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***SOMETHING IS ROTTEN IN THE STATE OF AMERICA:
PRODUCT MARKET COMPETITION DECLINE IN THE US? *****

Based on available theoretical and empirical research, the paper demonstrates that although some decline in the product market price competition in the US has been observed, the non-price competition has become more intensive, therefore enhancing competitive constraints. Increased markups (although the magnitude of the change is disputed) are primarily due to investments in Research and Development and brand development, which have created a substantial increase in intangible assets and rise of fixed costs. In the environment of cost-heterogenous firms, markups are not necessarily evidence of market power, which should be associated only with negatively sloped residual demand curve. The declining share of labour in the value added and increasing income inequality cannot be explained by the ostensible decline of competition in the US product markets, but by technological progress and globalisation. Three vulnerabilities of the competition in the US are identified: killer acquisitions, common ownership, and legal barriers to entry.

Key words: *Competition decline. – Competitive constraints. – Market power. – Markups. – US product markets.*

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1. INTRODUCTION

In light of the indisputable increase in the industrial concentration at the national level in the US in recent decades, and the substantial change of the industrial structure of the US economy, there is widespread speculation that there has been a decline of competition in the product markets in the US and a rise of market power as a consequence of it (Baker 2019; Philippon 2019; Eeckhout 2021). Various sources of the ostensible decline of competition have been suggested, mostly regarding malfunctioning competition policy (Barker 2019) and increasing barriers to entry (Philippon 2019), and various macroeconomic consequences of that decline have been considered (Eeckhout 2021). The issue of product market competition decline in the US and its sources is not only an academic question. If competition in the US is substantially undermined, then it is intuitive that the US competition policy (antitrust in the American parlance) has failed to produce a socially desirable outcome, i.e. benefits for the consumers and for the society. Accordingly, if this is the case, the straightforward idea is that something should be done to reform the US antitrust law, or at least the way how the legislation is enforced. Furthermore, other countries, especially advanced economies, could learn a lot from such an exercise, perhaps avoiding competition decline in their own product markets. Even if the hypothesis of competition decline in the US product market is not confirmed, its testing and related research would provide ample information about the developments in the US economy regarding its structure and operations, which are relevant for the competition law and possibly its reform. Taking into account that the US economy is on the technological frontier, these developments are something that other countries, especially advanced economies, should expect in due course, hence the analysis of this experience from the competition law perspective could be useful beyond the US, particularly taking into account that methodological issues of the exploration of the intensity of competition are the same in all countries.

The primary aim of the paper is to explore whether competition in the US product market has declined in recent decades and, if such a decline is confirmed, to answer the question what is its origin. The secondary aim of the paper is to explore whether some of the US macroeconomic developments, like decline of share of labour in the value added, can be explained by ostensible decline in product market competition, irrespective of whether this decline is actually observed. This will be done by reviewing the most important theoretical and empirical contributions in the field, published in recent decades. The structure of the paper follows its aim and the selected methodological approach. The first section of the paper deals with clarification of the notion of market power and its relation to competition

decline. The following section of the paper focuses on the ambiguous relations between market power and consumer welfare. The fourth section deals with the indirect approach to the measurement of market power. The fifth section of the paper focuses on the attempt at direct measurement of market power and the methodological problems of measurement of markups as proxies for market power. The sixth section is dedicated to the macroeconomic consequences of the ostensible decline in the US product market competition. The seventh section of the paper deals with possible vulnerabilities of the US product market competition, which is followed by the conclusion, containing some recommendations for the reform of the US competition policy.

This paper is only about the US product market competition. The analysis of developments related to competition in the US factors markets is not included. What is taken into account is only the impact, if any, of the developments in the product market competition in terms of the demand for production factors. These developments can influence the outcomes in the factors markets, but they do not change the character of the competition in those markets.

2. THE IMPORTANCE OF BEING PRECISE: THE DECLINE OF COMPETITION AND MARKET POWER

Competition always takes place in a relevant market, both product and geographic. It is about competitive pressure produced by the rivals (competitive constraints in the EU competition law parlance) that matters. These constraints produce incentives to firms for conduct desirable for consumer welfare maximisation. Declining competition means weakening competitive constraints, i.e. a decrease in competitive pressures between the rivals, compromising or even removing those incentives and undermining consumer welfare. Perfect competition generates competitive constraints that result in perfectly elastic residual demand for each incumbent firm. Departure from perfect competition, i.e. a decline of competition (in terms of demand substitutability), makes residual demand not perfectly elastic, shifting its curve to a negative slope. Full decline of competition eventually produces monopoly, a situation without any competitive constraints, in which the only incumbent firm faces a negatively sloped curve of residual demand that is identical to the curve of total market demand.

The lack of competitive constraints, embodied in a negatively sloped residual demand curve, enables a monopolist to be a price maker and to set the price, rather than to take it. A profit maximising price of the monopolist

is inevitably above the marginal costs and the difference between the two depends only on the elasticity of demand. This was basically the idea of introduction of the concept of monopoly power (Lerner 1934), measured by using the Lerner index, the difference between the price and marginal costs – the greater difference, the higher value of the Lerner index and the stronger monopoly power is. In such a set-up, a necessary condition for the existence of monopoly power is the absence of perfectly elastic residual demand, meaning that the firm faces a negatively sloped residual demand curve. Accordingly, monopoly power is nothing but the power of a monopolist to set price. The equilibrium price is higher than the one in perfect competition, the output is lower, consumer welfare reduced, monopoly profit (rent) is created and appropriated by the incumbent firm, and deadweight loss is recorded.

In the modern industrial organisation (hereafter IO) parlance monopoly power is frequently confused with the market power and the terms are used interchangeably (Carlton, Perloff 2015) with possible misunderstanding.¹ Hereafter in the paper, only term the market power is used.² Taking into account the origin of the notion, and the very aim of Lerner (1934) and his contribution, which have recently been profoundly debated (Elzinga, Mills 2011), it is reasonable to specify market power as a situation in which a firm, irrespective of how many firms compete each other in the market, faces imperfectly elastic residual demand, meaning that the price is not exogenous to the firm, what is appropriately labelled as pricing power – the firm is a price maker, not a price taker (Katz, Rosen 1994, 429; Pyndick, Rubenfield 2012, 355; Goolsbee, Levitt, Syverson 2016, 379). The difference between price and marginal costs, i.e. a positive value of the Lerner index, is only an inevitable consequence of market power (specified in this way, as the power

¹ It is suggested (Carlton, Perloff 2015, 117) that it would be useful to distinguish between the terms by using the “monopoly power” term to describe the situation in which the firm that set the price above the marginal costs earns economic profit, and the “market power” term to describe the situation in which a firm with prices above marginal costs earns only competitive (normal) profit, i.e. zero economic profit, as fixed costs are covered by the wedge between price and marginal costs. Within this framework, it is obvious that market power, specified as the wedge between price and marginal costs, is not a sufficient condition for economic profit.

² In the world of IO and competition law economics, the notion of market power was introduced after the 1950 *Alcoa* Case (United States vs. Aluminium Company of America) in which Judge John Knox used the notion of the defendant’s “market power” (Elzinga, Mills 2011).

to make the price),³ though it is not the source of it, nor empirical evidence that market power exists. Hence, a gap between price and marginal costs, usually labelled as a “markup” – typically called “markup” when expressed multiplicatively and “margin” when expressed as a difference (Syverson 2019) – should not be *per se* mistaken for market power, the situation in which the firm is a price maker due to the imperfectly elastic residual demand, i.e. the firm facing a negatively sloped residual demand curve. If there is a market power, its magnitude can be imperfectly measured by the difference between price and marginal costs, but that very difference is not a sufficient condition for market power.⁴ Unfortunately, market power is often confused with markups in recent academic contributions. Due to that confusion, the market power is wrongly and misleadingly specified as the difference between price and marginal costs. Contrary to that, market power is only one of the possible origins of markups, i.e. the difference between price and marginal costs.

Accordingly, the crucial question is what is the source of markups, i.e. why there is a sustainable difference between price and marginal costs. One possible answer is the decline of competition, specified as a departure from perfect competition (a situation with perfectly elastic residual demand), in which the competitive constraints are weaker, which makes residual demand imperfectly elastic, and tilts the residual demand curve to be negatively sloped. With a negatively sloped residual demand curve and competition reduced to price competition only, the static profit maximisation inevitably creates prices above the marginal costs.

The departure from perfect competition can encompass various versions of imperfect competition (with a negatively sloped residual demand curve): monopoly and monopolistic behaviour, dominant position of the firm and abuse of that position, Cournot-style oligopoly, or Chamberlain-style monopolistic competition. In all these cases there is some market power, and *ceteris paribus* the more inelastic residual demand, i.e. the greater the slope of the residual demand curve,⁵ the greater market power is. It is, for

³ It is exactly in this way that the market power is specified as “ability of the firm to make the price” (Belleflamme, Peitz 2010, 41). This ability does not exist without imperfectly elastic residual demand the firm faces.

⁴ The Lerner index, i.e. the difference between price and marginal costs, can be expressed in terms of absolute value of the coefficient of residual demand price elasticity, and in the case of monopoly, market price elasticity of demand, as residual demand equals total market demand (Landes, Posner 1981).

