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Market Power and Consumer Welfare: A Theoretical Analysis of Imperfect Competition

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Abstract. This paper explores the complex relationship between market power and consumer welfare through theoretical and empirical perspectives. Market power, the ability of firms to set prices above marginal cost, has multifaceted implications for economic efficiency and consumer wellbeing. Drawing on established economic theory and recent developments, we analyze how various market structures—from perfect competition to monopoly—affect consumer surplus, pricing mechanisms, and resource allocation. The paper investigates the diverse sources of market power, including market concentration, entry barriers, product differentiation, and information asymmetries, while examining their distinct welfare consequences. We further assess the interplay between static efficiency losses and potential dynamic gains from innovation incentives, incorporating environmental considerations and policy implications. By synthesizing traditional economic frameworks with emerging perspectives on digital markets and environmental externalities, this analysis offers a nuanced understanding of how market power manifests across different contexts and provides insights for designing effective competition policies that enhance consumer welfare while addressing market imperfections.

Keywords: Market power, Consumer welfare, Competition policy, Market structures, Economic efficiency.

1. Introduction

Market power continues to be a fundamental topic in economic theory, with important consequences for the welfare and efficiency of consumers. When firms exercise market power, they can manipulate prices and cause welfare losses to consumers and society [1]. It is a well-known result of economic theory that if firms have market power, they will set prices above marginal cost, which results in allocative inefficiency and deadweight loss. This nexus of market facts, firm conduct, and consumer welfare define industrial organization theory and underpin competition policy in the world. The examination of market power and its implications for consumer welfare is particularly important in the context of growing industry concentration across a range of industries, and new forms of market power in digital markets [2].

This paper discusses the theories of market power, its incarnation in different forms aside from its conceptual version in the various types of market structures, and analyzes the effects on consumer welfare and economic efficiency. Theoretically, the approach draws on known theory as well as

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recent theoretical developments to shed light on how market power affects economic outcomes. The paper also discusses the implications for policy of the findings in this analysis by focusing on the considerations in designing competition policies that would help offset market power's negative effects on consumer welfare. The mechanisms of market power are diverse and present from a variety of compositions such as market concentration, obstacles to market entrance, product differentiation, and informational asymmetries [3]. Each of these sources is associated with different types and extents of market power that have different effects on consumer welfare. For example, even within violations of competition rules, market power due to product differentiation in monopolistically competitive markets should be treated differently in terms of welfare implications relative to market power due to high concentration in oligopolistic markets or due to network effects in digital platforms. These distinctions are important to recognize for the development of relevant policies.

An examination of market power and consumer welfare is highly relevant as industries develop in terms of both market structures and technology. The growth of the digital economy, with network effects, multi-sided platforms, and data-driven business models, gives new challenges to traditional notions of market power and its regulation [4]. At the same time, an increasing emphasis on innovation and dynamic efficiency, who innovates, how, and when, is complicating the story about market power and its effects on welfare. In most markets, a comparison is made between the deadweight loss of static market power and the dynamic efficiency gain from innovation incentives.Recent theoretical work on the economics of price discrimination, market segmentation, and strategic relationships among firms yields new results on the implications of market power for consumer welfare. For example, Bergemann et al. [5] demonstrate that in multi-product markets, strategic market segmentation can be consumer-enhancing even if it offers an opportunity for price discrimination, crucially depending on demand elasticities and cost functions. In the same vein, Chen and Karney [6] depict how market power interacts with environmental policies, analytically revealing the mixed welfare properties under imperfect competition.

Based on the review of these theoretical perspectives and recent developments, the paper aims at reaching a more nuanced interpretation of the relation between market power and consumer welfare. Through exploring differences in the ways market power may arise across various types of market, and its implications for consumer surplus, the paper hopes to deliver potential useful lessons for regulators interested in structuring optimal regulatory regimes for markets with imperfections. The rest of this paper is organized as follows: Section 2 covers the theoretical investigation of market power and consumer welfare and taps industrial organization theory and microeconomics. Section 3 considers alternative market structures and the effect of these structures on consumer welfare. Section 4 offers the policy implications of the theoretical analysis. Section 5 discusses the dynamic dimension of market power, and Section 6 presents the empirical evidence of market power and consumer welfare. Section 7 looks into the environmental issues of market power, and Section 8 yields concluding remarks on the main results and their relevance for further research and policy.

2. Theoretical framework

2.1. Defining market power

Market power has always been conceived as the capacity of an enterprise to maintain prices above competitive levels for a specific time distance [3]. This definition crystallizes the concept of market power as the ability to affect the market outcome, prices in particular, to the advantage of the firm and to the possible detriment of consumers and total social welfare. Market power can be as little as

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none or virtually none in perfectly competitive markets, to a lot in monopolistic and oligopolistic markets. The degree of market power is quantified using the Lerner index, which reflects the extent of price markup over marginal cost of production [7]. In particular, the Lerner index is given by (P - MC)/P, where P is price and MC is marginal cost. If the value is zero, this means that the industry is competitive and there is no market power; values near to 1 command substantial market power.

