

Assessing the Importance of Market Power in Competition Investigations

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Abstract

Market power is a key factor considered by competition authorities to analyse mergers and acquisitions as well as alleged anti-competitive conduct. Traditionally, market power of a firm has been estimated primarily by reference to market share and market concentration measures. The objective of this paper is to assess the theoretical foundations of such an approach and study sector-specific conditions under which such an approach might not hold. We also briefly examine the relationship between market power and welfare effects under different scenarios and highlight instances where the relationship might not hold. Our findings show that market power can have positive welfare effects under certain circumstances and in certain types of markets. Therefore, authorities must give a more careful consideration of welfare effects while analysing conduct and transactions.

1. Background

Introduction

- 1.1 Market power is a key concept considered by competition authorities in assessing mergers and acquisitions as well as alleged anti-competitive conduct. It also influences pricing and strategy decisions made by businesses. However, the focus of this paper is to review the use of market power in competition enforcement, both in form (how can market power be measured) and in structure (what the effects of market power could be).
- 1.2 In competition assessment, market power is used as a proxy for the ability of a firm to raise and sustain prices above the competitive level and engage in anticompetitive conduct. It is primarily used in merger and conduct cases, wherein it is employed as an initial screen to ascertain whether an in-depth investigation is required. It is applied in the following contexts:
- (1) Abuse of dominance matters: Most competition authorities follow a two-step investigation process. The first step involves establishing ‘dominance’ or the ability of a firm to act independently of its competitors and customers, and to commit the alleged harm. The second step involves an assessment of the allegedly abusive behaviour. Competition authorities perform the first step and establish dominance by reference to the market power of a firm. Therefore, market power is a key element in such cases.
 - (2) Horizontal and vertical mergers: A horizontal merger or a merger between competitors could create an entity that can profitably increase prices and cause adverse effects on competition (“AAEC”). Similarly, a merger that results in a vertically integrated dominant firm can enable the firm to use its dominance in one market to foreclose its competitors in other markets. Consequently, assessing whether market power could lead to abuse of dominance is key in assessing both types of mergers.

(3) Anti-competitive agreements: Market power assessment might not be relevant for establishing liability in cartel investigations but it is helpful in calculating follow-on damages claims. Cartel damages are calculated by reference to but-for prices and volumes (i.e. the prices and volumes that would have prevailed had the firm in question not engaged in cartelisation). Since market power influences the pricing decisions of a firm, it is a useful tool in the estimation of the various but-for parameters and, in turn, the damages calculation.

1.3 Given the importance of market power in competition assessment, it is important to assess its relevance and applicability under different market and competition scenarios.

Objective

1.4 The objective of this paper is twofold. The first objective is to ascertain the contexts in which the direct relationship between market share and market power might not hold. The second objective is to highlight the instances in which the presence of high market power might not necessarily lead to negative welfare effects.

Structure of the paper

1.5 The paper is structured as follows.

1.6 Section 2 explores the theoretical relationship between market share and market power. It also reviews how competition operates in differentiated products industries as well as its impact on welfare.

1.7 Section 3 discusses the relationship between market share, market power and welfare effects of exclusionary behaviour in differentiated products industries.

1.8 Sections 4, 5 and 6 discuss market power in three specific industries, with unique characteristics: banking, healthcare and network industries. We set out our conclusion in Section 7.

2. Understanding Market Power and Competition Assessment

Introduction

2.1 A firm's market power is defined as its ability to set prices above marginal cost and act independently of its competitors. The Lerner Index, which is the percentage difference between the firm's price and its marginal cost, is the most straightforward way to define market power. However, the Lerner index might not be an accurate indicator of market power when intricacies such as complementarity, network effects, and learning curves are involved. In the formula below, L_i is the Lerner Index, P_i signifies the price charged by firm i , with C_i as the firm's marginal cost.

