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Date: 18 March 2011
Your ref.:
Our ref.: NBIM/BTa

Government Pension Fund Global – investment strategy for nominal bonds

1. Introduction

The goal for the management of the Government Pension Fund Global is to achieve the greatest possible long-term international purchasing power with moderate risk. The investment strategy for the fund needs to be based on the fund's long investment horizon and assessments of the expected return and risk on different investment options.

In our letter to the Ministry of Finance of 6 July 2010, we outlined how the investment strategy for the fund should be developed.

In this letter, we offer advice on what role the strategic benchmark index should play in the management of the fund, and how the strategic benchmark index for nominal bonds should be composed. Norges Bank has undertaken a broad review of bond market theory and empirics in a separate report (hereinafter referred to as "the report") which has been submitted separately as a basis for the Ministry's further work.

2. Challenges in the use of strategic benchmark indices

The strategic benchmark index for nominal bonds should reflect the role this asset class plays in the fund, and the long-term risk and return expectations for this asset class. It should serve as a long-term yardstick for operational management and must be based on market-leading, readily available indices to ensure the greatest possible openness and transparency.

The risk characteristics of the fund's strategic benchmark index have evolved over time. This evolution has been driven by structural changes, primarily on the supply side of the fixed-income market, as described in more detail in the report. Lower interest rate levels have led to an increase in the issuance of bonds with long maturities.

Looking ahead, new regulations for the financial sector may affect the supply of bank bonds¹ and how different parts of banks' capital structure are treated. Developments in government finances may also impact the risk characteristics of the fund's investments in government securities. Structural changes of this kind will affect the composition of the strategic benchmark index in ways that do not necessarily favour the long-term goal for the management of the fund. Its management should not therefore be automatically adjusted to such changes in the strategic benchmark index.

The return and risk on a bond portfolio are driven primarily by movements in *interest rates*, movements in the *term structure* of interest rates, and movements in the *credit spread* between bonds with an element of credit risk and government bonds. These are factors which bear little relation to the individual borrower. The return and risk characteristics of a broadly composed market portfolio can be recreated with a limited number of bonds from a small number of issuers. The risk reduction an investor achieves by spreading investments across many different bonds is limited. Index management of a market-weighted bond portfolio will not therefore result in an efficient portfolio and will be unnecessarily complex to implement.

The most widely used indices are market-weighted. The principle of market weighting means that borrowers which issue large volumes of bonds have a greater weight in the benchmark index. An increase in debt can impair debt-servicing capacity, and so a market-weighted benchmark index will probably not be the best approach for diversifying the risk of loss due to default.

The use of readily available, investable and verifiable market indices as a basis for the strategic benchmark index presents challenges for the management of the fund. The weaknesses of the indices underlying the strategic benchmark index are well-documented.² These indices mechanically exclude bonds which the credit rating agencies feel no longer meet given standards of quality. Nor do they include floating-rate bonds or bonds with an outstanding amount below a certain level. In our letter of 23 December 2009 on active management of the fund, Norges Bank argued that these weaknesses require us to invest differently to the index.

In our letter of 6 July 2010, we wrote that the strategic benchmark index cannot reflect all risk to which the fund should be exposed at any given time. Such assessments need to be discretionary and part of the operational management of the fund. This indicates that Norges Bank should establish an operational benchmark portfolio within the framework of the management mandate.

¹See the Basel Committee on Banking Supervision's *Results of the comprehensive quantitative impact study* (December 2010), available from www.bis.org. Assuming no changes in banks' funding structure, the report estimates banks' long-term funding shortfall at 2.89 trillion euro. By way of comparison, the market value of the bank sector in the Barclays Capital Global Aggregate Index was around 1.6 trillion euro in January 2011.

² See, for example, Barclays Capital's *Capturing the Credit Spread Premium* (June 2010, Kwok Yuen Ng and Bruce Phelps) and *Fallen Angels* (14 December 2010, Arik Ben Dor and Jason Xu).

Through this operational benchmark portfolio, we will seek to ensure timely adjustment to structural changes and address technical weaknesses in the strategic benchmark index. In the design of the operational benchmark portfolio, we can adjust the weighting regime by establishing rules for exposure to particular issuers, sectors or types of bonds.

