CCR - Competition Competence Report Spring 2013

UPP, GUPPI and IPR —
# Merger Screening Tools

Many transactions do not raise competition concerns. Since February 2010, the European Commission issued 826 unconditional clearances and 36 remedies decisions against four negative decisions.

To identify critical mergers, competition authorities like the European Commission increasingly use merger screening tools. The basic idea is to use resources for critical transactions and to clear the unproblematic ones without further investigations.

Changes in market shares provide information on whether an in-depth examination is required or not too. Often, however, the first point at issue is the definition of the relevant market. Modern merger screening tools skip this first step and address from the very beginning the question whether post-merger price increases are likely or not. In case the screening tools show that post-merger a competition problem will exist, authorities use the full range of their analyses tools like market definition, merger simulation models, etc..

UPP-Test: Upward Pricing Pressure-Test

The UPP test is a screening tool which is applied in markets with differentiated products and price competition. The starting point of the analysis is - simply said - a market with three companies A, B and C. The companies are in competition with each other and produce product, 1, 2 and 3.
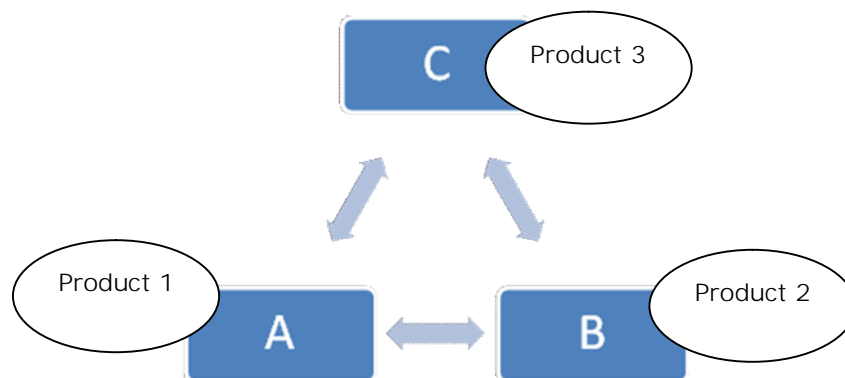
Company A sells product 1 at a price of p1 and at marginal cost of c1. Similarly, company B sells product 2 at price p2 and at marginal costs c2, etc. A price increase for product 1 by company A leads to a diversion of consumers to the products of companies B and C. This diversion represents a loss to company A in favor of companies B and C.

Consider the case that companies A and B decide to merge. The diversion of consumers to product 2 following a price increase of product 1 is now internalized post-merger for the new company A/B, as shown below:
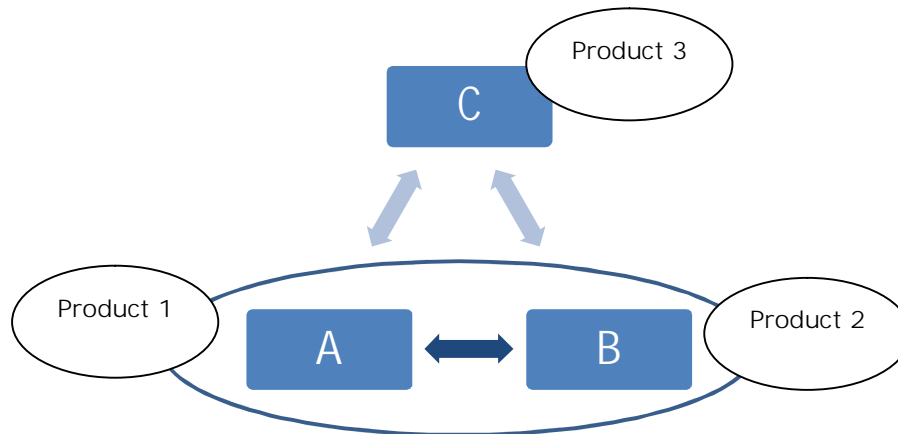
Potential competition problem post-merger

