## Box 3

## Issues related to Monetary Conditions Indices

Monetary Conditions Indices (MCIs) attempt to provide an aggregate measure of changes in short-term interest rates and exchange rates weighted by their relative impact on macroeconomic variables such as real GDP or prices. Until a few years ago, MCIs played an important role in the conduct of monetary policy in some countries.[1] The use of MCIs by both central banks and commentators on monetary policy has decreased over the past few years. This box provides some background to this issue.

**Methodology of calculating Monetary Conditions Indices**

MCIs are normally computed as in the equation below,[2] where $R_t$ represents the level of a short-term interest rate and $e_t$ is the logarithm of an indicator of the exchange rate (usually the effective exchange rate). The subscript *t* indicates the current date, while the asterisk indicates the level of the variables in a base year/period. The weights $\Theta_1$ and $\Theta_2$, which add up to one, usually represent the relative impact that changes in the short-term interest rate and the exchange rate have on aggregate demand or inflation. The "MCI ratio", $\Theta_1/\Theta_2$, represents the depreciation of the exchange rate that is needed to offset a 100 basis point increase in the short-term interest rate (or vice versa) on the macroeconomic variable concerned.

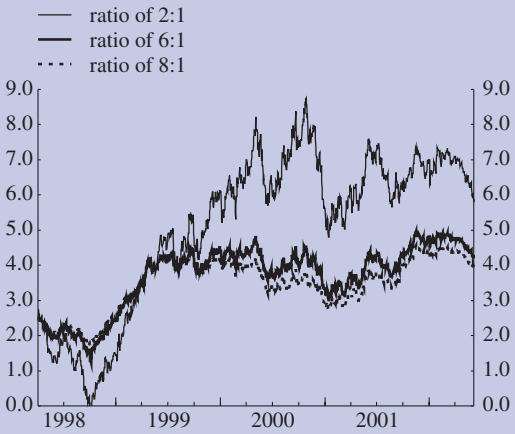
$$MCI_t = -[\Theta_1(R_t - R^*) + \Theta_2(e_t - e^*)]$$

In constructing the MCI, an initial "technical problem" is to determine the appropriate weights, or the size of, the MCI ratio $\Theta_1/\Theta_2$. The weights used for constructing MCIs are normally model-dependent and derived using a *ceteris paribus* approach. Consequently, the weights are subject to estimation uncertainty, which may imply large confidence intervals for the parameters. In addition, different models can result in quite different MCI weight outcomes. Moreover, the appropriate relative weights may vary over time, while the parameters used in the calculation of the MCI are normally held constant. For the euro area or euro area countries, a wide range of plausible MCI ratios has been found, from around 2:1 to 12:1. Chart A illustrates that the message conveyed by the index is highly sensitive to the selection of weights. The index that attaches most weight to the exchange rate, indicated as 2:1 in Chart A, has, since the end of 1999, been at a significantly higher level and more volatile than the indices which attach more weight to interest rates.

A further issue is that MCIs can be calculated in terms of both real or nominal variables. Theoretically, real MCIs seem to be the more relevant ones for analytical purposes. However, for the analysis of short-term trends in a context of low inflation, the real and the nominal MCIs are usually highly correlated and,

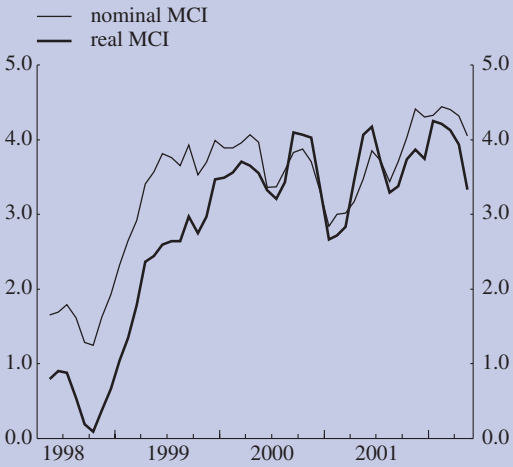
1 *For instance, MCIs played an important role in the conduct of monetary policy by the Reserve Bank of New Zealand and the Bank of Canada in part of the 1990s.*
2 *A Financial Conditions Index (FCI) is a broader concept, including long-term interest rates and asset prices, in addition to the variables in MCIs. This box only discusses issues related to the use of MCIs. However, most of the issues and arguments discussed in this box are also relevant for FCIs.*

