INSIGHTS

QUALITY: A GAME CHANGER IN MARKET DEFINITION?

A key change in the recently published Market Definition Notice is the greater emphasis on non-price elements as relevant parameters of competition.

How can we define markets in settings where firms compete on innovation and quality? How can we adapt existing economic tools for this purpose? This note illustrates this with a simple example from mobile gaming.

THE NEW MARKET DEFINITION NOTICE HAS BEEN PUBLISHED

On 8 February 2024, the European Commission (the "Commission") published its new Market Definition Notice (the "Notice").[i]

This first revision since the adoption of the notice in 1997 is substantial: the new notice is much longer and reflects 27 years of Commission practice. The Notice in particular updates the old notice to account for new trends in digital and more global markets.

One such key update is the greater emphasis on non-price elements[ii] as relevant parameters that need to be assessed in the market definition stage. For example, in multi-sided (digital) markets, consumers may not pay a monetary price for the services they use (hereafter, we refer to such services as "zero-priced products"). This makes conventional

tools (which rely on a price increase) not fit for purpose.

MEASURING QUALITY IN COMPETITION ANALYSIS IS A CHALLENGING TASK

In the case of quality competition, the Commission departs from the traditional Small but Significant and Non-transitory Increase in Price (SSNIP) framework[iii] and introduces the new Small but Significant Non-transitory Decrease of Quality (SSNDQ) test.

The SSNIP test is a conceptual test designed to identify relevant markets. In simple terms, a relevant market is identified as a group of products where market power can be exercised. This is the smallest set of products for which a small but significant (typically 5% or 10%) price rise would be profitable.

The SSNDQ applies the same logic to zero-priced products,[1] where quality is the most important parameter of competition. In this case, market power is manifested by a profitable decrease in quality, rather than a price increase. A relevant market is therefore defined as the smallest set of products where a hypothetical monopolist could profitably decrease quality in a small but significant way.

While providing a useful conceptual framework, this test raises practical challenges that authorities and firms will have to consider when using it. It is important to consider the objective of the SSNDQ test when using economic analysis to overcome these challenges.

The first challenge is to determine a relevant measure of quality. Unlike price, there is no universal measure of quality:

- Quality is **multi-dimensional**. Users consider various factors as part of quality, such as speed of load, number and frequency of ads shown, or ease of use.
- Some quality features **cannot be (objectively) measured**. It is not possible to measure an app's ease of use objectively.

- **Quality improvement and deterioration are often subjective**. What some users may see as a quality improvement, others may see as a deterioration. For example, a redesign of a social network app that introduces new reactions (such as ❤️😆🥺) might be perceived as an improvement by some users, while other users might find the new feature confusing.[2] Therefore, the same change can be seen as an increase or decrease in quality depending on the user.

- Finally, users put **different weights on different quality features**. For example, some users may put more value on the user interface while others may consider speed the most important feature.

Applying the SSNDQ in free mobile puzzle games

Consider a stylised example where we want to define the relevant market for free mobile puzzle games. The question is: Does this market include free mobile word games?

Assume that there is a measure of quality (called Qs) and that free puzzle games have an average Qs of 100.

To implement the SSNDQ, we undertake a critical loss analysis.

- The hypothetical monopolist would control all free mobile puzzle games. Suppose we determine that the threshold for a drop in Qs is 5%, i.e., 5 Qs. Assume that reducing quality by 5% would imply a €1 million cost saving.

- Thus, the proportion of lost users that would offset the cost savings from the reduction in quality is 10%. If 10% of users switched, this would result in a loss of revenue of €1 million. The critical loss is 10%.

- To understand whether this is a relevant market, we compare the critical loss with the actual loss. This is the number of users of free mobile puzzle games who would switch if the quality of all games dropped by 5Qs. If the actual loss is smaller than the critical loss, then free mobile puzzle games is a relevant market. Otherwise, we need to expand the market, e.g., to include free mobile word games.

