ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Bachelor Thesis (IBEB)

To What Extent Do Horizontal Mergers Impact Consumer Welfare in Oligopolistic Markets?

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Abstract

This paper discusses the effects of horizontal mergers in oligopolistic markets on consumer welfare. Various forms of competition such as Bertrand pricing competition and Cournot quantity competition are thoroughly discussed with examples from different industries and market features. Nonetheless, some studies overestimate the negative effect on consumer welfare by overlooking certain other forms in which consumer welfare increases such as innovation and R&D. Various influencers of consumer welfare such as product price, total output, product quality, product variety, innovation and technological development are discussed thoroughly.

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1. Introduction

It is a well-known fact that for a well-functioning economy, markets need to be significantly competitive. In such markets, producers maximize their profits by selling their goods or services at a price which is nearly equal to their marginal costs. This is also beneficial for consumers since they get to enjoy these products almost at its cost-price, probably the cheapest it can get. In contrast, if markets are less competitive, i.e. only have a few firms producing the same or nearly same product, producers can maximize profits by charging an enjoyable markup over the costs of production, leaving consumers to pay the inflated prices.

Firms may want to horizontally merge for various possible reasons, such as synergy gains, gains from more private information, and wealth transfers from customers (Trautwein, 1990). However, this does not always have positive consequences for consumers. Recent studies have shown that globally, firms charge a much higher profit margin on their products than a few decades back, which suggests markets are becoming less competitive and market power is increasing for only some. Loecker et al. (2020) discovered that consumer welfare has fallen drastically between the years 1980-2016 globally. Firms have exploited consumers by increasing their markups, on average, from a mere 10% of costs in the 1980s to almost 60% by 2016. This gives insight into the fact that Antitrust may not be fulfilling its purpose since effect on consumers is the priority.

Different market structures have different consequences of horizontal mergers on consumer welfare. The most common market structures include Monopolies, Oligopolies, Duopolies and Perfect Competition. In Monopolies, there is only one firm in markets, making it impossible to have a horizontal merger. Within Duopolies, a horizontal merger would mean that the two firms in a market combine forces and form one organization, which would lead to a monopoly in the market post-merger. Following Salant et al. (1983), a merger in a duopolistic market which forms into a monopoly is not beneficial for consumers. Of course, this is because of high market power. The remaining number of firms after a merger in a Perfectly Competitive market will still be very large and hence it would not have any welfare effects on consumers since prices will still be at the marginal cost level of firms (in theory). Hence, this paper studies both positive and negative, short term and long term consequences of mergers

on consumers' welfare. In particular, it aims at answering the following research question:

To what extent do Horizontal Mergers impact Consumer Welfare in Oligopolistic markets?

To do so, this paper employs a review of the literature studying the role of several characteristics of oligopolistic markets on the impact that horizontal mergers have on consumer welfare. I review both theoretical and empirical papers from economists in the past. Various characteristics and features of oligopolistic markets which may change the impact on consumer welfare of horizontal mergers in the respective markets are introduced. Moreover, there are some papers discussed that explore more long-term effects on consumer welfare of large merged firms investing in R&D and innovation. Furthermore, there is insight into how accurate these theoretical models and their predictions of welfare effects are in the real-world from empirical studies conducted in oligopolistic markets like the airline industry.

This paper explores horizontal mergers, which take place between competitors (Motta, 2009), and can hence have a big impact post-merger on its own welfare, but also on that of consumers. Clearly, horizontal mergers have consequences on competition in their respective industries, as there are fewer firms competing with each other post-merger. Therefore, governments usually intervene in the form of Competition Authorities. Competition Authorities are government agencies that enforce and regulate competition laws (Antitrust) and enforce consumer protection laws. Such authorities have the power to allow or reject merger proposals by firms. The 'Horizontal Merger Guidelines' given by the Federal Trade Commission (FTC) in the US clearly states that the goal of merger policy is to promote "consumer welfare" by protecting consumers from reduced output or high prices, and by ensuring product variety, product quality and innovation to be growing (Hovenkamp and Shapiro, 1996).

Hence, this paper is important since it looks at the horizontal merger topic from the perspective of consumers and not just from a social welfare perspective, which seems to have mostly been the case so far. Moreover, the conservative approach has been

to only look at the direct effects in for instance prices or quantities in markets after horizontal mergers. This paper also discusses indirect, immeasurable and positive long-term effects of horizontal mergers on consumer welfare.

