INTRODUCTION

In small, open countries – operating a floating exchange rate system – exchange rate fluctuations may play a key role in macroeconomic processes. Within this, in the conduct of monetary policy, attention must be paid to the exchange rate, since larger fluctuations may soon lead to the re-pricing of products involved in foreign trade or those competing with them, which may pass through to the prices of other products and services, as well as to wages in the long run. Emerging countries in particular often experience that hectic changes in global risk appetite or the perception of the country leads to fast, considerable appreciation or depreciation of their national currencies. In Hungary’s case it is enough to consider the weakening of the exchange rate in 2003 and 2006, or to recall the strengthening seen in mid-2008, and then the significant depreciation suffered as a result of the crisis.

It has long been a moot question in the literature dealing with optimal monetary policy whether the central bank should take account of the prevailing exchange rate fluctuations when making its rate-setting decisions. Central banks usually deem price stability as their primary objective, which most of them realise by targeting a pre-announced level of inflation that corresponds to price stability. Since exchange rate developments influence inflation prospects, it stands to reason that monetary policy should strive to neutralise exchange rate shocks, in order to prevent pass-through to inflation. However, exchange rate pass-through may change; its speed and extent may depend on the nature of shocks, as well as on the expectations of economic agents. It is equally possible that, in the case of products exposed to external competition, no rapid re-pricing occurs in response to appreciation or depreciation of the exchange rate, since price stability in the medium run may also ensure nominal stability in a broader sense. In the case of anchored expectations, exchange rate movements are also often only temporary, and thus it is not necessarily worth responding to them over the short term.

In my paper, I study how exchange rate shocks are managed in small, open economies, and whether potentially different interest policies have an influence on exchange rate pass-through or the efficiency on inflation targeting. The approach is an empirical one: that is, I provide, in respect of a number of countries, an estimate for the impact of changes in expected risk premia, including central bank responses. Comparing converging, more developed countries that have already achieved price stability, I find that the pass-through of exchange rate shocks to consumer prices could be considerably reduced only by larger and much more permanent interest rate measures than those observed in practice, but much may depend on how firmly expectations are anchored. It follows from the results that the best protection against exchange rate shocks of external origin is provided by the creation of a sustained, low-inflation environment.
Estimation Methodology

Although the question whether a central bank targeting inflation should respond to exchange rate movements with interest rate-setting decisions appears to be simple, it is worth defining more precisely what exactly we mean by this before answering the question.

Since the foreign exchange market is a financial market, exchange rates may respond quickly and sensitively to all economic news and changes. If, for example, demand falls in a country as a result of a fiscal tightening measure, output and inflation will also decrease. In such a case, a weaker exchange rate and lower interest may soften recession in a way that high inflation is not necessarily a threat. If we monitor monetary policy patterns, we may have the impression that central banks respond to weakening of the exchange rate with interest rate cuts, despite the fact that exchange rates and interest rates respond to the same news, i.e. to deteriorating economic prospects, and there is no obvious causal relation between them. However, in conducting this study, we are interested in those episodes when the exchange rate moves for an external reason – independently of domestic inflation and real economic processes – because these are the cases when the necessity for central banks to neutralise the consequences of the shock may clearly arise.

Thus, appropriate methodology differentiates between the various exchange rate movements and only looks at those where exchange rate movements would upset the equilibrium of the economy. Changes in the expected risk premia on investments in local currencies are suitable for this purpose. This is because demand from foreign investors is very often driven by news of or such changes in investor sentiment, which are independent of domestic processes.

The identified VAR models divide the movements of the variables studied into two components: each variable depends on the historical trends of the other variables, and in addition, they are also hit by simultaneous shocks. Shocks may be domestic (demand, technological, demographic shocks, etc.) or external (shocks exerted by global commodity prices, global economic activity, risk appetite, etc.). Appropriate assumptions may enable the model to differentiate between the impact of macro-economic processes and other, external impacts in developments in the central bank base rate.

I propose that a sudden change in risk perception takes longer than one month before it has any impact on industrial output and consumer prices. By contrast, it affects short-term interest rates and exchange rates immediately: as soon as risk perception deteriorates, the exchange rate weakens and interest rates will be higher for one year. Accordingly, a decrease in the expected premium reduces interest rates and raises the exchange rate.

The concept underlying my assumptions is that prices and production decisions are fixed in the short term, thus they respond to changes only with a delay. In contrast, financial markets respond to new information quickly, often on the same day.

For the estimate, I used the time series for industrial output, consumer price level, 3-month market interest and nominal-effective exchange rate for three converging countries (the Czech Republic, Poland and Hungary) and three developed countries (the United Kingdom, Canada and Sweden) mostly for the sample period between 1995 and 2006. The selection of countries was based on the availability of comparative figures and the similarity of their monetary regimes. The model also took account of the external impacts which I approximated with the production, consumer prices, short-term interest rates and exchange rates of Germany in the case of European countries, and those of the United States in the case of Canada.

Impact of Risk Premium Shocks

After the appropriate specification of VAR and identification of the required shocks described above, it is possible to calculate the way the model’s variables respond to an unexpected change in the risk appetite. The so-called impulse responses show the extent to which trends in the studied variable diverge after an average shock from the path it
would have followed without the shock. Chart 1 compares trends in short-term yields – reflecting the central bank’s interest rate policy – after an increase in the expected risk premia in the six countries under review.

The increase in the interest rate due to deteriorating risk perception or risk appetite is temporary in each country, and has hardly any impact in the second year after the shock. The increase in short-term market yields reflects the extra return expected by investors as compensation for holding risky assets. Furthermore, the behaviour of central banks also influences short-term yields strongly, since the pass-through of an exchange rate that weakens as a result of the shock would be accompanied by higher inflation, which interest policy tries to mitigate.

