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Oil Prices and ECB Monetary Policy*

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Abstract

The ECB and the Eurosystem should take past, present, and predicted future oil-price movements into account in its monetary policy depending on how these movements affect the inflation and output-gap forecasts that should guide monetary policy. Oil price movements have complex effects on these forecasts, so the impact of oil price movements on policy is complex. Hence, an evaluation of whether the ECB has responded appropriately to past oil-price movements is a somewhat demanding exercise.

Oil prices have moved dramatically in the last two years. The price of Brent crude oil rose to an all-time high of USD 51 at the end of October 2004 and has then fallen somewhat and fluctuated around USD 42 (ECB [1]).[1] How should the ECB adjust its monetary policy to oil-price movements? The answer to this question follows from the general principles for good monetary policy, as explained, for instance, in Svensson [2] and [3]. However, whereas the principles for good monetary policy are simple, the practice of good monetary policy is difficult. The same is the case for the question of how to adjust monetary policy to oil-price changes: the principles are simple, but the practice is difficult. In particular, there is no simple relation between the appropriate instrument-rate adjustment and a given change in oil prices.[2]

So, the principles of good monetary policy are simple: Perform *flexible inflation targeting*, which means aiming to stabilize inflation around an explicit low positive numerical inflation target with some weight also on stabilizing the real economy, which can be expressed more precisely as stabilizing the output gap, that is, stabilizing output around a measure of potential

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[1] The rise in oil prices has been mitigated by the fall in the dollar.

[2] The issues raised by monetary policy and oil-price movements are similar to those raised by monetary policy and central-bank judgment; see Svensson [4] on the latter.

output. Because of the lags between monetary-policy actions and the effect on inflation and output, the best way to do this is to look forward and perform *forecast targeting*. This means setting the central bank's instrument rate (more precisely, to choose an instrument-rate *plan*, a path for the current and future instrument rate) such that the corresponding inflation and output-gap forecasts "look good," in the sense of either achieving stable inflation at the inflation target and a stable output gap at zero or, more realistically, a good compromise between the two. In practice, "look good" normally means that the inflation and output-gap forecasts approach the inflation target and zero, respectively, often one-three years ahead (but, more precisely, the whole future forecast paths should look good, not just the forecast at some fixed horizon).

Although these principles are simple, as explained in Svensson [3], the *practice* of constructing forecasts, deciding on the appropriate instrument rate (plan), and communicating these to the general public and the market is quite complicated and difficult.

How do these principles apply to oil-price movements? How should the ECB find the optimal instrument-rate plan? The *first* step is to make a forecast of future oil prices. More precisely, past, current, and predicted future oil prices are one set of inputs in the construction of inflation and output-gap forecasts. Thus, any unanticipated change in current oil prices and any revision of the outlook for future oil prices call for a shift in the oil-price forecast.

The *second* step is to assess what impact the shift in the oil-price forecast has on the inflation and output-gap forecasts. In particular, estimating the impact on the forecast of the output gap, the gap between output and potential output, requires that the impact on *both* the output and potential-output forecasts is assessed. Potential output is a complex concept. The most appropriate concept for monetary-policy purposes is the hypothetical output level that would arise in the hypothetical situation where there is complete nominal price and wage flexibility but any real distortions such as taxes, imperfect competition, and information imperfections remain in place. This is not the same as the standard trend measures of potential output. Whereas potential output normally is independent of monetary policy, it does depend on the shocks hitting the economy, including oil-price changes. Oil is one of the intermediate inputs in production. For an oil-importing economy such as the euro area, an increase in the price of imported oil relative to the price of euro-area output implies an increase in production costs and is similar to a fall in productivity. A fall in productivity reduces potential output. Furthermore, an increase in the relative price of an imported commodity implies a terms-of-trade deterioration for the euro area as a whole. A terms-of-trade deterioration has a negative income and wealth

effect on consumption, which reduces aggregate demand for output. Aggregate demand is also affected by expectations of changes in future incomes. Hence, a rise in oil prices is likely to have negative effects on both output and potential output. The relative sizes and the time profile of those effects are not obvious, though. To the extent that aggregate demand and output is sluggish, the negative effect on potential output may dominate and lead to a positive output gap (output less potential output) in the short and medium run, but generally the time profile of the shift in the output-gap forecast is complex.

The shift in the oil-price forecast will also have an impact on the inflation forecast. Oil prices enter directly into the HICP as fuel for heating and for personal transportation. An increase in production costs because of higher costs of intermediate oil inputs in production will also increase the HICP. Finally, any shift in the output-gap forecast will have an impact on the inflation forecast via the standard output-gap channel in the Phillips curve. Expectations of future price changes will also have an impact on inflation, via various expectations channels. Although most effects on the inflation forecasts from an upward shift in the oil-price forecast would be positive, the time profile of the shift in the inflation forecast is not obvious.

We can think of the above shifts in the inflation and output-gap forecasts, resulting from the shift in the oil-price forecast, as being constructed for a given interest-rate plan. To isolate the effect of the shift in the oil-price forecast, we may assume that the interest-rate plan and the corresponding inflation and output-gap forecasts did "look good" before the shift in the oil-price forecast. The shift in the oil-price forecast has then resulted in shifts in the inflation and output-gap forecast that may no longer look good. The *third* step is then to decide, given the shift in inflation and output-gap forecasts, what revision, if any, of the interest-rate plan is required in order to make the inflation and output-gap forecasts look good again. The new current instrument setting is then the first element in the new instrument-rate plan. It follows from the above that the new instrument setting is a very complex function of the initial movement of oil prices. It is so complex that it cannot be summarized as a simple formula. Therefore, there is no point in trying to determine a simple reaction function for the appropriate instrument-rate response to a movement in oil prices. It all depends on the whole shift in the oil-price forecast, how that shift affects the inflation and output-gap forecast, and what shift this requires in the instrument-rate plan for the inflation and output-gap forecasts to look good. The reaction function is best left implicit, defined by the three steps I have outlined above.

The *fourth* and last step is to announce and implement the new instrument rate, and to

explain the analysis and the outcome of the three steps above to observers and the general public. The latter is what is done in the monetary-policy reports by the best flexible inflation targeters.

It follows that an evaluation of whether the ECB has responded appropriately to past oil-price movements is a somewhat demanding exercise. Ideally, it would require a detailed report by the ECB of how it has done the first three steps outlined above.

References

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