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Agenda

Advancing economics in business

Product migration: a problem for market definition?

There are markets where consumers migrate from one product to another—for example, from dial-up Internet to broadband, or from VHS to DVD. Competition investigations often question whether the old and new products should be treated as competitors. Policy practice is not always consistent. Can economic theory offer any answers?

Product migration is an area that is perhaps not addressed adequately in competition policy. Many products that are commonly used are at some point overtaken by a 'new generation' of products—a step-change in the product life cycle. Most recent examples come from the digital world: consumers migrate from dial-up (narrowband) Internet access to broadband Internet, from analogue TV to digital TV, from VHS to DVD, from traditional cameras to digital cameras, and, to some extent, from letters and faxes to email. However, product migration occurs in other industries as well—for example, from wooden tennis rackets to those made of graphite and other high-tech materials, or from washable to disposable nappies. Competition policy needs to recognise the implications this may have for market definition.

Sometimes the shift from one product to the next may happen overnight, but in most cases the old and new products live alongside each other for some time. In competition investigations, the question then regularly arises of whether the two products form part of the same relevant market; in other words, are the old and new products regarded as close substitutes? This article explains how product migration should be considered as part of the market definition analysis.

What's the issue?

- **Product migration is currently not addressed adequately in competition policy**
- **Market definition is interpreted too narrowly by focusing on relative price changes**
- **This article explains how product migration should be considered as well when defining markets**

Almost by definition, product migration implies that consumers substitute one product for another. However, competition policy is not concerned with substitution per se—in the end, all products compete to some degree for the customer's wallet—but with the question of whether this substitution is sufficiently strong as to place a pricing constraint on the original product.

There is not a two-way process. Given that product migration typically goes in one direction—from the old product to the new—the main issue is usually not whether the old product places a competitive constraint on the new product. Once consumers have switched, for example, to broadband Internet or digital TV, most are unlikely to switch back to the old product (narrowband or analogue TV, respectively). Only in the early stages of the new product may the old product still be very attractive to consumers, such that suppliers of the new product have to compete not only with each other, but also with the suppliers of the old product. This may have been the case for broadband Internet, where broadband providers had to keep prices low to attract narrowband users.

The more complicated question to ask, therefore, is whether the new product imposes a pricing constraint on the old product.

Does the new constrain the old?

Two recent examples in which authorities had to address this question are the analysis of narrowband markets by Oftel, the UK telecoms regulator (now Ofcom), and the analysis of the leased-lines market by OPTA, the Dutch regulator.[1]

In the first of these cases, Oftel made the following statement:

> Oftel's view is that there is not a single market including both narrowband and broadband. While Oftel recognises that customers have moved from narrowband to broadband and that this is likely to continue to some extent in the future, it is not clear that this is substitution in response to a relative price change as such, as opposed to customers upgrading to a higher quality product that was not previously available. (para 2.6)

Hence, Oftel did not consider product migration a relevant form of substitution for the purpose of market definition, since it does not occur in response to relative changes in the prices of both products. Oftel referred to the hypothetical monopolist test, a commonly applied tool for market definition (also known as the SSNIP test—small but significant and non-transitory increase in price). This test is indeed usually viewed in the way Oftel viewed it—do consumers switch from product A to B if A becomes relatively more expensive? However, for market definition, any demand reduction is of relevance (as explained below).

OPTA used the same reasoning with respect to the leased-lines market. A leased line is a permanently connected communications link between two premises, dedicated to a customer's exclusive use. Business users are gradually replacing leased lines with other data services, such as those based on Internet Protocol technology. While these newer data services have more variable capacity and require more outsourcing of network management functions, consumers consider them a lower-cost alternative to leased lines. Having noted a high degree of migration from leased lines to newer data services between 2002 and 2004, OPTA nonetheless concluded that the movement between the products was not relevant for market substitution:

> Switching and migration from service A to B does not automatically constitute demand substitution. Demand substitution requires that switching from A to B is caused by changes in the price difference between A and B. In this case, there is price pressure. Migration, however, can result from other factors, such as the emergence of a completely new service (B) or changes in user preferences. Consumers migrate as a result, where this migration no longer depends on further small (5% to 10%) changes in the price difference between A and B.
> (para 280, translated from Dutch)

Do these cases suggest an overly restrictive interpretation of the hypothetical monopolist test? What ultimately matters is whether the old product is a product worth monopolising. Here, product migration does have relevance, as explained below.

