Inflation expectations under Czech inflation targeting

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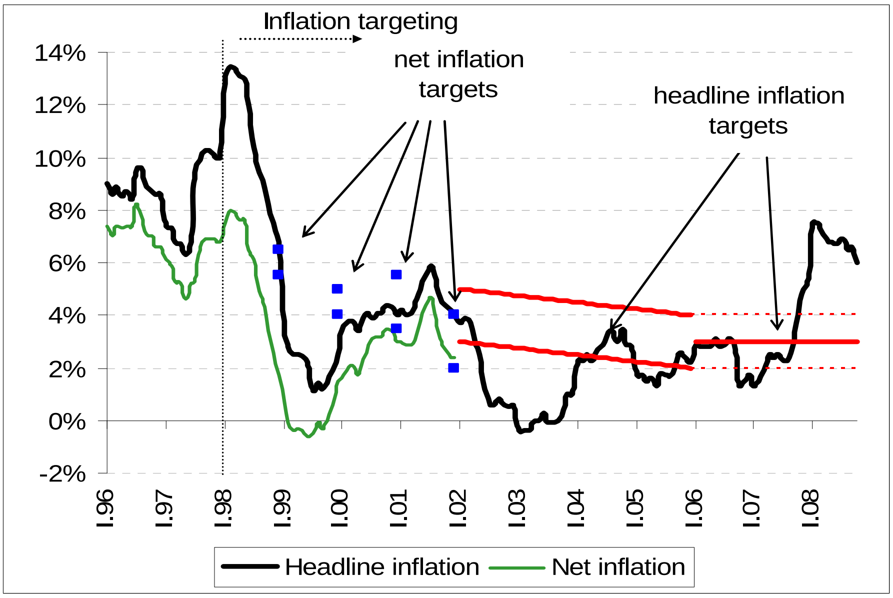
When the inflation targeting framework was introduced in the Czech Republic in late 1997, one of the key ambitions was to anchor inflation expectations (Hrnčíř and Šmídková (1998)). In this brief note I assess to what extent this ambition was actually achieved, building on the available empirical research on this issue that has been done at the Czech National Bank (CNB). I also look in more detail on the high-inflation episode of 2008, which provided a stringent test of the expectation's stability.

1. Fulfilment of inflation targets and stability of inflation expectations

During the first 10 years of inflation targeting, ie 1998–2007, there were significant deviations of inflation from the CNB's targets, typically downwards (Šmídková (2008)). The year 2008 was the first in which inflation exceeded the CNB's target significantly (see Figure 1).

Figure 1

Actual inflation vs CNB's targets



Source: Czech Statistical Office

Nevertheless, Holub and Hurník (2008) show that both the one-year-ahead and three-year-ahead inflation expectations, as measured by the CNB's survey of financial market analysts and non-financial corporations, have been anchored to the inflation targets much more closely than actual inflation. This is illustrated in Figure 2 as the average deviation of actual

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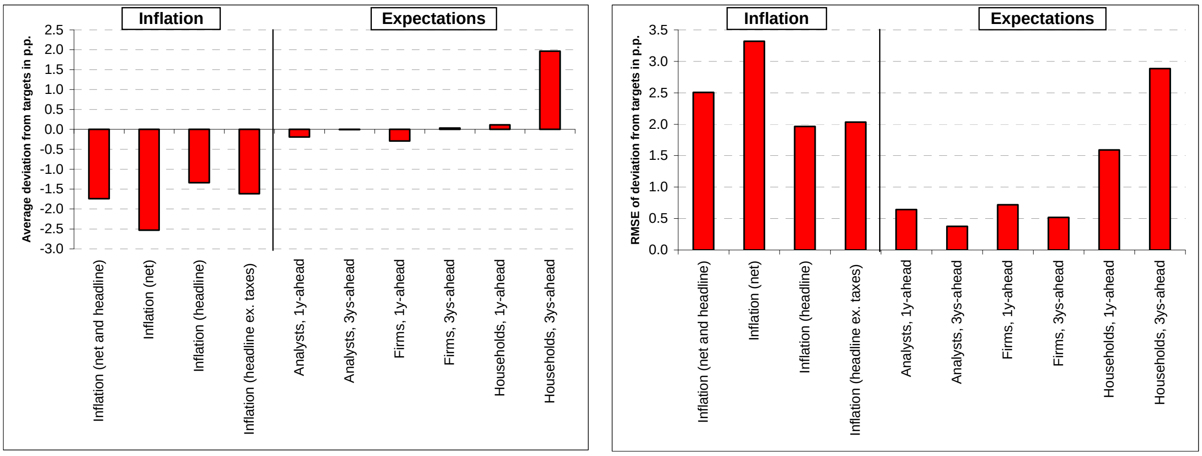
inflation and inflation expectations from the inflation target, as well as the root mean square error (RMSE) of these deviations. The only group of economic agents for which the measured inflation expectations are rather volatile and sometimes far from the CNB's target is households, but Holub and Hurník (2008) also claim that an alternative survey of households' inflation expectations, carried out by the European Commission, provides a somewhat more favourable outcome for this group of economic agents.

Figure 2

Deviations of actual and expected inflation from the targets



Source: Holub and Hurník (2008)

Holub and Hurník (2008) also estimate a set of VAR models to test formally the formation of inflation expectations under Czech inflation targeting. In particular, they study how the measured inflation expectations respond to some shocks, such as a commodity price shock, food price shock, regulated price shock, and exchange rate shock. They arrive at two general conclusions. First, the magnitude of responses to inflation expectations seems to be relatively low in comparison to the actual inflationary impact of shocks. Second, there are some differences between the ways financial market analysts, firms and households change their expectations when faced with various inflationary shocks.

