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PRESS RELEASE

The patterns and determinants of price setting in the Belgian industry

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In this paper, we gather the stylised facts of price setting in the Belgian industrial sector using the individual price records underlying the computation of the Belgian Producer Price Index (PPI). This study has been developed within the scope of the Eurosysteem Inflation Persistence Network (IPN). Throughout the period 2003-2005, this network of euro area central bank researchers conducted research on the patterns and determinants of inflation persistence and price setting in the euro area. Within the context of the IPN, numerous micro data sets, most of which are managed by the national statistical institutes and are confidential, became available for research at the respective national central banks.

The ultimate goal of this research is to gain insights from microdata that are useful for microfounded macroeconomic models. Using macroeconomic data only, the calibration of macroeconomic models with different microfoundations may result in different predictions and/or policy prescriptions. Therefore, a particular model is more realistic if its microfoundations also match evidence from microdata. In this paper, we empirically investigate the microfoundation of price adjustment, which is a key model ingredient in macroeconomic models for monetary policy analysis.

We have found a considerable degree of price stickiness in Belgian producer prices, as on average only one out of four prices changes in a typical month. The median implied duration amounts to 7 months. The average absolute size of a price change is 6% and is large compared with the prevailing rate of aggregate producer price inflation over the period covered. This suggests that large idiosyncratic shocks play an important role. Comparing the frequency and size of price adjustment for Belgian producer and consumer prices, we find that producer prices show more frequent but smaller price changes than consumer prices. This fact implies that price adjustment costs are smaller in the case of producer prices.

Across product categories, the frequency of price adjustment is very heterogeneous, since for some products (energy for instance) it amounts to 50%, whereas for others (consumer non-food and capital goods) it is close to 10%. The size of the price changes is far less heterogeneous across product categories. This difference in the degree of cross-sectional heterogeneity has two implications. First of all, it implies that, in a cross-sectional perspective, the frequencies of price adjustment, rather than the sizes, are the margin along which price setting is made compatible with the sectoral characteristics. Therefore, the heterogeneity in the observed frequencies can be seen as a state-dependent outcome in response to the sector- or product-specific economic conditions. Second, in the absence of a negative correlation between the frequencies and the sizes, this implies that differences in price adjustment costs do not play an important role in shaping the observed heterogeneity in the degree of price stickiness. In contrast, our econometric analysis shows that differences in firms' cost and market structure are important. In particular, a high share of energy inputs, a low share of labour inputs and a high degree of competition tend to increase the observed frequencies of price adjustment.

Price decreases are observed nearly as frequently as price increases, while they are both of the same size in absolute value. Moreover, the overall distribution of price changes which pools all product categories, turns out to be fairly symmetric. Overall, there is not much evidence of structural downward nominal rigidity. Across sectors, we found that if certain sectors at first sight seem to suffer from downward nominal rigidity, this is not a structural feature, but is endogenously generated by the level of sectoral inflation, as predicted by economic theory.

The frequency of price adjustment displays a clear seasonal pattern. Whereas price adjustment is relatively uncommon in December, it is much more likely in January. This pattern can be compatible with time-dependent characteristics in price setting. However, once the separate role of upward and downward adjustment was taken into account, we also found a considerable degree of variability over time in the frequencies, whereas the average sizes do not change much over time. This in turn supports state-dependent pricing. This evidence obtained in the time dimension strengthens the evidence mentioned earlier in the cross-sectional dimension. All in all, price setting of producer prices has both time-dependent and state-dependent characteristics. Similar conclusions were drawn on the basis of the analysis of consumer prices and in specific surveys on price setting, both in the euro area in general and in Belgium in particular.

Finally, we find that 38% of exported products in the industrial sector is affected by pricing-to-market. This is in line with the findings of a recent survey on price setting conducted by the National Bank of Belgium.