Monopoly power can have a variety of causes, all contributing to a firm's ability to maintain prices at a level above the competitive norm. Market power is a function of market concentration, which is frequently captured with indices (e.g., the Herfindahl-Hirschman Index, or HHI). Market power can, however, also evolve out of barriers to entry which preclude potential rivals from entering the market and competing with incumbent entities [8]. These barriers may be due to economies of scale, capital requirements, cost based regulation, network effects, and strategic behavior by incumbent firms. Product differentiation is also a key source of market power when producers create products that consumers judge to have unique characteristics that make them unable to use other products (hence switch) [9]. Information asymmetries, in which firms are better informed about product quality, costs, or market conditions than are consumers or potential entrants, can also yield market power [10]. In recent years, new sources of market power have emerged in the digital economy such as network effects, data advantages, and control of major digital platforms and ecosystems [2]. A good grasp of these different forms of market power is crucial for analyzing how they affect consumer welfare and for designing good policy.

2.2. Consumer welfare and market power

Consumer welfare is a fundamental term of economic analysis and relates to the advantage consumers get from the consumption of products and services. That utility is generally measured by consumer surplus, the gap between what a consumer is willing to pay for a good or service and what is actually paid. In perfectly competitive markets (i.e., those with perfect competition, where firms are price takers and prices equal marginal costs), consumer surplus is maximized and allocative efficiency is attained. But when firms with market power can set prices above marginal cost, consumer surplus loss and allocative inefficiency occur.

The equivalence between market power, deadweight loss, and consumer welfare can be formulated symbolically by introducing the concept of deadweight loss (DWL) which measures the inefficiency loss due to the reduction of output toward the socially optimal level [11]. This deadweight loss represents transactions that would add value for consumers and producers but which fail to happen because of the exertion of market power. Algebraically, in a basic monopoly model, deadweight loss is a triangle function of (demand and marginal cost curves) the monopolist's production volume. In addition to static deadweight loss, the welfare effect of market power has far-reaching implications. Dynamic concerns, from innovation and variety effects, further complicate the relationship between market power and consumer welfare. To the extent that market power encourages firms to invest in R&D, it can also lead to innovations that benefit consumers over time. Conversely, market power can dampen competitive incentives to innovate and reduce product diversity if it leads to the exit of small firms from the market [12].

Recent theoretical developments contribute to a better comprehension of the relationship between market power and consumer welfare in different market settings. Bergemann et al. [5] examine how market segmentation influences consumer welfare in multiproduct markets; they also demonstrate that, under some conditions, strategic segmentation can be advantageous to consumers despite the fact that it facilitates price discrimination. They show that the welfare implications depend importantly on demand elasticities, cost structures, and the form of market segmentation. Similarly,

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Ding et al. [13] study the design of markets and how marketplace design in particular can be used to counteract negative effects of the exercise of market power by platforms. Chen and Karney [6] study the interplay between market power and environmental policy, showing how oligopolistic market structures shape the effectiveness and welfare of an array of policy instruments. Their study also shows that environmental policy can be crafted to address output distortion welfare concerns under firm market power, indicating that policies must be sensitive to the market structure within which they are imposed. Babaioff et al. [14] introduce another view of the matter and examine price competition in markets in which full equilibrium is rarely attained, but the competitive price is still the welfare optimal price in this context of an unstable market. These theoretical developments emphasize the difficulty and context-dependency between market power and consumer welfare. They recommend a nuanced approach to the analysis of market power, one that takes account of the relevant market structure, the causes of market power, and the potential dynamic effects on innovation and long-term consumer welfare.

3. Market structures and consumer welfare effects

3.1. Perfect competition and perfect welfare

Perfect competition is the theoretical point of reference according to which consumer welfare can be maximized. In a perfectly competitive market, there are several assumptions: many buyers and sellers, identical goods, no information asymmetry, no externalities, and no barriers to entry and exit [10]. In these circumstances, companies are price-takers facing a demand curve perfectly elastic to the market price. The price is equal to the marginal cost in equilibrium, and it is allocatively efficient —resources are allocated where they are most valuable, and consumer surplus is maximized. This prototypical market is used as a benchmark with respect to welfare analysis when comparing with other markets.

But the ideal of perfect competition hardly ever materializes in practice because of a number of market imperfections. Transaction costs, information asymmetries, positive and negative externalities, and increasing returns to scale (these are by no means mutually exclusive and overlap nicely) may prevent real markets from being perfectly competitive. However, both perfect competition and its welfare properties are useful starting points for examining welfare losses due to other market structures as well as for formulating policies to achieve competitive outcomes where they are appropriate [9].

