New Calculation of Danmarks Nationalbank's Effective Krone-Rate Index

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Introduction

Danmarks Nationalbank regularly publishes an index of the development in the strength of the krone, the effective krone-rate index, and an index of the competitiveness of the Danish manufacturing sector, the real effective krone-rate index. Changing trade patterns make it necessary to revise the weights of the currencies in the index from time to time. The 2009 weights are presented below. The most recent revision of the weights is documented in Pedersen (2004).

2009 weights

Compared with the 2002 set of weights, the most important changes are that the weight of the Chinese currency, the yuan, has been doubled, making it the fourth most important currency in the effective krone-rate index, cf. Table 1. Trade with China has increased in terms of both exports and imports. Conversely, the weight of the pound sterling has been reduced substantially, also on both the import and export sides. In the new set of weights, the UK is only Denmark's fifth largest trading partner. Previously it ranked second.

The other adjustments to the weights are small. Generally, the weights of eastern European countries have increased, while those of many euro area member states, including Germany, have been reduced. In the new set of weights, trade with the euro area is weighted at 48 per cent as opposed to the previous 51 per cent. Over a long-term horizon the weight of the euro area has also declined. Nevertheless, the greater part of Denmark's trade is with countries that are geographically close to Denmark, but as globalisation increases trade becomes still more diversified.

About the revision of the weights

No methodological changes were made in connection with the revision of the weights. The number of countries included remains unchanged at 27. The krone-rate index is linked to the former index as of 8 April 2010 and will apply from that date onwards. Previously published figures have not been revised.

WEIGHTS FOR DANMARKS NATIONALBANK'S EFFECTIVE KRONE RATE Table 1

	Double-weighted export weights	Bilateral import weights	2009 weights	2002 weights	1995 weights	1989 weights
	65,4	34,6	100			
Germany (DEM)	16.4	26.0	19.8	21.0	27.4	25.6
Sweden (SEK)	5.9	16.3	9.5	9.0	9.4	11.7
USA (USD)	12.2	3.3	9.1	8.6	7.5	8.7
China (CNY)	6.9	9.2	7.7	3.6	-	-
UK (GBP)	7.1	6.2	6.8	10.4	8.6	9.8
France (FRF)	6.1	4.1	5.4	6.4	7.0	6.8
Netherlands (NLG)	3.8	7.6	5.1	5.3	5.5	4.6
Italy (ITL)	5.2	4.0	4.8	5.1	5.4	5.3
Belgium (BEF)	3.7	4.7	4.1	4.1	3.8	3.5
Japan (JPY)	5.4	0.7	3.8	3.9	5.9	6.7
Norway (NOK)	4.2	2.4	3.6	3.7	3.7	3.9
Poland (PLN)	2.4	3.2	2.6	1.9	1.5	-
Spain (ESP)	3.2	1.4	2.6	2.5	1.8	1.8
Finland (FIM)	2.3	2.2	2.2	2.5	3.1	3.6
South Korea (KRW)	2.5	0.5	1.8	1.4	1.4	-
Switzerland (CHF)	1.8	1.4	1.6	1.9	2.4	2.7
Austria (ATS)	1.7	1.4	1.6	1.7	1.6	1.7
Czech Republic (CZK)	1.5	1.5	1.5	0.8	0.4	-
Hong Kong (HKD)	1.8	0.4	1.3	1.2	-	-
Ireland (IEP)	1.3	1.4	1.3	1.7	0.9	0.7
Hungary (HUF)	1.0	1.0	1.0	0.8	0.3	-
Canada (CAD)	1.3	0.2	0.9	0.7	0.5	0.7
Australia (AUD)	0.9	0.1	0.6	0.5	0.5	0.5
Portugal (PTE)	0.5	0.6	0.6	0.7	0.9	1.0
Greece (GRD)	0.4	0.2	0.4	0.3	0.3	0.4
Iceland (ISK)	0.2	0.1	0.2	0.2	0.1	0.2
New Zealand (NZD)	0.2	0.1	0.1	0.1	0.1	0.1
Euro area (EUR)	44.7	53.6	47.8	51.3	57.7	55.0

Note: The overall set of weights, the 2009 weights, is calculated as a weighted average of the double-weighted export weight and the bilateral import weight. Exports are weighted at 65.4 per cent, calculated as manufactured exports as a share of the value of total manufactured output. The total set of weights, comprising both export and import weights, has more decimals than shown in this Table. The rows have been sorted by the 2009 weights.