$$L_i = (P_i - C_i)/P_i \quad (1)$$

2.2 Equation (2) below is a simplified version of equation (1) and defines Lerner Index as a function of the elasticity of demand faced by the firm (e_i). It shows that the Lerner Index for a firm in a perfectly competitive industry is zero.¹

$$L_i = 1/e_i \quad (2)$$

Approach to calculating market power

Introduction

2.3 The approaches to measure market power can be broadly grouped into two, (1) indirect; and (2) direct approaches.

2.4 The direct approach has traditionally been dominated by the Structure-Conduct-Performance ("SCP") approach that examines the relationship between a firm's profit and measures of concentration. However, since the 1980s, the New Empirical Industrial Organisation ("NIEO") approach has become popular. This approach estimates the demand and pricing equation for an industry in order to ascertain the conduct of firms.² However, this approach has very stringent data requirements and is only rarely used. Therefore, we only discuss the indirect approach in detail.

¹ This follows from a perfectly elastic demand curve in a competitive industry (e_i tending to infinity).

² For more information on the direct approach, refer to 'Market Power: How does it arise? How is it measured?', Lawrence J. White (http://web-docs.stern.nyu.edu/old_web/economics/docs/workingpapers/2012/White_MarketPowerRiseandMeasure.pdf)

2.5 The indirect approach (“Traditional Approach”) estimates market power based on market share and other market characteristics such as barriers to entry, closeness of competition etc. It does not estimate the magnitude of market power (Lerner Index), only its existence and directional movement. This is the most commonly used approach and often requires experts to make subjective judgements. It is discussed further below.

Traditional approach

2.6 Market share has traditionally been the starting point of assessing market power in matters concerning competition law. Economic theory models a strict formulaic relationship between market share and market power under a limited set of circumstances specific to homogenous products markets.³

2.7 Landes and Posner (1980) demonstrate that the market power of a dominant firm in a market with a competitive fringe⁴ and homogenous products depends on three factors:

- (1) its market share (s_i);
- (2) the market elasticity of demand (e_{md}); and
- (3) the supply elasticity of fringe firms (e_{sj}).

2.8 Equation (3) below formalises this relationship and gives the Lerner Index of firm i (L_i). This equation collapses to equation (2) above for a monopoly i.e. when market share is 100% and supply elasticity of fringe firms is zero.

$$L_i = s_i / [e_{md} + e_{sj}(1 - s_i)] \quad (3)$$

2.9 In 1982, Ordoover et al, further refined the above formula to establish the relationship between market power and market share for a market which has non-price-takers as well as a competitive fringe. Equation (4) below describes the Ordoover formula.

$$L_i = s_i(1 + k_i) / [e_{md} + s_j e_{sj}] \quad (4)$$

³ Homogenous products are those which are the same and have no differentiation.

⁴ Competitive fringe refers to small price-taking firms that operate alongside a large (dominant) firm in the market.

- 2.10** With two exceptions, the symbols in the above equation have the same meaning as those in equation (3). The two exceptions being: (1) s_j which refers to the market share of the competitive fringe; and (2) k_i which is the conjectural variation of firm i . The authors define the conjectural variation as “*.firm i's perception of its interaction with the other non-price-taking firms. If k_i is positive, the interaction is perceived to be "parallel": firm i anticipates that a contraction of its output will result in a contraction of output by the other non-price-taking firms as well.*”
- 2.11** Therefore, k_i captures the strategic interaction between the non-price-taker firms and will depend on the characteristics of the relevant market. A higher k_i , all else being equal, would mean a lower intensity of price competition between the non-price-taker firms and a higher market power and vice-versa.
- 2.12** Equations (3) and (4) above help illustrate the factors affecting market power of the dominant firm. In particular, it shows that market power in a homogenous products market is:
- (1) directly related to the market share of the firm;
 - (2) inversely related to the market elasticity of demand;
 - (3) inversely related to the market share of the fringe firms;
 - (4) inversely related to the supply elasticity of the fringe firms; and
 - (5) directly related to the conjectural variation (only relevant for equation (4)).
- 2.13** Put simply, higher market share will result in higher market power, all else being equal. Conversely, higher elasticity of demand and supply will result in lower market power, all else being equal.
- 2.14** However, the exact relationship between market share and market power will depend on how all the factors interact in a particular market. Under equation (3), a dominant firm with a 60% market share in an industry with elasticities of demand and supply of 1.5 each will have a lower price-cost margin (of 29%) than in an industry with elasticities of demand and supply of 0.5 (of 86%). Therefore, a given level of market share can convey radically different levels of market power, depending on the characteristics of the market.
- 2.15** On this basis, market share alone might not be sufficient to draw absolute conclusions about market power and consideration must be given to other relevant market factors.⁵

