualised returns. No trading costs have been deducted.

4.3 Contrarian strategies

Rebalancing to constant weights has a mildly contrarian flavour as it involves selling a recently outperforming asset and buying a recently underperforming asset. The current rebalancing regime could be extended to a more proactively contrarian approach to asset allocation as a more effective way for GPFG to exploit the long-term investment horizon. We review below both the exploitation of time-varying risk premia, aided by forward-looking valuation indicators, and various forms of insurance selling.

A world of time-varying risk premia offers special opportunities for a long-horizon investor. Most investors cannot benefit from exceptional market opportunities in bad times (such as Autumn 2008) because their risk aversion and perceived short-term risks tend to be higher just at such times, or they may simply be forced to liquidate positions. In contrast, a long-horizon investor, with more stable risk preferences and lesser liquidity needs, is naturally suited to take advantage of temporary market opportunities. Acting as an opportunistic liquidity provider or a contrarian investor not only serves a social purpose of stabilizing distressed markets, but should also enhance the investor's long-run returns. The other side of being contrarian involves some lightening of risk positions in boom years – when risky-asset valuations appear stretched – so as to have extra buying power when exceptional opportunities arise.

A *large* long-horizon investor faces capacity constraints when investing in illiquid asset classes and its market impact would be especially pronounced in pro-cyclical momentum strategies. Acting as a contrarian liquidity provider in listed asset classes would be the most natural way for the GPFG to take advantage of its long horizon; by definition, a contrarian investor faces an abundance of willing counterparties.

4.3.1 Rebalancing

The approach to rebalancing was explained in 2001 in a detailed letter, [Rebalancing Regime for the Government Petroleum Fund](#), and it has not changed fundamentally since then. The Fund has a strategic benchmark defined by regional weightings (the target proportions in Europe, North America and Asia-

Oceania) and asset class weightings (the proportions in public equity, fixed income and real estate). Actual holdings can deviate from the Fund's strategic weightings – for example, if equity prices advance sharply, causing the equity proportion to exceed the benchmark. Rebalancing brings the Fund back in line with the strategic weightings.

Much of the published discussion on the Fund's rebalancing relates to the frequency with which this is undertaken, the role of cash flows into the Fund, and whether rebalancing is initiated by a calendar-time schedule (e.g., rebalancing once every quarter) or by violation of a buffer zone (e.g., violating a range of $\pm 2\%$ around each strategic weight). What is taken for granted is that, in the absence of a review, the strategic benchmark should remain constant.

Potentially, there are dangers, as well as benefits, from following a constant-weights rebalancing regime. On the one hand, a fund that, in 1990-91, had a constant target exposure to Japanese equities – relative to other regions – would, in the ensuing years, have persistently loaded up on Japanese equities, thereby impairing portfolio performance. On the other hand, a fund that, in 2007-08 had a constant target exposure to risky securities – relative to, say, cash – would have benefited from the market recovery, to the advantage of its performance. Fortunately, the GPFG missed the Japanese debacle but benefited from the 2009 market recovery. When asset class trends persist for long periods, and performance fails to mean-revert, a constant asset mix can be costly.

Sharpe (2010) highlights the fact that not everyone can follow a static asset mix target, and that the only strategy that everyone can follow at the same time is to hold market-capitalisation weightings. If investors are heterogeneous, and some are contrarian while others are more driven by momentum, then taking the other side to dominant short-horizon return-chasers should earn some return advantage over the long haul. The ideal strategy is unlikely to be a constant strategic asset mix. However, the Fund's static asset mix provides a discipline that may be appropriate for a sovereign fund with an exceptionally long horizon.

Excessively procyclical investing is a common investment mistake that is important to avoid. Rebalancing back to a constant asset mix involves locking the Fund to a base-case strategy so as to resist being enticed too much by a winning asset class. Rebalancing has a contrarian flavour: it implies purchasing an asset class which has become cheaper while trimming holdings of asset classes that have outperformed. The benefits of rebalancing are more apparent if asset classes exhibit relative mean reversion, but it can even boost long-run compound returns in a random-walk world through the so-called diversification premium (see Ilmanen, 2011).

