1. **Introduction**

In this paper I look into the notion of market power in the history of economic thought. In particular I investigate: a) the kind of entry barriers the economists took into consideration; b) the role they attributed to the number of firms present in a market, and their consideration of potential competition.

As it is well known, modern economic theory states that market power is "the ability of firms to influence the price of the product or products they sell" (Martin 1989: 16). According to the traditional *structure-conduct-performance* approach to industrial analysis, this ability depends on the number of firms in the market, that is to say on the dimension of firms with respect to the market demand. In this view, the number of firms depends, in turn, on exogenous barrier to entry, which can be natural (like the uniqueness or scarcity of some resources), institutional (like patents, property rights, State privileges, State licences), technological (in particular economies of scale) or based on the characteristics of the market (like preferences, the size of market demand and the price elasticity of demand). The absence of perfect knowledge is also a barrier to entry.

The approach of the Chicago School to industrial economics denies the possibility of permanent barriers to entry. In its view market power is only temporary, because freedom of entry can always eliminate monopolies, unless the State blockades entry.

In the view of the New Industrial Economics, barriers to entry are not only exogenous, but depend also on the strategic behaviour of established firms aiming to prevent potential competitors from entering. Moreover, according to this approach, if there are neither institutional entry barriers nor sunk costs, even a limited number of firms can allow prices to converge towards marginal costs: "Such a market is called *contestable*, and in it the force of potential competition alone is sufficient to produce the same performance as a competitive market" (Martin 1989: 68).

Historians of economics have indeed studied the theory of non-competitive markets from two points of view. On the one hand, they have analysed the history of the profit maximization analytical models in a non-competitive setting, from Cournot (1838) to Chamberlin (1933). On the other, they have studied the history of antitrust policies (since the *Sherman Act*, 1890). But in both of these veins of research the historical reconstruction of the sources of market power has been neglected. In the former, the reason for their negligence lies in the lack of a proper explanation regarding the sources of market power by economists themselves: in the economists' contributions, in fact, those sources were taken as a given. In the latter, i.e. in the debates on antitrust policies, the reason is that obstacles to competition were not explained on the basis of economic theory (Martin 1989: ch.3).

To the best of my knowledge, the history of the theory of the sources of market power has not been written yet. In the handbooks of Microeconomics or Industrial Economics one can easily find the attribution to Cournot of the first analytical model of profit maximization in a non-competitive setting, but it's hard to find the name of an economist, before Bain (1956), credited with the paternity of the notions of the entry barriers I have mentioned above.

The method of my research was that of investigating selected periods in the history of economic thought in order to find the origins of the notion of market power. I started by looking at the writings of the most important economists belonging to the Italian marginalist school (Antonio de Viti de Marco, Maffeo Pantaleoni, Vilfredo Pareto, Ugo Mazzola, and Enrico Barone). The main reason that prompted me to investigate the writings of these particular economists is that most of them were public economists. As such, I presumed that they must have been interested in the theoretical definition of barriers to entry, because they were interested in the public intervention aimed at correcting market failures deriving also from those barriers. Moreover it is well-known, as Schumpeter reminds us, that starting from 1890s, those economists took Italy into a leading position in the world[1]. Three of them (De Viti de Marco, Pantaleoni, and Mazzola) took over the editorship of the *Giornale degli Economisti* in 1890, and turned it into the Italian voice of the new economic science. It became the most important review in Italy, and one of the most distinguished in the world in the field of pure theory. Hence, there are good reasons to think that their ideas played an important role not only for Italian economic thought, but also worldwide.

In this paper I analyse the writings of two of them: Antonio De Viti de Marco and Maffeo Pantaleoni.

2. Market power for Antonio de Viti de Marco

De Viti de Marco (1858-1943) is well-known internationally as an expert in public finance. Quite some time before Buchanan dealt with him in his famous essay on the Italian school of public finance (Buchanan 1960), the various editions of his *Principles* had been translated into German, Spanish and English (Cardini 1991: 588)[2]. Historians of economic thought look upon Antonio de Viti de Marco as one of the economists who, at the end of the 1880s, introduced marginalism into Italy (Barucci 1972).