⁵ These additional factors, including the demand and supply substitutability, capture the contestability of the market.

- 2.16** It is, however, often difficult to precisely estimate these other factors (namely, demand and supply substitutability), even in homogenous products markets. Therefore, competition authorities might consider other observable characteristics of the market such as threat of entry, number of competitors, consumer switching, buyer power, etc. The underlying assumption being that these observable characteristics are proxy for the factors in the equations ((3) and (4)) described above. Again, such an assumption might not hold true for all cases, in all contexts.
- 2.17** Although the equations discussed above are modelled assuming homogenous product markets, they also provide insights on differentiated products markets. For example, a market with vertical product differentiation⁶ will have a lower elasticity of demand, all else being equal. This is because of heterogenous consumer preferences and differences in the perceived quality of the goods offered by the market players. A price increase by a firm is less likely to lead to a significant reduction in its demand, as consumers also care about the quality (or perceived quality) of the product. Therefore, a firm in a differentiated products market will have higher market power, all else being equal.
- 2.18** In the sub-section that follows, we discuss how competition might operate in differentiated products markets. We then explore the relationship between competition and welfare effects in such industries in the next section.

Competition in differentiated products markets

- 2.19** Competition in differentiated products markets works differently than in homogeneous markets primarily for two reasons:
- (1) On the demand side, consumers perceive a difference between the products supplied by different firms. The consumer demand for these products is also heterogenous in nature, wherein the same product provides a different level of satisfaction to different consumers. Therefore, purchase decisions are not only dependent on price but also on other factors, including perceived quality, taste, accessibility etc. Consequently, a small increase in price may well not drive a consumer to switch suppliers, all else being equal.
 - (2) On the supply side, firms invest large sums of money in creating distinct products and in marketing and advertising those products. These fixed costs are aimed at increasing the demand that they face at each price point and at reducing the elasticity of such demand.

⁶ Two products are differentiated vertically if, prices being equal, all consumers prefer the same product. For example, Apple iPhone 5 and iPhone X. (source:<http://staff.bath.ac.uk/ecsjgs/Teaching/Industrial%20Organisation/Handouts/4.%20Verticle%20Product%20Differentiation/Handout%204.pdf>)

2.20 The combination of the above two factors leads to higher mark-ups in differentiated goods markets. These mark-ups are important for recovering the fixed costs and ensuring product variety in the long run.

2.21 We now discuss the welfare impact of such higher mark-ups.

Welfare in differentiated products markets

2.22 There are two opposing factors affecting consumer welfare in differentiated products markets. Firstly, the intensity of price competition between firms reduces⁷ as they compete on product quality and variety, and successfully manage to reduce demand elasticity through marketing and advertising. Secondly, the differentiated products align more closely with consumer preferences and lead to higher satisfaction and utility.

2.23 While the first factor tends to have a negative effect on consumer welfare through higher prices, the latter leads to an increase in consumer welfare. Therefore, a higher mark-up in differentiated products industries might not always mean a reduction in consumer welfare.

2.24 Further, market concentration in a differentiated products industry also has an ambiguous impact on consumer welfare in the long run. Although we discuss this in detail in Section 3 below, it is important to understand the intuition behind this.