[1] In many instances, the product in question may be a multi-sided platform that offers its services for free to one side of the platform.
[2] For instance, the expanded like button, introduced by Facebook in 2016 and updated in 2020, received varied feedback. Some commentators highlighted that some users appreciated the broader and more nuanced set of reactions; others pointed out that users might have "quibbled with the implementation"; yet others argued that users might find the intended messages of these reactions unclear and ambiguous. See The Verge, 2016. Facebook rolls out expanded Like button reactions around the world. 24 February 2016. Available

online at: https://www.theverge.com/2016/2/24/11094374/facebook-reactions-like-button. Wired, 2016. Facebook Reactions, the Totally Redesigned Like Button, Is Here. 24 February 2016. Available online at: https://www.wired.com/2016/02/facebook-reactions-to-tally-redesigned-like-button/. Paolillo, J. C., 2023. The awkward semantics of Facebook reactions. *First Monday*, 28(8). 7 August 2023. Available online at: https://firstmonday.org/ojs/index.php/fm/article/download/13157/11293 doi: https://dx.doi.org/10.5210/fm.v28i8.13157.

The second challenge is to determine what constitutes a small but significant deterioration in quality. While it is generally accepted that a price increase in the range of 5% to 10% is considered significant, [3] a 5% reduction in some quality measures may not be significant or noticeable for most users. For example, an increase in the proportion of the screen dedicated to ads by 5% may not be sufficient to make users switch simply because they do not notice this.

The Notice refers to the General Court's Decision in Android stating that '*defining a precise quantitative standard of degradation of quality of the target product cannot be a prerequisite for the application of the SSNDQ test. [...] All that matters is that the quality degradation remains small, albeit significant and non-transitory.*'[4] The question that remains, however, is determining what constitutes a "*small, albeit significant and non-transitory*" quality decrease.

In the example above, we assumed for simplification that there was a universal game quality measure called Q.

In reality, no such measure exists. Instead, performing an SSNDQ test would require using different proxies for quality of mobile puzzle games.

This could be factors such as average game rating in the Google Play Store and the Apple App Store (or other app marketplaces), ratings or reviews by renowned game publications such as *PC Gamer*, or measures of the game difficulty.

ADJUSTING THE ECONOMIC TOOLBOX FOR QUALITY COMPETITION

Just like the SSNIP test, the SSNDQ test provides only a conceptual framework for the assessment of market definition. Often, the level of switching that a hypothetical monopolist would face cannot be determined.

Competition authorities often rely on evidence of price-driven substitution to define markets. Similar analysis may be used for quality substitution.

For example, just like price co-movements (e.g., price correlation analysis), co-movements of quality improvements (e.g., assessing whether quality improvements are clustered) inform demand substitution.

Likewise, event analysis can exploit significant variations of relative quality (e.g., when one firm launches a new product) to infer substitution.

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[3] The Notice, footnote 53.

[4] "*The SSNIP considered is normally a price increase in the range of 5% to 10% implemented on one or more products in the candidate market, including at least one product of the undertaking(s) involved*". The Notice, footnote 54.

Applying event analysis to assess the market of free mobile puzzle games

Event analysis could be used to inform whether free mobile puzzle games and free mobile word games are in the same market. Figure 1 below provides an illustrative example of a word game and a puzzle game that release major updates. We assume these updates are significant quality improvements, i.e., the relative quality of the updated game increases relative to the game that did not update, whose quality is unchanged.

When the free mobile word game introduces an update in February 2023, we observe an increase in the number of daily active players and a corresponding drop in the number of players for the free mobile puzzle game. The pattern is similar but reversed when the free mobile puzzle game releases updates in June and November 2023. This event analysis indicates that free mobile puzzle games and free mobile word games may be in the same market.

