

NORGES BANK PAPERS

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Calculation of the aggregate for trading partner interest rates

Foreign interest rates influence interest rates in Norway, partly via the effect of interest rate differentials on movements in the krone exchange rate. Movements in the krone exchange rate will, in turn, influence inflation and economic activity in Norway. Norges Bank's monetary policy analysis uses an aggregate for trading partner interest rates as a representation of foreign interest rates. As from *Monetary Policy Report 2/15*, the composition of this aggregate for trading partner interest rates has been revised somewhat. This paper explains the current calculation method for this aggregate and the changes from the earlier method.¹

Monetary policy analysis uses the aggregate for trading partner interest rates primarily to make projections of the import-weighted krone exchange rate index (I-44). This index, which is calculated as a weighted average of the 44 largest countries in terms of the value of imports to Norway,² therefore forms the basis of the composition of the interest rate aggregate. Ideally, the interest rates of all the countries represented in the I-44 should be included in the interest rate aggregate, with relevant weight shares. However, including all of them is impractical. Since some countries impose capital controls, such a country's interest rate is not necessarily representative of the pricing of that country's exchange rate. For many countries, it is also difficult to find reliable market prices for forward rates. The gain from including interest rates with a very small weight share is limited, since individually these interest rates have little effect on the aggregate, while the cost of maintaining quality increases in proportion to the number of interest rates in the aggregate.

Against this background, the aggregate is calculated as a weighted average of the interest rates in selected countries/currency areas with relatively large weight shares in the I-44.³ The aggregate previously comprised interest rates in the euro area, Sweden, UK, US and Japan, where the different rates were weighted by their respective I-44 weights scaled up proportionally. In addition, Denmark's I-44 weight was included in the euro area weight, since the Danish krone is pegged to the euro. Using this calculation method, the interest rates of the euro area and Sweden combined made up around 80% of the interest rate aggregate, while their respective weight in the I-44 (including Denmark) is 54% (see Table 1). By comparison, US interest rates had a weight of 8%, only two percentage points more than the US dollar weight in the I-44.

To better reflect the composition and the relative weight between the most important countries/currency areas in the I-44, two changes have been made to the calculation method for the interest rate aggregate as from *Monetary Policy Report 2/15*:

1) Interest rates for two additional countries – Poland and Canada – have been added to the aggregate.⁴ Thus, the aggregate comprises interest rates from seven different countries/currency areas.

¹ See also "Special Feature: New set of weights for trading partner interest rates" in *Monetary Policy Report 2/15*: www.norges-bank.no/en/Published/Publications/Monetary-Policy-Report-with-financial-stability-assessment/215-Monetary-policy-report/

² For more information on calculation of the I-44, see: http://www.norges-bank.no/en/Statistics/exchange_rates/Calculated-rates---explanation/

³ This is also the practice at other central banks. For example, Sveriges Riksbank uses a weighted average of the interest rates in four countries/currency areas to represent international policy rates (see the Riksbank: *Monetary Policy Report*, October 2012, page 46): <http://www.riksbank.se/en/Press-and-published/Published-from-the-Riksbank/Monetary-policy/Monetary-Policy-Report/2012/>

⁴ Over time, these countries' exchange rate weights in the I-44 have been relatively large (more than 2%), the countries allow free movement of capital, and reliable market prices exist for forward rates.

2) The countries' I-44 weights are used in weighting the respective interest rates. Previously, the omitted countries' interest rates were represented by a proportional scaling of the I-44 weights on the interest rates included in the aggregate. Now the omitted interest rates (excluding Danish interest rates) are represented by US and euro area interest rates with a 50/50 distribution. Since US and euro area interest rates are regarded as the most important international rates, they probably better represent the omitted countries' interest rates than the other interest rates in the aggregate. As previously, Danish interest rates are represented by euro area interest rates.

The new calculation method results in a higher weight share for US interest rates in the aggregate, 18%, primarily at the expense of the weight shares of Swedish and euro area interest rates. The weight shares of the new interest rates in the aggregate – Polish and Canadian – are 3% and 2%, respectively.

Table 1 Weights. I-44⁵ and old and new aggregate for trading partner interest rates. Percentage points. At 1 January 2015

Country/ currency area	I-44	Old aggregate	New aggregate
Euro area	0.34	0.59	0.53
Sweden	0.14	0.20	0.14
UK	0.07	0.10	0.07
Denmark	0.06	*	*
US	0.06	0.08	0.18
Poland	0.03	-	0.03
Canada	0.02	-	0.02
Japan	0.02	0.03	0.02

* Euro area interest rates represent Danish interest rates in the interest rate aggregate.

The weights in the interest rate aggregate are updated when the I-44 weights are updated, normally in September each year.⁶

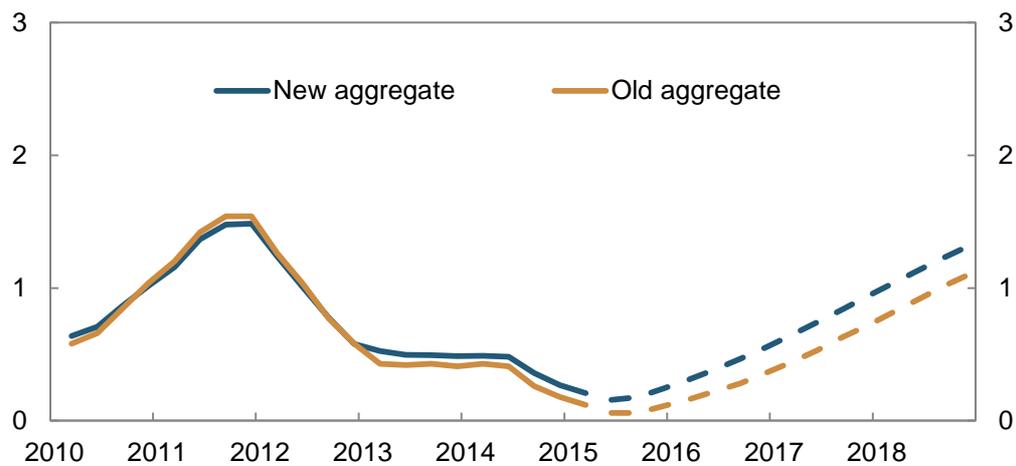
Chart 1 shows movements in trading partners' three-month money market rates calculated using the old and new set of weights. For the past few years, the new interest rate aggregate has been somewhat higher than the old interest rate aggregate. Estimated forward rates are also somewhat higher when calculated using the new set of weights. On 12 June 2015, the difference was just below 0.15 percentage point for the coming quarters, while it was just above 0.20 percentage point three years ahead.

⁵ Excluding China, whose currency accounts for 9% of the I-44, these are the countries/currency areas with the largest weight shares in the I-44.

⁶ The I-44 weights are updated in September each year. The weights are also changed if changes take place in currency area composition.

Chart 1 Trading partners' three-month money market rates. Old and new interest rate aggregate. Percent. 2010 Q1 – 2018 Q4¹⁾

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1) Broken lines show estimated forward rates at 12 June 2015.
Sources: Thomson Reuters and Norges Bank