2.25 Product variety, as mentioned previously, enhances consumer welfare. Gaynor (2000) notes that monopolistic competition may underprovide or overprovide product variety, depending on the specific characteristics of the market.

2.26 Competition underprovides product variety when firms cannot capture the consumer surplus from additional products. This is likely to occur when competition in the market is such that rival firms respond to a new variety by reducing their prices. As a result of this, the potential innovator will have a smaller target market for the new variety, which might not justify the fixed investment required in developing and launching that variety. This issue is exacerbated in the presence of non-zero switching costs.

2.27 Competition can overprovide product variety when it is relatively easier for firms to steal demand from others. This is likely to occur when switching costs in the industry are relatively low.

⁷ The price competition is less intense as compared to homogenous products markets.

2.28 Both under- and over-provision of product variety may have negative impact on social welfare. Therefore, higher competition in differentiated product markets might not result in higher consumer and social welfare. Therefore, it is possible for a market to be concentrated and still provide the optimal level of product variety.

3. Market Share, Market Power and Welfare in Differentiated Products Markets

Introduction

3.1 In this section, we examine the relationship between market share, market power and consumer welfare in a differentiated products market. We have sought to identify specific contexts under which market share is likely to be good proxy for market power and consumer welfare.

3.2 Our review suggests that although there is much empirical research on the above relationship, theoretical literature is relatively scarce. Since we are interested in the general intuition which can be applied across sectors, we limited our review to the theoretical literature. The papers by Kaplow (2012) and Bageri and Katsoulacos (2017) are relevant in this regard. We discuss the results of the latter in detail as it provides additional information about sources of market power and relevance of the traditional approach.

3.3 Bageri and Katsoulacos (2017) use a theoretical model of oligopolistic competition, with horizontal⁸ and vertical product differentiation, to draw conclusions about the source of market power and welfare effects resulting from the exclusion of a competitor.

3.4 Bageri and Katsoulacos (2017) establish a relationship between market share, market power and the welfare effects arising from the exclusion of a competitor for three different scenarios. We discuss these scenarios and their results below.

(1) When market power is derived from horizontal differentiation

3.5 This result relates to a scenario when the market power (as measured by Lerner's Index) of the dominant firm is a result of horizontal product differentiation.⁹

⁸ Two products are differentiated horizontally if, when the two prices are equal, some consumers prefer one product and other consumers prefer the other product. For example, Pepsi and Coke. (source:<http://staff.bath.ac.uk/ecs/jgs/Teaching/Industrial%20Organisation/Handouts/4.%20Verticle%20Product%20Differentiation/Handout%204.pdf>)

⁹ Keeping vertical product differentiation and market structure constant.

- 3.6** To illustrate this by way of an example, consider a city with four restaurants, P, Q, R and S, located in different areas within the city. P has the highest critic rating and is, consequently, perceived to have moderately higher quality than the others. Therefore, there is some vertical differentiation in the market. We assume that P is located in the city center and therefore is the most accessible of the four. So P has the highest market share and is the dominant firm because of its location (horizontal differentiation).
- 3.7** Under this scenario, the market share and market power of the dominant firm, P, vary inversely as horizontal product differentiation increases. However, the consumer welfare loss due to the exclusion of a competitor (due to the actions of the dominant firm) in such a market is directly related to market power and inversely related to the market share of the dominant firm. In this illustration, an increase in the transport cost for people travelling to the city center will increase the level of horizontal product differentiation between P and the other restaurants. As a result of this, the market power of P will increase but its market share will go down. In other words, the market share and market power will be inversely related.
- 3.8** Therefore, when a dominant firm derives its market power from horizontal product differentiation, market share is a poor proxy for market power and welfare effects. A high market share in such a market might be a result of low horizontal product differentiation and may not necessarily imply high market power or negative welfare effects.