Figure 1

Number of daily active players of a word and a puzzle mobile game
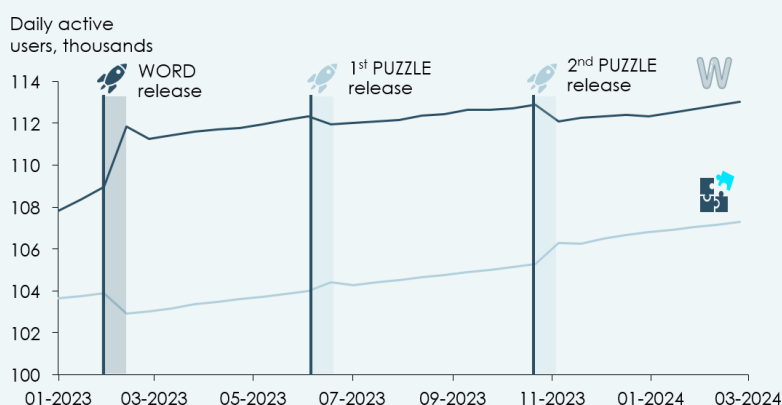
Note: Illustrative
Source: Copenhagen Economics

SQUARING THE CIRCLE BEYOND SSNDQ

Finally, the SSNDQ implicitly assumes that all the firms offer equally zero-priced products. This may not always be the case, though: Firms may compete in the same market using different business models or different choices regarding whether to charge end-users (e.g., YouTube vs Netflix, free-to-air vs pay-per-view TV, or free content vs paid content websites).

In such a case, it may be necessary to compare products with a price and those that are zero-priced. In this case, an alternative approach would be to determine an implicit price of the free product to compare with the prices of the paid products.[5] A "small but significant quality decrease" would then be translated into a "small but significant (implicit) price increase" and the original SSNIP test applied.

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[5] Implicit price refers to the price of a good or service that is not directly observed in a market transaction but can be inferred from other information. For example, if we assume that consumers prefer fewer ads, an implicit price could be calculated for the ads that the user sees to use the free product. This could be done by reference to the price of the ad, revealed preferences on users' willingness to pay for ad-free versions or other measures.

Alternatively, the closeness of competition between different sets of products could be assessed using estimates of the impact of forced diversion. This method consists of assessing what consumers would do when an alternative is unavailable (e.g., a game is no longer offered on an app marketplace). The impact of forced diversion could be estimated via a survey of consumers or events where one product was no longer available in a particular setting (e.g., because of exclusion from the marketplace of a mobile operating system). This approach would already capture by design all price and non-price factors that affect customers' decisions.

Considering how digital markets operate, the Commission has found it necessary to look beyond price to understand relevant markets. This requires adjustments to qualitative and quantitative tools to define relevant markets and assess competition. The new Notice offers long-awaited guidance in this direction. With an increasing body of practice, the tools and methods will become increasingly clear.

Comparing priced vs zero-price products

Assume that we want to determine if mobile puzzle and word games having both free and paid versions belong in the same market.

To determine the implicit price of free mobile puzzle games, we could use the price that users pay for an ad-free version. This could give an implicit price of the free version; for example, if users pay €4 for the ad-free version, then we could assume that this is the implicit price of the free app.

We can employ an SSNIP test framework and assess the impact of a 5% increase in the implicit price. In other words, we should test the impact of an increase in ad time equivalent to an increase in the implicit price to €4.20.

Assessing the impact of this price increase on consumers switching to other games, we can estimate demand substitution, and hence, the boundaries of the relevant market.

Endnotes:

(i)   European Commission, 2024. Commission Notice on the definition of the relevant market for the purposes of Union competition law. Available online at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AC_202401645.

(ii)   "*Those parameters may include the product's price, but also its degree of innovation and its quality in various aspects – such as its sustainability, resource efficiency, durability, the value and variety of uses offered by the product, the possibility to integrate the product with other products, the image conveyed or the security and privacy protection afforded, as well as its availability, including in terms of lead-time, resilience of supply chains, reliability of supply and transport costs*". The Notice, paragraph 15.

(iii)   "*When undertakings compete on parameters other than price, such as quality or the level of innovation, the application of the SSNIP test is difficult, in particular in the context of zero monetary price products and highly innovative industries*". The Notice, paragraph 30.

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