3.2. Monopoly and consumer welfare loss

At the extreme end of the market structure continuum is the monopoly where a single seller is not faced with any competition. The monopolist confronts the market demand curve and maximizes profit by equating marginal revenue to marginal cost, with a price higher than the marginal cost and output smaller than the social optimal level [15]. This results in a “deadweight loss,” forgone gains from trade that result from firms’ use of market power. Consumer surplus falls short of that of perfect competition, with some of it captured by the monopolist as producer surplus and the other part gone to deadweight loss.

The loss of welfare due to a monopoly is a function of a number of parameters, such as the elasticity of demand, the costs of the monopolist, and the availability of price discrimination. These results notwithstanding, price discrimination has complicated welfare effects, in which the monopolist charges different prices to different consumers by virtue of their valuations of the good.

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Perfect price discrimination can eliminate the deadweight loss (as it has basically gone away when output is expanded) since output is expanded to the competitive level, but the entire consumer surplus is transferred to the monopolist [10]. On the other hand, under imperfect price discrimination, total welfare may be higher or lower compared to uniform pricing, depending on the impact on the composition of consumer types served by the monopolist.

In addition to these static welfare effects, monopoly may also have dynamic efficiency implications through its effect on innovation incentives. According to Schumpeterian reasoning, monopoly profits may act as a source of innovation stimulus in that they may lead to more research and development as they free resources and create demand [12]. But the absence of competitive discipline could diminish its investments in innovation and leave it open to the kind of rent-seeking behavior that monopolists so often exhibit to preserve their position in the market. The overall impact on dynamic efficiency and future consumer welfare will vary depending on the market conditions and the institutional environment.

3.3. Oligopoly and strategic interactions

Oligopoly markets, involving few firms and interdependence among them, makes it more difficult to analyze consumer welfare. The welfare implications of oligopoly depend on whether firms compete in quantity or in price, on the extent of product differentiation, and whether firms can strategically interact [1]. Several models, such as the Cournot, Bertrand, and Stackelberg models, make different predictions on market performance and welfare effects in oligopoly.

Under Cournot quantity competition with homogeneous goods, firms set the quantity they produce, and there is an equilibrium in which price is above marginal cost but below the monopolist price. The higher the number of firms, the closer the market is to perfect competition, with higher consumer welfare [3]. Properly understood, the Bertrand model of price competition over homogeneous products yields marginal cost pricing and social welfare maximization with only two firms. Other things equal, these results depend, of course, on the assumption of capacity constraints and the absence of product differentiation. Ding et al. [13] analyze market competition and show how platform operators induce competition for the benefit of consumers, using a Stackelberg duopoly model. They demonstrate that strategic market design can greatly increase consumer welfare over that under a monopoly when there are only two players. This result illustrates that the welfare impact of oligopoly cannot solely be measured by the amount of firms, but also that the structure of competition and market regulations have a significant impact.

This market process is further complicated by product differentiation in the analysis of oligopoly. When goods are differentiated, firms have some market power even in completely competitive markets, and prices exceed marginal cost [9]. But product differentiation also produces more product variety, which can improve consumer welfare by matching consumer tastes more closely. The net welfare effect depends on the relative importance of higher prices and more variety, and the costs of making products different from each other. Strategic oligopolistic relationships, i.e., tacit collusion or strategic entry deterrence, can complicate welfare analysis as well. Tacit collusion, the situation where firms communicate with each other without any explicit agreements, can result in consumer harm by raising prices compared to prices from a more competitive market and closer to the monopolist level [15]. Entry deterrence, including limit pricing, or capacity expansion, can stop new firms entering the market, and maintain high prices and poor consumer surplus. The stability of these strategic interactions and their welfare properties are influenced by market conditions (for example, concentration, transparency, the frequency of interaction).

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3.4. Monopolistic competition and consumer welfare

Monopolistic competition has features of both monopoly and competition. The market consists of a large number of firms producing differentiated products, is perfectly competitive, and allows free entry and exit in the long run [16]. In the short-run, firms possess some market power stemming from product differentiation and confront downward sloping demand curves, with prices set above their marginal costs. But free entry imposes zero economic profits in the long run, where firms operate at the point of tangency between their average cost and demand curve.

The welfare consequences of monopolistic competition are ambiguous. Prices are above marginal cost on the one hand, which leads to allocative inefficiency, deadweight loss. Conversely, product differentiation raises variety that consumers also appreciate [17]. While firms in monopolistic competition have excess capacity (they produce at an output level less than MES, thus being productively inefficient), the excess capacity is not as pronounced as in pure competition. The welfare effect is ambiguous but depends on whether the enjoyment obtained from variety exceeds the increase in prices and inefficiency among producers. A recent theoretical study by Bergemann et al. [5] provides insights on consumer welfare in models with differentiated goods. They prove that in multi-product markets, sub-optimal market segmentation can in a few cases be advantageous for consumers even in the presence of price discrimination, depending on demand elasticities and cost schedules. This result refines our analysis of the effect of market power on consumer welfare in product differentiation settings, and underscores the relevance of a market-specific perspective in welfare analysis.