The critical issue in the context of a merger is whether post-merger price increases of the new company A/B to the detriment of consumers can be expected or not. With regard to the impact of the merger on price, two reverse mechanisms need to be taken into consideration: The new company A/B has an incentive to increase prices since it lacks competitive pressure. On the other hand, products 1 and 2 are produced in a more efficient way. In the UPP test, an increase in efficiency of 10% is generally assumed. Thus, the new company A/B has an incentive to offer cheaper products. Demand for these cheaper products and gross margins increase. The UPP is the difference between these two mechanisms.

Calculations UPP-Test

The probability of a price increase post-merger is influenced by two factors:

- The first factor is the migration of consumers, also called diversion ratio, form product 1 to product 2. The diversion ratio answers the following question: If the price of product 1 increases, what portion of the consumers will switch to product 2? The diversion ratio can be calculated by using consumer surveys or historical data. Market share estimates can be used alternatively. Under the assumption, that all products are equally distant, the lost sales of one product are likely to be diverted to the other products in the market in accordance with the market shares.
- The second relevant factor is the gross profit margin defined as the difference between the price and the marginal cost.

Put simply, the probability of a price increase post-merger is calculated by multiplying the gross profit margin with the diversion ratio followed by the subtraction of the efficiency gains (as "downward pricing pressure").

Mathematically, the UPP is calculated as follows:

$$UPP_1 = (p_2 - c_2)D_{12} - e_1 c_1$$

The terms p2 and c2 correspond to the price and the marginal cost of producing good 2 respectively, c1 is the marginal cost of producing good 1 and e1 represents the efficiency gains resulting from the merger. Finally, D_{12} is the diversion ratio. The diversion ratio between products 1 and 2 measures what percentage of the demand for good 1 will be transferred to the competing good 2 as a result of a price increase in good 1. Expressed mathematically, the diversion ratio D_{12} is:

$$D_{12} = \frac{\partial Q_2 / \partial p_1}{\partial Q_1 / \partial p_1} = -\frac{\varepsilon_{21}}{\varepsilon_1} \cdot \frac{Q_2}{Q_1}$$

Here Q1 and Q2 refer to the demand for product 1 and 2 respectively, ε_{21} is the cross price elasticity between good 1 and 2 and ε_1 is the price elasticity of demand for good 1. The term $\partial Q_2 / \partial p_1$ measures the demand change for good 2 in response to a price change of good 1 whereas the term $\partial Q_1 / \partial p_1$ indicates the demand change of good 1 in response to a price change of good 1.

The UPP test only determines whether prices are expected to rise or fall post-merger. The test does not give any information with respect to the amount of the price change.

Data requirement

Data on volume, price and cost of the two merging companies are available as well as information on market shares. These data have to be submitted to the competition authorities for the last three years anyway. Since all data are available, the UPP test is easily and quickly applicable.

An example

In the following example, a market with three watches is examined. Two of the watches are of high quality (gold and silver watches), whereas one product is of lower quality (the plastic watches). The following table contains data about sales volumes, prices, marginal costs, profit margins and market shares for all three watches.

The UPP test assumes that the increase in efficiency corresponds to 10%.

The price elasticity of the high quality watches is -1.5 whereas the price elasticity of the lower quality watches amounts to -2. The cross price elasticity between the two high quality watches is 2, whereas the one between the high quality watches and the lower quality watches is 0.5. They reflect the market segmentation in so far that customers in the premium class segment prefer to buy high quality products.

Example Market for Watches

	Golden watches	Silver watches	Plastic watches
Sales volume	10.000.000	15.000.000	30.000.000
Price	€ 120	€ 115	€ 80
Marginal costs	€ 90	€ 85	€ 75
Gross margin	€ 30	€ 30	€ 5
Market share	22,54%	32,39%	45,07%

A review on the level of market shares post-merger would generate the following result: A merger with the producer of plastic watches always needs to be examined in detail, since the market shares in each scenario will be post-merger above 67%.