The inflation expectations of financial market analysts follow the direction of the shock in all cases, but the responses are rather weak. The shock to food prices has the greatest impact on analysts' inflation expectations, but its magnitude is roughly three times lower compared to the response of actual headline inflation. The response of inflation expectations to commodity price shock is evaluated as insignificant, and the same also applies to the impact of administrative price. Exchange rate shock seems to have a heavier impact than commodity or administrative prices shocks, going in the right direction and being statistically significant after one period and marginally significant after two periods.

Firms' inflation expectations are also significantly affected by food price shocks (a little more strongly than in the case of financial markets' expectations), while the impact of exchange rate shock is significant on the margin only. Surprisingly, the impact of commodity prices is insignificant, although one could expect commodity prices to be important for firms' inflation expectations.

Finally, the responses of households' inflation expectations to shocks go in the intuitive direction and their magnitudes are relatively high, which applies especially in case of food and administrative prices, but are evaluated as insignificant. This may be caused by generally higher volatility in households' expectations.

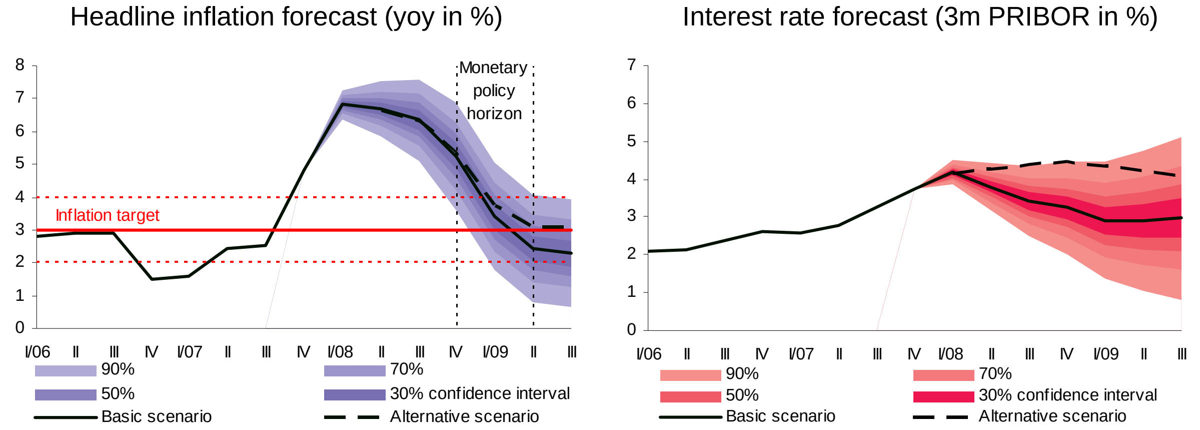
Horváth (2008) also analyses the formation of measured inflation expectations in the Czech Republic econometrically, using VECM and VAR models. He concludes that monetary policy has anchored inflation expectations. In particular, he discovers that the inflation target is a major determinant of inflation expectations, its importance for inflation expectations surpassing that of the current inflation development. Inflation expectations also decrease significantly in response to stricter monetary policy, implying that the expectations work as an important transmission channel of monetary policy.

2. The role of inflation expectations in 2008

Headline inflation increased significantly in the Czech Republic at the beginning of 2008 due to a combination of indirect tax changes, regulated price increases and rising international food and energy prices. The CNB's baseline forecast in early 2008 assumed that inflation expectations should remain relatively well anchored in the presence of these specific price shocks, in line with past experience and the empirical evidence mentioned above. Therefore, the forecast suggested that inflation should drop back to the target in early 2009, as the price shocks fade away and their second-round effects remain muted. The forecast also predicted that after an initial interest rate hike in early 2008, which should help to keep inflation expectations under control, the interest rates could actually start to decline gradually in the second half of the year (see Figure 3).

Figure 3

CNB's baseline and alternative forecast – risk of second-round effects



Source: CNB, Inflation report I/2008

Nonetheless, the CNB perceived a risk of higher second-round effects, because the economy was just beyond the top of the business cycle with tight labour market conditions, and the price shocks concerned a broad range of goods, unlike in the past. Therefore, an alternative scenario was also produced, which led to higher inflation on the monetary policy horizon, and implied a substantially higher interest rate path than in the baseline projection.

With the benefit of hindsight, inflation is now likely to drop even lower than the forecast made at the beginning of this year, and an interest rate easing phase of the monetary policy cycle began already in August 2008. This is, of course, largely attributable to developments in the international economy, which has led to a pronounced slowdown in economic growth, loosening of labour market conditions, fading away of the food and energy price shock, and an appreciation of the Czech koruna. Nevertheless, the anchored inflation expectations probably contributed to this outcome, too.

While inflation expectations have been anchored in broad terms, it should be noted that they have yet not fully reflected the last change in the inflation target. The level of inflation target will fall from the current 3% to 2% as of January 2010. The CNB announced this step in March 2007, but the three-years-ahead inflation expectations have continued to hover at or slightly above the level of 2.5%, where they had already been for some two years prior to the announcement. While the discrepancy is not great, it remains the same in spite of the fact that the fall in the inflation target is now only one year ahead. In recent months, inflation expectations for the one-year horizon have fallen to 2.5% as well.

3. Conclusions

In spite of the substantial shocks to actual inflation developments and relatively frequent missing of the CNB's inflation targets, the available empirical evidence suggests that inflation expectations have been well anchored by the Czech Republic's inflation targeting framework. Stable inflation expectations make the life of the central bank easier, of course. The experience of the high-inflation episode in 2008, through which the CNB was able to go with relatively low nominal interest rates, is an example of this. Turning to the future, it remains to be seen whether inflation expectations will start fully to reflect the most recent reduction of the inflation target.

References

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