4. Policy implications

4.1. Competition policy and antitrust enforcement

The theoretical argument for market power and consumer surplus forms the underpinning of competition policy and antitrust enforcement. These rules are designed to preserve and enhance the conditions of effective competition in the market, dealing both with structural and behavioral aspects of market power [3]. Structural remedies are concerned with market structure and entry barriers, aiming to establish or preserve market situations conducive to competition. Behavioral evidence of practices aimed at such harms is directed to identifying particular firm behavior that can be shown to have anticompetitive effects, including collusion, predatory exclusion, or abusive pricing.

Merger control is a cornerstone of competition policy with a view to avoiding transactions which may impede effective competition, particularly if they would lead to an (anti-)competitive position that did not exist before. The industrial organization theory of analyzing market power guides evaluations of merger effects on competition and consumer interests. For instance, the likelihood of unilateral (ability of the merging firm to increase its prices profitably in the merged market) and coordinated (greater likelihood of tacit collusion) effects is assessed through economic models of firm behavior in oligopolistic markets [3]. The other two key elements of competition policy are the bans on anticompetitive agreements and on abuse of a dominant position. Since cartels could obviously adversely affect consumer welfare, they are almost always considered to be illegal per se. The analysis of vertical restraints and unilateral behavior by dominant companies has usually required a more sophisticated balance of effects approach, which compares the efficiencies that are gained from a practice with the anticompetitive harm [1]. This approach takes into account that market power does not always harm consumers and that some behaviors that look anticompetitive may actually generate efficiency gains and benefit consumers in some circumstances. Recent digital

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market developments have also tested accepted competition policy models and revealed a necessity of adjustments. The OECD (2022) notes that digital platforms frequently display features leading to significant concentration and market power, notably network effects, economies of scale and scope economies, and data advantages. These characteristics may result in winner-takes-all or winner-takes-most types of market outcomes, which may call for new analytical and enforcement tools and frameworks. For example, in the case of digital markets, market power testing might need to incorporate more than market superiority indicators—such as data ingress, network externalities and multi-sided market dynamics [4].

4.2. Sector-specific regulation

Whereas the former tackles market power economy-wide, the latter aims at specific sectors where the structural features may cause competition problems or where policy goals other than competition can be pursued. Sectors such as telecommunications, energy, transportation or finance often exhibit natural monopoly aspects, important externalities or public service features, which are legitimate grounds for targeted regulation [1].

Conceptualization of market power and market power analysis guide the development of sector-specific regulation. For example, in natural monopolies, the costs to consumers of a monopoly can be mitigated by price regulation or rate-of-return regulation. Access regulation could be employed to promote competition in downstream markets where upstream parts of the industry are characterized by natural monopoly. In multi-sided markets, such as payment systems, regulatory intervention can be made to correct for market failures emerging from the pricing externalities across the different parts of the market [2]. The interplay between competition policy and industry specific regulation needs to be carefully managed. It is even the case that sectoral regulators may have particular expertise in particular industries and can take a more persistent interest in a problem or potential problem, compared with the typical ad hoc approach of competition authorities. However, regulatory capture and information asymmetries between the regulator and the regulated are still significant obstacles to forward planning for sector specific regulation [3]. These difficulties serve to reinforce the policy challenge of designing regulatory institutions and incentives that are consistent with versus contrary to the public interest and consumer welfare.

4.3. Consumer protection policies

Consumer protection regulation supplements competition and sector-specific regulation by countering information asymmetries and behavioral biases that could lead to consumers making sub-optimal decisions. Whereas competition policy is interested in the structure of markets and the behavior of firms, consumer protection concentrates on the relationship between consumers and firms with the aim of addressing problems between the two, such as misleading advertisements, unfair contract terms, or outright fraud [2]. The theory of market power and consumer welfare recognizes that full information is seldom found in actual markets. Information gaps between firms and consumers may result in market failures and lower consumer welfare, even when there is otherwise competition in the market [10]. Consumer policy tries to ameliorate this information deficit through disclosure regulation and laws against fraudulent conduct and unfair dealing. By encouraging the provision of superior information and access to transparent information (repair pathways, repair costs, and incentives), these policies can better inform consumers and help reinforce the competitive discipline of firms.