De Viti deals with the sources of monopoly power mainly in an article against the public running of the telephone industry (De Viti 1890). The article is written with the aim of demonstrating that the telephone industry is not a public service. For De Viti, public services are characterized by two features: a) they are monopolies; b) they satisfy a collective want. He claims that while to some extent the first feature was present in the telephone industry, there was not, and there was not going to be, a collective need for the telephone (it was 1890). Hence, in his opinion, there was no need for it to be nationalized, but only regulated by the State through licences, as we will see later.

In this context De Viti gives many explanations of the causes of monopolies. The first one is the following:

"big private monopolies […] are the characteristic phenomenon of the present economic organization and the natural result of three causes: division of labour, competition and big enterprises. The action of combining these forces in various ways leads to the triumph on the market of the most powerful and best

[1] "The most malevolent observer could not have denied that it [Italian economics] was second to none by 1914" (Schumpeter 1954, ed. 1976: 855).

[2] For a discussion of De Viti's popularity outside Italy see also Kayaalp (1998).

organized firm which, by reducing to the minimum its general expenses, could offer its products at the best price and knock out the smaller competing firms" (De Viti 1890: 288-289).

Although these words are too few to understand the theory that De Viti had in mind (if he did, indeed, have one in mind) we can try to interpret them, on the basis of the knowledge of the Italian economic thought before his time. For the Italian economists of the XIX century, competition was a dynamic process, as it was for Smith. In their view, thanks to innovations (*division of labour* in De Viti's words) a firm could improve x-efficiency and reduce costs of production and prices. It could enter a market (*competition* in his words) and become a monopolist. When talking about *big enterprises* we don't think that De Viti refers to the share of their production with respect to the market, but to the actual physical dimension of firms, which at that time was growing, due to mechanisation[3]. De Viti establishes the same relation between the division of labour and monopoly in his *Principles* (1928, Engl. ed. 1936: 40) where he speaks of "the growing division of labour, as a result of which the producing group sometimes finds itself in a quasi-monopolistic position".

In this view, monopoly power is a temporary phenomenon, because potential competitors can always improve their x-efficiency and enter the market. Moreover, De Viti considers the monopoly power obtained by competition on merits to be a good outcome, provided that the benefits of efficiency are passed on to consumers in the form of lower prices. This was the general opinion among the XIX century Italian economists, as well as one of the goals of the *Sherman Antitrust Act*.

At this stage we can already notice that De Viti was fully aware that monopolies could arise in some industries not only for institutional, but also for technical or strategical reasons. This awareness is confirmed in other writings. In the *Principles* (Engl. ed. 1936: 47) he writes that it's important to see "whether the private enterprise, *if left to itself*, would succeed in establishing a monopolistic position". The words "if left to itself" presumably mean "without the intervention of the Government", and they suggest that De Viti is thinking to some kind of technical, not institutional, entry barriers, as a cause of monopoly power. Moreover, according to one of the lithographic versions of his lectures (without the year of publication, but edited between 1894 and 1924), De Viti's definition of monopoly is the following: we have "a monopoly […] when *a producer* is able to exclude everyone else from the ownership and from the availability of the necessary production forces. This exclusion must be absolute and complete, because […] even two individuals are enough to create competition, and for the monopoly to disappear" (De Viti n.d.: 12). We notice that in the first part of this assertion De Viti says that "the producer" himself, not the Government or the law, can blockade entry. The second part of the assertion allows us to believe that for De Viti competition is not a function of the number of firms in the market. It also explains why, as we will see, De Viti doesn't consider the market power existing in non-competitive market structures any different from monopoly.

De Viti's analysis of the causes of monopoly as it's developed in his article on the telephone industry (De Viti 1890) is very original when he considers the case of a music concert, of which he stresses the non-rival nature of its consumption. When the maximum amount of people who can join in the consumption of a

[3] We have to keep in mind that for an observer of that age, division of labour and mechanisation were considered complementary processes. See Mosca (2004).

concert is 1000 – De Viti writes – one theatre with 1000 seats is more efficient than two theatres with 500 seats. In contemporary terms we can say that he considers the case of monopoly provision of price-excludable public goods (or local public goods).