⁵ For the sake of simplicity, it is assumed in this paper that the residual demand function is linear, hence there is a straightforward relation between the coefficient of elasticity of residual demand and the slope of the residual demand curve. The

example, substantially smaller in the case of differentiated product and monopolistic competition than in the case of monopoly. Nonetheless, in all these cases all the incumbent firms feature some market power, though not necessarily economic profit.

The point regarding economic profit should be considered taking into account an assumption of this comparative static analysis that there are no fixed costs, hence no decreasing average costs. If that assumption is relaxed, so the firms operate in the domain of decreasing average costs, for example because of substantial fixed costs, market power becomes a necessary condition for production sustainability. The point is that marginal costs pricing (the first best solution from the allocative efficiency viewpoint), inevitably meaning that there is no market power as there is no gap between the price and marginal costs, generates financial losses. Decreasing average costs are always higher than marginal costs (the negatively sloped section of average costs curve is inevitably above the marginal cost curve), hence the marginal costs based price is not sufficient to cover the average costs, i.e. total revenues are below total costs. The higher the share of fixed costs in total costs and the lower the marginal costs, the more market power is needed for production to be sustainable. This means that, with fixed costs, zero economic profit can be consistent with market power or, from the other viewpoint, market power is not sufficient condition for economic profit.⁶

The other relevant issue is whether negatively sloped residual demand curve necessarily means a decline in competition. It is unambiguously a deviation from perfect competition, but that kind of competition exists only in microeconomics textbooks. The idea behind the Lerner index is to measure allocative inefficiency (deadweight loss) due to the reduced price competition because of limited demand substitutability, but it is silent about productive efficiency (both static and dynamic) and about non-price competition (Elzinga, Mills 2011, 559), especially relevant in the case of differentiated products. Accordingly, there is no straightforward relation between market power and competition, and it would be wrong to conclude that more market power necessarily means decline in competition, i.e.

smaller the absolute value of the coefficient of residual demand, i.e. the more inelastic residual demand, the greater the slope of residual demand curve. Relaxing this assumption would not change any result in the model but would only focus the analysis to the coefficient of the residual demand elasticity instead of the slope of the residual demand curve.

⁶ Hence it is quite feasible, if the price is above marginal, but below average costs, for a firm that enjoys market power to record financial losses. This is just a special case of the above-mentioned classification of market power in opposition to monopoly power (Carlton, Perloff 2015).

undermining competitive constraints. Though the existence of market power inevitably creates deadweight loss, i.e. allocative inefficiency, due to the decline of price competition (limited demand substitutability), its relation to non-price competition and to other types of efficiencies are not straightforward and linear.

Irrespective of whether market power is necessary for the sustainability of production (it can be in some situations), the conclusion that observed markups are the evidence of market power and departure from perfect competition (decline of competition of some magnitude) is based on the assumption that incumbent firms are cost-homogenous, i.e. that they all utilise the same technology and feature the same cost function (including both exogenous and endogenous costs). Nonetheless, assuming that incumbent firms are cost-heterogenous, i.e. that they operate different technologies (with homogenous product as output) and have different costs functions, all the firms except the least efficient one have prices above their marginal costs and they appropriate economic profit, although they all face a horizontal residual demand curve (Carlton, Perloff 2015, 87–88). If that is the case, there is no decline of competition whatsoever, no market power, no monopoly behaviour, no reduction of the output, no deadweight loss – only the markups and economic profit of more production efficient firms. Accordingly, this gap between price and marginal costs is not caused by the decline of competition. Furthermore, existence of the many cost-heterogenous firms in the same industry indicates that the barriers to entry are reasonably low and that there are only barriers to access to cutting-edge technologies, for example, due to patent protection.⁷

There are two consequences of this theoretically feasible situation. The first is obvious: the decline of competition is not a necessary condition for markups, as such a situation can exist with perfectly elastic residual demand. The second that the markups itself is not a sufficient condition for concluding that there is a decline of competition. Furthermore, even if there is a decline of competition and the gap between price and marginal costs exists, that does not necessarily mean that incumbent firms earn economic profit (Carlton, Perloff 2015).

⁷ To keep this model simple, it is assumed that the product itself is not differentiated, i.e. that all the cost-heterogenous firms produce homogeneous products, which are perfect substitutes for each other. Taking that assumption into account, the patent protection refers only to a new, superior production technology, not to a new, superior product.

Since the situation of technologically heterogeneous firms is theoretical feasible, a theoretical hypothesis can be developed based on it. The hypothesis is that the existence of markups is due to the cost heterogeneity of firms, with the additional hypothesis that increased cost heterogeneity increases the average markup.⁸ Moreover, a further hypothesis is that technological progress, which is inevitably uneven, increases the firms' cost heterogeneity – some firms adopt cutting-edge technology, others rely on traditional ones. Accordingly, the more intensive the technological progress (the higher the rate of technological innovations), the greater the cost heterogeneity of the firms.⁹

Two questions are related to this theoretical hypothesis and its verification. The first one is whether it is probable and the other one is related to the empirical evidence to support it. As for the first one, the crucial question is whether the firms that obtained superior technology and are cost efficient have incentives to exclude, i.e. to drive out competitors that are technologically inferior and feature higher average costs. This is feasible in a price war, as with a price decrease, which would only decrease the economic profit of the more efficient firms, without generating financial losses, and the less efficient firms, due to the average costs above the price, would exit the market.¹⁰ Such exclusionary practices, although enhancing selection efficiency, would lessen the competition and would eventually drive to monopoly, since only the most efficient firm would survive. This would enable the only surviving firm to further increase its markups, obtain market power, and maximise economic profit by reducing the output. Obviously, this is a strong incentive for driving out the less efficient competitors.

⁸ The cost heterogeneity of firms hypothesis does not rule out the decline of competition hypothesis, as both can in principle explain the existence and increase of markups. At the end of the day, the empirical question is about the relative strength of these two causalities, i.e. about their relative contribution to the level and change of markups. Contrary to that, Eeckhout (2021) attributes all markups and their ostensible increase in the US economy to the decline of competition and implicitly rules out the cost heterogeneity of firms hypothesis, although in his contribution he provides ample empirical evidence about that very cost heterogeneity of the firms in some US industries.

⁹ This increase in cost heterogeneity of firms, stemming from the technological progress, is comparable to the concept of horizontal innovations in which the technological progress is embodied in new products, but the incumbent products are not crowded out (Romer 1990). The technological progress generates increased product diversification.

¹⁰ Low searching costs of and reduced transaction costs due to advancing IT, which facilitates creation of the superstar firms (Autor *et al.* 2020) also accelerate price wars between the efficient firms and their less efficient competitors, which may possibly lead to the latter exiting from the market. Winner-take-all conditions are favourable for a Darwinian mechanism of selection efficiency.

Nonetheless, there are a few incentives for the technologically dominant incumbent firms not to engage in such a quasi-predatory behaviour. The first one is that the new equilibrium with lower competition constraints and with the consequently higher (economic) profit, i.e. higher returns to investments, would attract less efficient firms to enter the industry due to the reasonably low barrier to entry. For such high-cost and less efficient firms, their expected low profit is the most effective barriers to entry. Increasing profit inevitably decrease barriers to entry and increases the likelihood of new entries. Accordingly, the market structure is not sustainable, and the new long-run equilibrium would probably be very similar to the initial one. The choice for the efficient, technologically dominant incumbent firm is between the current high economic profit and the expected value of even higher economic profit with a rather small probability, due to the reasonably low barriers to entry. In the models of stepwise innovation (Aghion, Harris, Vickers 1997; Aghion *et al.* 2001) firms differ in the quality or cost of their product, meaning that the current high economic profit has produced incentives not to drive out the less efficient firms.¹¹

The other reason for the technologically dominant incumbent firm (which in many cases can also be a dominant firm from a point of view of competition law) not to drive out the competitors is a possibility of the exclusionary behaviour of that firm being perceived as in violation of Section 2 of the Sherman Act (in the US) or violation of Article 102 of the TFEU (in the EU), even though it is not. The competition law has a substantial deterrent effect, and it can be divided into good deterrence (preventing anticompetitive, welfare reducing behaviour) and bad deterrence (preventing procompetitive, welfare enhancing behaviour). It is not feasible to separate the two (Stigler 1969; Bucciorossi *et al.* 2009), and it is evident that in this situation the deterrent is counterproductive. If the technologically superior firm drives out the less efficient competitors, their production will be moved to the more efficient firm, allocation of resources will be improved and efficiency enhanced, clearing the way for consumer welfare increase. Furthermore, if the most efficient firm operates in the domain of decreasing average costs, i.e. economy of scale, its increased output will additionally improving enhance economic efficiency as more economy of scale will materialise. Although the deterred process of reallocation of resources is at least up a

¹¹ This was hardly the aim of these models, but it is a collateral result. The mechanism of refraining from driving out less efficient firms could be compared to the replacement effect (Arrow 1962) in which a firm with market power refrains from innovation due to the prospects for replacing the current economic profit that is appropriated.

point countervailed by reducing competitive constraints, possibly generating decreased elasticity of residual demand, i.e. increasing the negative slope of its curve.