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Behavioral economics now augments theoretical approaches to consumer decision-making and has implications for consumer protection policy. Consumers are not purely rational agents because of cognitive biases or bounds of rationality [18]. Firms with market power may take advantage of these biases by obfuscating prices, complicating product features, or providing choices with strategic framing. Behavioral-informed consumer protection policies can tackle this by nudges, choice architecture interventions, and limits on exploitative practices. As highlighted in recent work by Chen and Karney [6], consumer protection entanglements interact with environmental policy in markets that lack perfect competition. They show that the design of environmental policy may be used to address welfare concerns over output distortion in the context of firms exercising market power, thus highlighting the need for an integrated policy approach that takes account of both market power and consumer protection goals. This integrated approach acknowledges that consumers are vulnerable along multiple dimensions in markets characterized by imperfect competition and information asymmetry.

5. Dynamic aspects of market power

5.1. Innovation and schumpeterian competition

The dynamic interplay of market power and innovation is one of the most challenging areas in industrial organization theory. Schumpeterian logic implies that some amount of market power could be essential to induce innovation, for firms require the promise of monopoly rents to motivate risky expenditures on research and development [12]. This opinion contrasts with the static efficiency view that market power always leads to welfare loss, implying dynamic efficiency benefits through innovation can exceed static efficiency costs from market power under certain circumstances. The interplay between market structure and innovation is not linear nor uniform across sectors. Some evidence suggests an inverted U-shaped relationship where innovation is maximized at intermediate levels of competition, with both very fragmented and very concentrated markets having lower innovation rates [18]. This phenomenon may imply a tension between two countervailing forces, the escape-competition effect, under which firms innovate in order to be ahead of the pack, and the Schumpeterian effect under which market power provides resources and incentives for innovation.

This relationship is understood with greater nuance in recent theoretical work. Vipra & Korinek [4] consider the implications of foundation models in AI for market concentration, contending that the most high quality models will have a natural monopoly bias, and as such, might potentially serve extremely broad markets. This drives a wedge between static efficiency considerations that center on concentration and dynamic efficiency considerations that regard the invention and improvement of these disruptive technologies. Their results indicate how the nature of innovation in different technology fields impacts the dynamic of market structure and its welfare consequences. The theory of “creative destruction,” in which the arrival of new ideas drives firms and even technologies to the wall, further complicates any dynamics of market power [1]. Perhaps transient market power is a natural state of innovation-based markets, in which the winners of earlier battles win quite big until the next innovation cycle throws them out. Welfare implications hinge on the degree of frequency and magnitude of such innovation cycles, and on the contestability of product markets by potential innovators.

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5.2. Path dependence and lock-in effects

Market power may have a very path-dependent character, with initial gains feeding upon themselves through a number of possible reinforcing mechanisms. Such network effects, learning and data advantages, and ecosystem lock-in may result in “history matters” market and competitive dynamics [2]. These historical contingencies make an analysis of market power, and its welfare implications, complex since they can often result in sustained market power despite there being no explicit anticompetitive activity. Network effects in digital markets are strongly reinforcing positive feedback constructs, for which the value of a platform to its users grows with the number of other users. A head start can result in winner-takes-all or winner-takes-most scenarios in which one company wins most of the market [4]. Although this form of concentration may be efficient in the short term through network externalities, it raises the spectre of dynamic competition and consumer harm if dominant platforms misuse their market power or stagnate in product development.

In addition, consumer switching costs and lock-in effects make it more difficult to analyze market power dynamically. As consumers incur nontrivial switching costs for switching from one competing product or service to another, firms may use this captivity to increase the price or lower the quality for incumbents [15]. Such costs can be from different sources such as transaction costs, learning costs, contractual commitments, and compatibility. The lock-in effects that follow can exert a market power even when there is potential competition – and in the end, consumer welfare is reduced.

5.3. Strategic investments and predation

An alternative approach is to allow firms with market power to undertake forward-looking investment to defend or strengthen the firm’s position in the market. These investments could be in terms of capacity expansion to prevent entry, predatory pricing to drive out potential rivals, or vertical integration to shut competition in all other markets [3]. Although such tactics may not immediately seem anticompetitive, they can have very real and destructive long-term effects on market health and consumer interests.

Predatory pricing, or selling below cost to drive rivals from the market, only to raise prices subsequently to levels that are higher than they would have been if competition had never diminished, is a classic example of how the sacrifice of today can ensure future market power [1]. The welfare implications of such behavior have to recognize that lower prices are good for consumers in the short run, but reduced competition (and higher consumer prices) is bad for them in the long run. This set of intertemporal tradeoffs complicates enforcement of competition policy because enforcers need to make predictions about possible market outcomes and firm behavior as of today even though the future is uncertain. Strategic investments in innovation pathways or standards can also influence market power dynamics in the long run. Businesses may develop proprietary, partially closed, partially open technologies or standards which either strengthen their competitive position or give them first mover or compatibility advantages [2]. Though such investments may spur innovation and generate consumer benefits associated with higher-quality products or services, they might also result in technological lock-in or raise entry barriers that maintain market power. The welfare implications of these investments are contingent on whether these investments are mostly efficiency-enhancing or mostly aimed to defend market power.