The next section gives insight into the methodology used to select the papers and theoretical literature included in this paper. Following the methodology, some key concepts are introduced which are fundamental for this paper. Next, the theoretical frameworks are discussed followed by evidence from empirical studies. Lastly, there are some concluding remarks towards the end of this paper.

2. Methodology

Since we are interested in finding the effects of horizontal mergers on consumer welfare, we need to know what the positive and negative influencers of consumer welfare are. After some research into the general concept of consumer welfare from some economic journals, it was clear that consumer welfare increases with increasing output, product quality, product variety, innovation and decreasing prices. Hence, the methodology used to find answers to the research question was by focusing on these influencers of consumer welfare in markets with horizontal mergers. Key words used to search these literatures include ‘Consumer Welfare’, ‘Oligopoly’, ‘Horizontal Mergers’, ‘Mergers and Innovation’, ‘Long-term Consumer Welfare’ among others. Moreover, forward reference searching was used to gather insights from previously published articles which were the base of the articles used in this paper. Some of the authors of the researches cited in this paper are prize-winning economists and have published numerous articles in journals and more. Selection for the empirical papers was done based on which industry the study was conducted in since we are only interested in oligopolistic markets. Furthermore, most of the articles used have been cited abundantly in the past, increasing their reliability.

3. Key Concepts

3.1 Mergers

A merger occurs when two entities decide to pool resources and create one larger entity. This research focuses on 'Horizontal Mergers', which can be defined as a merger between two competitors (from the same industry and at the same stage of production) in a market (Motta, 2009). The objective of a merger for both entities is simple: be more profitable than the combined profits of each entity pre-merger. This can be achieved through advantages such as synergy gains, high market power and asymmetric information due to increased private information (Trautwein, 1990).

3.2 Oligopoly

An oligopolistic market structure refers to a situation in which a small number of organizations have control of an industry (Cambridge Dictionary, n.d.). Typically in an oligopolistic market, there are barriers to entry which is why there are only few firms in the whole industry. Another characteristic of an oligopolistic firm is the powerful instrument of 'Advertising' (Kumar, 2020). In a perfectly competitive industry, advertising is unnecessary. However, in an oligopoly, advertising can play a significant role, for instance a firm failing to keep up with the advertising budget of its competitors may find its customers drifting off to rival products (Baumol, 1958). Moreover, an oligopolistic firm may realise abnormal profits, which could be any positive (or negative) value. Often, oligopolistic firms in an industry try to collude in order to realise high market power and exploit consumers. Of course, such behaviour is illegal and is closely monitored by competition authorities. In those cases, consumer welfare, clearly, falls due to firms setting inflated prices together leaving no choice for consumers. Hence, in this paper, we will only focus on the impact on consumer welfare of non-collusive oligopolies.

One way to distinguish markets is the way firms compete within a market. From the perspective of microeconomics, the two main models of competition in oligopolistic markets are Bertrand pricing competition and Cournot quantity competition (Frank, 2010):

Bertrand Pricing Competition

The price of a product is the key variable in a Bertrand competition model. This implies that competing firms within the industry set a particular price based on which they produce the respective profit-maximizing quantity.

Cournot Quantity Competition

In Cournot competition, quantity is the key variable around which decisions are made in the market. In such a situation, competing firms decide to produce their profit-maximizing quantity instead of their profit-maximizing level of price (Cournot, 1838).

In oligopolistic markets, it is common to see both types of competition models depending on the product, geographical location, or other factors. Hence, we will discuss impacts on consumer welfare of mergers in settings of both competition models.

3.3 Welfare

In the simplest terms, welfare can be defined as 'the health, happiness and fortunes of a person' (Oxford Dictionary, n.d.). Hence, Consumer Welfare can be considered as the satisfaction gained by consuming a good or service for a consumer. As mentioned before, Competition Policy exists to ensure that consumers are not exploited by high market-power of firms and hence protects consumer welfare; whereas market power refers to the ability of firms to set prices above marginal costs. However, it does not necessarily mean that increasing competition in markets by having more firms is ideal. In his book, Motta (2009) mentions that "Competition policy is not concerned with maximizing the number of firms. Competition policy is concerned with defending market competition to increase welfare, not defending competitors".