Deviations between the strategic benchmark index and the operational benchmark portfolio will draw on the risk limits in the mandate, but may differ in size, character and time horizon from what would normally be considered to be within the scope of active management. The operational benchmark portfolio will be a tool for communicating the adjustments we make in the management of bond investments within the framework of the management mandate.

3. Investments in nominal bonds

Over long time periods, the real return from investing in nominal bonds has been considerably lower than from investing in the equity market, while variations in the realised real return have been roughly the same size. In the short and medium term, these investments may help reduce fluctuations in the fund's overall return. This is the most important strategic goal for the fund's investments in nominal bonds. Within the asset class, it is particularly the element of credit risk that determines risk and return characteristics.

The fund's strategic benchmark index for bonds currently consists of the subgroups of government bonds, government-related bonds, securitised bonds and corporate bonds. The report describes how bonds in these subgroups serve the strategic goals for the asset class to differing degrees. Our opinion is that these goals will be best served if the strategic benchmark index is composed of government and corporate bonds.

Government securities of high credit quality can reduce the risk in the portfolio, especially in periods of economic decline and in periods of growing risk aversion in the markets. These investments will normally also be liquid. The report discusses how developments in sovereign debt could impact on government securities' credit and liquidity quality, and the consequences this could have for expected real returns.

Corporate bonds increase the expected return, but also increase the asset class's covariance with equity instruments, especially in periods with sharp falls in equity markets. The strategic benchmark index should therefore draw a clear line between these two types of bond, as they play different roles in the fund's portfolio.

Our proposal is that government-related and securitised bonds should no longer be part of the fund's strategic benchmark index. The risk characteristics of these segments are more complex and do not necessarily help serve the strategic goals for investments in nominal bonds. US asset-backed securities in particular have different characteristics to nominal fixed-income investments, due partly to an element of option risk.

4. Exposure to sources of systematic risk

In *Report No. 10 (2009-2010) to the Storting*, the Ministry of Finance writes that systematic risk should be given greater attention in the management of the fund. In our letter of 6 July 2010, we established that the fund is particularly well-suited to bearing certain types of systematic risk and should therefore probably have different exposure to these sources of systematic risk than a market-weighted average.

Analyses of asset allocation have traditionally been based on an assumption of a stable risk structure between the major asset classes. Such an assumption can be misleading. The report presents a theoretical framework for describing time variations in risk premia over time and across asset classes. As the fund has a long investment horizon and considerable risk-bearing capacity, the fund's exposure to different risk premia should vary over time.

The most important sources of systematic risk in the fixed-income market are the credit premium and the term premium. Both of these premia have varied often considerably over time. The theory and empirics of these risk premia are presented in more detail in the report.

The credit premium is the excess return an investor realises by investing in a bond with a larger element of credit risk than a government bond with the same maturity. Historically, this premium has generally been positive. The expected return on an investment in corporate bonds must compensate for weaker liquidity, higher default risk and a tendency for defaults to come during economic downturns. These last two components have many similarities with the risk premium an investor can harvest in the equity market.

The report shows how the compensation for investing in corporate bonds has historically been higher than realised default losses. Our review of the literature and our own analysis indicate that the fund should have some exposure to the credit premium, which should be expressed in the strategic benchmark index through an allocation to corporate bonds.

The report describes various approaches to how the credit premium can be decomposed, and how the composition of the compensation to the investor has varied over time. We also show how the portfolio characteristics of investments in corporate bonds are affected by the business cycle and interest rates. Norges Bank's operational benchmark portfolio should be adjusted dynamically to capture time variations in the credit premium.

The term premium is the excess return that an investor realises by holding a bond with a longer maturity rather than continuously reinvesting in securities with shorter maturities. We find no theoretical or empirical support that a specific maturity of the benchmark index best captures the term premium. Instead, the literature suggests that dynamic adjustment of the portfolio to changes in the term structure of interest rates is necessary to achieve this. This

kind of dynamism cannot be built into the strategic benchmark index, but must be achieved through the operational benchmark portfolio and management adjustments.

In the design of the operational benchmark portfolio and internal management strategies, Norges Bank will allow for dynamic adjustment to such time-varying investment opportunities. This means that, in the operational management of the fund, Norges Bank will take actual asset and risk allocation decisions on the basis of the expected return for risk premia in the fixed-income market. The operational benchmark portfolio's maturity and credit risk will therefore vary considerably over time and deviate from the strategic benchmark index.