Hungary differs slightly from the other countries, as it appears that interest rates increase at a faster pace and to a larger extent. Estimates for the period of 2001–2008 shows that a rapid, robust response in Hungary’s interest rate policy was maintained even after the introduction of the inflation targeting system in 2001, and suggests that, compared with the rest of the countries under review, the MNB has put more emphasis on softening exchange rate fluctuations. It is also worth noting that firm interest rate measures are only temporary: after six months, interest rate levels in Hungary no longer differs materially from those in the other countries.

The higher sensitivity of Hungarian interest rates may be attributable to a number of factors. The narrow-band exchange rate regime operated until 2001 necessitated more intense exchange rate management. After 2001, there was also an intervention band in the inflation targeting regime, at the edge of which interest rate policy also responded faster to risk premium shocks. In addition, in 2002–2003 the budget deficit eroded investors’ confidence, thus in the periods of sudden declines in the international risk appetite the MNB had to signal its commitment to maintaining nominal stability more clearly than the central banks of the other countries under review.

Chart 2 reveals that an average increase in the expected risk premium leads to a weakening of the exchange rate which is similar to what can be observed in the rest of the countries under review, in terms of its extent and course that it runs. This may be attributable to the fact that after the shock, foreign investors receive compensation from two sources for holding the risky assets: in addition to higher domestic interest rates, adjustments for the weakening of the exchange rate also commence, which – according to the estimate – means appreciation lasting for a year or two.

Since foreign investors are interested in yields realised in their own currency, during the appreciation period the value of their investments also increases proportionately. A higher expected premium is provided by a higher interest rate and the appreciation that follows immediate depreciation. If after the shock the central bank softens the weakening of the exchange rate by a higher interest rate, it offers interest income to the investor instead of the exchange rate gain hoped for as a result of future appreciation.

However, it can be proven that in the countries under review the higher expected premium was ensured mostly by the strengthening of the exchange rate rather than a higher interest rate. Accordingly, after a premium shock the extent of weakening could have only been considerably reduced by extremely large or significantly prolonged interest measures. Although the Hungarian interest reaction is significantly larger than that of the other five countries, the difference is only temporary, thus – if expressed in exchange rate gain – it is still negligible, which may provide and explanation for the similarity of exchange rate reactions.

**EXCHANGE RATE PASS-THROUGH**

In the next step, I studied the extent and speed with which the exchange rate movements generated by risk premium shocks pass through to consumer prices. In order to ensure the comparability of the countries, it is worth selecting the size of the shocks in a way that the shift of the exchange rate is of a similar size in each country. For this purpose, I allocated a shock to each model that resulted in the average

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2 Hidi (2006) also found that the MNB interest rate responds to the exchange rate fast and significantly.
Prices start to increase relatively shortly after the shock, which is explained by the openness of the foreign trade of the countries studied and the high ratio of imported products. Since – after the initial depreciation – the exchange rate recovers gradually, it is not surprising that the price increase is also only a temporary phenomenon; prices increase already in the second year after the shock. However, in addition to similar dynamics, considerable differences can also be observed: the inflation impact of deprecation in the United Kingdom and Canada is half of the impact seen in the rest of the countries, while from the end of the second year prices are markedly lower in all three developed countries in the converging ones.

This phenomenon is due, in part, to the fact that the increase in the expected premium influences prices via other channels as well. For example, it is perfectly justified to think that increasing interest rates in the more developed countries – due to their deeper financial intermediation – reduce demand more, which may curb price increase. However, the results received with regard to the shocks of the monetary policy – presented in detail in the study – suggest that there is a similar discrepancy between the two country groups, even when weakening of the exchange rate is accompanied by interest rate cuts.

In one of his studies published in 2000, Taylor addresses the issue of the globally observed weakening of the pass-through of cost shocks – and, within this, that of exchange rate shocks – to prices. He argues that the low inflation environment that had developed by the 1990s anchors inflation expectations. Since prices are usually fixed in advance for a longer period, when re-pricing occurs, it is worth considering not only the actual inflation environment and costs, but also the medium-term prospects. If, after an exchange rate shock, companies do not expect a permanent increase in inflation, they will price in the exchange rate change only to a small extent. Consequently, the infrequency of re-pricing and anchored inflation expectations may weaken exchange rate pass-through.

In our estimate, annual inflation in the countries with more moderate exchange rate pass-through was low throughout the sample period, typically fluctuating between 1-3%. By contrast, in the three transition countries we can observe rates exceeding even 10%, especially at the start of the sample period. Based on the logics of the Taylor study, we may suspect a causal relation between low inflation and weak exchange rate pass-through.

CONCLUSIONS

Overall, we found that shocks of external origin affecting the exchange rate also appeared in domestic consumer prices. If the central bank follows an inflation target, it will respond to these shocks. However, under normal circumstances exchange rate fluctuations can only be absorbed by ad-hoc interest measures with a relatively low efficiency. However, price stability and the degree to which inflation expectations are anchored may reduce exchange rate pass-through considerably, which offers higher protection against external shocks in terms of inflation.

Nevertheless, it is important to point out that the estimate was made for a period that was calmer than the present global crisis. In extreme cases, especially in the case of disturbances in the financial markets, or when market players panic, interest rate measures – firmer than usual – may be justified and efficient; in such cases, however, the direct objective is not the absorption of inflation impacts, rather stabilisation of markets and their redirection to the normal course of operation. Accordingly, the estimate does not provide useful information as to the nature of the optimal interest policy to be pursued in turbulent periods.

REFERENCES
