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# Consequences of Rigid Prices for Competition and Structural Policy

## *Panel Discussion*

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The project's focus is monetary, between basic research and an empirical exploration of behavior, on producing stylized facts that can later be explained in theory. Consequences for competition and structural policy are not the focus of the studies, nor should conclusions be drawn offhand. I see my task as follows:

- highlighting the results, which could inspire further research in this area
- presenting these results in relation to the current body of common knowledge
- suggesting theories that can consistently explain the stylized facts
- putting forward hypotheses that can be examined in future work

### **1. The Most Salient Results**

1. Prices change less frequently in Austria and Europe than they do in the United States. In Austria and Europe, 15% of prices change each month. In other words, prices change once a year on average. In the United States, 25% of prices are changed each month. Thus, loosely speaking, they change twice as often.
2. When prices are changed in Austria, they are changed considerably. The average price increase is 10% and the average price reduction is 15%. Just how great a change this is becomes apparent when it is compared with an average inflation rate of 1 ½% or an average price-cost margin of perhaps 10%.
3. Downward price rigidity is not greater than upward price rigidity. This result is interesting from a theoretical perspective since the administered-price theory has substantiated downward rigidity and used it to explain economic cycles and non-market-clearing at the national economy level. Of all price changes, 45% are reductions and 55% are increases. This is interesting for the non-professional observer (the consumer, journalist, or layperson), who assumes

that price changes are always upward. “Perceived” inflation is high. We will see later that this observer is right, that prices rise when costs rise but do not drop when costs fall.

4. Even in the strong economy of 1998–2000, with growth rates around 3%, prices were not raised more often or more sharply. Not until the introduction of the euro in 2002 drew nearer was there a marked difference in the frequency of price changes. And no, the shift was not to markedly more frequent increases (as the layperson suspects) but rather to markedly more frequent changes. The fact that this happened as a result of the euro and not as a result of accession to the EEA and the EU, suggests that the common currency made the changes more comparable. It also suggests that companies had put this moment off somewhat.

## 2. Assessment of the Results

Economists see both advantages and disadvantages in frequent price changes. Price changes increase the uncertainty under which economic decisions are made, and uncertainty can reduce consumption and investment, that is, the consumption that occurs on the basis of given incomes and production that is planned on the basis of a given level of demand. On the other hand, price changes are important signals of changes in costs and productivity. And price changes that are too small can later result in volume imbalances, which limit the possibilities for production and demand.

When weighing the advantages and disadvantages of price rigidity, I tend to be of the opinion that more frequent price changes than are currently occurring in Austria would be beneficial. This is because, firstly, the current frequency of change – once per year – is truly the bare minimum and, secondly, the price changes that then become necessary after long periods of rigidity are relatively large. A Change that takes place in several steps cannot result in feelings of insecurity. According to uncertainty theory, it is a “petty uncertainty”, or a calculable risk. Particularly for businesspeople and people with a low risk aversion, price changes affect production decisions either very little or not at all. On the other hand, volume shortages – when a product is not available at all or can only be delivered later – present a severe uncertainty (Keynesian uncertainty, see Aiginger, 1998).

Companies’ hesitation to meet the initial steps toward European integration with rapid price changes suggests a lack of aggressiveness on their part to seek market opportunities and make shortages known. In the same way, reactions to changes in costs or demand suggest that focusing on cost is still far more important in Austria and Europe than taking advantage of differences in demand. As a result, structural adjustments are delayed and innovations are less profitable. Companies that have lower costs thanks to process innovations do not gain market share quickly enough.

### 3. Explanations for Price Rigidities

In the end, short-term optimization cannot completely explain the pattern of behavior described above, but an implied agreement aimed at maintaining market share can. Before we get to that, a word on the range of explanations for price rigidity selected from various authors and writings.

Of 11 theories aimed at explaining price rigidities, 2 are compatible with high levels of price rigidity: direct written agreements between companies and customers (vertical agreements) and implied agreements between providers (horizontal agreements or patterns of behavior), also referred to as “coordinated behavior” in the terminology of competition policy.

Just less than three-quarters of the companies surveyed have supply relationships with their customers that are governed by long-term contracts. Six out of ten of these companies generate at least half of their revenues from such agreements, of which just less than 80% have terms of at least one year.

Much the same situation is reflected in the very high proportion of regular customers. Eight out of ten companies generate at least 60% of their revenues from business with regular customers. The companies surveyed describe their behavior very similarly in this respect, as if they had written agreements with their customers (implied vertical agreements). Similar surveys of U.S. companies indicate a far lesser importance of express and implied agreements.

But, in the end, this explanation is not sufficient. If it were to become necessary to change prices more rapidly, the circumstances could be incorporated into the long-term agreements. Besides, not all long-term agreements are made at the same point in the year. And even price changes made by the remaining quarter would constitute price changes.