(2) When market power is derived from vertical differentiation

- 3.9** This result relates to the scenario when market power (as measured by Lerner's Index) of the dominant firm is a result of vertical product differentiation.
- 3.10** Continuing with the previous example, we now assume that P, Q, R and S have similar access, with no locational advantage to any one restaurant. Horizontal differentiation still exists because some consumers will always prefer to go to the restaurant nearest to them. In addition to this, we assume that P has a significantly higher critic rating and much higher perceived quality as compared to other restaurants. As a result of its higher quality (vertical differentiation), P has the highest market share and is the dominant firm.

3.11 Under this scenario, the market share and market power of the dominant firm vary directly as vertical product differentiation increases.^{10.11} However, the consumer welfare loss associated with the exclusion of a competitor (due to the actions of the dominant firm) in such a market is inversely related to the degree of vertical product differentiation.

3.12 In this case, although market share might be a reasonable proxy for market power, it might not be an accurate predictor of the welfare loss caused by the exclusionary conduct. Therefore, market power (or market share) might not be an appropriate screen in exclusionary conduct investigations in industries with significant level of vertical product differentiation.

(3) When market power is a result of concentrated market structure

3.13 This result relates to the scenario when market power (as measured by Lerner's Index) of the firms is a result of lower number of rivals in the market.

3.14 Again, we continue with the same example as before. We continue to assume that horizontal differentiation is the same as in the previous illustration (under the scenario with vertical differentiation). Further, P only has a slightly higher critic rating and a moderately higher perceived quality as compared to the other restaurants. P has the highest share but is not dominant as other competitors also have significant market shares.

3.15 Under this scenario, market share and market power vary directly as the market structure becomes more concentrated.^{12.13} The foregoing result holds for all the firms in the market.

3.16 Consumer welfare loss due to the exclusion of a competitor is also directly related to the market share and market power of the existing firms. In such industries, market share is an appropriate proxy for market power, and also for the welfare loss caused by the exclusion of a competitor.

Summary

3.17 While the analysis above is based on a theoretical model, and only holds true under certain strict assumptions, it provides useful insight for assessing market power and competition in different markets. For example, in an industry where firms compete on prices and the dominant firm derives market power from horizontal product differentiation, market share might be a poor indication of market power.

¹⁰ An increase in vertical differentiation can be thought of as P getting the award for the best restaurant and additional recognition by the City Government.

¹¹ Keeping horizontal product differentiation and market structure constant.

¹² Keeping horizontal and vertical product differentiation constant.

¹³ An increase in market concentration can be thought of as the shutting down of one of the restaurants.

3.18 In the next sections, we discuss the relationship between market power and social welfare in certain select markets. The objective of our review is to understand scenarios in which market power and social welfare might not have a strictly direct relationship.

4. Market Power and Welfare in the Banking Industry

4.1 There is an existing academic debate on the impact of market power on the stability of banks. The argument for the positive relationship between market power and stability is as follows:

- (1) Increased competition squeezes profit margins, leading banks to take excessive risks while sanctioning loans: this causes a deterioration of the loan portfolio and an increase in bank fragility;
- (2) increased competition for deposits also lowers profitability and destroys franchise value: this increases the moral hazard problem because of the likelihood of a government bailout;¹⁴
- (3) therefore, increased competition and lack of market power can lead to instability in the banking system.

4.2 Keeley (1990) shows that intense competition causes increased probability of bank failure.¹⁵ On the other side of the debate are Boyd and De Nicoló (2005), who show that less competitive markets are more likely to have unstable banks.

4.3 Berger et al (2009) point to the problems associated with studies conducted using indirect measures of market power, such as market concentration and H-statistic. Therefore, the results of some of the studies¹⁶ that show a negative relationship between market power and stability are not particularly reliable.¹⁷

¹⁴ Berger et al (2009) pp4 and 5.

¹⁵ As given in Ariss (2010), p2(pdf).

