Egil Matsen: The equity share in the Government Pension Fund Global

Introductory statement by Mr Egil Matsen, Governor of Norges Bank (Central Bank of Norway), Oslo, 1 December 2016.

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Accompanying slides

INTRODUCTION

The discovery of oil off the Norwegian coast has shaped the economy for almost two generations. Norway's industry structure has undergone a fundamental change. Oil has lifted the level of prosperity and generated substantial government revenues.

Chart: The Government Pension Fund Global

Twenty years have passed since the government made the first capital transfer to the Government Petroleum Fund, which has since been renamed the Government Pension Fund Global (GPFG). Since then, Norway's subsea oil wealth has to a large extent been transformed into foreign financial assets.

The GPFG serves two main purposes: to insulate the central government budget from the effects of large annual fluctuations in petroleum revenues and to preserve a substantial share of the oil wealth and increase it for future generations.

A milestone in the management of the nation's oil wealth was the fiscal rule, adopted in 2001. The fiscal rule permits the government to spend the expected real return on the GPFG, then estimated at 4 percent. The rule was introduced to phase in oil revenues gradually into the economy in pace with the increase in the fund's capital.

The GPFG has grown rapidly over the past ten years. In line with the fiscal rule, the fund's contribution to the central government budget has increased. Owing to the fall in oil prices, government petroleum revenues are now lower. Volatility in the return on the fund's investments could have a considerable impact on the fiscal room for manoeuvre in the coming years.

Norges Bank has managed the GPFG since the first transfer was made in May 1996. An important part of our responsibility for the operational management of the fund is to advise the Ministry of Finance on the fund's investment strategy.

Chart: Equity share in the strategic benchmark index and of the fund

The investment strategy issue of most importance for the fund's return and financial risk is the fund's equity share. Under the current investment mandate, the size of the fund's actual equity investments will largely be determined by the equity allocation set by the Ministry of Finance for the fund's benchmark portfolio. The equity share in the strategic benchmark index provides an important indication of volatility tolerance with regard to the fund's value. To be able to maintain the investment strategy, not least in periods of falling equity prices, a good understanding and broad-based acceptance of the fund's risk are essential. The equity share in the fund's strategic benchmark index is therefore naturally reassessed at regular intervals.

The Ministry of Finance has increased the equity share in the strategic benchmark index twice on the advice of Norges Bank and others. When equities were included in the investment portfolio in 1998, the strategic equity share was set at 40 percent, and the equity share in the actual portfolio had reached this level by June of the same year.

In June 2007, it was decided to increase the strategic equity share further to 60 percent. The implementation of this strategic change took place during a demanding period. Financial market uncertainty was elevated. Although equity markets declined sharply in autumn 2008 and winter 2009, the new strategic equity share was maintained. The increase in the equity share was been completed by June 2009, and Norges Bank had purchased NOK 1000 billion in equities for the fund over this two-year period. The fund's average ownership stake in global listed companies had increased from 0.4 percent to 1 percent. A large share of the equities held by the fund today was purchased during these two years.

In 2010, the GPFG's investment universe was expanded to include unlisted real estate. Since then, the fund's strategic benchmark index has been composed of 60 percent equities and up to 5 percent real estate, with the remainder in bonds. As real estate investments involve some equity risk, the equity share in the strategic benchmark index, in an index composed solely of equities and bonds, is now slightly higher than the allocation defined in 2007.

The question of the fund's strategic equity share is once again on the agenda. The Mork commission submitted its recommendation to the Ministry of Finance in October.

In February, Norges Bank was requested to assess whether the relationship between expected return and risk for equities and bonds has changed, and whether there is reason to adjust the equity share in the fund's benchmark index. Norges Bank submitted its advice to the Ministry of Finance today, recommending an increase in the equity share to 75 percent.

Chart: Covers of four Discussion Notes

Norges Bank's advice and my remarks today are based on a set of analyses conducted by Norges Bank. These analyses have been published in the form of four Discussion Notes.[1]

EXPECTED RETURN

Let's start by taking a closer look at expected bond returns. After several years of high bond returns owing to the fall in global interest rates, there are strong indications that returns will be low ahead.

Chart: Yield and future returns

Empirical studies show that current bond yields provide a good estimate of the nominal return on a broad bond portfolio over the next five to ten years. This is illustrated in the chart, which shows a close correlation between the return on US government bonds and the level of yields six years previously.