4.3.2 Time-varying expected returns

There is increasing evidence that expected returns for major asset classes vary over time. This may be attributed to rationally time-varying risk premia and/or to irrational investor behaviour. Quite conceivably, all the return sources listed earlier may have time-varying expected returns.

Such time variation is most apparent in the credit premium. For example, the credit spread between the Barclays Capital investment-grade credit index and U.S. Treasuries was as narrow as 0.8% at the end of 2006. The spread more than doubled in 2007 before peaking above 5% in late 2008 and retracing back to 1.6% at the end of 2009. Even though investors cannot expect to earn the whole yield advantage – default losses will offset some of it – it is likely that the prospective reward was higher after the Autumn 2008 crisis than a year earlier or a year later. It is understandable that investors require higher risk premia in such environments, and that relatively few investors jump at opportunities previously deemed enormously attractive.

Estimating the forward-looking expected return for stock markets and less liquid assets based on valuation ratios is a more treacherous activity, but such analysis suggests some time variation and a broadly similar time profile for various risk and liquidity premia in recent years.

Time variation in expected returns can make historical average returns misleading because a decline in required returns is often achieved by pushing today's market prices higher, while an increase in required returns is often achieved by pushing today's market prices lower. This is transparent in Treasury markets where few investors expect a repeat of recent decades' annual returns near 10% when bond yields today are near 3%. However, it was less well understood during the 1990s big bull market for stocks that the high realized returns partly reflected a decline in required returns. Thus backward-looking realized returns peaked

in 2000 when forward-looking expected returns (say, based on stock market valuation ratios) were probably at a record low. Many investors were confused by the prolonged bull market that ran until 2000. But there is now a clear message from the past decade's boom-bust cycles: Valuations matter.

Fortunately, longer historical estimation windows and longer investment horizons make return analysis less sensitive to starting and ending valuations. Long-term average returns do thus remain useful for the Fund's long-term return projections, although they may be supplemented with a study of forward-looking valuation ratios. Such valuation ratios will be especially important if the Fund wants to behave in a contrarian fashion.

We recommend a further examination of more proactively contrarian approaches to exploiting time-varying risk premia, beyond the mildly contrarian stance in the current rebalancing regime. However, we stress that such initiatives should be disciplined, restrained and largely based on market valuation ratios. The past decade's experience makes market timing look easy, but this is hindsight. Few market-timers have achieved consistent success, while their effort can impose costs and impair diversification. At best we make noisy estimates of expected returns, reinforcing the view that any contrarian timing or asset allocation should be done with humility and moderation.

4.3.3 Writing insurance

Large long-horizon investors, such as the GPF, are naturally suited to writing various forms of insurance. In financial markets, such strategies include selling index volatility, writing certain types of structured product, and carry strategies that effectively provide protection against financial catastrophe. They also include traditional insurance, such as cover against earthquake and natural catastrophes, and opportunistic provision of more standard forms of insurance.

Such strategies have inherently asymmetric payoffs. There are long periods of collecting small steady fees that are punctuated by infrequent large payments when the insured adverse event materializes. It is important to be explicit in advance about the large negative tail risks in such asymmetric strategies. When the strategy has been properly communicated in advance, it is easier for the public to accept the rare but inevitable large losses when they occur. Warren Buffett has shown that opportunistic insurance underwriting can be a lucrative business for investors with deep pockets (a credible capacity to pay) and a long investment horizon. Since counterparties should be willing to pay a premium for losses in "bad times", the expectation is that over the long haul the GPF's losses from insurance selling will be more than compensated by the insurance premia.

Still, the headline risks associated with such strategies must be recognized because the media tend to guide public and political attention to dramatic single events instead of slowly accruing long-run payoffs. It would be unfortunate if the fear of headline risks prevented the GPF from employing such insurance selling strategies, especially since they are particularly well-suited to a large long-horizon investor and should result in solid profits over the long run.