In game theory, price continuity is the most important tool for “calming a market”, that is, for achieving positive profit margins on a market with little innovation and potentially intense competition (large number of market participants or strong reactions to slight price differences). The oligopoly theory predicts that a homogeneous market will reach a balance in which companies just earn their average costs and are happy when the competition does not go so far as to bring prices down toward marginal costs. This would be true even if there were just a few market participants, given some degree of price competition – the Bertrand model applies when as few as two companies are involved. A far better result can be achieved by starting with a high price and then seeing whether the other market participants understand the signal. It is difficult enough to “guess” at this high, common price (problem of coordination). In practice, it can be the cost price plus a standard recognized margin. What is important then is that this price not change or change only in a clearly predictable manner. Once a year and in accordance with a cost formula is a wonderful coordinating mechanism.

This is called implicit collusion. In principle, it is not prohibited as long as it is not supported by records or signals. However, it is dubious from a structural policy perspective.

Firstly, companies that work to achieve cost advantages, for example, by using new technologies will not gain market share quickly enough, so companies have little incentive to innovate. Secondly, economic sectors that become essentially unattractive (homogeneously mature industries with narrow profit margins) will remain relatively more attractive than sectors with rapid innovation (where there is little need for price stability as a coordinating mechanism). Thirdly, companies will have higher costs because they will pay higher input prices.

Of course, there are no empirically visible behaviors that cannot also theoretically yield benefits for society. Mature industries that have higher profits due to coordinated behavior and infrequent price changes can use these profits to achieve especially sharp cost reductions or to establish new production lines. Monopoly profits can also be used for innovation. They can, but they do not have to.

#### **4. Symmetry of Reactions by Type and Direction of Shocks**

Another interesting structure of the results suggests the significance of price rigidity as a coordinating mechanism.

1. Companies generally react more strongly to cost changes (shocks) than to changes in demand.
2. Prices go up quickly and sharply when costs increase, but are not lowered when costs decrease.
3. On the other hand, companies often refrain from increasing prices when demand increases while they do lower prices when demand declines.

All of these results of the new studies replicate results presented by Aiginger (1989). For me, these stylized facts suggest that companies resist incurring losses (as in the rapid price increases, when costs increase and price reductions when demand drops). By comparison, achieving the highest possible profit is less important since companies can earn more when demand increases and will have avoided supply bottlenecks. Missed demand due to backlogged orders is not as important (see Aiginger, 1985). Perhaps companies are also speculating that their competitors will also be unable to deliver.

The survey results indicate a strategy aimed at preventing the collapse of an implied cartel in the event of recession (Porter vs. Saloner – discussion).

The stronger reaction to changes in costs compared with changes in demand suggests either a dominance of cost-oriented pricing (mark-up pricing) or avoidance of profit fluctuations. But it may also be interpreted within the scope of game theory. Cost fluctuations often do not affect individual companies but rather entire sectors (as in pay rounds or energy price fluctuations). It is also easier to estimate whether changes in a competitor's actions are a signal of a price war or a

reaction to cost increases. Fluctuations in demand can vary by customer segment, particularly in heterogeneous markets, and be difficult to interpret. However, I do not want to overemphasize this point since changes in prices have been viewed as the truly most important “natural” and “moral” justification for price changes for decades in Austria, where formal price regulation and the subsequent agreements between employers and employees have been determined primarily on the basis of costs. Changing prices in accordance with changes in demand or perhaps even using price elasticity has always smelled of profit-oriented behavior. Take, for example, the places I would stay while on vacation. They were always hopelessly overbooked during the Christmas week and the late-winter school break. When asked why they did not differentiate their prices more, they invariably responded that it would be unfair to families with children. I understand this social behavior, even if it is uneconomical. But what I do not understand is why companies do not make use of another option that I encountered in the United States. When an American hotel owner sees that his hotel is empty during the week, he offers a special price for Monday through Thursday. Such deals are even offered at extremely popular ski areas like Lake Tahoe and are officially advertised in the media. In Europe, hotel owners keep prices relatively constant, granting discounts on the basis of individual negotiation and accepting considerable volume imbalances.

## 5. Hypotheses for Future Studies

With a little imagination, the results can be summarized into the following hypotheses:

European companies change prices relatively seldom, but when price changes become necessary they are sharp. In particular, there is no fine tuning of prices. Prices are not adjusted seasonally or on the basis of short-term changes in demand. Avoiding losses seems to be more important than exploiting market opportunities or avoiding supply bottlenecks. Costs are more important for adjustments than changes in demand. Moreover, cost reductions are not passed on to customers, either because it is not possible to increase demand or because doing so would increase the risk of price wars. When costs rise, the competition can be expected to follow suit because cost increases often affect entire industries rather than individual companies. These tendencies are not entirely unproblematic for structural change and competition.

In any event, the studies must be continued in order to see which industries have greater price rigidities, whether there is a correlation between price rigidities and intensity of competition, and whether structural change occurs more quickly in areas where price changes are more frequent. The studies have provided testable, interesting hypotheses for which I would like to thank the authors and the studies' funder.

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*Table: Overview: Reactions to Demand and Cost Shocks*

Type of shock	Fraction of firms holding the price constant	Mean lag
Small positive demand shock	82%	6.1
Large positive demand shock	63%	4.6
Small negative demand shock	82%	4.6
Large negative demand shock	52%	3.6
Small cost-push shock	38%	4.8
Large cost-push shock	8%	3.8
Small decreasing cost shock	71%	4.8
Large decreasing cost shock	38%	4.2

*Source: Kwapil, Baumgartner and Scharler (2005A).*