Chart: Yields on US inflation-linked bonds

It is the real return that is of relevance for the fund. For a bond portfolio of high credit quality, the expected real return can be estimated from the yield on inflation-linked bonds. At the end of 2016 Q3, ten-year yields on inflation-linked bonds in the largest markets varied from –2 percent in the UK to 0 percent in the US. Yields on longer-term inflation-linked bonds are somewhat higher, but still considerably lower than their historical level.

Chart: Driving forces behind the fall in the global real interest rate

The reasons for the global fall in the real interest rate are complex. The fundamental driving forces are nevertheless reasonably well understood and are shown in the chart. The large current account surpluses of oil-exporting countries and emerging economies have been one important factor. In addition, population ageing and a more uneven distribution of income have driven up saving in many countries. At the same time, investment has been low in many

advanced economies. One reason for this could be prospects for low returns on investment in productive capital. Since the financial crisis, these structural factors have been amplified by cyclical conditions. While deleveraging has pulled up savings, greater uncertainty may have dampened the willingness to invest and increased the propensity to save.

Unconventional monetary policies in many countries have also contributed to pushing down real bond yields.

Moreover, the spread between the return on fixed income products with long and short maturities, the so-called term premium, has shown a marked decline in recent years. Historically, investors have been rewarded for providing loans with longer maturities – the term premium has been positive. This is not necessarily the case today. The term premium ahead is assumed to be approximately zero.

Based on our analyses, we consider that 0.25 percent is a reasonable estimate of the expected annual real return on bonds over the next ten years. As the GPFG is also invested in other bond markets, even this modest expectation is slightly higher than the yield on inflation-linked bonds in the largest markets.

The prospect of low returns on bond investments is undoubtedly one of the reasons for the renewed discussion of the fund's equity allocation. However, whether low bond returns warrant a change in the size of the equity share of the benchmark index depends on the return that can be achieved on alternative investments – namely the expected return on equities. The relevant factor for the composition of the fund's benchmark portfolio is the spread between the expected return on equities and the expected return on bonds.

Chart: Realised real yields on equity and fixed income

The excess return that can be achieved in equity markets is usually measured in terms of the so-called equity risk premium (ERP). This is defined as the spread between the return on equities and the return on short-term government securities. Historically, the realised ERP has been high. Since 1900, the world's equity markets have yielded a total return 120 times higher than the return on short-term government securities, bringing the average ERP to 5.7 percentage points per year.[2]

If we look at the period from 1970 to 2015, for which we have more complete data, the ERP is even higher. This cannot be explained by company fundamentals such as growth in earnings and dividends in this period, suggesting that market valuation of company profits has changed since 1970. Adjusting for the effect of this re-pricing, the long-term average ERP falls to just below 4 percentage points.

Chart: Equity risk premium from different model specifications

As we know, past performance is no guarantee of future results. In addition to using historical excess returns, the ERP can also be estimated using more forward-looking models. The most common approach is to estimate the ERP on the basis of current market prices and expected future dividends. We have analysed several different models of this type. On average, these models estimate an expected ERP of just below 6 percentage points. In all the models, the estimate is higher than it was ten years ago.

The chart shows that model-based estimates of the ERP are uncertain and can change quickly. The estimates are particularly sensitive to assumptions for dividend growth and the risk-free rate. Growth in firms' dividends has been particularly strong in the years since the financial crisis.

Chart: Growth and returns

In the long term, growth in dividends and firms' cash flows will reflect underlying economic growth. In our analyses, this is clearly evident in global data: internationally, growth in firms' cash flows and equity returns are correlated with growth in the global economy. Global economic growth in the coming years is expected to be below its historical level. This "pessimism" is partly related to the driving forces behind the low level of the real interest rate. If we use more conservative estimates of future dividend growth as inputs in our models, our estimate of the ERP falls to below 4 percentage points. There is considerable uncertainty around this estimate, and Norges Bank's projections are based on a more cautious estimate of 3 percentage points.

Chart: Equity allocation and expected return

The Ministry of Finance has requested the Bank to provide estimates of the expected return on the fund ahead. Expected bond returns are considerably lower than in 2006, while the expected excess return on equities relative to bonds is somewhat higher as expected term premiums are lower. With an equity allocation of 60 percent, our best estimate of average real return is about 2 percent per year over the next ten years. If the equity allocation is increased to 75 percent, the expected real return rises to about 2½ percent.