We recommend a further examination of the expected return and risk characteristics of various forms of insurance selling strategies

4.4 Summary

Investors do not wish to be exposed to underperformance during bad times, such as periods of turbulence and crisis. They are therefore unwilling to hold assets that are especially exposed to such adverse outcomes, unless asset prices offer a reward for risk. We identify a number of risk premia that compensate investors for such exposure, and argue that the GPF is well suited to accepting the concomitant risks. We favour harvesting the equity risk premium and several other risk premia, such as those related to value and liquidity. Because these risk premia are likely to be relatively uncorrelated, harvesting additional premia is unlikely to have a marked impact on the overall volatility of the GPF portfolio. This strategy can be expected to improve the Fund's return per unit of risk, and it is superior to merely increasing the Fund's equity weighting.

We then examine approaches to augmenting these contributors to performance by taking a contrarian stance in asset markets. This is already a feature of the GPF's rebalancing strategy, though this has potential dangers, too. We argue that exploitation of time-varying risk premia as well as other contrarian strategies,

which resemble selling insurance, should be of interest to the Fund, since occasional losses should, over the long haul, be outweighed by the premia received for underwriting adverse events. If this is adopted, we stress the need for prior communication of the possibility that there may be an adverse “hit” when the insured event materialises. These approaches are especially well-suited for large long-horizon investors and thus would enable to Fund to capitalize on its natural edges.

5. Currency exposure

The long-term nature of the GPFG indicates a relative tolerance for exchange rate risk. The Fund’s tolerance must exceed that of an investor who has to deal with short-term problems such as potential withdrawals from an open-ended fund. An important foundation of this willingness to accept exchange rate risk is that it is plausible to expect currencies to adapt in the long run to changes in relative prices, even though they fluctuate over the short to medium term for many other reasons.

At the national level, the GPFG can be seen as a long-term buffer fund, participating in the financing of imports of goods and services, and allowing Norway to run a permanent trade deficit when the production of oil and gas ends. In line with this view, the objective of the Fund should be to maximize its expected future international purchasing power for Norway’s anticipated future net imports, subject to risk considerations. Should the Fund then need to care about exchange rate risk, should it actively hedge, and how? There are theoretical aspects relating to exchange rate risk in the long and short run, as well as practical aspects of currency risk management, which need to be taken into consideration when discussing these questions.

The choice of currency for measuring the size of GPFG is guided by the purpose of the Fund. The aim is to maximize the international purchasing power of the GPFG. Hence, fluctuations in the value of the Fund due the movements in NOK are irrelevant to the international purchasing power of GPFG as all investments are in international assets.

5.1 Long run versus short run

An overwhelming question concerns the magnitude of exchange rate risk in the long run. If purchasing power parity (PPP) were to hold reasonably well in the long run, expected changes in relative prices would be offset by opposite changes in exchange rates, eliminating or at least radically reducing the need to manage exchange rate risk in the long run. Empirical studies of PPP from the 1990s typically give only weak support for it, revealing large deviations and a slow rate of convergence to parity: a half-life of three to five years. However, more recent results based on a deeper understanding of the power of the statistical methods used, as well as using different research designs, give more confidence to a convergence in line with the PPP, especially when larger deviations and tradable goods are concerned (see Ilmanen, 2011). DMS (2010) report that, for 19 stock markets over the period 1900–2010, deviations from PPP were small compared to cross-country variation in stock or bond market performance. This suggests that, from a long term perspective, hedging the Fund’s exchange rate exposure is of lesser importance.

A second question concerns the need to hedge short-term deviations from PPP. For short-term hedging, six issues should be addressed. First, what is the relationship between the investment weights and the optimal currency exposure: to what extent could exchange rate risk be managed separately from, or jointly with, individual investment decisions?

Second, if a simple currency overlay portfolio approach were chosen, would all deviations from expected net import weights in local currencies be hedged, or only short-term deviations from the PPP? The former would probably not be practical due to the large hedging volumes implied by it, given large gaps between portfolio weights tilted towards market weights, and expected Norwegian net import weights. In the latter approach, how would short-term deviations from PPP be identified in real time? Most price indexes are based on historical data, reported with a time-lag.

Third, what is considered “short-term” hedging? If deviations from PPP have a half-life of three to five years, the potential length of the hedging period might be long. Currency derivative contracts on the other hand typically have shorter maturities. Using contracts which do not match the hedging demand creates additional basis risk, and is also costly.