High market power of profit-maximizing firms can be dangerous for consumers due to inflated prices or lower overall output leading to a decrease in overall consumer welfare. Consumer welfare decreases due to higher prices or lower overall output because there is a fall in the satisfaction of these consumers due to having to give up more, or have higher opportunity costs for having the same product which either used to be cheaper or available in abundance. However, market power may not always be

harmful for society. Some advantages of high market power include investment in research and development (R&D) which encourages economic growth, only being possible for firms that have high profits due to the high levels of investments needed. If firms did not have high market power, consumers would be worse-off in the long run, for example by not having new types of products (like mobile phones which were not even imagined of in the late 1900s). Hence, competition policy is not meant to permanently ban firms with high market power. As long as performance is based on legitimate business practices, it should be allowed (Motta, 2009).

In this paper, consumer welfare increases if prices fall, if total output in the industry increases, if product quality improves, if society has an effect which indirectly benefits consumers (such as an increase in ecological resources), or if innovation and investment into research and development (R&D) is increased.

4. Theoretical Framework

This section reviews the implications of horizontal mergers for consumer welfare under several different theoretical frameworks. First, I compare the differences between firms that compete in quantities (Cournot setting) and firms that compete in prices (Bertrand setting). Further, I discuss key factors that in the long-term may increase consumer welfare following a horizontal merger.

4.1. Competition: Price vs. Quantity

Most of the previous research into this topic has been done with the assumption that the market players are in a Cournot setting, and hence compete in quantities. However, Deneckre and Davidson (1985) argued that 'price' was a "much more natural strategic variable than output". They argued that the reaction functions of the non-merging firms in the industry is 'upward-sloping'. This means that the initial price increase of the merged firm will lead to an increase in the prices of its competitors until a new equilibrium has been reached where all prices have risen and all firms are better-off. So, when price is the strategic variable, 'mergers of any size are profitable' and 'large mergers yield higher profits than small ones'. Interestingly, the results also show that non-members of the merger made higher profits, because of the free-rider

problem where outsiders benefit more from increased concentration than insiders (Deneckre and Davidson, 1985). The increased profits for all firms is paid from the pockets of consumers, since consumers are the ones paying the higher price after a merger takes place, leading to a decrease in overall consumer welfare.

Stigler (1950) argued that non-participants in a merger may benefit more than the participants of the merger. This is because after a merger occurs, the new (larger) firm will decrease its produced output. As a result, industry prices will rise and non-participants of the merger will increase output and hence profits (Stigler, 1950). However, some assumptions in this model such as holding average marginal costs constant are not very realistic since not all firms have identical cost curves in most oligopolistic markets. Williamson (1968) argued that if mergers produce significant price and efficiency consequences, and if it is challenging for this to be achieved without a merger, then the merger should be allowed since the efficiency gains are significant. Moreover, the Williamson Trade-off revolves around the fact that a small decrease in costs of production could lead to a much higher increase in consumer welfare.

In contrast to a Bertrand model, in which firms compete in prices, in a Cournot model with homogenous goods, a merger does not necessarily lead to an increase in producer welfare for the merged firm. Salant et al. (1983) examined the incentive to merge in a 'symmetric Cournot' model with demand being linear, and identical average costs for each firm in the market. Their research concluded that a horizontal merger in a Cournot setting is only beneficial to the merged firm if the combined market share is above 80% post-merger. However, the assumptions considered for this study are questionable and can influence the results found. It is very unlikely to have demand perfectly linear and for firms to have identical cost functions. Moreover, they also assume that firms do not have any 'incentive to merge'. Product differentiation is another feature which can reverse decreasing producer welfare, an effect usually seen in oligopolistic markets after a merger (Deneckere and Davidson, 1983). This occurs because consumers are loyal to the firms they purchase their products from for various possible reasons such as brand value or packaging, and hence continue to purchase their products in spite of a price-increase. In this case, the merged firm continues to produce the same quantity as the sum of both individual firms pre-merger in order to satisfy demand. However, in essence, a market with firms that have product

differentiation would be closer to the monopolistic competition market structure than to an oligopoly. Perry and Porter (1985) conducted a research similar to that of Salant et al. However, they did not underestimate the 'incentive to merge' for firms. Interestingly, their results showed that a price increase in the market is beneficial for all firms and not just the non-participants. This is because the output reduction by the merged firm is "not as severe as in the Salant, Switzer and Reynolds model". Moreover, they concluded that the incentive to merge depends on various factors such as demand and cost parameters which cannot be accounted for theoretically.