The UPP test leads to another assessment.

The following table shows the diversion ratios between the watches. The diversion ratio is calculated with the above-described formula.

Diversion Ratio

	towards golden watches	towards silver watches	towards plastic watches
Diversion ratio of the golden watches		2	1
Diversion ratio of the silver watches	0,89		0,67
Diversion ratio of the plastic watches	0,08	0,13	

A share of those consumers who purchased plastic watches so far will shift to a minor extent to the more expensive watches (diversion ratios are 0.08 and 0.13). Furthermore, those customers who bought luxury watches in the past prefer to stick to their respective premium segment.

Based on the data, the UPP values post-merger can be calculated.

UPP-Values

	golden watches	silver watches	plastic watches
UPP golden watches		51,00	-4,00
UPP silver watches	18,17		-5,17
UPP plastic watches	-5,00	-3,75	

The value of 51 (positive sign) indicates that in case of a merger of the producer of golden watches with the producer of silver watches, the price of golden watches will increase. It is, however, not possible to evaluate with the UPP test the precise amount of that price increase without further data. This additional data might be collected by a conjoint-analysis.

Furthermore, the price of the silver watches will increase post-merger too. (18.17 has a positive sign). As prices increase for both products, a merger in the premium segment has adverse effects for consumers.

A different situation emerges when firms producing premium watches merge with the firm producing less qualitative plastic watches. In that case, the price for both watches decrease.

This result seems surprising, since the plastic watches producer has with 45% the highest market share. By applying the traditional market share test, a merger with the latter should raise competition concerns.

In this particular example, competition in the premium segment is more intense than competition between the premium and the low-cost segment.

Instead the UPP-test determines the closeness of competition between all market participants. In the present case, the result of the UPP test is that a merger of the plastic watches manufacturer with any other producer is not crucial.

Other screening tests: UPP*, GUPPI & IPR

The **UPP*-test** is an extension of the UPP test. This screening tool uses the reverse diversion ratio from product 2 to product 1, and takes into account efficiency gains in the production of product 2.

Unlike the UPP test, the **GUPPI test** (Gross upward pricing pressure) assumes no efficiency gains of a merger. Only profit margins and diversion ratios are used for the calculations. Thus by definition, the GUPPI value is positive. This is the reason why thresholds of 5% or 10% apply. The GUPPI is defined mathematically as follows:

$$GUPPI_1 = \frac{D_{12}(p_2 - c_2)}{p_1}$$

Another merger screening tool is the Illustrative Price Rise test, the **IPR test**. This test uses the same information as the UPP test. In addition, detailed information on the demand function is required. The IPR calculates exactly how large the price increase will be after a merger.

Further application of UPP tests

The original formulation of the UPP framework has recently been extended in several respects. Extensions include, amongst others, more product markets, quantity competition, auction markets and two-sided markets.

Application of UPP tests by competition authorities

The European Commission has recently applied the GUPPI test in the merger proceedings Hutchison 3G Austria / Orange Austria (COMP/M.6497). Already in Unilever/Sara Lee Body Care (COMP/M.5658), the Commission has used a variation of the UPP test. By using a "nested logit" model, the Commission has evaluated the competitive closeness of Sanex products (Sara Lee) and Axe/Dove products (Unilever). The result was that the competitive effects between these products are low.

Other examples for the application of UPP tests are merger procedures in the UK (Asda/Netto, Sports Direct/JJB Sports, Cineworld/Showcase Cinema, Somerfield/Morrisons, CGL/Somerfield and Zipcar/Streetcar) and in Sweden (Office Depo /Svanstroms, Cloetta/Leaf, Arla/Milko, Eniro/Teleinfo).

If you are interested in more information about these new merger screening tools please contact us at ccr@ee-mc.com.

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