Fourth, given that the Fund uses multiple managers, even the collection of mark-to-market data of current exposures in individual currencies is not an easy task. Moreover, what *is* a stock's currency denomination and exchange rate exposure, especially when it is an exporting firm, a multinational, or a multi-listed company?

Fifth, what are the potentially adverse effects of the Fund's large size in relation to its trading activities on the foreign exchange markets be (i.e. the costs of price pressure)? There are also informational effects to be considered. The Fund's hedging demand might be easy to estimate, but given its size, this might in itself create speculative currency demand, with an impact on the exchange rate.

Last, what instruments would be used? Many instruments which can be used to hedge exchange rate risk (such as OTC derivatives contracts) open up other risks such as counterparty risks. All six questions raise important, practical issues. We are advised that they are the focus of continuing research within the Ministry.

5.2 Policy on hedging

A reasonable convergence towards PPP in the long run seems plausible, reducing the need for long-term hedging. We also acknowledge the problems with short-run active currency risk management. The hedging demand is hard to estimate since both the current currency exposure, and the target (optimal currency exposure) are hard to define. The benefits of active hedging are uncertain and will involve additional risks. Such activities should also reflect the costs of the instruments available and market impact effects. (A separate question, which has already been touched on, is the potential benefit from active currency investing such as that based on carry or value indicators; we do not discuss this question here.)

A "simple" alternative hedging device would be to invest with weights close to the projected future net import weights of Norway, as suggested by Breedon and Kosowski (2009). However, this approach still suffers the problem of needing to project the optimal weights for the long-run. Today's net import weights are not feasible due to the large weights in neighbouring countries. Today's weights may also be a bad predictor for the future, since international trade and differences in GDP and population growth may create pressure towards quite different production locations for goods and services in the future. The best, and simplest, solution may be to invest in weights close to market capitalization or, perhaps, GDP based weights.

Finally, a question related to exchange risk is the choice of currency in which performance evaluation is to be performed. The current approach is to use the currency composition of the benchmark portfolio. Alternatives suggested include the SDR which, however, is neither motivated by theory nor has practical impact in terms of a truly traded asset. The SDR can therefore be viewed as just one ad-hoc portfolio with weights different from the currency composition of the actual portfolio to be evaluated, and different from the expected Norwegian net import weights. If one views weights close to market capitalization, or GDP based weights, as a simple hedging device, then using such weights (reflecting the currency composition of the benchmark) is also consistent in the context of performance evaluation.

5.3 Summary

In terms of currency exposure, over the long run, purchasing power parity can be expected to hold reasonably well. As an anchor for long-term currency weighting, it is difficult to make reliable projections of long-term import weights. We do not favour major deviations from currency allocations based on market capitalisations or, possibly, GDP weights.

6. Peer review

We now present a short comparison with selected peers. We deem GPF's peers to be other large institutional investors with a long investment horizon. Each of the asset owners and managers that we have looked into has its own individual circumstances that need to be taken into account when assessing its strategy. Nonetheless, they share common characteristics as long-term investors that have an ability to accept short term volatility.

6.1 Comparisons

Exhibit 4 below shows the strategic asset allocation of GPFPG, Canada Pension Plan Investment Board (CPPIB), Government of Singapore Investment Corporation (GIC), Alaska Permanent Fund Corporation (APFC), Abu Dhabi Investment Authority (ADIA), and lastly, a peer group average compiled by CEM Benchmarking Inc. Here we only focus on asset class allocations; future peer comparisons could cover issues like performance, costs, governance and responsible investing.

The strategic asset allocation of the investors in the peer review is not presented in a uniform manner in the various annual reports. This makes it challenging to make comparisons between the institutions and draw firm conclusions. All investors show the allocation to stocks, bonds and real estate. We have chosen to standardize the classifications in Exhibit 4 to accommodate the disparity in reporting. Other alternative investments may include hedge funds, natural resources and other strategies that are not included in other asset classes.

Exhibit 4 shows that the GPFPG had a high allocation to listed equities with a policy target of 60%. ADIA has the potential to have a 70% allocation to listed equities. GIC had a (listed) equity proportion of 51%, followed by CPPIB at 41% and APFC at 36%. The latter had close to 30% in private equity and other alternative assets and thereby a significant indirect exposure to equity market risks. Hence, the equity market beta of the total portfolio of APFC is probably in line with the rest of the peer group. There seems to be broad consensus amongst these institutional investors that a high equity proportion is necessary to create real long-term returns.