Source: OECD, Statistics Denmark and own calculations.

The calculations are based on trade in manufactured goods. The total weight is arrived at by weighing a set of weights for imports, bilateral import weights, with a set of weights for exports, double-weighted export weights, cf. below. In the new set, exports have been given a greater weight than imports, so that exports are now weighted at 2/3 and imports 1/3, since 2/3 of industrial output is now exported.

The term "double-weighted" in relation to export weights indicates that they take into account the fact that Danish exporters compete with a given country not only in its domestic market but also in third markets. The methodology applied is described in more detail in Pedersen (1998).

In order to calculate the double-weighted export weights, a trade matrix is set up, showing trade in manufactured goods between the 27 countries included. The matrix is based on 2006 figures, as these are the most recent OECD figures. The bilateral import and export weights are from 2009. The impact of this discrepancy is assessed to be limited. Firstly, international trade patterns change only slowly, and secondly changes are to a large extent captured by the bilateral weights. Nevertheless, the weight of especially China is presumably a bit on the low side, as the importance of China is growing rapidly in all markets these years.

For countries that are geographically far from Denmark, the double-weighted export weight is typically greater than the bilateral weight, cf. Table 2. This is true of e.g. Asian countries such as China, Japan, Korea and Hong Kong. This reflects the fact that these countries export heavily to all countries and thus compete with Danish manufacturers in many third markets. Direct bilateral trade, on the other hand, is typically of

BILATERAL AND DOUBLE-WEIGHTED EXPORT WEIGHTS Table 2

	Bilateral	Double-weighted
Germany (DEM)	18.6	16.4
USA (USD)	9.7	12.2
UK (GBP)	7.8	7.1
China (CNY)	3.3	6.9
France (FRF)	5.8	6.1
Sweden (SEK)	12.3	5.9
Japan (JPY)	2.0	5.4
Italy (ITL)	3.3	5.2
Norway (NOK)	8.8	4.2
Netherlands (NLG)	5.1	3.8
Belgium (BEF)	2.3	3.7
Spain (ESP)	3.4	3.2
South Korea (KRW)	0.9	2.5
Poland (PLN)	2.8	2.4
Finland (FIM)	2.9	2.3
Hong Kong (HKD)	0.4	1.8
Switzerland (CHF)	1.4	1.8
Austria (ATS)	1.1	1.7
Czech Republic (CZK)	1.4	1.5
Canada (CAD)	0.9	1.3
Ireland (IEP)	1.9	1.3
Hungary (HUF)	0.9	1.0
Australia (AUD)	1.2	0.9
Portugal (PTE)	0.5	0.5
Greece (GRD)	0.7	0.4
Iceland (ISK)	0.5	0.2
New Zealand (NZD)	0.3	0.2
Euro area (EUR)	45.6	44.7

Note: The rows have been sorted by the double-weighted weights.
Source: OECD, Statistics Denmark and own calculations.

minor significance, especially in the case of Hong Kong, where the double-weighted export weight is more than four times as large as the bilateral weight.

The opposite applies to the near markets. Here direct exports prevail, and the bilateral export weights exceed the double-weighted ones. This applies to e.g. Sweden and Norway. The same pattern was seen in previous sets of weights.

WEIGHTS FOR CALCULATING REAL EFFECTIVE EXCHANGE RATES

A real effective exchange rate shows relative wages or prices in the same currency and is thus a measure of competitiveness. The real effective krone rates published by Danmarks Nationalbank are described in more detail in Pedersen (1996).