Hence, there are countervailing incentives for technologically superior firms to drive out (all) less efficient competitors, with the theoretical possibility of a scenario in which they do not drive out all the less efficient rivals. Essentially, it is an empirical question whether the firms with different technologies and different cost functions can compete in the same industry, more precisely on the same relevant market. Eeckhout (2021) points out that the two US retail giants, Amazon and Walmart together have only a 15% share in the US retail industry.¹² Obviously, although those two undertakings are technology superior, each in its own specific way, neither of them has driven out all other technology inferior competitors from the retail industry – the US retail industry is technologically a very heterogeneous sector.

Indirect empirical confirmation of the technological heterogeneity of the firms comes from a comprehensive study of markups in the US economy (De Loecker, Eeckhout, Unger 2020).¹³ Although the main finding of the paper is that the markups, as indicators of market power according to the authors, on (weighted) average have increased in the US economy from 21% to 61% between 1980 and 2016, the finding is that the markup of the median firm has remained the same, and the authors demonstrated how skewed the distributions of the markups and of their increases are. These results provide indirect evidence about cost heterogeneity of the incumbent firms in the US, across the industries, as such a diversity of markups and their dynamics can be explained only by the diversity of the costs functions of the firms and their change over time – evidence of unevenly distributed technological progress.

¹² This does not mean that this is their share in the relevant markets, since the retail industry is notorious for highly differentiated product and geographic relevant markets, especially the latter, with a substantial number of separate local geographic relevant markets, as retail outlets located in one of those local market do not compete with the outlets located in another. More specifically, this share in the industrial sector does not mean that Amazon does not achieve dominant position in some of the (many) relevant retail markets, let alone wholesale markets in which the company is a buyer.

¹³ Furthermore, the cost heterogeneity of the firms is an assumption of the model that was used for estimation of the markups in the US economy.

According to these results, not only cost heterogeneity of the incumbent firms has existed, but it has increased with the technological progress in recent decades.¹⁴

Furthermore, if product homogeneity assumption is relaxed, the model gets closer to the US reality, as well as reality of the other advanced economies. On the demand side, there are heterogeneous, differentiated products and Chamberlain-style monopolistic competition, with a slightly negatively sloped residual demand curve, as the products within the same product relevant markets are not perfect substitutes. The competitors try to differentiate their products from the products of the rivals, which is in essence non-price competition, like for example quality competition in which firms invest in Research and Development (hereafter R&D) of new product. These innovations decrease demand substitutability and generate a negatively sloped residual demand curve or make it steeper, which in turn creates or strengthens market power. This may appear to be evidence of a decline of competition, but the product differentiation and negatively sloped residual demand curve, may be the result of innovation driven by intense competition (Gilbert 2020, 61). In essence, price competition is substituted by non-price competition.

Each rival invests in non-price competition, like investing in R&D and marketing/branding of their products, generating fixed costs that are to the great extent sunk costs (Berry, Gaynor, Scott Morton 2019). That means that sunk costs are endogenous for each firm: they are a necessary condition for improved differentiated products or for improved production technology (Sutton 1991).¹⁵ In principle, the higher the sunk costs, the more improved the product, the more differentiated the product of the firm, and the greater the slope of its residual demand curve, i.e. the less the elastic residual demand, enabling market power. Furthermore, the higher the sunk costs, the more improved the production technology, and the lower the marginal

¹⁴ The sample on which these results were obtained consists only of publicly traded companies, relatively large firms and they account for 29% of private U.S. employment (De Loecker, Eeckhout, Unger 2020, 572). It is reasonable to assume that if all firms had been taken into account, their cost heterogeneity would have been even greater.

¹⁵ Contrary to that, if both the product and the technology (i.e. cost functions) of the firms are homogenous, all sunk costs will be exogenous, specified only by technology. Sutton (1991) provides a comprehensive endogenous sunk costs theory, with a clear distinction between endogenous and exogenous sunk costs, with a more recently compact summary of this theoretical framework (Perloff, Karp, Golan 2007, 35–39).

costs: the gap between fixed (to the great extent sunk) and marginal costs increases. Within this framework, there is clearly a link between markups and fixed/sunk costs of each firm, with causality going from endogenous fixed costs to markups and market power. This explains the heterogeneity of the firms in the terms of their markups, because they differ in endogenous sunk costs, with consequences on both the residual demand function and the cost function (marginal costs). The higher the (endogenous) fixed/sunk costs, the higher the markups.

Observing this regularity from the other viewpoint, higher endogenous fixed/sunk costs are an indicator of more intensive competitive constraints in non-price competition. It is rather intuitive that firms have strong incentive to differentiate their products only if there is strong competitive pressure from the rivals, as product differentiation is the way to relieve such pressure and “The best of all monopoly profits is a quiet life” (Hicks 1935). Combining this insight with the previous one (the higher the fixed/sunk costs, the higher the markups), the logically correct conclusion, however counterintuitive, is – the higher markups, the more intensive (non-price) competition.

Both these features, technology and product differentiation, are departures from perfect competition. On the one hand, firms are cost-heterogenous, utilising different technologies and featuring distinctive cost functions, with substantial fixed/sunk costs, though they may or may not face a horizontal residual demand curve, depending on whether the product is homogenous. On the other hand, and on the top of it, products are heterogenous, i.e. differentiated, which generates a somewhat downward sloped curves of residual demand, pointing to reduced demand substitutability, and in that way declined price competition, but without any implications on non-price competition, on the contrary, as demonstrated, clearing the ground for the hypothesis that price competition is substituted by non-price competition. This model, which could be labelled as a model of cost-heterogeneous firms selling differentiated goods (Syverson 2019), in all its versions (Melitz 2003; Asplund, Nocke 2006; Melitz, Ottaviano 2008; Foster, Haltiwanger, Syverson 2008) accurately corresponds to the reality of most of the contemporary industries in the US and the other advanced economies.

Furthermore, this model successfully explains the sustainability and potentially the increase of market power, with developments both on the demand side (differentiated products and imperfectly elastic residual demand) and on the supply side (technological progress with the corresponding increase in fixed costs and decrease in marginal costs). Accordingly, there is no doubt that this is a departure from perfect competition. Nonetheless, the crucial questions are: (1) does that departure, which enables market power (or rather markups as its highly imperfect

indicator) to be sustainable and even to increase, inevitably imply that there is a decline of competition, meaning weakening competitive constraints, and (2) what is the outcome of such market power on consumer welfare. The later question is to be figured out first.

3. MARKET POWER AND CONSUMER WELFARE: NO UNAMBIGUOUS RELATIONS

There is no unambiguous answer to the question about the consequences of market power on consumer welfare. Everything depends on what is the source of market power and the specific set-up within which it exists.

It is rather straightforward that increased prices with no change in the quality of the products decreases consumer welfare. This is basically the result of the comparative statics of the monopoly vs. perfect competition, a framework of the Lerner (1934) analysis. The point is, however, that generally prices in the US product market have not been increasing, save perhaps in a few sectors. Philippon (2019) claims that the prices in telecommunication and airline industries are currently not as low in the US as they are in Europe,¹⁶ and according to his anecdotal evidence it was the other way around two decades ago, but there is no systematic evidence that across the board (quality adjusted) product prices in the US have been rising in the past several decades. On the contrary.¹⁷

Even Eeckhout (2021), who claims that there is widespread market power in all the US industries and points out ubiquitous market power as the cause of many (adverse) macroeconomic developments, at the same time claims that due to the technological progress prices have gone down, because production is more efficient, and new innovative products are now available to US consumers. In other words, consumer welfare in the US has improved despite of ubiquitous market power. His point is that consumer welfare would have improved even more without the market power, i.e. under conditions of perfect competition. The problem with this counterfactual claim is that within the framework of perfect competition technology is

¹⁶ It is a bit ironic that the US airline industry is used in this anecdotal evidence of high prices due to its market power, as the industry is notorious for low profitability (low rate of returns) with widespread loss-making episodes, especially involving the largest (legacy) airline companies.

¹⁷ The systematic product prices increase, across the board (quality adjusted), would inevitably generate a substantial inflation rate. Nonetheless, the inflation rates in the past several decades, prior to the COVID-19 pandemic, were very low.

exogenous and equally available to all firms – it is a static framework. Nonetheless, the observed technological progress – the one that has pushed product prices down – is endogenous: it is due to the investments in R&D, which have to be recuperated from the market power. Otherwise, due to the lack of incentives, there would have been no investment of the kind and no technological progress. This is a rather straightforward insight of modern IO. Basically, there is a conceptual trade-off between the world of perfect competition, without market power and without technological progress, which provides for the lowest product prices for a given technology, and the world of market power and technological progress, which pushes costs and prices down and improves the product quality. To have both perfect competition and technological progress is simply not feasible.

Furthermore, various digital platforms operated by technological giants, e.g. Google, Facebook/Meta and other hi-tech companies in the US, provide their services at zero price, increasing consumer surplus for all the consumers who are willing to use them. And those consumers who do not find any net utility in using them, simply do not use them, so there is no change in their consumer surplus.¹⁸ At the end of the day, creating a personal profile on Facebook is not mandatory.