The allocation to bonds varies considerably more ranging from a low of 17% to the 40% allocation of the GPFPG. The creation of a real estate portfolio in GPFPG will gradually reduce the allocation to bonds towards 35%. An allocation of 35% is in line with the level of CPPIB while markedly above that of GIC and APFC. GPFPG has the highest allocation to bonds, while the rest of the peer group have entered into alternative assets in the form of infrastructure, private equity and hedge funds.

Exhibit 4: Strategic asset allocation of selected institutional investors

	GPFPG ¹	CPPIB ²	GIC ³	APFC ⁴	ADIA ⁵	CEM ⁶
Equities	59.6%	40.8%	51%	36%	46–70%	49%
Bonds	40.4%	32.0%	20%	17%	15–30%	32%
Real estate	(5%)	6.1%	9%	12%	5–10%	11%
Infrastructure	—	4.7%	3%	3%	1–5%	—
Private equity	—	13.1%	7%	6%	2–8%	7%
Other alternative investments	—	n/a	10%	26%	5–10%	1%
Total	100%	100%	100%	100%	100%	100%
AUM USD billion	430	136	>200	37	>400	4545

The GPFPG allocation to real estate will be broadly in line with peers when the target has been reached. The rest of the peer group has broadened the investment universe by including allocations to infrastructure and private equity. Infrastructure investments are well suited to GPFPG, with an opportunity to harvest risk premia being consistent with the Fund's long-term nature. The market for infrastructure investments is smaller compared to real estate, and a possible allocation would be in the region of 2–3%.

Private equity is an asset class that consists of equities in companies that are not traded publicly. Private equity is therefore defined as illiquid. Private equity investments often demand holding periods that are long

¹ As at 30 June 2010. May invest up to 5% in real estate, with the allocation to bonds being reduced correspondingly.

² Canada Pension Plan Investment Board as of 31 March 2010. Alternatives not reported. The allocation to equities and bonds may include underlying exposure via hedge funds.

³ Government of Singapore Investment Corporation as of 31 March 2010. The 20% allocated beyond equities, bond and real estate comprises private equity (PE), venture capital (VC) and infrastructure 10%, absolute return strategies 3%, natural resources 3% and cash and others 4%. We assume in the table that the 10% allocation to PE, VC and infrastructure is equally split between the three groups (and include VC within PE).

⁴ Alaska Permanent Fund Corporation target allocation per 27 May 2010, AUM 12 October 2010. "Other alternative investments" consists of absolute return 6%, real return mandates 7%, distressed debt 1%, mezzanine debt 1%, structured credit 1%, and other 5%.

⁵ Abu Dhabi Investment Authority Review 2009, benchmark ranges. "Other alternative investments" comprises hedge funds and managed funds.

⁶ CEM Benchmarking Inc. peer group study of 2009. "Other alternative investments" is 1% in hedge funds. In the report, the 11% in real estate comprises real assets that also include REITs, commodities and infrastructure.

enough to allow for a turnaround of a distressed company or a liquidity event such as an initial public offering. Private equity investments are high-cost and high-beta. The individual allocations to private equity are not available for all members of this peer group. One may conclude from the available material that the range of allocations may vary from 2% to possibly above 15% in the case of APFC. The CEM study of 2009 found an average allocation of 7% for a group of institutional investors.

Norges Bank Investment Management (NBIM) suggested in their letter of 6 July 2010 to further expand the investment universe into infrastructure and private equity. The proposed objective is to obtain a broader diversification of the portfolio and to harvest liquidity premiums. We agree that, in principle, there is potential for such benefits.

Infrastructure investments, with long-term inflation adjusted cash-flows, ought to be particularly well suited to meeting GPFG's long-term investment needs. An integral part of the strategy for infrastructure investments could be to establish a hurdle rate to ensure an appropriate premium above the riskless rate of interest. Such a hurdle rate would naturally discourage investments at times of high valuations.