**Chart A: Nominal MCI: alternative weights**
*(daily data)*




*Source: ECB.*
*Note: A weighted average of the three-month interest rates in the euro area is used for 1998; thereafter the three-month EURIBOR. The reference period is the average from January 1991 to May 2002. A higher level of the indices indicates "looser" monetary conditions.*

**Chart B: MCI: nominal and real versions**
*(ratio of 6:1; monthly data)*




*Source: ECB.*
*Note: In calculating the real MCI, interest rates are deflated by euro area HICP inflation and the effective exchange rate by the relative CPIs. The reference period is the average from January 1991 to May 2002. A higher level of the indices indicates "looser" monetary conditions.*

consequently, the nominal indicator will not differ significantly from the real indicator. Chart B provides an example of this (in Chart B, $e_t$ is the effective exchange rate, and – arbitrarily – an "MCI ratio" of 6:1 is chosen).

A further point to note is that the level of the MCI is not relevant by itself, but should always be seen in conjunction with a base/reference period. This base period should ideally reflect "neutral" economic conditions.

**Difficulties related to the use of Monetary Conditions Indices**

Simplicity and timeliness are the most attractive features of MCIs. Once the weights of interest rates and exchange rates are obtained, MCIs can be calculated easily. Nominal MCIs can be calculated on a daily basis, thus providing timely information, while the real version provides information with a lag, depending on which deflator is being used. However, there are significant difficulties related to the use of MCIs, both from a technical point of view (i.e. the construction of the index) and from a more conceptual one (i.e. interpreting movements in the index).

An initial issue was touched upon above: the choice of the MCI ratio is model-specific and surrounded by high uncertainty. The weights also depend, of course, on whether the effects on GDP or prices are measured; furthermore, it is not obvious whether they should be determined as a result of the complete (long-term) impact of changes in interest rates/exchange rates or as the impact on a specific horizon – say, two years ahead. Another (technical) issue relates to the identification of a "neutral" period. Given the difficulties in determining such a reference period, the analysis of MCIs usually focuses on any changes in the index as compared with previous periods. However, even this is problematic, since "neutral" conditions may vary over time. In addition, in the case of the MCI in real terms, shocks to inflation may temporarily distort the information content of the interest rates and the exchange rate if they are deflated with current inflation.

In addition to the technical caveats involved in the construction of these indicators, there are also serious difficulties regarding their interpretation. MCIs are very often used as a tool to assess the stance of monetary

policy. However, in order to assess the stance of the monetary policy, the level of the instruments available to the central bank should be assessed against the objective of the central bank. In the case of the ECB, the exchange rate is not a policy instrument. Therefore, in the case of the euro area, MCIs mix variables which are not of the same nature. Aggregating the nominal short-term interest rate, which is controlled by the central bank, and the exchange rate, which may respond to many influences other than monetary policy decisions, does not result in a meaningful indicator of the monetary policy stance of the ECB. In line with the monetary policy strategy of the ECB, the appropriate level of interest rates depends on an overall assessment of all information which may be relevant for price developments, as derived from the analysis of the information under the two pillars of the strategy.

A further point to note is that, with regard to assessing the information content of exchange rate changes, it is generally very important to determine the nature of the shock affecting these changes. For instance, in a situation where an appreciation of the euro exchange rate is related to expectations of stronger economic growth in the euro area, developments in the MCI would, *ceteris paribus*, indicate that a "tightening" of monetary conditions has taken place. If the central bank were to aim at maintaining the MCI unchanged, its key interest rates would have to be reduced, which, in such a situation, would not be the appropriate response. This is a good example of the principle that monetary policy should look at the nature of the shocks hitting the economy and not mechanically follow movements in individual indicators.

The above-mentioned issues imply that using an MCI as a simple indicator of the monetary policy stance is problematic. The simplicity of MCIs implies a loss of information when the effects of the component variables are aggregated. It is not clear why such an aggregation is needed, as a more detailed analysis can be made of the information contained in the individual variables included in the index, thereby avoiding the pitfalls of these indicators. In addition, there are no obvious advantages, in terms of timeliness, over the analyses of the underlying variables, which are obviously available at the same time as MCIs.

All this shows that MCIs have a misleading focus and cannot summarise the stance of monetary policy in the euro area. The simplicity of an MCI neither provides a substitute for a thorough analysis of underlying developments nor does it give valuable complementary information, meaning that its usefulness is doubtful. This also explains why the attractiveness of such indicators has decreased over time.