This is not to say that in every single case in the US product market the magnitude of market power is just enough to compensate the investment in R&D and other sunk costs. Apparently, there are some product markets and some industries in which market power is far beyond the level that is required for compensation of the fixed/sunk costs, leading to substantial economic profits. Such product markets should be specified as the prime suspects for markets with declined competition, i.e. with weakened competitive constraints. It is those specific cases that should be explored in the tradition of IO, as suggested (Berry, Gaynor, Scott Morton, 2019), especially the specific factors that created this situation and its implications on consumer welfare. Only the insights of such specific research can have implications on competition law enforcement, especially regarding the impact of the situation on consumer welfare, which is still a standard for enforcement of competition law and for a good reason (Hovenkamp 2019) – whatever increases consumer welfare, even if it produces and increases market power and enlarged economic profit, is desirable from a competition law enforcement viewpoint.¹⁹

¹⁸ The term net utility is used because of the possible decrease of utility of consumers due to sharing information about their preferences with the platforms.

¹⁹ This is not to say that such a situation (an increase in economic profit, and increase economic inequality as its consequence), if it is assessed as undesirable, should not be addressed through some other public policy, such as taxation.

It is obvious that there is no general, across-the-board unambiguous relation between market power, competitive constraints, and consumer welfare. No evidence has been provided that there is general causality from increase in market power in the US product markets to decrease in consumer welfare. In some specific situations that may be the case, it should at least not be ruled out, but there is no evidence for a general conclusion about the relation between increased market power and decreased consumer welfare.

This finding is important for answering the previous question: is the increase in market power evidence that supports the hypothesis that the competition in the US product markets has declined, i.e. that competitive constraints have been weakened? Based on the assumption – even an axiom for economics of competition law – that the increase of competition, i.e. strengthening competitive constraints, improves consumers welfare, there is no evidence to support that ostensible increase in market power in the US signals out the decline of competition. Furthermore, the reverse may be the case in the differentiated product markets, in which non-price competition (e.g. competition in quality) is important and in which the competitive advantage of a firm is gained by endogenous fixed/sunk costs that must be recuperated through market power. In these markets increased market power can be a signal of increased competition, the one that brings down the prices and improves products due to technological innovation, a situation in the US product markets referred to by Eeckhout (2021).

Since the relations between the increase in market power, decline in competition and consumer welfare have been clarified, the attention can now be turned to the question of whether the market power has increased in the US product markets in the past several decades.

4. MEASURING MARKET POWER: INDIRECT APPROACH

The only proper way to measure a firm's market power is to evaluate the coefficient of residual demand elasticity, as the Lerner Index, the appropriate measure of market power in the case of cost-homogenous firms, depends solely on that elasticity. The problem is that residual demand elasticity is not observable. Accordingly, the attention in measuring market power has shifted to the markup (the difference between price and marginal costs) as an inevitable outcome of market power in the case of cost-homogenous firms. Again, the obvious problem is that the marginal costs of the firm are

not observable.²⁰ Hence, it is intuitive that an observable proxy for market power should be selected for empirical research and conclusions regarding the level and dynamics of market power and, in that way, dynamics of the intensity of competition, i.e. the strength of the competitive constraints, although there is no straightforward linear relation between market power and intensity of competitive constraints.²¹

For decades that proxy has been relevant market concentration with the basic assumption that the higher the relevant market concentration, the greater the market power and the weaker the competitive constraints. This is basically the legacy of the structure-conduct-performance (S-C-P) paradigm in which there is inescapable logic that the market structure determines the firms' conduct, with inevitably produces performance in terms of competitive constraints (Scherer, Ross 1990).

The first problem with this approach is a conceptual one: that it is precisely the nature and intensity of the competition in the market that affects the equilibrium market concentration. It is the competition conditions in the relevant market that drive market concentration, not the other way around (Syverson 2019). More efficient firms exert stronger competitive constraints on their rivals, decreasing their market share and driving some of them out of the market, reallocating activities towards more efficient firms, improving

²⁰ The average costs for the firm are observable, especially in the case of single-product firms, while some methodological dilemmas exist in the case of multi-product firms regarding the method of allocation of overhead costs. Nonetheless, average costs differ from marginal costs in every situation except the very special case: where there are no fixed costs and marginal costs are constant. It is even unobservable whether average costs are higher than marginal, as that depends on the output. Although in some contributions average costs – especially average variable costs – are used as a substitute for marginal costs, this approach is not promising, and the empirical results obtained through such substitution should be taken with a caveat (Karabarounis, Neiman 2018).

²¹ The methodological issue is that competitive constraints are not observable, hence they are not measurable. An indirect way of observing the intensity of competitive constraints is to survey consumer welfare, but the problem is that it is not quite observable. Some rules of thumb, though, can be established. If prices are falling with unchanged quality of product or if prices are falling and the quality of product is improving, then it is reasonable to assume that consumer welfare has improved. Also, if the sales grow simultaneously with the price, this can be an indicator of increased consumer welfare, especially in the case of improved and innovative products – the consumers' willingness to pay increases more than the price, generating an increase in consumer surplus.

overall efficiency of the industry.²² Accordingly, in the process, more efficient firms grow larger and larger, increasing their market share and decreasing the number of competitors, i.e. increasing market concentration. Furthermore, if fixed costs share in total costs in the specific industry is substantial, then the larger firms materialize more economy of the scale than the smaller ones, additionally increasing competitive pressure that drives smaller firms (those that cannot materialise economy of scale) out of the business, contributing to the increase in market concentration. Accordingly, market concentration is endogenous to competition and in that process higher market concentration can be the consequence of more intensive competition. Therefore, it is wrong to use market concentrations as a liner measure of competition – the lower the market concentration, the more intensive the competition and the stronger the competitive constraints.

The other problem of this approach is that it is implicitly based on the Cournot model of oligopoly in which a relatively small number of cost-homogeneous firms compete with the quantity of homogenous product they supply to the market, taking into account the action of their rivals – their outputs (Syverson 2019). The equilibrium price is a result of a non-cooperative oligopoly game, and it is specified by the intersection of the product demand curve and the joint supply curve of all the firms. Indeed, in such a framework, an increase in market concentration generates an increase in average market power, but only if all assumptions of the model are valid, i.e. if all preconditions are met. The problem is that the assumptions of the model are far from the reality in most of the product markets in the US, as well as in product markets around the world, taking into account widespread product differentiation, implying substantial non-price competition, and cost heterogeneity of firms competing with each other and their distinctive costs functions. In these conditions using market concentrations as a proxy for market power and intensity of competition is quite misleading.

Furthermore, available data is usually related to industrial, rather than relevant market concentration. It has been pointed out (Shapiro 2018) that increasing industrial concentration does not necessarily signal increasing relevant market concentration: on the contrary, increased industrial concentration can be associated with decreased relevant market concentration. This is especially the case in small, local relevant geographic markets. The point is that the competition takes place in relevant markets, both product and geographic markets, not at the industry level. Defining

²² Philippon (2019) referred to the case of increased concentration in the US retail market due to the advent of Walmart and reallocation of the retail activity to this efficient firm as an efficiency enhancing concentration.

the relevant market within each industry is a painstaking and time-consuming task with rather controversial outcomes. This is one of the most disputed segments in the majority of the competition law cases: there are no straightforward solutions (Bishop, Walker 2007). Hence, converting industrial concentration at the national and even local level into relevant market concentration is not a methodologically correct analytical endeavour.²³

As already pointed out, some relevant geographic markets are inevitably local because of substantial transportation costs compared to the value of the product. Increased concentration at the national industrial level can produce decreased concentration in the local relevant geographic markets because of the new entries of bigger national firms into those markets (Shapiro 2018). It has been demonstrated (Rossi-Hansberg, Sarte, Trachter 2018) that in the US, from 1990 to 2014, there was simultaneously an increase in industrial concentration at the national level and a decrease in industrial concentration at the local level, with three different approaches to specifying the local level. Taking into account that this is related only to industrial (i.e. sectoral) concentrations at the local level, and not the concentration in the local relevant product and geographic markets, this insight only provides a hint about the false claims of decline of competition – even if a faulty measure of competition (market concentration) is used.

In short, market concentration is quite a misleading way of measuring market power, and the recorded increased industrial concentration at the national level in the US does not necessarily imply that there has been a competition decline in the US product market. The developments that generated the increase industrial concentration are not necessarily adverse developments and their impact to consumer welfare can be beneficial (Autor *et al.* 2017). Hence an alternative way of exploring the ostensible competition decline should be explored. One of the approaches that has gained substantial academic attention in the recent years is the direct measurement of the markups.

²³ It was the Council of Economic Advisers, under the Obama administration in 2016, that warned about rising industrial concentration at the national level as a signal of declining competition in the product markets in this country. Shapiro (2018) provides a long list of similar reports. Although the authors who are IO specialists (Philippon 2019) recognise that this is about industrial concentration at the national level and that it is irrelevant for any conclusion about the competition that is always in the relevant market, they still believe that there is reason for concern, based on the national industry concentration trends in the US.

5. INCREASED MARKUPS: THE PROBLEM OF MEASUREMENT

The crucial problem of measuring market power – specified as markups, i.e. the gap between price and marginal costs, as pointed out previously – is that the marginal costs of the firms are not observable. Nonetheless, a specific methodological approach has been developed to solve that problem, by to using accounting data on variable costs for the direct estimation of markups, circumventing the issue of the lack of the marginal costs data.

The most prominent empirical research of the kind (De Loecker, Eeckhout and Unger 2020), demonstrated that (weighted) average markups in the US economy have increased from 21% to 61% of the marginal costs, between 1980 and 2016, as previously pointed out in this paper.²⁴ Since the first version of the paper with these results was released in 2017, there has been a substantial debate on the methodological issues related to the approach used in the paper and its results.