¹⁶ For example, Boyd et al. (2006); Claessens and Laeven 2004; Schaeck et al. 2006; Molyneux and Nguyen-Linh 2008

¹⁷ As given in Berger et al (2009), pp3 and 5.

- 4.4** In contrast, Ariss (2010) uses the Lerner Index to estimate this relationship. He uses data from 821 banks in 60 developing countries, over the period 1999-2005, and finds a positive relationship between market power and overall firm stability.¹⁸ The author estimates two models¹⁹ and finds a positive relationship between market power and stability of the bank in both.
- 4.5** Although Ariss (2010) does not settle the debate on the positive effects of market power in the banking industry, it provides good evidence in support of such phenomena in developing countries.
- 4.6** Therefore, in so far as the stability of the banking sector generates welfare gains for consumers, the likely relationship between market power and firm stability should be taken into account in antitrust assessments. This could justify higher thresholds of market power for merger assessments and in the banking industry.

5. Market Power and Welfare in the Healthcare Industry

Specificity of the Healthcare market

- 5.1** While it is true that none of the real world markets satisfy the perfect competition assumptions, there are some markets that depart from such assumptions more markedly than others. Healthcare is one such market.
- 5.2** In this section, we discuss some of the key features that differentiate healthcare from other markets.

Agency problem

- 5.3** Healthcare suppliers provide consultancy and advice in addition to healthcare treatments: the customer relies on the provider's advice to choose a treatment. Because of the specialised knowledge involved, the customer can neither choose the treatment herself, nor judge whether the treatment prescribed is appropriate. In most cases, the same provider then goes on to provide the treatment.

¹⁸ Ariss (2010), p10(pdf).

¹⁹ The two models use two different specifications of the Lerner index, the efficiency-adjusted Lerner and a funding-adjusted Lerner. This was done to control for endogeneity as market power can be affected by both, the efficiency as well as the size of the bank.

- 5.4** Providers, therefore, have an incentive to provide the most profitable treatment, even if an equally effective but less expensive treatment exists. This phenomenon, called induced demand, is characteristic of the healthcare industry and has implications for consumer welfare, because suppliers exercise control over both the price paid and the quantity consumed (through induced demand).
- 5.5** Therefore, while measures of market power will capture the welfare impact of a high price, they cannot account for the negative welfare implications of induced demand.
- 5.6** In fact, considering market power only may lead to misleading conclusions. For example, it is possible for a profit-maximising healthcare supplier to have a relatively high price, low induced demand and a high market share. The customers of such a supplier get the inexpensive (but effective) treatment at a relatively high price but are less likely to be steered towards even more expensive treatments.
- 5.7** If we were to compare this supplier with one who charges lower prices but has a high level of induced demand, we would conclude the former to have a high market power and to be dominant. This is because, at the outset, the former has a higher market share and commands a price premium. The induced demand, which is an unobservable, is difficult to take into account in antitrust investigations. Further, the welfare impact of the pricing strategy of the high price supplier might be the same or less than that of the low price supplier because of the latter's higher induced demand.
- 5.8** This indicates that high market shares and high prices might not necessarily lead to a loss of welfare in the healthcare market.

Moral Hazard

- 5.9** Illness is an uncertain event and the consumer has to pay potentially prohibitive costs on its occurrence. As a result, insurance is very common in the healthcare industry. Insured consumers pay only a part of the cost and do not face the marginal cost associated with the treatment. This makes them consume excessive amounts. Insurance also decreases their incentive to search for the best price for the provision of the treatment.

5.10 Studies have shown that total welfare in the healthcare market increases if providers raise the price of healthcare products and services.²⁰ The intuition for this phenomenon is clear: an increase in the price of healthcare leads to an increase in insurance premiums and deductibles charged to consumers. This induces consumers to consume less at the margin. Although this potentially increases the welfare of insurers and providers, it is bound to reduce the welfare of the final consumer. This result is relevant for antitrust investigations using the total welfare standard.