5. Principles for setting the benchmark index and currency distribution

The fund's strategic benchmark index for bonds currently consists of three regional portfolios assigned fixed weights. Within each of these three regions, the strategic benchmark index is market-weighted.³ In our letter of 6 July 2010, we noted that the relationship between these regional weights and the goal for the fund's management is unclear.

The goal of the greatest possible long-term international purchasing power is best served by broad ownership of the production capacity for the goods and services of which the fund is to finance the purchase. The strategic benchmark index's currency composition should reflect these considerations.

A market-weighted index for the allocation to government bonds means that the fund's exposure to countries with growing government debt will increase. A better approach may be for the portfolio of government bonds to be weighted on the basis of the production capacity financing that debt. The fund's strategic benchmark index for bonds was GDP-weighted in each of the three strategic regions up until the expansion of the benchmark index in 2002. The arguments that were behind the replacement of GDP weights for government bonds with market weights seem less relevant today.

The big emerging markets of India and China now account for around 10 percent of global GDP, yet the markets for government bonds in these currencies are not immediately investable for an international investor and so do not meet the criteria for widely used market indices. Nor are these markets investable for the fund to the extent that a GDP weighting would require.

Within the euro area, each individual country should be assigned a weight corresponding to that country's share of the currency union's GDP.

³ With the exception of a reweighting between different segments of the bond market in the US. In the Swiss and Asian markets, the benchmark index consists solely of government bonds.

There is no direct relationship between GDP and companies' ability to service their debt. Substantial structural differences between the markets for corporate bonds in different currencies mean that GDP weights are not particularly appropriate. Generally available indices for corporate bonds are based on a market weighting principle.

Government and corporate bonds play different roles in the fund's portfolio, and this warrants a separate allocation to corporate bonds within the asset class of nominal bonds. Our recommendation is that the strategic benchmark index for nominal bonds is composed of 70 percent government bonds and 30 percent corporate bonds. This should be seen in the light of the fact that corporate bonds currently account for around 20 percent of the strategic benchmark index for bonds and 16 percent of the market portfolio.⁴ Other sectors with an element of credit risk, such as securitised and government-related bonds, currently account for 25 percent of the fund's benchmark index and 32 percent of the market portfolio. However, the element of credit risk in these segments is considerably lower than for corporate bonds.⁵

The changes in currency composition that would result from the proposed changes in the strategic benchmark index are shown in the report. The currency mix will be relatively stable over time. The biggest change relative to today's index is a reduction in the level of euro in the strategic benchmark index.

Consideration could therefore be given to assigning European currencies a special adjustment factor of around 2 during a transitional period. This approach would allow for the future introduction of currencies that are not sufficiently investable today, and limit the need for large portfolio adjustments in the short term. The impact of such a factor on the currency composition of the benchmark index is shown in the enclosure.

6. Design of the strategic benchmark index for nominal bonds

The report compares the risk characteristics of a stylised version of our proposal for a new strategic benchmark index for nominal bonds with today's benchmark index. The proposed benchmark index has had attractive return and risk characteristics during the period that we have analysed. Our recommendation for the design of the strategic benchmark index for the fund's nominal fixed-income investments can be summed up as follows:

- The fund's strategic allocation to nominal bonds should be 40 percent less the net value of the fund's real estate investments and the market value of the fund's strategic benchmark index for inflation-linked bonds.

⁴ Defined as the Barclays Capital Global Aggregate Index.

⁵ Based on figures from Barclays Capital as at 31 December 2010, the option-adjusted spread was around 75 basis points for government-related and securitised bonds that are part of the Barclays Capital Global Aggregate Index, and around 230 basis points for corporate bonds that are part of the same index.

- The strategic benchmark index for the fund's nominal bonds should be based on the Barclays Capital Global Treasury GDP-weighted Index⁶ and the Barclays Capital Corporate Bond Index.
- The allocations to government bonds and corporate bonds in the strategic benchmark index for nominal fixed-income investments should be 70 percent and 30 percent respectively. The actual weights should be rebalanced to the strategic weights monthly.
- The strategic benchmark index for government bonds and corporate bonds should consist of the following currencies: USD, CAD, EUR, GBP, SEK, DKK, CHF, JPY, AUD, NZD and SGD.

