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The rule for rebalancing the equity share in the Government Pension Fund Global

The decision has been taken to increase the fund's strategic equity share to 70 percent. The Ministry has laid down a plan for phasing in this increased equity share, cf. the letter of 22 September 2017. In a letter of 5 March 2018, the Ministry asked the Bank to consider whether there will be a need to revise the rebalancing rule once the phasing in of the increased equity share in the benchmark index is completed.

The equity share in the benchmark index will deviate from the strategic equity share as a result of different returns on the sub-indices for equities and bonds. The Ministry has set a limit for how far the equity share in the benchmark index may move away from the strategic target without triggering rebalancing, and issued detailed rules on how the equity share in the benchmark index is to be rebalanced. The Bank's responsibility is to manage the portfolio of equities, bonds and real estate in accordance with these rules.[1]

The Bank's advice and assessments in this letter build on the analysis in a discussion note published on the Bank's website, our experience of the existing rule, and the current division of duties between the Ministry and the Bank. We do not discuss whether or not the equity share in the benchmark index should be rebalanced, only how the rebalancing rule should be designed. We have chosen to concentrate our analysis on simple, return-based rules where rebalancing is conditional on the equity share in the benchmark index moving outside an

[1] The new regulations of the fund's real estate investments do not in themselves affect the Bank's ability to adjust the portfolio when rebalancing is triggered. In the same way as before the change in regulations, this adjustment will largely need to be made by buying and selling liquid assets.

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interval ("no-trade band") set by the Ministry. In this letter, we consider how different variants of such a rule will impact on expected returns, transaction costs and deviation from the strategic equity share.

The current rule

Under the management mandate, rebalancing is to take place if the equity share in the benchmark index deviates more than 4 percentage points from the strategic target. The current rebalancing rule was introduced in 2012, cf. the discussion in Report to the Storting No. 1 (2012-2013). Since 2012, the strategic equity share has been increased from 60 to 70 percent. All else equal, a larger equity share will reduce the number of expected rebalancing events. The market value of the fund has risen since 2012 from around 3,400 billion kroner to around 8,500 billion kroner. This increase in the fund's value means that there is a need to trade much larger amounts once rebalancing is triggered. In the years since the financial crisis, the Bank has found it more challenging to carry out large transactions without impacting on market prices. It is also the Bank's experience that the corporate bonds in the benchmark index present a number of challenges in terms of rebalancing. The Ministry should therefore see the matter of changes to the rebalancing rule in the context of the assessments currently being made of the framework for the fund's bond investments.[2]

In 2012, the Ministry stressed that the objective of rebalancing was to ensure that the composition of the benchmark index did not stray excessively over time from the strategic allocations to different asset classes. At the same time, the Ministry noted that rebalancing could help increase the fund's return by exploiting any time variation in the equity risk premium by selling when market pricing is high and buying when prices are low. These two considerations were then weighed against the transaction costs from trading back to the strategic asset mix.

The equity share in the benchmark index currently varies with realised returns in the markets. It increases (decreases) when equity returns are higher (lower) than bond returns. In the short term, the equity share can deviate considerably from the strategic target, but on average it will be close to, but slightly above, the target level. The volatility of the benchmark index varies, first and foremost because the volatility of a given equity share varies. Variations in the equity share can therefore help reduce overall volatility in the benchmark index.

The rebalancing rule and returns

The equity risk premium – and so expected returns – will vary over time.[3] It may be advantageous for the fund to pursue systematic investment strategies that seek to exploit these variations. We have analysed whether a simple, return-based rebalancing rule is capable of capturing time variation in the equity risk premium, so increasing the return on the fund. In our analysis, we compare the return on a portfolio rebalanced on the basis of such a

[2] The Bank's advice on changes to the rules for the fund's bond investments was set out in its letter of 1 September 2017.
[3] There is an extensive literature in this area, including Shiller (1981), Summers (1986), Fama and French (1988 and 1989), Campbell and Shiller (1989), Campbell (1991), Cochrane (1992), Campbell and Cochrane (1999), Campbell and Viceira (1999), Campbell and Thompson (2007), Cochrane (2008), van Binsbergen and Koijen (2010), Cochrane (2011), Campbell, Giglio and Polk (2013), Kelly and Pruitt (2013), Martin (2017), and Campbell, Giglio, Polk and Turley (2018).

rule with the return on one where the equity share is kept constant. The question we are attempting to answer here is to what degree the rebalancing rule leads to the equity share in the benchmark index being, on average, higher (lower) than the strategic target when the expected return is high (low). Our analysis indicates that it is unlikely that such a simple, return-based rule can achieve this. This indicates that considerations other than the possibility of capturing time variation in the equity risk premium should be given priority when designing the rebalancing rule.