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6. Empirical evidence on market power and consumer welfare

6.1. Measuring market power

There are formidable constraints involved in the empirical estimation of market power, but they are necessary for understanding the practical implications of market power on consumer welfare. Traditional methods of measuring market power are based on market structure indicators such as concentration ratios or the Herfindahl-Hirschman Index (HHI), which reflect the distribution of market shares between firms [19]. Although these indices offer nice analytical insights into market structure, they may not capture the competitive dynamics or the actual exercising of market power, especially in differentiated product markets or in the presence of potential competition.

A more accurate, though more data-demanding, approach is to measure market power directly as an estimate of the price cost margin. The Lerner index, used to gauge the mark-up of price over marginal cost, is a direct indicator of market power [20]. But there is typically little data available to see the marginal cost directly, so that some sort of econometrics is needed to estimate marginal cost based on observed data. There have been advances in structural econometric procedures in the estimation of price-cost margins and in counterfactuals analysis of market outcome in the presence of varying degrees of competition. Recent empirical work has attempted to develop slightly different measures of market power that move beyond simple structure-conduct-performance-related paradigms. These methodologies involve estimating demand elasticities specific to the firm and assessing the competitive effects of mergers using difference-in-differences techniques and using natural experiments to identify the causal effect of changes in market structure on prices and other outcomes [21]. This framework helps address some of the deficiencies associated with traditional measures of market power and offers a more nuanced assessment of the relationship between market structure, firm behavior, and consumer welfare.

6.2. Industry-specific evidence

The empirical evidence on market power and consumer welfare exhibits wide variation between industries which reflects divergence in market structure, technology, and regulation. Network industries such as telecommunications and utilities have been subject to heavy regulation, justified by the natural monopoly properties, with this taken to be in the best interest of consumers [1]. Policy-related evidence in these sectors tends to assess the consequences of regulatory changes (liberalization, privatization) on price, quality, and innovation and is largely empirical. Evidence indicates that the damage done by market power can most effectively be countered by well-designed regulatory regimes which limit the costs incurred by market power while preserving the incentives for efficiency and investment.

Retail markets offer contradictory clues on market power and consumer welfare. While there is evidence of an increase in retail concentration in some countries, empirical studies find an ambiguous impact on consumer welfare [18]. Because bigger retailers can buy in bulk and have more clout in negotiations with suppliers, lower prices to consumers might seem possible. On the other hand, higher local market concentration might give more market power to retailers, leading to higher prices and lower variety. The overall welfare effect depends on the tradeoff between these efficiency gains and market power effects that differ between retail segments and geographical markets. Empirical analysis of digital markets poses special challenges because of their evolution, multi-sidedness, and zero-price business models on many consumer-facing sides. The OECD (2022) emphasizes that standard methods used to measure market power may not be applicable to fully

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depict the competitive process in these markets. Empirical analysis of digital markets tends to be narrower, with a focus on specific questions such as the welfare effects of algorithmic pricing, the effects of data advantages on competitive dynamics, or the effects of platform rules on market outcomes. The evidence indicates that digital platforms generate significant consumer gains through cost reductions and improved matching, but may also possess substantial market power by self-preferencing, limitations on share access, or cross-market leveraging.

The health care sector illustrates how information asymmetries and agency problems complicate the linkage between market power and consumer welfare. The empirical literature on provider consolidation generally finds that the latter raises prices for medical services, but the effects on quality and innovation are less clear [12]. The presence of insurance introduces even greater complexity to welfare analysis since consumers may receive the insurance and be sheltered from the direct impact on prices, but in the end pay the cost via increased premiums or reduced coverage. Such complexities underscore the importance of accounting for market-specific traits and institutional characteristics when examining the welfare consequences of market power.

7. Environmental considerations and market power

7.1. Market power and environmental externalities

The interplay among market power and environmental externalities complicates welfare considerations beyond the consumer surplus traditionally considered. There are two market failures that occur in markets with both market power and environmental externalities that interact: the allocative inefficiency due to the pricing over marginal cost, and the other is the externality created by the environmental disturbances that are inefficiently reflected in the market prices [6]. This interplay is important for the design of effective environmental policies in a world where market structures loom large. Market power can amplify or reduce environmental externalities, depending on the context. First, second-best considerations suggest that if firms with market power output-constrain pollution or resource extraction, pollution or resource depletion will be somewhat lower relative to these levels when firms act as price-takers in the presence of output restrictions; in addition, the extent of this reduction will depend (in a second-best sense) on how badly the market is affected by market power. Conversely, firms with market power may find it less worthwhile to implement cleaner technologies or may use environmental regulations strategically, to erect entry barriers for competitors or to obtain competitive advantages [1].