Adverse selection

5.11 This occurs in the healthcare insurance markets because of consumers being of different risk types and these types being unknown to the insurance companies. This poses a problem for insurance companies, who attract more high risk consumers irrespective of the price they charge.

5.12 Studies have found that an optimal solution where both the high risk and low risk individuals choose the same insurance contract ('Pooling Equilibrium') does not exist.²¹ Academic literature also suggests that an equilibrium where the two types of individuals choose different insurance contracts ('Separating Equilibrium')²² can have similar welfare effects under both perfect competition and monopoly settings.²³ This implies that the total welfare of the stakeholders in the healthcare market might be the same under perfect competition and monopoly.

5.13 Therefore, a high market power in the healthcare insurance market does not necessarily lead to a loss of total social welfare. This result is relevant for investigations which use the total welfare standard.

²⁰ Crew (1969) and Gaynor, Haas-Wilson, and Vogt (forthcoming) [as mentioned in Gaynor (2000), p1413.

²¹ Rothschild and Stiglitz (1976) and Stiglitz (1977) [As given in Gaynor (2000), pp1414 and 1415].

²² Under the Separating Equilibrium, the high risk individuals purchase full insurance while the low risk individuals obtain partial or no insurance (Source: Gaynor (2000), p1415)

²³ Gaynor (2000), p1415.

Summary

5.14 The three phenomena above show that high market shares in certain segments of the healthcare industry might not be welfare reducing. In the presence of non-price variables such as induced demand, the negative welfare impact of the pricing strategy of small firms might be higher than that of large firms. Further, high market power does not result in negative total welfare effects because of moral hazard and adverse selection. Therefore, due consideration should be given to the welfare impact of pricing strategies as well as the relationship between market power and welfare while analysing competition in healthcare markets.

6. Market Power and Welfare in Network Industries

Introduction

6.1 Gottinger (2003) defines network industries as “*..those where the firm or its product consists of many interconnected nodes, where a node is a unit of the firm or its product, and where the connections among the nodes define the character of commerce in the industry.*”

6.2 According to Oz Shy (2001), network industries are characterised by the following features: (1) complementarity, compatibility and standards; (2) consumption externalities; (3) switching costs; and (4) economies of scale.

6.3 Examples of network industries include telecommunications, railroads, postal service and two-sided markets such as stock exchanges, e-commerce platforms, etc.

6.4 In the sub-sections that follow, we discuss some of the salient features of network industries and how these features will affect any competition assessment in the relevant markets.

Sub-optimal outcomes under competition

6.5 The major distinguishing factor of network industries is the ‘positive demand externality’. It refers to the benefits that an existing customer of a network derives from another customer joining the network: the utility of any individual customer increases as the network becomes larger, keeping everything else constant, implying that larger networks are socially optimal.

- 6.6** Competition in network industries leads to smaller networks, which are not socially optimal. Since network industries involve high fixed costs and decreasing marginal costs, the smaller networks will have higher marginal costs. This will lead to higher prices and under provision of the good. However, it is pertinent to note that not all network industries have positive demand externalities; negative demand externalities for example arise when the networks approach full capacity (for example, an increase in the number of electricity connections through the same sub-station might lower the quality of electricity being supplied).²⁴
- 6.7** The size of a company in a network industry would therefore depend on the degree of positive demand externality, among other things. An industry with significant network effects is bound to have at least one large firm. This large firm could have significant market power as measured by market share. However, the negative welfare effects of such market power will be severely limited by the lower marginal costs and the network benefits accruing to the customers of such a firm.
- 6.8** Therefore, network industries are likely to be more concentrated than non-network industries. The preceding conclusion has important implications for antitrust assessment: the relevant “but-for” benchmark for comparing anti-competitive conduct should not be perfect competition but a reasonably concentrated market. Network industries will never be perfectly competitive markets. Further, there is a need to take into account the welfare benefits accruing from a larger network while assessing mergers or dominance in a network industry.