Strategies that seek to exploit time variation in the equity risk premium should be designed on the basis of indicators beyond just realised returns.[4] Should the Ministry wish the Bank to pursue such strategies, the Bank would need to be given somewhat greater responsibility for the fund's overall exposure to equity risk. This would require adjustment of the current division of duties between the Ministry and the Bank. One possibility would be for the Bank to decide the equity share in the benchmark index unless the condition for rebalancing is met.

It is unlikely that a simple, return-based rebalancing rule is capable of capturing time variation in the equity risk premium. Such a rule will not ensure that the equity share in the benchmark index is, on average, higher (lower) than the strategic target when the expected return is high (low).

The rebalancing rule and transaction costs

Using historical data, we have analysed how the width of the no-trade band and the speed at which the equity share is rebalanced impact on transaction costs and deviation from the strategic equity share.

A broader band before rebalancing is triggered will reduce transaction costs, but also increase the variation between the equity share in the benchmark index and the strategic target. A narrower band has the opposite effect. Transaction costs will be lower when trading related to rebalancing is performed over a longer period of time with smaller amounts each month.[5] This applies whatever the size of the no-trade band. A more gradual adjustment of the equity share in the benchmark index does, however, mean that deviation between the equity share and the strategic target will increase. More rapid rebalancing has the opposite effect.

We have considered how different combinations of band width and rebalancing speed impact on transaction costs and deviation from the strategic target. We find that it is possible to reduce both transaction costs and deviation from the strategic target with the combination of a narrower band and more gradual rebalancing than at present. The combination of a narrower band and more gradual rebalancing means that rebalancing will occur more

[4] See *NBIM Discussion Note 1/2016: The Equity Risk Premium* for a discussion of various indicators that can be used to estimate the equity risk premium.
[5] In our analysis, we assume that the adjustment of the equity share in the benchmark index is carried out at the end of the month, as is currently the case. The first adjustment is made in the month after the condition for rebalancing is met. The method used to return the equity share in the benchmark index gradually to the strategic target is currently exempt from publication.

frequently and be carried out over longer periods than today.[6] Rebalancing will to a greater extent become part of ordinary portfolio management.

Transaction costs and deviation from the strategic target can be reduced with the combination of a narrower no-trade band and more gradual adjustment back to the strategic target than at present.

The Bank's advice

The Bank recommends more gradual rebalancing to the strategic target. The method for rebalancing the equity share in the actual benchmark index will then be closer to a process that the Bank can follow in its operational management. This recommendation will enable the Bank to make greater use of transfers to and from the fund in the implementation of rebalancing than at present. This will help reduce transaction costs further. More gradual rebalancing than today should be combined with a narrower no-trade band to reduce the gap between the equity share in the benchmark index and the strategic target. With a narrower band, the equity share will, on average, be closer to the strategic target. However, there may still be significant deviation in the short term.

The Bank's proposed changes to the rebalancing rule mean that it may take time for the equity share in the benchmark index to return to the strategic target of 70 percent. This may be desirable in periods of great uncertainty about factors that could affect the fund's long-term risk-bearing capacity, cf. the Bank's letter of 1 December 2016 where we noted that the matter of the equity share might need to be revisited in the event of significant changes to the assumptions underlying the choice of equity share.

As is the case today, the width of the no-trade band should be part of the public mandate, but the rules on how and how quickly the benchmark index should be adjusted should be exempt from publication and laid down by the Ministry after consulting the Bank. The Bank's advice on more detailed rules on the rebalancing process is set out in an enclosure. The Bank's recommended adjustments to the rebalancing rule can be introduced at a time of the Ministry's choosing.

The equity share in the benchmark index should be adjusted back to the target level more gradually than at present. The width of the no-trade band within which the equity share may move without triggering rebalancing should be narrower than today, and could be set at +/- 2 percentage points.

Yours faithfully

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In *NBIM Discussion Note 1/2018*, we also analyse the effect of introducing an inner band as well, such that the equity share is not returned all the way to the strategic target level when it is rebalanced. The use of such an inner band may reduce transaction costs somewhat, but the effect is relatively limited with a narrower no-trade band and a more gradual rebalancing process. For any given no-trade band, the introduction of an inner band will increase the gap to the strategic target.

Encs:
Characteristics of different rebalancing rules – exempt from publication
Detailed rules on the rebalancing process – exempt from publication