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Comment on “The Dynamics of Individual Consumer Price Data for Austria”

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1. Motive for the Study

The study of Baumgartner, Glatzer, Rumler and Stiglbauer was conducted under the aegis of Research Group 2 (Analysis of Individual Consumer Price Data) of the Eurosystem Inflation Persistence Network, where inflation persistence was to be pinpointed at the level of individual price data. Prior to this, individual data from the consumer price statistics had been made available by a number of statistical authorities in Europe for the purpose of studying the effect of the changeover of prices from the national currencies to the euro. This exercise in itself provided a number of highly informative insights into price-setting behaviour.

Even at first glance, however, the data revealed that there was no inflation persistence at the level of individual prices. Most prices do not change too often (non-economists, however, consider a rate of 10% per month as quite frequent!) but when they do change, the changes are quite substantial. For example, a price change of 7% is usually followed by a considerable number of months without further adjustments. The research interest of RG2 was therefore concentrated on the statistical description and the economic explanation of price rigidities. Thus, price rigidity – rather than inflation persistence – became the focus of interest. Inflation persistence was understood to be the result of the interaction of many individual decisions but it was not modelled or empirically studied within RG2.

2. Methods

The Austrian study presents summary statistics on price-setting behaviour at the consumer level and looks for explanations. It records the average frequency and

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size of price changes, the average duration of price spells as well as hazard rates (i.e. the probability that a price that has not been changed for x months will be changed in the following month). Particular importance is attached to adequate weighting, which is done in an exemplary and consistent manner.

In this connection, adequate weighting is important because the number of price quotes per product in the CPI sample is not proportional to the importance of the respective products in private consumption expenditure and because there are pronounced differences in the dynamics of the individual prices. This applies, in particular, to hazard rates, which – when naïvely calculated using unadjusted and unweighted raw data – would be misleading from a statistical point of view owing to the substantial heterogeneity in price adjustment.

To explain the differences in the individual price dynamics, the authors use a logit model in which the entire time-invariant heterogeneity, whether observable or not, is absorbed by fixed effects. This is unfortunate in so far as the effects of time-invariant heterogeneity on price adjustment – for example, whether a price is regulated, to which business type it relates etc. – can no longer be observed. An alternative would be to pool the observations, weigh them adequately and model the duration non-parametrically. Thus, it should be possible to handle unobserved heterogeneity (as well as some other problems) without resorting to a fixed-effects approach (Dias et al., 2005).

The variable of the logit model explains the probability of price changes. This would be entirely appropriate if price changes of similar size took place only in one direction (up or down). However, since price changes occur in different directions and are of varying size, an additional distinction should be made at least between price increases and price reductions. Just like Stahl (2005), one might even go one step further and consider four different “transitions”: a price increase following a price increase, a price reduction following a price increase, a price reduction following a price reduction, a price increase following a price reduction. Such a differentiation would be the obvious choice if a sequence of price changes in one direction is presumed to have causes which differ from those of a sequence of adjustments in the opposite direction.

3. Results

The key result of all the RG2 studies is heterogeneity. There are sectors with “frequent” and with “rare” price changes, as well as sectors where the price changes are “large” and “small”. Moreover, the sectors where frequent price changes occur are not always the ones with small price changes; nor are the sectors with infrequent price changes always the ones where price changes are large. Furthermore, there are significant differences in price-setting behaviour even within narrowly defined product groups. This heterogeneity is characteristic not only of Austria but also of all euro area countries (Dhyne et al., 2005).

Using the fixed-effects logit model, the authors find that the probability of a price change is higher the longer a price has been unchanged, and also if the inflation rate has increased, if a price was not “attractive”, and always in January and exactly one year later. Thus, there is a combination of time-dependent and state-dependent price-setting behaviour.

Studies of this kind do not provide a proper “explanation” for price-setting behaviour. In this respect, the Austrian study does not differ from the studies of the other euro area countries. This lack of proper “explanations” is due to the fact that at the individual data level there is hardly any sufficiently disaggregated information on price-driving factors. Only for Germany it was possible to approximate the most important input prices from the producer and import price statistics for a small number of products (Hoffmann and Kurz-Kim, 2006).

4. Interpretation

The major result of the different European studies on price-setting behaviour at the consumer level is that prices of many products are not changed frequently. This gives rise to the question of whether these prices are inefficiently rigid.

First of all, it can be established that menu costs are “real”, which is why there is an “optimum” degree of price rigidity, as less sticky price setting would require additional resources (in a wider sense). In line with this rationale, one might try to obtain information on the size of the menu costs from the data on the input and sales price behaviour, as Davis and Hamilton (2004) did.²

Secondly, as early as in the mid-1940s, the U.S. agricultural economist Frederick Waugh posed the question “Does the consumer benefit from price instability?”. And, in a widely acknowledged paper, he answered this question in the affirmative (Waugh, 1944). A consumer, for example, will prefer a price varying between EUR 5.00 and EUR 15.00 to a fixed price of EUR 10.00 if there are minimum intertemporal substitution possibilities. This result is still quoted sometimes in discussions on the pros and cons of price variability.

In the very same year, Paul Samuelson pointed out the shortcomings of Waugh’s ideas in a paper that was published only very much later (Samuelson, 1972). In the above-mentioned example, the representative average price weighted with purchasing frequencies would not be EUR 10.00 but lower and, in an extreme case, it would amount to exactly EUR 5.00. The economically relevant alternative to a variable price, however, is precisely this weighted average price. Consumers would be better off if the price were constantly at the level of the weighted average price. Thus, it has to be concluded, consumers do benefit from price stability! From this point of view, Waugh’s theorem merely implies that inherently instable prices

² Davis and Hamilton found, however, that menu costs are not the major reason for price rigidities in U.S. wholesale petrol prices.

(such as those of weather-dependent agricultural products) should not be artificially stabilized.

However, if suppliers vary their prices at short notice without a compelling reason it may be assumed that they are trying to maximize their profits by means of intertemporal price discrimination (inter alia Varian, 1980). A study for the U.S.A., in fact, has demonstrated that the prices in retail outlets pursuing an everyday low-price strategy were on average almost 10% lower than prices in shops embracing high-low pricing (Hoch et al., 1994; with special offers prices are still lower by 5%!) Ho et al. (1998), too, report that shops with higher prices show greater price variability.

For this reason, it is extremely important that studies on price-setting behaviour differentiate between regular and temporary price changes, as Baumgartner, Glatzer, Rumler and Stiglbauer (in this volume) did, because more frequent price adjustments are not always preferable!

Another consideration directly follows the observation that prices are changed quite rarely if the overall price level is almost stable. Then, the costs of even moderate inflation might be substantial, either because the price changes occur too frequently or, in the absence of more frequent price changes, relative prices might be distorted and would send out incorrect signals (Ball and Romer, 2003).

5. Summary

In Research Group 2 (Analysis of Individual Consumer Price Data) of the Eurosystem Inflation Persistence Network we have learned much about the frequency and size of price changes as well as other regularities involved in price-setting behaviour. Baumgartner, Glatzer, Rumler and Stiglbauer contributed significantly to this endeavour, as may be inferred from the reviewed paper. The primary objective of RG2 of the IPN, however, had actually been a different one, i.e. inflation persistence. In the end, even the reasons for and consequences of price “rigidities” have been explained only in rudiment. Much remains to be done.

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