The approach of the direct measurement of markups as proxies for market power is founded on the production approach (the opposite to the demand estimation approach) based on the seminal contribution by Hall (1988) and subsequent contribution by De Loecker and Warzybski (2012).²⁵ The approach relies on the individual firm input and output data, assuming profit maximisation by the firm, based on cost minimisation. A measure of the markup within this framework is obtained for each firm at a given moment as the ratio between the firm's total revenues and the variable input's expenditure (observable, according to the authors, in the accounting data for the firms) multiplied by the variable input's output elasticity, which is obtained by estimating the production function of each firm, using data on variable inputs. Hence it is crucial to obtain correct data on variable costs and unbiased estimates of the variable input's output elasticity.

²⁴ As previously pointed out in this paper, this finding is based on a sample of the companies that are traded on the stock market, since the accounting data is available only for those companies. It is reasonable to assume that the given methodological approach, applied to the population of the US firms rather than this biased sample, would have produced much lower estimates of markups and their increase, since traded companies are substantially larger than nontraded ones.

²⁵ In his earlier contribution, De Loecker (2011) emphasised that both demand estimation and production approach have their advantages and disadvantages, that there are trade-offs in selecting one, and that the appropriate selection of the approach depends on a number of factors. It seems that in due course he fully subscribed to the production approach.

According to US accounting standards, income statement based information provides operational expenses (OPEX), which includes costs of goods sold (COGS), selling, general and administrative expenses (SG&A), and residual items that are capital expenses (CAPEX).²⁶ It is indisputable that the CAPEX are by and large fixed costs.²⁷ De Loecker, Eeckhout and Unger (2020), justifiably assumed that CAPEX are completely fixed costs and excluded them from the analysis. Nonetheless, SG&A are also assumed to be entirely fixed, so only COGS was used as variable costs. As pointed out by Triana (2018), substantial segments of SG&A are not fixed but rather variable costs, as they mostly consist of marketing and management costs, i.e. costs of selling the products and operating the firm. This means that the estimations of the markups done using only COGS as variable costs are inevitably biased upwards as not all variable costs are taken into account. One source of bias is downward bias in the estimation of the amount of variable costs, as some variable costs are not included, thus increasing the markup. The other source of bias is the upward bias of the variable input's output elasticity, again increasing the markup. Accordingly, the biases due to the failure to include full variable costs are not countervailing, but they reinforce each other.

The observed upward bias remains the same if the share of SG&A in OPEX is constant, i.e. if the magnitude of markups estimates are inaccurate but stable, hence it does not influence the markups dynamics. Nonetheless, with increase in the share of SG&A in OPEX, the bias increases over time. Accordingly, in such an environment, a recorded trend of markups increase is spurious, because the markups are positively correlated with the share of SG&A in OPEX.

Triana (2018) pointed out that the share of SG&A in OPEX has been steadily increasing for US publicly traded firms since 1980 and that the share of COGS in OPEX has been steadily decreasing from 85 % in 1980 to 77 % in

²⁶ Methodological issues in utilising accounting data in empirical economic analysis, due to the substantial difference between economic and accounting concepts, have been recognized earlier (Fisher, McGowen 1983) in the case of distinction between accounting and economic profit. Mistaking one for the other leads to the wrong conclusion about the profitability of firms.

²⁷ It can be argued, though, that depreciation, as annualised CAPEX, depends on the intensity of the utilisation of the physical assets, and that intensity depends on output. Accordingly, there is also an element of variability in the depreciation, as it does not depend only on time, irrespective of the output. Amortisation is annualised CAPEX in the case of financial assets, hence there is no element of variability.

2016, demonstrating that there has been a proportional increase of SG&A.²⁸ Obviously, the bias in the estimation done by De Loecker, Eeckhout and Unger (2020) is not only evident, but it also increases in time, meaning that the markups increases recorded in their research can be spurious. Accordingly, Triana (2018) used the same approach only assuming that both COGS and SG&A are thoroughly variable costs, and the result is quite distinct from the one of De Loecker, Eeckhout and Unger (2020). The markups' estimations with the alternative assumption in which costs are variable (with broader encompassment of variable costs) demonstrates not only that the markups are much lower, but that there has been no significant increase in them in the US economy since 1980. The markup increase was from 10% of the marginal costs in 1980 to 17% of the marginal costs in 2016, as opposed to 21% and 61%, respectively, according to De Loecker, Eeckhout and Unger (2020). Accordingly, the total increase is 70% rather than 290% – quite a distinctive result.

There are two relevant issues regarding these results and the discrepancy between them. The first one is that not all SG&A expenses are variable costs, as some of them are indisputably fixed. For example, regarding the marketing costs, an advertising campaign is an investment in the brand and the cost of the campaign does not depend in any way on the output – a typical case of fixed costs. On the other hand, a substantial segment of marketing costs depend on the costs of selling a specific unit of product, hence they are variable costs. As to the management costs, some of them are fixed, but some of them depend on the output and its variation. The share of fixed and variable costs within SG&A is not observable, so the only regularity is that the greater the share of variable costs in SG&A when they are omitted from the analysis, the greater the upward bias of the markup estimates. Furthermore, it is reasonable to assume that the share of variable costs in SG&A varies from industry to industry, as industries have specific marketing and management operations, and even from firm to firm in the same industry.

Accordingly, it is reasonable to assume that the estimates of the markups and their increase since 1980 are biased upward if SG&A are excluded from the analysis, and biased downward are they are included in the analysis. However, the magnitude of the bias is not observable. One way or the other, it is reasonable to conclude that there has been some increase in the

²⁸ Residual OPEX are treated by Triana (2018) as SGA, hence in his analysis the sum of COGS and S&GA equals OPEX.

markups since 1980, though of uncertain magnitude – probably greater than the magnitude estimate by Triana (2018) and lesser than the estimate by De Loecker, Eeckhout and Unger (2020).

The second issue is the origin of the increased share of SG&A in OPEX. Since these costs are mostly costs of marketing, i.e. the cost of selling the products, and costs of managing the production process, it is reasonable to assume that the competition between firms has increased, the competitive pressure from the rivals has gone up, hence competitive constraints become stronger, increasing marketing and management efforts for selling the products. Improvements in IT and communication technologies, which have enabled customers to be better informed, have also spurred IT and communication activities of the firms in now winner-takes-all/most competition increasing the share of SG&A in OPEX. Finally, there is an issue of intangible assets and to what extent the rise of these assets and their mismeasurement increases the share of SG&A. Some of that increase, like marketing activities on brand creation and strengthening, are part of OPEX, but some are part of CAPEX, e.g. franchise purchasing. In the case of innovations, some of the intangible capital increase can be traced back to OPEX, e.g. salaries in R&D, but others, such as license purchasing or investments in new equipment for R&D departments, are part of CAPEX. One way or the other, in an economy with differentiated products and intensive innovation based non-price competition, it is reasonable to expect the increasing share SG&A in OPEX due to the intangible assets (Peters, Taylor 2017; Crouzet, Eberly 2019). Furthermore, all of these reasons are indirect testimony of increased non-price competition in the US product markets.

Finally, there is the issue of the biased sample of firms, because only traded companies are analysed. It is reasonable to assume that these companies are larger than other traded firms, hence the question is whether larger firms have higher markups than smaller firms. Autor *et al.* (2020) provide evidence that this is the case especially regarding the dynamics, i.e. that the markups of the large, superstar firms, increased faster than the markups of smaller firms. Their explanation is based on the two complementary developments—globalisation and technological innovations—that both benefited large firms, due to their capacity to materialise economy of scale in both cases. Economy of scale and innovations decrease marginal costs and that increases markups, sometimes even when the price is falling. The revenues appropriated due to the markups are used to cover substantial fixed costs (CAPEX) that are the source of economy of scale. The other possible explanation is that larger firms obtained market power due to the decline of competition and that market power enables them to charge the prices above the marginal costs

and earn economic profit. The bigger the firm, the greater the market power. This causality, along the lines of the SCP paradigm, is suggested by Eeckhout (2021), although no evidence to support it is provided.

Whatever the methodological problems of the contribution of De Loecker, Eeckhout and Unger (2020) may be, the most intriguing insight is that although a substantial aggregate markups increase is reported, the median markup is unchanged. This demonstrates, as already pointed out, that there is technological and cost heterogeneity among the firms in the same industry (operating in the same relevant market), but also the reallocation of the activity and market share from low- to high-markup firms. This is further (indirect) evidence that large firms are high-markup firms. These firms feature substantial fixed costs, including intangible assets, and these costs cannot be recovered by marginal cost pricing in the situation of economy of scale, i.e. when the average costs are higher than marginal costs. In short, without markups these firms with huge total factor productivity gains, which made customer prices lower, would not be sustainable at all.

It is quite possible that these firms face negatively sloped residual demand curves as an indicator of declined price competition and market power—typical conditions of monopolistic competition. It is indisputable that such conditions decrease the output of profit-maximising firms producing allocative inefficiency (deadweight loss) compared to hypothetical perfect competition and marginal cost pricing.²⁹ Nonetheless, perfect market competition does not provide for increased productivity due to increasing returns and innovation. In that sense, the increased markups, to the extent that they exist, although some increase is indisputable, signals the rise of monopolistic competition conditions and the superstar firms within that framework.