How substitution works in the SSNIP test

To see how product migration affects market definition, it is worth taking a step back and reviewing how substitution works in the SSNIP test. Figures 1 and 2 below seek to do this in an intuitive way. It should first be noted that the explanation below focuses only on the mechanics of the SSNIP test and how migration affects these. It is not intended as a full description of how old and new products compete—more complicated models could be constructed to analyse that competitive interaction in detail.

Figure 1 below shows a standard downward-sloping demand curve where the quantity demanded decreases as price increases. For simplicity, demand is assumed to be linear here.[2] This curve can represent total demand for any given group of relatively homogeneous products (eg, demand for VHS recorders or for narrowband Internet services), or for any individual product variation or brand (eg, demand for high-end VHS recorders). This is not important for the explanation below.

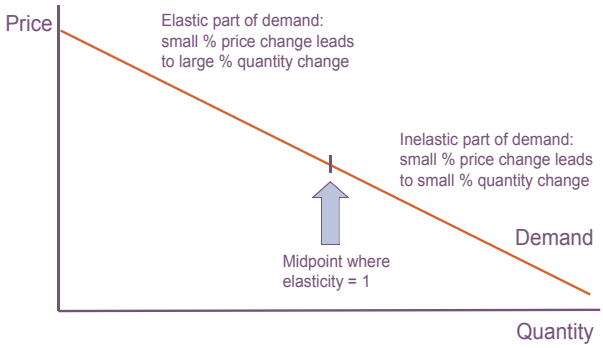
This demand curve has two properties that are of relevance here, and that are explained in more detail in Figures 1 and 2:

- first, the curve has a part where demand is elastic (the left half) and a part where demand is inelastic (shown in Figure 1);
- second, competition from other products has the effect of shifting the whole demand curve down (see Figure 2).

How does this change the behaviour of the hypothetical monopolist?

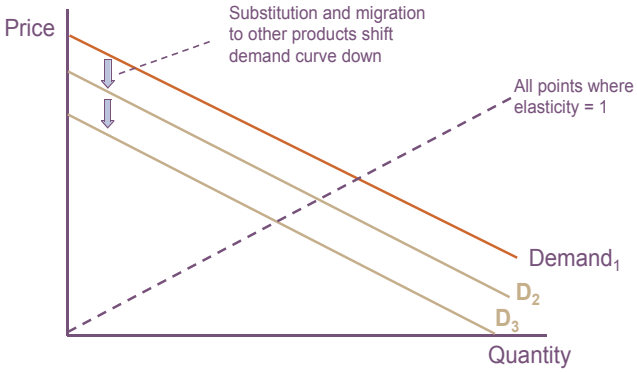
Assume that the supply of the product in question has a marginal cost as depicted in Figure 3 (a constant marginal cost is assumed, again for simplicity). In the initial situation, if there is some degree of competition between the existing providers, the equilibrium price will lie at, or not too far above, the level of marginal cost. Then, if the product is hypothetically monopolised in the context of the SSNIP test, the hypothetical monopolist will raise the price to the profit-maximising level, which is the point at which the monopolist's marginal revenue equals the marginal cost (as shown in Figure 3). The question asked in the SSNIP test is whether this new monopoly price exceeds the initial price by 5–10%. If it does, the product in question can be considered a relevant market. If it does not, the product is not worth monopolising and hence further substitute product(s) should be included in the relevant market.

Figure 1 A typical demand curve



Note: Elastic and inelastic parts—this property of the linear demand curve is perhaps not always understood. Independently of its slope, this demand curve always has an elastic part and an inelastic part. Elastic means that the own-price elasticity is greater than 1 (in absolute terms)—ie, an increase in the price by 10% would lead to a fall in demand by more than 10%. Inelastic means that the 10% price increase would lead to a demand loss below 10%. The left half of the curve is the elastic part, and the right half of the curve is the inelastic part. At the midpoint of the curve—also shown in Figure 1—the elasticity is exactly equal to 1 (in absolute terms).

Figure 2 Effects of substitution and migration



Note: Competition from other products—on the demand curve, the quantity demanded only depends on the own-price of the product. Competition from other products is not captured directly by the curve itself, but it does have an impact on the demand curve: it can shift the whole demand curve up or down. That is to say, if competition from another product increases, this has the effect of shifting the demand curve down—for example, to curve D2 or further to curve D3. At any given price, demand for the product is now lower because the competing product has become an attractive alternative. This is precisely the way the SSNIP test takes into account competition between products.