Farrell and Shapiro (1990) demonstrated that mergers in markets with Cournot competition cause prices to rise unless sufficient synergies are realised; for instance if the merged firm produces a certain level of output cheaper than the combined costs for the two firms independently to produce the same output pre-merger. Without the synergies, the merged firm chooses to produce a level of output below the sum of outputs produced by the two participant firms pre-merger, which drives competitors in the industry to increase their output. The net effect is an increase in prices with a small decrease in total output. Hence, instead of a positive effect on consumer surplus after the merger, there is a significant negative effect. The two main drivers of the consumer welfare decrease are increasing prices as well as decreasing output. This is in line with the concept of the 'merger paradox', which can be defined as a situation where post-merger profitability of the merged firm is harmed due to increased competition by non-participants of the merger (Sawler, 2005). In their research, Farrell and Shapiro (1990) mathematically explained how horizontal mergers in oligopolistic markets lead to an increase in total (social) welfare. However, consumer welfare does not increase. In fact, they have shown that at the cost of consumers, the outsiders[1] of a merger realise an increase in welfare, which in total is higher than the total decrease in consumer welfare, resulting in an overall net increase of total welfare. Moreover, the loss of consumer welfare is a combination of a decrease in industry output as well as an increase in prices. Prices increase in the short run while output is gradually reduced and is realised in the long run. They have also mentioned that these effects can differ given some features specific to the market, for instance depending on cost and revenue functions. In case a merger creates a certain level of economies of scale, it could lead to a drop in prices for consumers which can then change the net effect of

[1] The non-participant firms in a market with mergers (Farrell and Shapiro, 1990)

the merger on consumer welfare from negative to a positive figure. For instance, with a market share of 20% and unit-elastic[2] demand in the market, prices would be reduced if the merged firm produces 2.4 times the output than it did pre-merger. Another feature which could change the effects of mergers on consumer welfare is if the mergers lead to an increase in 'learning'. This means that the merger should "enhance efficiency at some or all of the merging facilities". For instance, if the market shares of each merging firm pre-merger is 20% and assuming unit-elasticity in the market, at least one of the production facilities post-merger should realise at least a 25% reduction in costs in order for prices to fall.

The effect of horizontal mergers could also depend on how large the merging firms are pre-merger and what position they are at in the specific market. Levin (1990) found that horizontal mergers which start with less than 50% pre-merger market share lead to an increase in welfare due to increased efficiency gains. In line with Levin's result, Cheung (1992) also shows that the 50% mark is "indeed special" since it is the minimum market share possible to ensure no firms can exploit their market power through horizontal mergers. However, it is then up to the firm to decide whether to share the gains with consumers or to maximize their profits.

There have also been some arguments that mergers in markets where firms' costs are private information can have positive welfare effects for consumers. Stennek (2003) argues that due to incomplete information in markets, firms cannot anticipate the output produced by rival firms; an assumption taken for granted in the Cournot model. For instance, if a firm has high marginal costs, the optimal output would be relatively lower than a firm with lower marginal costs. When this information is complete, "the competitors anticipate this and expand their output". Hence, a merger would lead to more information available in the market and the merged firm can benefit from "pooling of information" to realise efficiency gains high enough to offer a lower price so that consumers can benefit.

Werden and Froeb (2005) studied the unilateral competitive effects of horizontal mergers in oligopolistic industries and found that a merger in an industry with Bertrand competition, two competitors and some degree of product differentiation will still result in a "unilateral" increase in prices, even if it is a small amount. This is because the

[2] Unit elastic: Elasticity = 1

merged firm anticipates an increase in demand to which it responds by increasing prices. Based on the Bertrand model, non-participating firms in the merger react to this by increasing their prices too. Overall, this boosts producer welfare but leads to a fall in consumer welfare.

4.2. Long-Term Effects on Consumer Welfare

As previously mentioned, several factors can lead to an increase in consumer welfare after a horizontal merger occurs in the context of oligopolistic markets. Among these are product quality, product variety and innovation. Nonetheless, the literature suggests that realizing the benefits of these factors takes time.