In short, the debate regarding markups levels and dynamics has demonstrated that there are substantial methodological obstacles for an unbiased estimate of markups and their dynamics in the US economy. A wild guess is that there has been some markups increase since 1980, but it is rather likely that this increase is not as high as reported by De Loecker, Eeckhout

²⁹ The most prominent case of deadweight loss is the one of the monopoly due to patent protection. Since there are no rivals (assuming that there is no substitute for a patented product), market demand equals patent holder residual demand, hence the negative slope of the residual demand curve equals the slope of the market demand curve, maximising deadweight loss. Contrary to that, the patented production technology need not generate monopoly on the product market, depending on how close substitutes are and what would be the strategy of the cost-efficient patent holder regarding driving the competitors out of the market.

and Unger (2020). The increase in the markups in the US economy, to the extent that it exists, does not necessarily mean the proportional increase in market power, due to the technological and cost heterogeneity of the firms and the rise of superstar firms to whom the production was allocated from the low productivity firms. Although market power, which is a convincing evidence that price competition declined (though not necessarily non-price competition, on the contrary), is inevitably associated with the deadweight loss, the unanswered question is to what extent this loss is compensated by the increase in productivity and the decreases in customer prices due to falling costs. Obviously, there is a trade-off between deadweight loss of consumer welfare and consumer welfare gain due to increased productivity, improved product quality, and/or lower prices.

The analysis can now move to the further debate about markups, market power and their macroeconomic consequences.

6. MARKUPS, MARKET POWER AND THEIR MACROECONOMIC CONSEQUENCES: THE PROBLEM OF CAUSALITY

There is no doubt that the share of labour in value added in the US has declined since 1980, after decades of stable share, following the end of the Second World War (Elsby, Hobijn, Sahin 2013; Autor *et al.* 2017). According to the US Bureau of Labor Statistics, the labour share in value added dropped from around 62% to 56% in the second decade of the 21st century. Although there is no doubt about the trend and its magnitude, there is a controversy about the origin of this development, with potential explanations being, for example, labour substitution with capital (Karabarbounis, Neiman 2013), increased intangible assets/capital and its inadequate measurement (Koh, Santaaulalia-Llopis, Zheng 2017), structural changes in the US economy with offshoring labour-intensive work (Elsby, Hobijn, Sahin 2013), and substantial technological changes, predominantly those in the IT, with the advent of superstar firms (Autor *et al.* 2020) and the transfer of the resources to them.

Finding these explanations unconvincing, De Loecker, Eeckhout and Unger (2020) suggested that the market power, i.e. declining competition in the US product markets, is the source of the declining labour share in the US economy. They pointed out that an increase in markups implied a decrease in aggregate output (actually compared with the perfect competition

conditions), whenever residual demand was not perfectly inelastic. Lower output then implies lower demand for labour. This results in both lower labour force participation and lower wages.

There are several issues regarding this reasoning. First, as the authors pointed out, the increase in markups implies a decrease in output only if residual demand is not perfectly elastic. As already pointed out in this paper, in an economic environment with cost-heterogeneous firms, markups can coexist with perfectly elastic residual demand (Carlton, Perloff 2015). In this case increasing markups indicates only increasing cost heterogeneity of the incumbent firms (as all the firms, save the least efficient one, appropriate rents) with no decrease of output whatsoever. Second, in conditions of monopolistic competition of cost-heterogeneous firms, residual demand is not perfectly elastic, but it is an empirical question to what extent the observed markups are due to technological superiority of the firms and to what extent due to the negatively sloped residual demand curve. Decreased output (and reduced labour demand due to it, consequential for lower wages) in this situation, the monopolistic competition of cost-heterogeneous firms is proportional to the elasticity coefficient of the residual demand, not to the markups.³⁰ Furthermore, the share of the markups due to the cost heterogeneity of the firms and the negatively sloped residual demand curve is not observable. Nonetheless, it is evident that markups are inaccurate, upward biased indicators of the reduction of the output compared to perfect competition conditions. The greater the cost heterogeneity of the firms operating on the relevant market, the more biased the indicator it is.

Third, the decrease in the output due to the market power can be more than compensated by decreasing costs in cases when the market power is associated with technological progress embodied in new cost-reducing production technology. Such a development, reducing marginal costs and shifting marginal costs curve (effectively the supply curve for profit maximising firm, its section above the average costs curve) downward, can produce an equilibrium in which the output of a profit maximising firm is greater than it was in the initial perfect competition situation, which featured a horizontal residual demand curve and the initial (before technological

³⁰ It should be expected that, because imperfect substitutes of differentiated products exist, for a given market demand elasticity the absolute value of the residual demand elasticity coefficient in the case of monopolistic competition is rather high, i.e. that the slope of residual demand curve is relatively shallow compared to monopoly, meaning that the output reduction is lesser than in the case of monopoly. The more competitors, i.e. the more the differentiated products that are imperfect substitutes, the higher the absolute value of the residual demand elasticity coefficient that each competitor faces (Katz, Rosen 1994, 484–485).

innovation) high marginal costs, with the supply curve being above the one generated by the technological innovation. Hence, in a dynamic setting, with strong non-price competition, market power need not produce output reduction or a decline in labour demand. Effectively, evidence of falling prices of some products points to the decrease of marginal costs and produce hints, if not evidence, that the output is not reduced but increased due to the downward shift of the supply curve.

This is not to say that the increase of markups, interpreted as increase in market power due to the decline of competition, cannot cause a decline in labour demand (and consequently the decrease in the share of labour in value added), but this causality should be accepted with all the mentioned caveats, especially considering alternative explanations of the origins of the declining labour share that takes into account two developments that are missing from the declining competition explanation of increasing market power: technological change and globalisation.

These two developments imply that the competition in the US product markets, considered as competitive constraints, has actually strengthen, not declined. As to the technological change, the advances in IT increase information for the customers, decreasing both price and quality information asymmetry, increasing competitive pressure and creating environment for “winners-takes-all/most” games. As for the globalisation, it is self-evident that the import flow of tradeables from the countries with comparative and sometime absolute advantages has increased competition in the US product markets. Furthermore, Autor *et al.* (2000) demonstrated that these two developments are the origin of both superstar firms and declining labour share, as the sales, i.e. economic activity, has been reallocated to the superstar firms (firms with substantial competitive advantage) which feature a lower share of labour – both in terms of composition of production factor and distribution of the added value. Hence it is intra-industry reallocation of activities from less productive to more productive firms that causes the decline of the share of labour in value added. Autor *et al.* (2020) also observed that superstar firms have experienced faster growth of productivity than the average, meaning that reallocation of activities to these firms increases overall efficiency, i.e. the reallocation of the resources to these firms is efficiency enhancing, producing the ground for lower prices of the products of the same quality or improvement of the price-quality

combinations.³¹ Furthermore, it is empirically supported (Autor *et al.* 2020) that superstar firms are greater than the average and that they enjoy higher markups.

The question is whether these two developments provide support for thesis on the decline of competition in the US product markets. As already demonstrated (Syverson 2019), the size and number of firms are correlated with competition constraints (with linear relation: more smaller firms, stronger competition), only withing a very specific Cournot oligopoly framework with very restrictive assumptions. These assumptions are not met in the US economy, and actually hardly in any real-world economy. Higher markups, as already demonstrated, need not be related to market power (i.e. decline of price competition), due to cost heterogeneity of the firms, and that heterogeneity is emphasised with the advent of superstar firms. That is not to say that market power does not exist in the US, but in fact its magnitude hardly demonstrates substantial decline in competition in the US markets and it is not a convincing explanation of the origin of the declining labour share in value added.

The increase in markups, as it was empirically demonstrated (Díez, Leigh, Tambunlertchai 2018; Autor *et al.* 2020), is not unique to the US and has been recorded in a number of advanced economies. Obviously, the observed increase of the markups, whatever the magnitude observed, is not a national but a global phenomenon. Accordingly, there must be something global that is origin of this development, such as technology or globalisation, not national, specific for the US, such as decline in competition in product markets. The insight that while competition has been declining in the US product markets, it has been increasing in the European Union (Gutiérrez, Philipon 2018), indirectly supports the notion of the increased markups as a global phenomenon. If this insight is accurate, and if the increase in markups is the consequence of the decline of competition, then markups should have been declining in the EU. That is just not the case.

Furthermore, it is feasible that at least some segment of declining labour share in the added value in the US can be explained by developments on the US labour markets. These markets hardly operate perfectly, as monopsonies have been identified in the US, especially in certain local labour markets (Posner 2021), but that is related to the market power in labour markets,

³¹ Even if the mechanism of the market power drives down labour demand and declines nominal wages, the increased efficiency argument points to the possibility that real wages have actually gone up.

i.e. the buyer's power, and not product market power – and the two are by and large not related. At the present, there is no evidence of causality from market power in the product market to market power in the labour market.

