Appendix 2

What do exchange rate indices measure?

New environment – new viewpoints

Review of the Central Bank of Iceland's methodologies for calculating exchange rate indices

A rough observation of methods of calculating effective exchange rate indices in several neighbouring countries reveals significant changes in recent years in the principles on which they are constructed. The introduction of the euro and floating of most currencies in the world appears either to have diminished the emphasis on such indices (including not even updating their baskets) or prompted methodological review. There appears to be an increasing focus on broadening the indices, i.e. including more currencies rather than fewer. The change in Iceland's monetary policy framework in 2001 likewise gives grounds for revising the methods used for calculating the exchange rate index for the króna.

Methods for determining the weight of a currency in a basket vary considerably. In some cases merchandise trade is the sole determinant of the distribution of weight. Since geographical distribution of trade in services is generally considered less reliable, some countries have simply assumed that it is broken down along the same lines as merchandise trade. Other countries take full account of trade in services, while others still confine themselves to a geographical breakdown of tourism receipts.

Iceland's monetary policy framework underwent a radical change in 2001 when the fixed exchange-rate regime was abandoned in favour of inflation targeting with a floating exchange rate. The setting of currency weights in the official exchange rate index under the fixed exchange-rate regime was partly determined by the need for a monetary policy anchor in the form of a fixed reference value. The basket therefore had to be composed of currencies with a strong internal value, i.e. those from low-inflation countries. This viewpoint was particularly prominent over the period 1990 to 1995 when the share of low-inflation countries was increased. In 1995 the policy was eased with the adoption of a broader index. Admittedly this made little difference in practice, because global inflation was on a downward trend. However, Iceland never followed the policy of a hard currency peg like many neighbouring countries, which pegged against the ECU and thereby, implicitly, against the Deutschmark. Iceland never entirely abandoned the philosophy that, besides providing a monetary policy anchor, the exchange rate could serve as an important instrument for adjusting to external shocks, so it was considered important that the index should also reflect changes in the competitive position of industries.

The floating of the króna in 2001 has significantly diminished the need for a reference basket of hard currencies. Nonetheless, calculation of indices still serves two important purposes: monitoring the competitive position and the impact of foreign exchange-rate movements on the domestic price level. The latter is surely particularly important after the inflation target became the anchor of monetary policy. Different indices have in fact been calculated as potentially useful analytical tools. The Central Bank of Iceland's official exchange rate index is based on hybrid methodologies with fairly vague objectives. It is a point for consideration to stop publishing this index and replace it with indices which serve clearer objectives, or at least publish them simultaneously.

One of the ambiguities in the current foreign exchange-rate index is how to account for Iceland's trade in services. A completely different approach is taken than in the case of merchandise trade. In the merchandise trade-weighted index, weights are determined on the basis of data on the destination country of exports and land of origin of imports. Services trade weights, on the other hand, are largely determined by the share of the vehicle currency of transactions, which may differ from the country of origin or destination. This has increased the weight of major currencies, which are often used by smaller countries in their bilateral trade. Using these currencies in such transactions does not necessarily affect Iceland's long-term competitive position. Generally speaking, the reliability of data on geographical distribution of international trade in services is questionable. Some countries therefore ignore them and others only take them partly into account. Those that acknowledge trade in services determine individual country weights on a different basis from Iceland, i.e. with direct surveys of their geographical distribution (by destination or origin), rather than using data from forex trading systems.

Clear objectives should be set in advance for the methodologies for evaluating the currency basket weights used to calculate new indices for the króna. The new indices would have three purposes:

1. To measure changes in the short-term competitive position (and in the long term when they are used to evaluate the real exchange rate).
2. To measure the inflationary impact of changes in the exchange rate.
3. To measure the position of the króna relative to a basket of major world currencies.

To fulfil the first two objectives, the indices should be as broad-based as possible. The reason is that a country with a relatively small market share may have an inordinate effect on Iceland's competitive position if its exchange rate is characterised by large swings. For example, a sizeable appreciation of the yuan (renminbi) – which is widely deemed to have been undervalued by 20-30% below its equilibrium exchange rate recently – could then have a substantial impact on domestic prices in Iceland, despite its small weight in Iceland's foreign trade. In the case of a currency where the stability of its internal value does not need to be taken into account, the most obvious approach is to apply a rule for the minimum volume of trade required for a country to be included in the index. A necessary condition of course is that the exchange rate of the currency in question is available at sufficient frequency and that a multicurrency regime is not in operation.