The changes we recommend to the strategic benchmark index for the fund's nominal bonds could be made operational from 1 July this year.

Yours faithfully

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Enclosure

Currency distribution of the benchmark index

⁶ Barclays Capital's GDP-weighted bond indices are presented in more detail in the report.

Enclosure

	GDP weights	Weights in current benchmark portfolio		Weights in proposed benchmark portfolio		Weights in proposed benchmark portfolio (factor 2 for European currencies)	
Corporate bonds		19.7 % % of segment		30.0 % % of segment		30.0 % % of segment	
AUD				0.2 %	0.6 %	0.1 %	0.4 %
CAD		0.4 %	1.9 %	0.9 %	3.0 %	0.6 %	2.2 %
CHF				0.4 %	1.2 %	0.5 %	1.8 %
DKK		0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
EUR		8.3 %	42.2 %	8.7 %	29.0 %	12.7 %	42.3 %
GBP		1.9 %	9.8 %	2.1 %	7.0 %	3.1 %	10.2 %
JPY				1.8 %	6.1 %	1.3 %	4.4 %
NZD				0.0 %	0.0 %	0.0 %	0.0 %
SEK				0.0 %	0.0 %	0.0 %	0.0 %
SGD				0.0 %	0.0 %	0.0 %	0.0 %
USD		9.1 %	46.1 %	15.9 %	52.9 %	11.5 %	38.5 %
Government-related bonds		12.9 % % of segment					
AUD							
CAD		1.0 %	8.0 %				
CHF							
DKK		0.0 %	0.0 %				
EUR		7.1 %	55.1 %				
GBP		1.0 %	7.8 %				
JPY							
NZD							
SEK		0.1 %	0.4 %				
SGD							
USD		3.7 %	28.7 %				
Securitised bonds		12.4 % % of segment					
AUD							
CAD		0.0 %	0.0 %				
CHF							
DKK		0.3 %	2.4 %				
EUR		5.5 %	44.5 %				
GBP		0.3 %	2.3 %				
JPY							
NZD							
SEK		0.6 %	4.9 %				
SGD							
USD		5.7 %	45.9 %				
Government bonds		55.0 % % of segment		70.0 % % of segment		70.0 % % of segment	
AUD	2.6 %	0.4 %	0.8 %	1.8 %	2.6 %	1.3 %	1.8 %
CAD	3.7 %	0.8 %	1.4 %	2.6 %	3.7 %	1.8 %	2.6 %
CHF	1.3 %	0.5 %	0.8 %	0.9 %	1.3 %	1.2 %	1.8 %
DKK	0.8 %	0.5 %	0.9 %	0.6 %	0.8 %	0.8 %	1.2 %
EUR	32.7 %	26.1 %	47.5 %	22.9 %	32.7 %	32.1 %	45.9 %
GBP	6.6 %	6.2 %	11.4 %	4.6 %	6.6 %	6.5 %	9.2 %
JPY	12.8 %	4.9 %	8.9 %	8.9 %	12.8 %	6.3 %	9.0 %
NZD	0.3 %	0.1 %	0.1 %	0.2 %	0.3 %	0.2 %	0.2 %
SEK	1.2 %	0.4 %	0.7 %	0.8 %	1.2 %	1.1 %	1.6 %
SGD	0.5 %	0.2 %	0.3 %	0.3 %	0.5 %	0.2 %	0.3 %
USD	37.6 %	14.9 %	27.1 %	26.3 %	37.6 %	18.5 %	26.4 %
Total		100.0 %		100.0 %		100.0 %	

	Weights in current benchmark portfolio	Weights in proposed benchmark portfolio	Weights in proposed benchmark portfolio (factor 2 for European currencies)
AUD	0.4 %	2.0 %	1.4 %
CAD	2.2 %	3.5 %	2.5 %
CHF	0.5 %	1.3 %	1.8 %
DKK	0.8 %	0.6 %	0.8 %
EUR	47.0 %	31.6 %	44.8 %
GBP	9.5 %	6.7 %	9.5 %
JPY	4.9 %	10.8 %	7.6 %
NZD	0.1 %	0.2 %	0.2 %
SEK	1.1 %	0.8 %	1.2 %
SGD	0.2 %	0.3 %	0.2 %
USD	33.4 %	42.2 %	30.0 %
Total	100.0 %	100.0 %	100.0 %