VOLATILITY IN THE FUND'S VALUE

Let me now turn from expected returns to the return volatility that must be expected when different equity allocations are applied. The most common measure of risk in financial markets is standard return deviation, i.e. return volatility around the average.

The standard deviation of the fund's benchmark portfolio is determined by two factors: equity return volatility and bond return volatility, and the degree of covariance between the two asset types.

Chart: Equity allocation and volatility

Volatility is lower for bonds than for equities. As illustrated by the straight line in the chart, this means in isolation that portfolio risk increases with the increase in equity exposure. There is a pattern in our data showing that the standard deviation for equities has over time been two to three times higher than for bonds. The analyses do not support estimates that differ from those of ten years ago for equity risk relative to bond risk.

Equity and bond returns do not move in tandem. As a result, bonds reduce the variation in the fund's value in addition to the contribution from lower volatility. For a given equity allocation, portfolio volatility will be smaller the lower the correlation between equities and bonds is, as illustrated by the dashed curves in the chart. The blue curve assumes a degree of positive correlation between equity and bond returns. This means that although bond and equity price often covary, this is not always the case. For the purple curve, we have assumed that the correlation is negative. With this correlation, the tendency in the data is for bonds to rise in value when equity prices fall.

Chart: Correlation between equities and bonds

There has been a marked change in the correlation between equity and bond returns in recent years. In the period from the early 1960s to the end of the 1990s, the correlation between equities and bonds was positive. This trend has reversed. Since the beginning of the 2000s, the correlation between equities and bonds has generally been negative. This shift is clearly reflected in the chart, which is based on the correlations between US equities and bonds. The same shift is evident in the financial markets of a number of other countries.

The decline in the correlation has received considerable attention in the financial literature.[3] It has been suggested that this change may be the result of a shift in monetary policy in many countries

towards giving greater weight to stabilisation of the real economy in the face of supply side shocks. This means that there is now some divergence in response between equity and bond markets to this type of macroeconomic shock. This type of shock has also occurred less frequently in the past couple of decades.

A lower correlation means that bonds reduce the risk associated with equity investments more effectively than earlier. Investors may thereby be willing to accept lower expected returns on bonds with long maturities. There may therefore be a relationship between the decline in the correlation between equities and bonds and the low term premiums now observed in the bond market.

The previous decision to change the equity share was based on the assumption of a correlation between equity and bond returns of about 0.4. Over the past decade, this correlation has averaged –0.3. In Norges Bank's opinion, it is not unreasonable to base our advice on a lower correlation than the last time we issued advice. With a lower correlation, the fund will need a lower bond allocation than previously assumed in order to maintain return volatility at about the same level.

RISK OF SUBSTANTIAL AND PERSISTENT DECLINES IN VALUE

So far, my discussion of risk has focused on the fund's expected return volatility from one year to the next. If returns are normally distributed, a standard deviation of 10 percent means, in slightly simplified terms, that the value of the fund, at its current size, will change by more than NOK 700 billion in one out of every three years and by more than NOK 1400 billion in one out of every twenty years.

Even these enormous amounts may underestimate actual risk. Financial market returns do not follow a normal distribution. Major financial crises occur more frequently and with greater severity than implied by a normal distribution. An example from the recent past is 2008, when the value of the fund's strategic benchmark index for equities fell by almost 40 percent. With the fund's current size and equity allocation, this would have resulted in a fall in the value of the equity portfolio of NOK 1700 billion. This is equivalent to 65 percent of GDP for mainland Norway.

The financial crisis triggered a deep decline in equity markets, but was followed by a relatively rapid rebound. We cannot ignore the possibility that the return on the fund will be low for many years. In the 1970s, the real return on US government bonds was negative for five years in a row. In equity markets, a long period of high ERPs after the Second World War was followed by a long period of low ERPs in the 1970s.

A good understanding and broad-based acceptance of the risk of substantial falls in the fund's value are, as mentioned, essential to be able to maintain the investment strategy. Experience from the financial crisis suggests that the governance model for the fund is capable of coping with periods of large falls in value. We should, however, remember that the value of the fund in krone terms did not fall to any great extent during the financial crisis because of substantial transfers of petroleum revenues and a substantial depreciation of the krone. A future test of the governance model may prove more demanding.