Two-sided markets

- 6.9** Two-sided or platform markets are very common in the presence of network effects. In such cases, the network operators (firms) can make money from both sides of the market and employ complex pricing strategies to maximise profits.
- 6.10** These complex pricing strategies can include charging lower than average cost or having a high price mark-up (and market share) on one side of the market. For example, online media giants such as Facebook and Google do not charge users for accessing their content. However, they charge the firms that want to advertise on their network. Therefore, looking only at one side of the market can lead to misleading conclusions.

²⁴ Gottinger (2003), p10.

- 6.11** For instance, we can conclude that Facebook is engaging in predatory pricing in the market for social media content if we only look at the consumer side of the market. However, Facebook's decision to not charge the final users is rooted in the different price elasticities on the two sides of the network and its objective of maximising the value of its network. In short, its complex pricing strategy is a result of the positive externality between the two groups of buyers of its services: the consumers and the advertisers.
- 6.12** Tremblay (2017) finds that excluding one side of the market from a merger simulation results in an upward bias in the post-merger price. This will lead us to incorrectly conclude that a merger causes AAEC, when in reality it might not. Therefore, it is important to consider both sides of the market during any competition assessment. Since the traditional measures developed for one-sided markets lead to misleading conclusions, there is a need to develop and use new tools for competition assessment in two-sided markets.²⁵

Buyer power

- 6.13** According to Economides (2008), in platform markets, large customers make the network attractive to other small players because of the significant network benefits that accrue from their presence. For example, large traders and arbitrageurs provide liquidity to stock trading platforms, which in turn attracts retail investors to trade on the platform. Liquidity on trading platforms ensures that traders find counterparties for their transactions and keeps the platform stable. Therefore, liquidity providers exercise a degree of bargaining power over the trading platform operator, as their departure can make the platform unstable.
- 6.14** The platform owners realise the importance of these large customers and charge them low service fee or other compensation to incentivise them to stay on the network. This result has implications for market power assessment as it implies that larger customers in platform markets have more buyer power than in other markets. The aforementioned buyer power, wherever it exists, can counteract the market power of a relatively large firm. While this phenomenon might not exist across all network industries, it is certainly an important factor to take into account while assessing market power.

²⁵ Some of these tools have been covered in *Measuring Market Power in Multi-sided Markets - Note by Kate Collyer, Hugh Mullan and Natalie Timan*, Organisation for Economic Co-operation and Development.

7. Conclusion

- 7.1** Our primary finding is that the negative welfare impact associated with high market power does not always hold up. There are many reasons for this. For example, price competition is less intense in differentiated product markets because of the presence of quality differentiation and heterogeneous consumer preferences. However, prices above marginal-cost are necessary in such industries in order to support innovation and ensure the satisfaction of consumers in the long-run. Similarly, higher market concentration in network industries is socially optimal and leads to higher consumer welfare, as discussed in Section 6.
- 7.2** There are also instances in which high market power can be justified on grounds of total social welfare. This is particularly true for the healthcare industry, as discussed in Section 5. Further, market power has positive dynamic efficiency effects in the banking industry, as discussed in Section 4.
- 7.3** These instances show that care should be exercised while assessing the negative welfare effects associated with market power. Further, welfare effects resulting from factors other than price should also be given attention. In differentiated product markets, these result from innovative products, which cater to heterogeneous consumer preferences. Positive welfare effects also result from increased stability of the system in the banking industry.
- 7.4** The context-specific nature of the welfare effects associated with a conduct or a merger indicates that a standard approach to competition assessment might not work in all instances. Therefore, there is a need to adapt the current approach for greater emphasis on welfare effects and for taking context-specific factors into account.
- 7.5** Our other finding relates to the use of market share for assessing market power. The analysis of the theoretical relationship between the two strengthens the argument against solely relying on market share for the assessment of market power. We also identify markets and instances where market share is most likely to lead to misleading conclusions about market power and welfare effects.

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