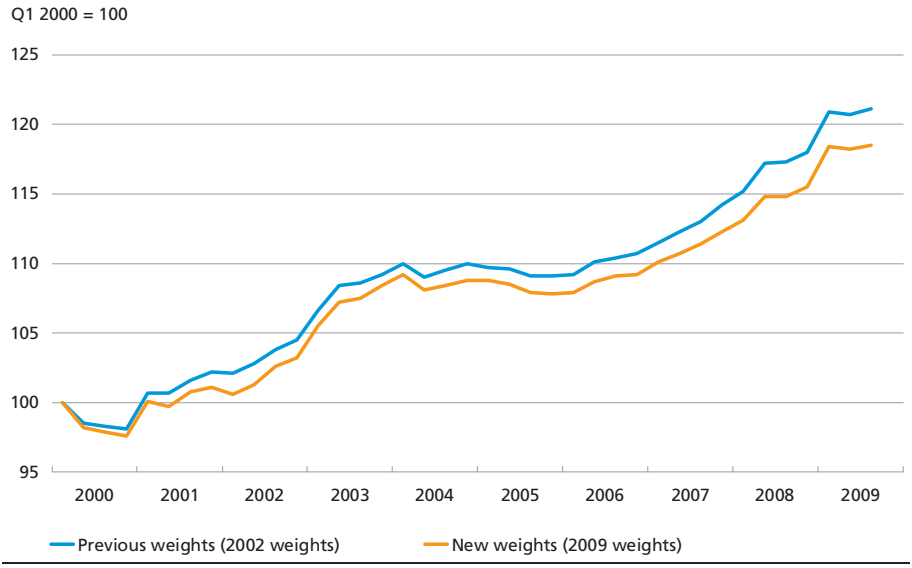
The calculations of weights include trade in manufactured goods, SITC 5-9, only. Manufactured exports account for 70 per cent of total Danish

WEIGHTS FOR DANMARKS NATIONALBANK'S REAL EFFECTIVE KRONE RATES Table 3

	2009 weights	2002 weights	1995 weights	1989 weights
Germany (DEM)	21.5	22.3	27.4	25.6
Sweden (SEK)	10.4	9.4	9.4	11.7
USA (USD)	10.1	9.0	7.5	8.7
UK (GBP)	7.5	10.9	8.6	9.8
France (FRF)	5.9	6.7	7.0	6.8
Netherlands (NLG)	5.7	5.6	5.5	4.6
Italy (ITL)	5.3	5.4	5.4	5.3
Belgium (BEF)	4.5	4.3	3.8	3.5
Japan (JPY)	4.2	4.1	5.9	6.7
Norway (NOK)	4.0	3.9	3.7	3.9
Poland (PLN)	2.9	2.0	1.5	-
Spain (ESP)	2.8	2.6	1.8	1.8
Finland (FIM)	2.5	2.6	3.1	3.6
South Korea (KRW)	2.0	1.5	1.4	-
Switzerland (CHF)	1.8	2.0	2.4	2.7
Austria (ATS)	1.7	1.8	1.6	1.7
Czech Republic (CZK)	1.6	0.8	0.4	-
Ireland (IEP)	1.4	1.8	0.9	0.7
Hungary (HUF)	1.1	0.8	0.3	-
Canada (CAD)	1.0	0.7	0.5	0.7
Australia (AUD)	0.7	0.5	0.5	0.5
Portugal (PTE)	0.6	0.7	0.9	1.0
Greece (GRD)	0.4	0.3	0.3	0.4
Iceland (ISK)	0.2	0.2	0.1	0.2
New Zealand (NZD)	0.2	0.1	0.1	0.1
China (CNY)	-	-	-	-
Hong Kong (HKD)	-	-	-	-
Euro area (EUR)	52.3	54.1	57.7	55.0

Note: The rows have been sorted by the 2009 weights.
Source: OECD, Statistics Denmark and own calculations.

DEVELOPMENT IN WAGE COMPETITIVENESS Chart 1



Note: Real effective exchange rates of the krone, i.e. relative wages in the same currency. An increase in the index indicates weakening of Denmark's competitiveness. The 2009 weights have been applied to calculate the real effective krone rate with wages as the deflator back in time. In the data publications, the indices are linked, and historical data (blue curve) are not revised.

Source: OECD, Danmarks Nationalbank and own calculations.

exports of goods and 45 per cent of total exports, which also include services. See Pedersen (2007) for a calculation of a set of weights that includes trade in services.

The calculation of the real effective krone rate is based on the same set of weights as the calculation of the effective krone rate, except that China and Hong Kong are omitted, cf. Table 3. The set of weights is renormed so that the weights still add up to 100. The reason why China and Hong Kong are omitted is that no immediately comparable wage statistics are available for these countries.

The weights used to calculate the real effective exchange rates have been revised only to a lesser extent. Notably, the weight of the UK has declined somewhat.

The view of developments in wage competitiveness over the past decade does not change if a backward calculation is performed using the new set of weights, cf. Chart 1. In practice, the indices are linked, and the historical figures are not revised.

A rising index indicates weakening of Denmark's competitiveness. The slightly lower increase in the alternative calculation based on the new weights is primarily attributable to the increased weight of the eastern European countries, where wage increases have been substantially stronger than in Denmark in the period in question.

LITERATURE

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