Investing in private equity is challenging. Various studies have shown that, despite much worse liquidity, private equity does not tend to outperform listed equities after costs, unless one invests with top quartile managers. The size of the GPFG is also an impediment. Given the difficulty in selecting superior private-equity managers, as well as capacity problems, we are more reserved about the benefits to the Fund of investing in private equity. Potential solutions to these challenges will probably involve in-house capabilities or investment vehicles that reduce costs.

6.2 Summary

Our comparison with peers suggests at first sight that the GPFG has a high equity weighting. However, once private equity is added into the picture, peer funds also have a large commitment to equities. The Fund's move into real estate is not out of line with peers, either. Some exposure to infrastructure could be beneficial. We are circumspect about private equity, however, since we are concerned about the difficulty of hiring private equity managers who will subsequently deliver acceptable performance on an after-costs basis.

7. Governance and management issues

The overriding concern in terms of governance is to ensure the legitimacy of GPFG in terms of public support. If the public were to lose confidence in the operation of the Fund that would entail the risk of major changes to the set-up and undermine the current structure. Since the inception of the GPFG, the world has experienced two major downturns in the equity markets, including the financial crisis of 2008. There seems to be broad political support for the GPFG's portfolio structure and total risk level; the bulk of the discussions have revolved around the relative performance of NBIM in 2008.

7.1 Transparency

The transparent management model is clearly a key indicator in this success in ensuring legitimacy (public support and acceptance) for the management of the Fund. Among other governance characteristics of the Fund, transparency has also enhanced its international reputation. For example, in the SWF study referred to above, GPFG gained a full score of 100 per cent in three out of four categories when it came to structure, governance and accountability and transparency. Here the author assessed accountability towards home country citizens, but also to citizens and government in which SWFs invest, and to participants in financial markets. When it comes to socially responsible investments GPFG is also considered amongst the best, and belongs to select few that adhere to strong guidelines of corporate responsibility. GPFG is clearly a market leader in terms of governance.

The current arrangements work well when the GPFG invests in liquid asset classes with investable benchmarks and when active risks are small and highly diversified. The Ministry "owns" the benchmark risk and NBIM "owns" active risks. The ex-ante deviations from the benchmarks can easily be measured, and the resulting tracking error and realized active return are easy to compute.

A shift to less liquid asset classes, alongside other proposals we make, provides new challenges for governance and the asset management model. For example, because illiquid assets lack investable

benchmarks, the manager must be given more leeway and performance evaluation will be less exact. Investments in infrastructure could present new problems and dilemmas for the investor.

Even for the listed stock and bond assets, but especially for new less liquid asset classes, *more* information on the Fund's key risks will be central. Alternatively, the Ministry might impose a variety of explicit constraints on asset class and sector weights beside the tracking error constraints. Because extensive constraints are likely to hamper long-run performance, we regard transparency and more detailed information as a better solution. It follows that the Ministry should receive detailed information about the Fund's major active risks. This should include prespecified asset class, regional, sector and factor exposures. It should also incorporate the manager's own assessment of its largest active risk sources, as well as less quantifiable major risks.

However, one should keep in mind that full transparency at all times is probably detrimental to GPFG's performance. If future portfolio allocations are well understood in the markets, prices will move in anticipation and implementation costs will increase. Hence, there may be a trade-off between increased transparency and the future performance of the Fund. One may mitigate this problem by non-public or delayed disclosure. For example, NBIM might be required to disclose information about key risks to the Ministry, while delaying broader publication for up to, say, 12 months. The knowledge that the manager provides such information could enhance the Fund's transparency and serve as a substitute for a more extensive set of constraints.

7.2 Benchmark adjustments and deviations from the benchmark

Good governance requires that the ownership of fund risk is clearly specified – both the benchmark risk and the active risk. The current arrangement between the Ministry of Finance and the NBIM is commendably clear, except that a decision-making vacuum exists if a need should arise for medium-sized or medium-term deviations from the benchmark. Practical examples include contrarian opportunities arising from changing market valuations or dangers arising from a structural change in global inflation prospects. In the current set-up, the Fund is locked into investing close to its benchmark weights for an extended period. Any changes to the benchmark require a lengthy consultation ending with Parliamentary approval. Meanwhile, the manager's deviations from the benchmark are constrained by the annualised limit on tracking error, which ensures that any active risk is at most a small fraction of the Fund's overall volatility.