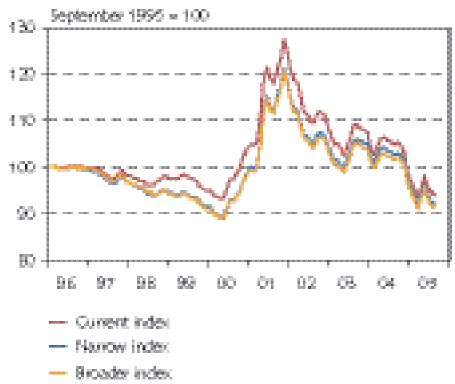
The Central Bank of Iceland has calculated two new indices as follows:

1. All countries accounting for more than 1% of Iceland's total foreign merchandise trade are included in the "narrow" index. The "broader" index covers all countries accounting for more than 0.5% of Iceland's total foreign merchandise trade.
2. Merchandise trade with countries that are not included in the basket is excluded from the calculations, i.e. given a zero value. The previous methodology of attributing the share of trade with "outsiders" to the major currencies, i.e. according to their share in SDR, increased the weight of the hard currencies. This becomes pointless if the index does not serve as an anchor for a fixed exchange-rate regime.
3. To avoid the problem of frequently needing to add or remove currencies from the index as a result of annual fluctuations in trade, the criterion for inclusion or removal is the three-year average of merchandise trade.
4. Third-country effects are omitted from these indices. Although they would be preferable, such calculations are difficult from a technical point of view and as practised in Iceland hitherto have only been based on rough estimates of the third-country impact of a couple of countries which have not been updated regularly. The advantage is not considered sufficient to justify regular updating.

When the three-year average of merchandise trade is calculated to determine the composition of the new indices based on a 0.5% and 1% minimum entrance rule, several countries are added which are not in the current official index. The indices have been calculated retrospectively to 1995. The main difference between the new narrow (1%) index and the current index is that Russia, Australia and Taiwan are added in 1995. China joins in 1999 and Estonia in 2002. However, not all these countries remain permanently, because Taiwan drops out again in 1999, Canada in 2003 and Australia in 2004. The broader index includes 14 extra countries at various times, and comprises a total of 19 currencies for 2005, instead of the present 9.

Since the purpose of the new indices is to measure Iceland's competitive position vis-à-vis main trading partner countries, trade in services should preferably be included insofar as reasonably reliable data on their composition are available. A hypothesis has been put forward that the breakdown of merchandise trade is comparable to the breakdown of trade in services excluding the travel and tourism sector. Given that services trade in the current index breaks down very differently from merchandise and services trade in other countries, data from the forex trading systems arguably give a misleading picture of its actual geographical breakdown, and are therefore unreliable. Information on the nationality of foreign tourists and destinations of Icelandic tourists is available, however, and could be taken into account.

Chart 1
Comparison of the current exchange rate index and new exchange rate indices January 1996 - August 2005[1]



1. The current index has been set at September 1995 = 100.
Source: Central Bank of Iceland.

Exchange-rate developments according to the new indices

No major difference is revealed between the narrow and wide indices over the past ten years even though the latter includes considerably more currencies. The reason is that the extra currencies in the broad index still constitute a very small part of total trade. In the long run, these indices can be expected to diverge more. As Chart 1 shows, the discrepancy has been growing over the past two to three years in pace with the increasing number of currencies in the wide index and the diminishing weight of hard currencies. Nonetheless, both indices display a clear difference from the one currently recorded. The explanation is that the US dollar has a much larger weighting in the official index than in the new ones. In general, the new and old indices diverge the most when the dollar has appreciated. During dollar depreciations, the króna has appreciated more according to the official index than the new ones, aligning it more closely with them.

It could be feasible to calculate more indices. Given the growing weight of trade in services in recent decades, the failure to include them is a flaw. Preferably they should be incorporated to some extent. Since reasonably reliable indications can be obtained about the geographical distribution of tourism, it is useful to calculate other indices which take into account the estimated breakdown of revenues and expenditures from this sector. Surveys on trade in services are already made in many countries and could provide a basis for taking full account of such data in Iceland in the future.

Another useful reference might be an index showing the exchange rate of the króna vis-à-vis several major world currencies, on a narrower basis than in both the official index and the new ones. Its main purpose would be to present a picture of the position of the króna in a long-term context against currencies that have established themselves as reserve currencies and are characterised by low inflation and very active trading in forex markets.