It was also suggested (Eeckhout 2021) that market power in the US, due to decline of competition in the product markets, is the reason for increased income inequality in the country. The causality goes from market power to excess profits, which in turn increases capital income, enlarging overall income inequality, since capital income is more concentrated in rich people than in the poor. Although this causality is undeniable if a set of assumptions is met (Crane 2016), the question is how strong is the link and whether the impact on increasing income inequality is negligible. The other point is that market power cannot explain the greatest driver of rising income inequality in the US – the increase in inequality in labour income. This rising inequality should be considered within the framework of technological change and globalisation. Not only has technological change increased education premium and replaced low-skill labour engagement in automated tasks, mainly in manufacturing, with automation (Acemoglu, Restrepo 2019), but together with globalisation it has changed the structure of the US economy since 1980 and consequently the pattern of labour demand. The good, well paid manufacturing jobs for people without a college degree have disappeared due to automatization and relocation to other countries in the process of offshoring substantial segments of production. Some of the demand for labour that was lost as well paid jobs vanished was compensated by increased demand for low-skill jobs in service industries, but these jobs are not well paid and that not only contributed to decreasing share of labour (being reallocated from intermediate wage jobs to low wage jobs), but also to the demise of the US middle working class (Case, Ditton 2020), significantly contributing to the increase in the economic inequality, and especially labour income inequality.

Ironically, it is increase of product market competition (in tradeables), due to the globalisation and offshoring of activities as its consequence, that made the US labour income more unequal – not the decline of competition in the US product markets.

Another point that is made (Philippon 2019) is that, due to the decline of competition and increased markups, investment rates in the US have dropped and the growth rate of capital has been generally declining since 1980. There is, according to the available data, no doubt that the investment dynamic in the US in the recent decades has been rather sluggish (Hall 2015; Gutierrez, Philippon 2017; Crouzet, Eberly 2019). Nonetheless, there are at least two important questions regarding the insight that decline of competition in the US product markets generates sluggish investments. The

first one is whether the available data on investments and capital stock dynamics is accurate, especially whether there might be any reason for the measurement error to change over time. It was demonstrated (Crouzet, Eberly 2019) that both importance and magnitude of intangible assets – such as software, intellectual property, brands, innovative business processes – have increased substantially in the past several decades, and that the share of intangible assets in the total assets/capital has grown considerably. The problem is that intangible assets have not been fully recognized in capital accounting, meaning that some of the intangible assets were not observed as capital. Although capital accounting has improved in the US in the recent years, encompassing more of the intangible assets, the share of these assets in the total assets has also increased. As it has been pointed out (Crouzet, Eberly 2019), it is very likely that the amount of investment and capital has been underreported in the recent decades due to the partial capture of intangible capital. According to this view, the problem of reduced/sluggish investments does not exist at all or exists on a very limited scale.

Nonetheless, even assuming that, contrary to the evidence, the measurement of capital stock and flow is correct, that the problem exists, i.e. that the investments have been reduced, then another question inevitably arises: the question about the causality from declined competition to reduced investments. What is the mechanism of this causality? After all, declining competition should produce economic rents appropriated by the investors, creating incentives for investment due to the higher expected returns. This is precisely the reason for advocating rather lax competition policy for countries that are in the investment-based stage of economic growth (Acemoglu, Aghion, Zilibotti 2006) – it is reasonable to expect that higher returns will attract more investments.

In explaining this conundrum, Philippon (2019) implies that the firms with the market power, i.e. firms that face a negatively sloped residual demand curve, maximise their profit and appropriate economic profit by reducing output (compared to perfect competition). Accordingly, firms with market power do not have incentives to increase output and that drives demand for investment lower than in perfect competition. The problem with this argument is that it only takes into account incumbent firms, thoroughly neglecting new entries attracted by economic profit, i.e. returns above the cost of capital.

Hence, it is crucial to demonstrate that the above normal returns in an industry at least do not induce an augmented level of investment in that very industry. One possible way to demonstrate this regularity is to identify an investment gap (Gutiérrez, Philippon 2017). The rationale is that investments are channelled to the firms with a Tobin's q (the ratio between market value

of the firm and the replacement cost of its capital) higher than one, meaning that the market value (based on the expectations of future returns) of the firm is higher than the value based on the replacement cost of its capital, indicating high or at least above average expected returns. If an increase in Tobin's q of a specific firm is not followed by an increase of investments in it – which is counterintuitive – something is wrong, and it should be explained.

As usual, the devil is in the detail. Market values of the firms are available on the daily basis only for publicly traded companies – again a biased sample, as in the case of estimating markups. The estimation of the replacement cost of the firms' capital is a greater problem. Not only that exercise has not been done regularly, but the valuation procedure itself is infested with arbitrary evaluator decisions.³² Even worse, the level of arbitrariness is not constant, but varies from one firm to the other, even within the same industry, and varies from one industry to the other. The advent of intangible assets only made these measurement problems more fervent. In short, the investment gap based on Tobin's q is not a reliable indicator, because Tobin's q estimates are unreliable.

Furthermore, even assuming that the observed indicators are reliable, the way that they are used to ostensibly demonstrate that the decline of competition generated the drop in investments (Gutiérrez, Philippon 2017) is flawed. First, the overall dynamics (for the US economy as a whole) of the fitted values of investment, according to the estimates of Tobin's q and actual values of net investment, with the significant wedge starting to appear after 2008, is hardly an argument supporting the link between declined competition and lower investments, among other things because competition is a matter of a specific relevant market – it is not a feature of the aggregated values. Furthermore, the sectoral dynamics of the wedge for the ten industries with the fastest increase of concentration (measured by the dHHI), dropping faster than the ten industries with the slowest increase of concentration since 2000 hardly proves anything, since it has already been demonstrated in this paper that industrial concentration is not an appropriate measure of the intensity of competition, i.e. the strength of competitive constraints. Finally, the analysis only looks at the investment

³² Because the procedure is resource demanding and not legally required, it is not done frequently, in many cases not for many years, even decades. Book values of assets/capital are frequently used as a proxy for replacement cost value of the capital of firm. These values of the capital are even less reliable, because they are based on the accounting value of assets, calculated using the purchasing value and annual *ex ante* arbitrary chosen depreciation rate. Accordingly, most of the estimates of Tobin's q are not reliable indicators.

of the incumbent (not even all, but only publicly traded) firms and entirely excludes new entries – the most important source of competition in an advanced economy like the US.³³

For all the mentioned macroeconomic consequences to be explained by market power there must be substantial and ever-increasing exploitative abuse of dominant position (in the EU competition law parlance) that, in the comparative statics, decreases the output, increase the prices, and redistribute incomes from labour income to capital. Even the authors who claim that market power is the explanation of these macroeconomic consequences have not provided any evidence of such exploitative abuse of a dominant position. Even if such abuse exists, is it not likely that its magnitude and dynamics are sufficient to explain most of the macroeconomic development. This is especially the case taking into account the technological progress, particularly in the IT sector, globalisation, advent of superstar firms, and changes in the structure of the US economy.

7. POSSIBLE VULNERABILITIES OF THE US PRODUCT MARKET COMPETITION

Most of the evidence of decline of product market competition in the US, provided by the contributions thus far reviewed in the paper, is not convincing: the hypotheses of the overwhelming decline of competition in the US product market does not sit comfortable with the facts. Nonetheless, this does not mean that the US product market competition is not vulnerable. Before the sources of these vulnerabilities – even threats to the competition – are evaluated (likewise from the available literature), the nature of the US product market competition should be assessed.

The point is that, since the US economy is on the technological frontier (i.e. the frontier of the cutting-edge technology), its growth heavily depends on innovation. Furthermore, it is reasonable to assume that most of the consumer welfare gains in the US are due to the productivity increases that are based on technological progress and innovations, resulting in either new and improved products or in superior new production technologies that decrease costs. After all, even the authors who fully subscribe to the market

³³ An implicit additional explanation of the investment gap based on the Tobin's q is the existence of barrier to entry (Philippon 2019). The problem is that the investment level in the analysis is only due to the activities of incumbent firms, while barriers to entry, if they exists, just keep returns high, providing stronger incentives for incumbent firms to invest more.

power hypothesis as evidence that product market competition in the US has declined, admit that due to the innovation and productivity growth product quality adjusted prices are lower than they were (Eeckhout 2021), a clear indication that the consumer welfare has increased.

Accordingly, it is reasonable to conclude that the competition in the US product markets, i.e. competitive constraints, should be considered from the point of view of incentives for innovation, i.e. dynamic efficiency, rather than static allocative efficiency. Accordingly, it is quite reasonable to suggest that the aim of the competition policy in the US should be innovations, rather than price efficiency – as it is suggested it should move “from price-centric to innovation-centric competition policies” (Gilbert 2020, 2). In other words, it is appropriate to sacrifice some deadweight loss (i.e. allocative inefficiency) for the dynamic efficiency gains due to innovation. Obviously, markups labelled as market power and considered as an indicator of declined competition in the US are hardly relevant within such a framework.

It seems, based on the insights of the recent contributions, that there are three major sources of weaknesses or possible threats to the product market competition in the US, especially to the competitive constraints regarding innovation. The first one is the practice of killer acquisitions (Cunningham, Ederer, Ma 2021), in which large dominant firms that are technological leaders in a given industry purchase small innovation intensive new entries (potential rivals) to prevent them from becoming actual rivals and potentially dethroning the technologically dominant firm. In infamous words of Facebook CEO Mark Zuckerberg “It is better to buy than to compete”. It is obvious that such killer acquisition removes some incentives for innovation by the incumbent firms, hence from that point of view such mergers should be prohibited.