Scherer (1987) aim at understanding how antitrust affects the level of economic efficiency from the perspective of dynamic efficiency and technological progress. He suggested that it is necessary to focus on allocative efficiency as well as dynamic efficiency, even though it is complex and cannot precisely be pinned down. He claimed that from past evidence, 'giant monopolistic enterprises are not superior engines of technological progress'. Moreover, he argued that there is hardly any evidence suggesting adverse effects of antitrust on technological innovation.

Product variety can also be an important influence for consumer surplus since it could increase the likelihood of consumers finding a good or service in line with their preferences by having relatively more options to choose from. However, a horizontal merger may reduce the chances of increasing product variety for consumers. A study by Inderst et al. (2007) which analysed the impact of retail mergers on product variety suggested that following a merger, the merged firm would choose only one supplier, in contrast to their own individual suppliers pre-merger. Anticipating this concentration in the market, suppliers will strategically choose to produce products which are less differentiated leading to an overall decrease in product variety. They conclude that this decrease in product variety reduces consumer surplus. However, if a horizontal merger leads to synergies with product development or R&D into product innovation, this may lead to an increase in product variety causing an increase in consumer welfare.

A study by Brekke et al. (2017), which focused on horizontal mergers and product quality, found results which suggested that merging firms reduce the quality of their product, whereas competitors in the market increase the quality of their products. Prices also increase in a similar way as the Cournot settings discussed in the previous section. Hence, average prices increase in the market but so does the average product quality. They further found that a merger always reduces consumer welfare. However, total (social) welfare may increase due to significant cost savings driven by declining product quality.

Consumer surplus also increases with increased innovation such as by investments into Research and Development (R&D). Motta and Tarantino (2017) studied the effect of horizontal mergers when firms compete in prices and investments. The results they found concluded that without efficiency gains, mergers lower total investments which in turn leads to a fall in consumer surplus. However, they suggest that sufficient efficiency gains can be achieved through Network-Sharing Agreements; which can be defined as agreements between two or more companies where they share different elements of a network infrastructure while independently behaving at the retail level. They argue that such an agreement is “superior to the merger from the welfare point of view”; only if the participants of the merger can prove that these gains cannot be achieved without the “anti-competitive agreement”.

A study by Federico et al. (2017) on horizontal mergers and product innovation in oligopolistic markets showed that mergers lead to lower incentives to innovate for the merged entity, without cost efficiencies and knowledge spillovers. Hence, results hint that innovation and hence overall consumer welfare significantly declines after a horizontal merger.

We have seen in this section that there are many ways in which consumer welfare can be impacted positively in the long-run after mergers in oligopolistic markets if firms take the right decisions. If merging firms are not selfish and have the interests of consumers in their decision making, methods like product quality, product variety and innovation can help transform consumer welfare in the long-run. However, since firms are usually profit-driven, they take decisions post-mergers which only and only help increase their private goals and does not account for all the externalities caused to the rest of society such as consumers.

5. Empirical Evidence

Prager and Hannan (1998) conducted a study to evaluate the effects of horizontal mergers in the banking industry. To evaluate the effects, they used deposit rates as the main measure. They used data from the Federal Reserve's Monthly Survey of Selected Deposits for the deposit rates, and this consisted of data from between 500-550 banks all over the US. The data collected is from between the periods October 1991 and August 1994. Moreover, they only examined all bank mergers that occurred between January 1992 and June 1994 to ensure a two-month period in the dataset of pre-merger price changes. They found that deposit rates in the markets with substantial horizontal mergers declined by a greater amount than deposit rates in markets without horizontal mergers. This shows that even in oligopolistic industries where government intervention is substantial, horizontal mergers create efficiency gains which are not shared with consumers; instead they exploit their high(er) market power by making consumers worse off.

The airline industry is a great example of oligopolistic markets. This is because there are only a few firms in the market, each provide a homogenous good, i.e. a seat on their airplane to go from destination A to destination B, and there are significant barriers to entry in the market due to the high investment amount required to start an airline company. Kim and Singal (1993) compare changes in the prices of airplane tickets on routes affected by mergers with those that were not affected. Their data is obtained from 14 airline mergers that took place between the years 1985-1988. This includes 21,351 sets of data based on which the research was conducted. They found that "over the period from merger talks through merger completion, the merging firms increased air fares by 9.44% on average relative to other routes unaffected by mergers". This, yet again, shows that profit maximizing firms, even after merging and realising efficiency gains, are not concerned with the welfare of their consumers.