It is not obvious how such a vacuum could be filled. On one hand, the Ministry might not want to own such large risks due to political constraints and it might not be nimble enough or sufficiently market-savvy to make such judgments. On the other hand, the tight tracking error limit constrains the NBIM's activity. Even if the tracking error limit were loosened, the manager may have other grounds for index-hugging. The manager knows well that directional asset allocation positions can easily overwhelm its more diverse active risks.

Other funds do manage to facilitate medium-term deviations from their long-term benchmark allocations.: The Government Investment Corporation of Singapore (GIC) stated in its latest annual report that it has implemented a medium-term orientation of its portfolio adapting to the changing circumstances in financial markets. The New Zealand Superannuation Fund (NZSF) also reported that it had implemented a "strategic tilt" in the portfolio to take advantage of its long-term investment horizon. NZSF has a belief that asset class returns are partly predictable and exhibit time-varying returns. In connection with the financial crisis of 2008 this gave rise to an increased exposure to equities and real estate investment trusts, and a reduced allocation to government bonds.

The Ministry stated in *Report No. 10* that the long investment horizon is of great importance for the Fund's investment strategy. We have argued above that a contrarian approach may add value in the long term. However, this assumes that decisions can be made fairly quickly to change the benchmark or to adjust the level of risk in the portfolio. The key question is who will make these types of decisions? Good governance suggests a clear line of responsibility. Currently there is a vacuum: certain risks are not taken and changes in the benchmark indices are not easily implemented.

Who might accept the responsibility for these decisions? There are three possibilities:

1. Delegate to NBIM
2. Delegate to a new entity, for instance, an Investment Advisory Board.
3. Ministry of Finance

The intermediate solution, following the example of some peer institutions, would be to create an Investment Advisory Board to which the Ministry of Finance could delegate certain investment decisions – or at least the task of making proposals. As one specific task, the IAB could regularly judge whether to accept or overrule the asset allocation weights a contrarian rebalancing regime would imply. This board might include members of the Ministry’s asset management department, members from NBIM, Norges Bank or its board, and experts with relevant academic and market experience.

Whichever way this decision-making vacuum is filled, accountability and measurability are essential. Each risk should have a clear owner. The final decision and responsibility remains at the Ministry of Finance, the ultimate risk owner, unless it is explicitly delegated. Oversight of the Fund should verify that any systematic tilts or timing decisions are implemented with moderation; they should be constrained to be small compared to the equity market risk in the total portfolio. The evaluation period for medium-term risks should be even longer than that of other active management. Even if quarterly returns are published, their importance should be downplayed.

The current vacuum may in part reflect the current management model whereby the Ministry is the principal and NBIM the agent. It is perhaps no surprise that in the two institutions highlighted above – GIC and NZSF – the fund is responsible for both policy and operational management. This report does not assess alternatives to the current management model, but future Strategy Council reports might do this.

7.3 A potential agency problem

Principal-agent problems arise whenever a manager does not have exactly the same incentives and interests as the ultimate owner, and may therefore behave in a way that is not optimal from the owner’s point of view. Principal-agent problems may therefore hamper investment performance. Principal-agent problems may exist e.g. between stock-holders and company managers, or between financial risk owners and active asset managers. AGS (2009) rightly argue that the principal-agent problems between the Ministry and NBIM are mild. Still, such problems exist and we emphasize the concern that that the GPFG’s core advantage – its long horizon – may not be passed on to the manager. Public focus on quarterly performance measures and headline risk aversion are two key reasons why the NBIM may not fully inherit the owner’s long investment horizon.

The Fund is an important and growing part of the national wealth of the whole country. Its size and its ultimate ownership, as well as its transparency, may be at the core of this agency problem. There are high expectations associated with the use of the proceeds of the Fund. Failure to meet these expectations constitutes a large reputational risk but such risk materializes very slowly, notwithstanding the 2008 experience. What is worse, over the shorter term *any* negative news will be under particular scrutiny by the media. Transparency is an undoubted strength for the GPFG but is not an unalloyed good. Transparency exacerbates headline risk aversion which could lead the GPFG to avoid certain investment strategies (insurance selling, contrarian investing) that would be naturally fitting – and likely profitable – for a large long-horizon investor, but that could occasionally result in adverse media and political reactions.