Nonetheless, if these mergers are prohibited, the outcome can be harmful for innovation. The point is that, at least in some cases, the opportunity to sell an innovative start-up or promising R&D project to an established firm is the most powerful incentive for innovation on the first place and the best way to commercialise a new product (Gilbert 2020). Without that incentive, one can expect a slower pace of innovation, and slower introduction of new products and new technologies that decrease the average costs of existing products: in short – the slowing down of dynamic efficiency.³⁴ Hence, there

³⁴ This mechanism works for both entrepreneurs who commit themselves to the innovative endeavour and to the venture funds that support them. Both entrepreneurs and venture funds expect capital gains as reward for their effort and the risk they are exposed, and they are *ex ante* aware that capital gain cannot materialise without the acquisition.

is an obvious trade-off in the area of killer acquisitions, but it is important to recognise that this practice can be a threat to competition in the US product market and that it makes competition constraints vulnerable, especially regarding incentives for innovation.

The other possible vulnerability of the competition in the US product market is common ownership of rivals. It is indisputable that financial institutions (mutual funds, sovereign wealth funds, etc.) are investing in competitors: firms that compete against each other in the same industry. Sometimes even in the same relevant market. It is rather intuitive that these institutional investors could benefit from restricting the competition between the firms they own as minority shareholders, since the economic profit the companies that they invested in earned this way would be transferred to the dividends and increased the earning of the financial investors, with benefits for the fund managers themselves (Scott Morton, Hovenkamp 2018, 2031).

Effectively, it is in the common interest of institutional investors that the firms they invested in collude and enforce horizontal restrictive agreements, in the EU competition law parlance. Such agreements generate or enhance market power of all the participants, which enables them to earn economic profit that would be transferred into increased dividends for the investors. This rationale has been confirmed by a highly stylized theoretical model (Azar, Vives 2019), whose results is that enlarged common ownership generates increased market power and deadweight loss. Nonetheless, as the authors of the model specify, we need to know much more about how the common ownership structure translates into a firm's business decisions. There are some suggestions of mechanisms that institutional investors may use to "soften" the competition (Scott Morton, Hovenkamp 2018, 2032), albeit without a thorough hypothesis of the causality.

The answer to the question regarding mechanism is rather difficult, as it has been demonstrated (Hemphill, Marcel 2020) that the causal mechanisms that might link common ownership to anticompetitive effects are rather vague. The authors believe that most suggested mechanisms either lack significant support or are implausible. Perhaps the most prominent empirical research focused to the airline industry (Azar, Schmalz, Tecu 2018; Azar, Vives 2021) and provided some empirical evidence that increased common ownership in the US airline industry is anticompetitive and that it has produced increased market power, although these findings have been challenged (Dennis, Schenone, Carola 2019). Obviously, more theoretical and empirical research is needed for the threat of common ownership to the US product market competition to be better evaluated, but it is evident that collusion among competitors not to innovate, as they would without the collusion, can be enforced much easier than the "classical" cartel collusion

regarding prices and outputs. This is the reason why common ownership can be more anticompetitive in the US than in the other countries, because it can be focused on innovation and dynamic efficiency, rather than on prices and output, i.e. allocative efficiency.

Furthermore, the trend of increasing shares of institutional investors (especially diversified mutual funds) in the equity of the publicly traded companies in the US, is viable and there is no signal of slowing down or trend reversal. This is quite consistent with the insight that increased wealth generates more demand for financial intermediation (Shiler 2012), including institutional investors as one of the most important financial institutions. Accordingly, with the increased personal wealth of individuals (in the US and abroad) who invest that wealth in institutional investors, allowing them to be the custodians of it, the problem of common ownership and its adverse impact to competition in the US product market is here to stay and will only become aggravated, making it possibly a significant vulnerability of the US product market competition.

Legal barriers to entry, due to entry regulation, are the third possible vulnerability of the US product market competition regarding innovation, as well as other anticompetitive inefficiencies. Although the proposition that increasing barriers to entry decline potential (in the short run) and actual (in the long run) competition is intuitive, there is still vast space for empirical sector-specific research regarding the causality and magnitude of the consequences. One way or the other, there is an indisputable long-term trend of increasing government regulation, erecting and enhancing legal barriers to entry. As pointed out by Davis (2017), the *US Code of Federal Regulations* has grown eightfold over the past 56 years and at the time of publishing this piece stood at nearly 180,000 pages.

The methodological problem is that the number of pages is not a reliable indicator of the regulatory burden that creates legal barriers to entry. The breakthrough came with the Index of Regulation generated by the RegData, a relatively new database (Al-Ubayadli, McLaughlin 2017) that cleared the way for introducing the regulatory burden, i.e. legal barriers to entry at the industry level. It was demonstrated that substantial negative correlation exists, with a consistent increase of the Index of Regulation (increase in legal barrier to entry) and decrease of the rate of new entries in the US since 1980 (Gutiérrez, Philippon 2019). Furthermore, there has been a consistent decrease of the young firms (those less than five years old) in total US firms, both in the number of firms and in employment. The employment share was 20% in 1980 and only 10% in the mid-2010s (Philippon 2019). Clearly, the strengthening of legal barriers to entry undermines new entries.

New entries are especially relevant for innovation – proportionally much more innovation is generated by new entries than by incumbent firms. Hence, in the case of innovation driven economy, such as the US, legal barriers to entry are a greater obstacle to dynamic efficiency than in other economies, which focus on “conventional” allocative efficiency aims. Nonetheless, the competition vulnerabilities from legal barrier to entry should be considered within the framework that in some of the cases these barriers contribute to consumer surplus, such as the barriers to entry in the financial sector (especially banking), which increase its stability (Vives 2016), or environmental barriers to entry directed at decreasing environmental negative externalities.

This is not to say that this list of vulnerabilities of the US product markets competition, i.e. potential culprits of competition decline, is a closed one. These are just a suggestion of apparently the most important threats to US product markets competition. They are based on some empirical evidence and on the assumption that dynamic efficiency is what really matters for the consumer welfare in the US product markets, and not allocative efficiency.

8. CONCLUSION: THE NEED FOR CHANGES IN THE US COMPETITION POLICY

The review of the recent contributions on markups, market power and the decline of competition in the US product markets, both theoretical and empirical, provides enough evidence that there has possibly been some decline in price competition, but it has been compensated by non-price competition within the framework of monopolistic competition and product differentiation. The rise of the share of intangible corporate assets (patents, brands, etc.) is indirect testimony of the increasing non-price competition in the US product markets and the efforts of the firms to isolate themselves from rivals and their competitive pressure. Accordingly, competitive constraints in the US product markets, predominantly in the area of non-price competition, have by and large gone up, not down.

The observed increase of the markups (regardless of the upward bias in their estimates), market power, and profit rates are consistent with the possible decline in price competition. Nonetheless, they are also consistent with the technological progress, mainly in IT, decreasing customer information asymmetry, and creating a winner-takes-all/-most business environment framework, clearing the path for the advent of superstar firms (who took all), reallocation of activities towards those firms, and increasing selective efficiency and industrial concentration.

With increased productivity and decreasing marginal costs, markups are needed to cover the substantial fixed costs (e.g. investments in R&D and brand creation), those that enable increased productivity, to provide sustainability for the firms enjoying economy of scale, as marginal costs pricing would inevitably create financial losses.

Globalisation, together with automatization, as the consequence of technological progress, have destroyed well paid manual manufacturing jobs in the US and this structural change helps explain decline in the share of labour in value added and the rising income inequality. Market power is hardly the culprit in those developments.

As to the threat of killer acquisitions to the US product market competition, it is obvious that some changes to merger control are needed. Since the controversial contribution of Kwoka (2015), whose insights were challenged (Vita, Osinski 2018), there has been a vast range of recommendations regarding tougher merger control reform, and some of them, such as the Klobuchar Bill (Ilić 2022), are in legislative procedure. It seems, though, that the best way forward regarding the merger control reform should be the cautious approach by Gilbert (2020) – that the notification thresholds should be modified to require reporting of acquisition targets with modest revenues, if the acquirer is a firm that dominates an industry. Even in such a case, the burden of proof should remain on the competition authorities.

Common ownership is a significant possible vulnerability of the US product market competition, especially regarding incentives to innovate. On the one hand, much more knowledge is needed about the mechanism possibly linking common ownership to anticompetitive effects – clearly, an academic task. On the other hand, the US legislative framework provides the ground for appropriate merger/acquisition control to check enlargement of common ownership (Scott Morton, Hovenkamp 2018). It seems that such an endeavour regarding common ownership will inevitably be post-merger control, with all the adverse effects to legal predictability and the regulatory risk associated with it. Accordingly, careful and restricted moves on this front are needed to not endanger the beneficial effects of common ownership, and to not increase the unnecessarily administrative burden of merger control and the legal uncertainty.

Finally, there is no panacea regarding legal barriers to entry and their expansion in the recent decades. It is obvious that lobbying is an inherent segment of the US political system, and this enables powerful incumbents to create legal moats around their business castles. Antitrust legislation and authorities can hardly do anything about these efforts, but something can be done to reduce their impact. In the intellectual environment which is so much

in favour of regulation and captivated by the belief in a benevolent regulator (Sunstein 2021), in which Stigler's theory of regulation (Stigler 1971) and its public choice approach are almost completely forgotten, some old-fashioned competition advocacy, so eagerly recommended to less developed countries, should also be applied to the US – the cradle of antitrust. After all, shaping attitudes cannot do any harm.

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