Froeb et al. (2002) conducted a research on mergers among parking-lot firms in an oligopolistic market that competes in prices (Bertrand). They used data from the 1999 merger between the two biggest parking companies in the US: Central Parking and Allright. They measure consumer surplus based on the changes in prices and availability of parking spots for consumers. Results showed that the merger leads to a welfare loss for consumers due to increases in prices of parking spots as well as

shortages of parking spaces post-merger. Even though non-merging firms still have lower prices than the new merged firm, consumers would choose to pay a higher price because of the shortage of supply of parking lots in areas where they usually park. This shortage of availability (of parking lots in this case) is a feature of oligopolies which forces consumers to have no choice but to either stop using the product or to pay a higher price.

Aghion et al. (2005) investigate the relationship between market competition and innovation. Their research was conducted based on data gathered from UK companies during the period 1968-1997. Overall, their data consisted of 461 firms for the same period. To measure innovation, they use information on patents taken out by UK firms in the US patent office, which is internationally used for patents. They find that there is an inverted U-shaped relationship between market competition and innovations. Hence, this suggests that in relatively competitive markets, innovation is less likely to occur and hence consumers may be worse off in the long-run.

With empirical evidence, we still see a similar trend among firms as we did with the theoretical literature: firms only maximize their profits even if they lead to major negative consequences for consumer welfare. The airline industry, which consists of thousands of travellers every year, showed that firms increase prices right after a merger to exploit their market power. Similarly, banks, which are also responsible for the deposits and savings of an ample amount of consumers, decreased the interest rates they pay to their depositors (customers) after horizontal mergers to exploit their market power leading to a loss for consumers and consumer welfare. Hence, there needs to be more regulation from the public sector, either directly by legislation against such behaviour, or by promoting the concepts of sustainability and equality where firms' own strategic decisions will account for its environmental and social impact instead of only maximizing private benefits like profits.

6. Conclusion

Various forms of mergers in different types of oligopolistic markets were discussed throughout this paper. Overall, in most horizontal merger situations, it is clear that consumer welfare decreases. When a merger takes place in an industry in which firms

compete in prices (Bertrand competition), the prices by all firms would increase due to the upward-sloping reaction functions of non-participants. In Cournot settings, i.e. when firms compete in quantities, the consequences of mergers on consumer welfare are mixed. On the one hand, some show that only the non-participants of the merger benefit from it or that both participants and non-participants benefit. On the other hand, others argue that consumer welfare increases as a result of a merger. Several factors may explain this, such as the demand and cost functions in markets, price elasticity of demand and supply, whether there exists product differentiation in the market, if government intervention is involved and if it is, then to what extent is the government intervention influencing consumer welfare, among others. Furthermore, product quality, product variety and innovation were recognized as influencers of consumer welfare. In Cournot settings, a horizontal merger would increase average prices, however it would also increase the quality of products provided by non-participants of the merger.

Moreover, we also observed that there may be several factors which may influence consumer welfare in the long-run, such as product quality, product variety and innovation. Such factors have the potential to transform consumer welfare, however it really depends on the strategic decisions taken by firms after mergers. The empirical evidence also hinted at the fact that firms prioritize their own goals which is usually maximizing profits. Oligopolistic industry examples such as from the airline industry, banking industry, and parking-lot industry suggested that after mergers took place in their respective industries, firms increased prices (or reduced interest payments in the case of the banking industry) almost immediately after and consumer surplus suffered as an effect.

Most of the literature reviewed suggests that following a horizontal merger, there is a net loss in consumer welfare, however there an overall increase in total (social) welfare. This suggests that at the cost of consumers, firms are earning more profits. An interesting suggestion to tackle these losses in consumer welfare for the benefit of efficiency gains for producers is suggested by Sawler (2005): firms should consider forming an alliance instead of a merger where they jointly develop and produce their product to realise efficiency gains; however sell the products independently. This ensures that even though the two firms may cooperate on, for instance, production of

the product; they remain competitors in the marketplace and sell their products independently.

This paper tried to capture all aspects of horizontal mergers in oligopolistic markets to show their effects of consumer welfare. However, there are many assumptions involved in the calculations of the literature discussed to derive their results. In the real world, these assumptions are unlikely to hold. Nonetheless, these results still provide some insight into the topic especially focused on consumer welfare.

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