Figure 3 The price increase by the hypothetical monopolist

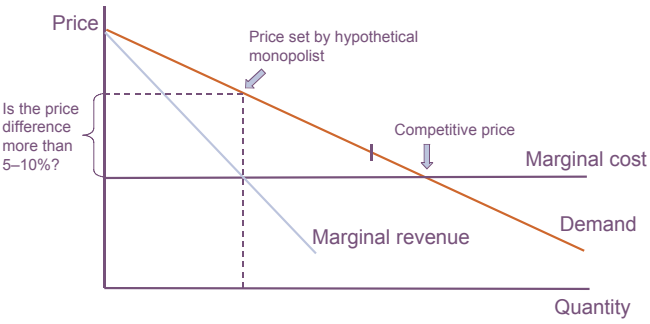
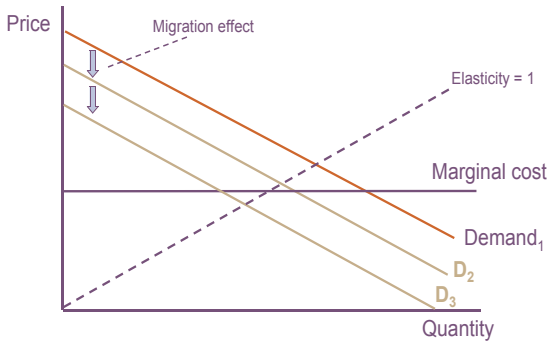


Figure 4 The effects of migration on the SSNIP test



The important point to assess here is how the shift in demand depicted in Figure 2 affects what a hypothetical monopolist would do. Basically, given that marginal cost stays the same (as there is no change in supply conditions, only in demand conditions), it follows that the lower the demand curve, the more the initial price (which is at or just above marginal cost) will approach the elastic part of the curve. To see this, compare curves D1, D2 and D3 in Figure 4.

If the market is fully competitive, price will be equal to marginal cost, and the equilibrium will be where the demand and marginal cost curves intersect. It is clear that this competitive starting point is at a relatively less elastic point on curve D1 (more towards the right-hand side of that curve) and at a more elastic point on curve D2 (more towards the left-hand side). Indeed, for curve D3, demand has shifted so far down that even the fully competitive price will be on the elastic part of the curve, as the marginal cost curve intersects the D3 curve where demand is elastic (the left half of D1).

Now consider the commonly known result that the more inelastic the demand, the more a hypothetical monopolist could increase the price—this is entirely intuitive, as inelastic demand means that the monopolist loses relatively few customers for any given price increase, making the price increase profitable. The reverse is also true: the more elastic the demand in the initial situation, the less likely it is that the hypothetical monopolist will

find it profitable to impose a large price increase. In other words, the further downward the demand curve has shifted, the lower the price increase resulting from hypothetically monopolising the market. At some point, when demand is sufficiently low with respect to marginal cost, the market is simply no longer worth monopolising by itself—even a monopolist would not find it profitable to raise its price by 5–10% in that market. Curve D3 may well be at that point.

So what is the effect of migration?

Migration, like any substitution, shifts total demand for a product downward. This means that product migration has exactly the same effect on the hypothetical monopolist test as any other form of substitution from one product to another. For example, migration to broadband Internet means that the demand curve for narrowband Internet moves down—for any given price, there is now less demand for narrowband services than previously. At some point, migration may reach such levels that narrowband ceases to be a market worth monopolising.

In practice, once it is recognised that migration does matter for market definition, the key question then becomes whether migration is indeed sufficiently strong to push demand for the old product all the way down to where the initial (competitive) equilibrium is already relatively elastic. The relevant timeframe over which to consider this question is between one and two years, as is typical for the hypothetical monopolist test.

It may well be that, in the examples of Oftel and OPTA, such an analysis would have led to the same conclusions as those drawn by the two regulators—indeed, in both cases there were other indications that separate markets could be defined. One reason why the old products could still be worth monopolising over the next two years may be that those customers who have not yet migrated are in fact the least price-sensitive customers—thus limiting the speed and impact of migration on the hypothetical monopolist. Such an effect is not directly captured in the mechanics of the SSNIP test.

Nevertheless, an analysis of the strength of migration ought to form an integral part of the process of assessing relevant markets.

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[1] Ofcom (2003), 'Fixed Narrowband Retail Services Markets: Final Explanatory Statement and Notification', November 28th; and OPTA (2005), 'Ontwerpbesluit huurlijnen' (draft decision leased lines), July 1st.
[2] The same conclusions are reached for many other demand curves that are continuously downward-sloping and shaped 'normally'.