As noted, the Ministry of Finance, as the Fund owner, controls active risk by imposing strict governance rules and risk management requirements, including the narrow tracking error rule. The managers of the Fund clearly take these limits seriously. The tracking error volatility is in general kept well within the permitted limits. While this set-up may be seen as an example of good governance, it may also be a manifestation of excessive risk avoidance both by the owners and the managers of the Fund. In the latter case, the full benefits of the special characteristics of the Fund (its long time horizon and lack of explicit liabilities) may remain underutilized.

The 4 per cent rule ensures a gradual increase in public spending related to the oil revenues. The 4 per cent spending rule is based on the expected real return of the Fund. The government may deviate from the spending rule depending on the strength of the business cycle. However, should the Fund fail to attain a real return of 4 per cent over longer time periods the public may start to lose confidence in the investment strategy. In fact, the more the Fund utilizes the long-term investment horizon and the associated potential to accept larger risks, the more likely it is to encounter short-term volatility in real returns.

While NBIM is responsible for the relative returns, the Ministry is responsible for the absolute returns of the Fund. It is important for the Ministry to avoid changes in the investment strategy that may be detrimental to

the long-term performance of the Fund. First, one should steer clear of ad hoc modifications to investment strategy due to short-term volatility. Second, one should avoid imposing additional constraints on investment strategy that could force GPFG to behave like some institutional investors (life insurance companies, for instance) with a pro-cyclical bent in investment strategy. This would compromise the strength of being an investor with a long horizon and an ability to accept short term volatility.

The Ministry could expand the analysis of expected real returns in the short-term and the long-term. The aim would be to anchor expectations about future returns and illustrate the inherent volatility in returns and risks of short term losses. For instance, these days the yield on the 10-year US Treasury real (“inflation-protected”) bond is about 0.4 per cent. Hence, expected returns will be impacted by low bond yields in the medium-term. Communication and public education are therefore paramount. Education regarding the long-term benefits and short-term risks associated with the Fund’s strategy is best conducted in good times, and not in the midst of a crisis when the same fair reasoning may seem like excuses.

8. From the past to the future

Common hindsight bias makes past outcomes seem more predictable than they really were. This may not be well appreciated by the public. A key implication is that the manager should be judged, as much as possible, by the ex-ante quality of investment decision-making. When drawing lessons from the past, we should resist over-reliance on the one ex-post outcome that materialized. For example, while the 2008 experience was truly exceptional, we should keep in mind the possibility of even worse market outcomes (which were not realized). One interesting question is whether a continued fall in risky asset markets could have reached a point where pressure to sell at wrong time would have become overwhelming. Despite the turmoil and some second-guessing in the media in 2008, it seems that such a breaking point was not near.

We should recognize the history-dependent and evolving nature of public risk appetite, given the still relatively short history of the GPFG and the inherent scarcity of stress events. Adaptation and public education have allowed the GPFG to increase its equity market weight from 0 to 40% and to 60% over time, despite a relatively unfriendly capital market environment. The ultimate risk owner’s resolve to “stay the course” and avoid knee-jerk reactions during any future crises presumably has been strengthened by the experience of two major bear markets (2002, 2008) during which, with hindsight, it was clearly right not to capitulate to market distress. The idea of gradually growing risk tolerance makes us more confident that the Fund can bear the new and somewhat greater risk-taking that we propose as natural paths for such a long-horizon investor.

In contrast, public risk aversion to active risk has been obviously greater than public aversion to total risk. Moreover, it has risen steeply after 2008. The question of active management is beyond this Council’s remit, but we note that this attitude can lead to underutilization of the Fund’s distinctive characteristics and excess conservatism which would make it harder for the GPFG to reach its long-run real return targets. Hopefully, public attitudes will evolve over time, aided by good performance and better communication – by the manager, by the Ministry, by this Council, and by the media.

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