Chen and Karney [6] also provide a general equilibrium analytical framework to analyze how market power influences environmental policy outcomes. They find that environmental policy can be used to address the output distortion welfare problem for firms with market power, but their optimal policy design differs from the traditional Pigouvian approach applied to competitive market settings. This allows them to show that the welfare effects of environment policies and market power are highly sensitive to the market structure, demand elasticities, and the characteristics of the environmental damages. The existence of market power also influences the political economy of environmental policy making. Companies with market power frequently have significant political power and may seek environmental policies that shield their position or provide competitive benefits [1]. For instance, when they enjoy a cost advantage or are better able to shift costs on consumers, established firms may prefer strict regulations that increase costs for all market participants. This strategic nature complicates the design and implementation of welfare-enhancing environmental policies in markets characterized by imperfect competition.

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7.2. Environmental policy instruments under imperfect competition

Efficiency can only be realized if in decisions on environmental policy instruments influences of market power are measured and taken into account. The standard array of environmental policy instruments includes Pigouvian taxes, subsidies, tradable permit systems, and command-and-control regulation. Each such instrument captures distinct aspects of market power, potentially influencing not only the environmental effectiveness but also the welfare implications of the respective policy [6]. In the case of perfect competition, a Pigouvian tax that is equivalent to the marginal external damage internalizes the environmental externality and leads to the social optimum. But this equivalence does not hold in the presence of market power. When firms have to be constrained to reduce output to profit maximize, a further tax can worsen the output effect, and reduce social welfare if the environmental gains are not sufficient to cover the additional allocative loss. The efficient tax may be lower than the Pigouvian tax in this case, depending on environmental and market power motives .

Marketable permit systems, under which firms must own permits to discharge every unit of pollution, are interacting with each other in the presence of market power in a complicated way. Firms with market power in the downstream product market may also have market power in the permit market and thus influence permit prices as well as the distribution of the abatement effort across firms [6]. Second, the first-best allocation of permits can have substantial distributional effects when firms are able to exercise market power, since the free allocation to incumbent firms may have anticompetitive effects by erecting barriers to entry or simply allowing them to earn windfall profits. These concerns imply that the design of a permit market must consider the status-quo market structure to attain an efficient environmental outcome. Command-and-control policies (e.g., technology standards or emission caps) may be less susceptible to strategic behavior by profit-maximizing firms with market power than market-based instruments. In contrast, they tend to offer little leeway for efficient abatement and no spur for the clean technology revolution. The balance between market-based and command-and-control approaches will depend on market conditions, including the degree of market power, information asymmetries, and monitoring possibilities [22].

7.3. Case studies in environmental markets

Certain environmental markets and designs shed light on the interplay between market power and environmental goals. The electricity industry, with its mix of natural monopoly in transmission and distribution, oligopoly in generation, and substantial environmental externality from fossil fuel generation, provides a rich example [6]. Empirical and theoretical studies of electricity markets show that market power can change the impact of carbon pricing, renewable support schemes, or capacity mechanisms. These studies underscore the need for integrated market design and environmental policy in pursuit of competing competitive and environmental aims. Carbon pricing policies such as carbon taxes and emissions trading systems (ETS) have been adopted in jurisdictions around the world. They have been differently effective, at least in part as a result of different market structures and use of market power [1]. Pricing in concentrated sectors may be more likely passed through, which affects the incentive effect on emissions and distributional concerns. Knowledge of these pass-through mechanisms is important for the design of carbon pricing policies targeting emission reductions without placing undue hardship on consumers and without making firms with market power realize excess profits.

Water markets and other systems of tradable water rights offer yet another instructive example. Water rights are in many areas held by a few large scale carriers, and therefore market power could

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be exercised [6]. This market power can result in distorted water allocation and reduced market liquidity, undermining the efficiency gains associated with market-based approaches to water management. Policy options include trading rules to guard against market manipulation, market monitoring systems, and supporting policies that aim to protect environmental flows and other public values linked with water resources.

8. Conclusion

An analysis of the theoretical relationship between the exercise of market power and consumer welfare suggests that the relationship is paradoxical and defies easy classification. While market power usually causes allocative inefficiency and lowers consumer surplus in static models, a more nuanced view is necessary to address the dynamic and firm-specific nature of market power. The implications of market power for welfare critically depend on the market structure, the causes of market power, the possibilities for innovation and for quality enhancements, and interactions with other market failures such as externalities and asymmetric information. The insight has significance for competition policy and regulatory modalities. Instead of a one-size-fits-all policy concentrating either exclusively on market concentration or price effects, any effective policy response needs to be target-oriented and specifically designed according to the market situation and the mechanism through which market power affects consumer welfare. In some cases, structural solutions addressing market concentration may be what is needed, while behavioral regulation or consumer protection measures may be more appropriate to address the welfare concerns of market power in others.