A FUTURE PERSPECTIVE ON WEALTH

An assessment of the fund's equity share should not be exclusively based on an analysis of expected financial market return and risk.

Chart: The government's petroleum wealth

It may be useful to think of the government's total petroleum wealth as the sum of the fund and the estimated value of the remaining oil and gas reserves. The chart shows how the composition

of this wealth has changed over time. Ten years ago, the estimated value of the reserves was more than double the value of the fund. Today, this relationship has reversed – the fund now constitutes more than two-thirds of the government's estimated petroleum wealth.

This could have a bearing on the choice of equity share. It is reasonable to assume that oil and gas reserves in the ground entail greater financial risk than a global, diversified securities portfolio. The risk associated with the government's total petroleum wealth has been reduced by gradually transforming oil into financial assets. If we maintain the same level of risk tolerance for total government petroleum wealth as previously, we can take on somewhat higher risk in the financial portion without increasing overall risk to a higher level than previously. This point was also emphasised by the Mork commission.

THE EQUITY ALLOCATION AND FISCAL POLICY

As I mentioned in my introduction, one of the objectives of the fund and the fiscal rule is to ensure that Norway's oil wealth will also benefit future generations. We have achieved this by limiting oil revenue spending over the central government budget to the expected real return on the fund over time. When the fiscal rule was introduced, the expected return was estimated at 4 percent. The estimates presented today entail a considerably lower expected rate of return for any realistic equity allocation. As mentioned, with an equity allocation of 75 percent, the expected annual real return will be about 2.5 percent per year over the next ten years.

Chart: Petroleum revenue spending over the budget

Another important objective of the GPFG and the fiscal rule is to insulate the budget from sharp fluctuations in oil revenues. The GPFG is now so large and finances such a sizeable share of government spending that it may become just as important to manage swings in the fund's value as swings in petroleum revenues.

The fiscal authorities face an important trade-off: on the one hand, closely linking fiscal policy to changes in the value of the GPFG will have a substantial impact on other government spending and revenues from one year to another. This is far from desirable. On the other hand, a substantial degree of decoupling between changes in the GPFG's value and government spending of its funds over the budget could lead to greater uncertainty about the value of the GPFG in the longer term.

Oil revenue spending should be based on a realistic estimate of expected return. At the same time, due consideration must be given to return uncertainty. It may therefore be wise to consider spending somewhat less than the expected return over time.

CONCLUSION

Norges Bank has assessed whether the equity share in the GPFG's strategic benchmark index should be changed. The current equity share is slightly higher than 60 percent. In Norges Bank's assessment, the equity allocation can be increased to 75 percent. The Bank's proposal is based on a broad analysis of changes since the equity allocation was last assessed.

In financial markets, bond portfolio characteristics in particular have changed over the past ten years. Expected returns on investment grade bonds have fallen sharply. At the same time, the expected excess returns on equities over bonds are now estimated to be somewhat higher than when the equity allocation was last assessed. Moreover, there is reduced covariance between bond and equity returns. In short, bonds have become a better, but also more costly, hedge against fluctuations in the fund's value. Both of these factors suggest that some increase in the equity allocation would be appropriate.

If the analysis is expanded to include the relationship between return and risk for overall

petroleum wealth, we arrive at a similar conclusion. Today, the GPFG accounts for a far larger share of petroleum wealth. This means that the fund's owner can accept a higher level of risk associated with the return on the fund while keeping the level of risk associated with petroleum wealth unchanged.

A higher equity allocation means that the expected return on the fund will increase. The realised return, however, may differ considerably from expectations. In order to maintain the investment strategy over time, a good understanding and broad acceptance of this risk are essential.

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1 NBIM Discussion Note 1/2016: *The equity risk premium*, NBIM Discussion Note 2/2016: *Risk and return of different asset allocations*, NBIM Discussion Note 3/2016 (forthcoming): *Global growth and equity returns,* NBIM Discussion Note 4/2016 (forthcoming): *Asset allocation with government revenues and spending commitments*.

2 NBIM Discussion Note 1/2016: *The equity risk premium*.

3 See for example Campbell J.Y., C. Pfluger and L. M. Viceira (2015): Monetary Policy Drivers of Bond and Equity Risks, Working Paper 14–031, Harvard Business School.