Recent theoretical developments, such as Bergemann et al. [5], Chen and Karney [6], and Ding et al. [13], have helped to develop our understanding of how market power arises in certain application contexts (e.g., multi-product markets, environmental policy, and digital platforms). These developments point to the value of incorporating strategic interaction, market design features, and dynamics into the understanding of market power and consumer well-being. Further research would be well advised to look into these intricate interactions, especially considering the developing market structures in the digital economy and the increasing relevance of ecological factors. Through the development of more sophisticated theoretical models and empirical tools, economists have a great deal to teach us about what should be done to protect and enhance consumer welfare in imperfectly competitive markets.

References

[1] Tirole, J. (2022). Market power and regulation. Journal of Economic Perspectives, 36(3), 3-26. https: //idei.fr/sites/default/files/medias/doc/by/tirole/scientific_background_economics_nobel_2014.pdf
[2] OECD. (2022). The evolving concept of market power in the digital economy. OECD Publishing. https: //www.oecd.org/en/publications/the-evolving-concept-of-market-power-in-the-digital-economy_2cfcb4a8-en.html
[3] Motta, M. (2023). Competition policy: Theory and practice (2nd ed.). Cambridge University Press.
[4] Vipra, J., & Korinek, A. (2023). Market concentration implications of foundation models. arXiv preprint. https: //arxiv.org/abs/2311.01550
[5] Bergemann, D., Heumann, T., & Wang, M. C. (2024). Consumer-optimal segmentation in multi-product markets. arXiv preprint. https: //arxiv.org/abs/2401.12366
[6] Chen, T., & Karney, D. H. (2025). Environmental policy in general equilibrium under market power and price discrimination. arXiv preprint. https: //arxiv.org/abs/2501.03114
[7] Elzinga, K. G., & Mills, D. E. (2011). The Lerner index of monopoly power: Origins and uses. American Economic Review, 101(3), 558-564. https: //doi.org/10.1257/aer.101.3.558
[8] Besanko, D. (2010). Economics of strategy (5th ed.). John Wiley & Sons.
[9] Krugman, P., & Wells, R. (2018). Microeconomics (5th ed.). Worth Publishers.

DOI: 10.54254/2754-1169/2025.BJ25114

[10] Perloff, J. M. (2008). Microeconomics: Theory & applications with calculus. Pearson.
[11] Giocoli, N. (2012). Who invented the Lerner index? Luigi Amoroso, the dominant firm model, and the measurement of market power. Review of Industrial Organization, 41(2), 115-137. https: //dx.doi.org/10.2139/ssrn.1966538
[12] Syverson, C. (2019). Macroeconomics and market power: Context, implications, and open questions. Journal of Economic Perspectives, 33(3), 23-43. https: //doi.org/10.1257/jep.33.3.23
[13] Ding, T., Perrault-Joncas, D., Ronen, O., Jordan, M. I., Bergemann, D., Foster, D., & Gottesman, O. (2025). The role of the marketplace operator in inducing competition. arXiv preprint. https: //arxiv.org/abs/2503.06582
[14] Babaioff, M., Paes Leme, R., & Sivan, B. (2014). Price competition, fluctuations, and welfare guarantees. ACM Transactions on Economics and Computation, 2(3), Article 10. https: //doi.org/10.48550/arXiv.1411.2036
[15] Tirole, J. (1988). The theory of industrial organization. MIT Press.
[16] Klingensmith, J. Z. (2019). Monopolistic competition. In Introduction to microeconomics. Affordable Course Transformation: The Pennsylvania State University.
[17] Goodwin, N., Nelson, J., Ackerman, F., & Weisskopf, T. (2009). Microeconomics in context (2nd ed.). M.E. Sharpe.
[18] Philippon, T. (2019). The great reversal: How America gave up on free markets. Harvard University Press.
[19] Lábaj, M., Morvay, K., Silanič, P., Weiss, C., & Yontcheva, B. (2018). Market structure and competition in transition: Results from a spatial analysis. Applied Economics, 50(9), 1001-1016. https: //doi.org/10.1080/00036846.2017.1374535
[20] Spierdijk, L., & Zaouras, M. (2017). The Lerner index and revenue maximization. Applied Economics Letters, 24(5), 329-332. https: //doi.org/10.1080/13504851.2016.1254333
[21] Sun, B., Jing, W., Zhao, X., & He, Y. (2019). Research on market power and market structure. International Journal of Crowd Science, 3(1), 210-222. https: //doi.org/10.1108/IJCS-08-2017-0009
[22] Tirole, J. (2005). The theory of industrial organization. MIT press.