It's worth noticing that, in showing that this kind of monopoly comes naturally, De Viti considers two processes by which a market, where one firm can produce more efficiently than two, becomes monopolistic. One process consists in collusion, the other in the undercutting price mechanism. It's really hard to know whether De Viti knew the theories of Cournot (1838) and Bertrand (1883)[4]. In fact it's almost impossible to trace the origins of De Viti's ideas back to previous economists, because De Viti didn't often cite others[5]. Unlike Bertrand's model, De Viti claims that the price undercutting will lead to the survival of only one theatre.

Comparing the above example of the theatre with those of the railroad, telegraph, and of a road network, De Viti finds a similarity in that, in all of them, one firm is more efficient than two or more. The same idea is expressed in his *Principles* (Engl. ed. 1936: 76) where he reports on the real situation of the railroads: "free competition between railway enterprises often ended, and tends as a rule to end, either by a combination of the competing companies, or by the collapse of the weakest". These are the reasons why De Viti (1890: 297) considers it certain that "inside a town the telephone service tends to be a monopoly". It's also worth noticing that De Viti singles out, probably for the first time in the history of economic thought, the *network-externality effect* of the telephone industry: "Consumers have a higher utility as the number of subscribers, with whom they can communicate when needed, increases" (De Viti 1890: .297).

We can summarize in contemporary terms De Viti's ideas about the causes of monopoly in the telephone industry as follows: he considers the entry barriers due to the existence of increasing returns to scale (the average cost that falls as firms' production increases). In the industries which he takes as examples, there are high fixed costs (part of which are sunk costs) and low marginal costs (as in transport networks, telegraph and telephone industries), or zero marginal costs (as in the case of non-rival goods, like theatres). In these examples economies of scale are so large, relative to the size of consumer's demand, that a single firm can produce at a lower average cost than two or more firms. In other words, the minimum efficient scale of production is larger than the size of the market. As everybody knows nowadays economists call them "natural monopolies"[6].

To the best of my knowledge the first economist who singled out the relation between increasing returns and monopoly was Jules Dupuit (1852: 340): "the huge amount of capital needed to build a new road – he wrote – limits the possibility of making it, to a very small number of people; furthermore, it happens that […] the revenue which is enough for one is not enough for two. [… A] big part of [the costs] are independent

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[4] What we do know is that De Viti had studied Jevons (De Viti de Marco 1925, ed. 1927: 41) who cites Cournot. In 1890 Edgeworth's article on the theory of monopoly (Edgeworth 1897) had not yet been published in the *Giornale degli economisti*.

[5] In the note to the reader of the third edition of his *Principles* (1928) De Viti wrote explicitly that the book did not contain "references to other authors".

[6] According to Shy (2001: 8) "there is nothing "natural" in the formation of monopolies. Therefore this term is likely to disappear from the language used by regulators and professional and academic economists".

from the use. […] The transport networks […] are necessarily monopolies"[7]. It's superfluous to say that De Viti doesn't cite Dupuit.

We have seen that, in the general view of competition as a dynamic process, monopoly power is temporary, because of the threat of entrance by rivals. But, as we know, in the industries considered by De Viti, high sunk costs rise permanent barriers to potential entrants and generate a monopoly. Aware of this problem, De Viti proposes a way to reduce the incumbent's monopoly power in these cases. According to his view, in the telephone service the Government regulation of entry can limit the monopoly power of firms. In particular, the Government can give a licence to the most efficient firm and can refuse to renew it if the firm behaves as a monopolist (fixing high prices and lowering quality standards). This mechanism of periodical attribution of the right of running an industry is now seen as a special kind of potential competition[8].

Efficiency is also assured, in De Viti's view, by the existence of substitute goods: "Competition to telephone inside a town comes from errand-boys, servants, and the telegraph itself. It's in the interest of the company to win against these natural competitors, by supplying the service at a lower price" (De Viti 1890: 298). This statement allows us to say that for De Viti, although implicitly, market power also depends on elasticity of demand, and the demand for the telephone is elastic. However, this time quoting Marshall (1890), he writes that "demand lacks elasticity" (De Viti 1890: 295) because in his opinion, the price is low for the rich (so their demand doesn't depend on the price), while it is too high for the poor (so they are out of the market).

The problem of the sources of monopoly power is not explicitly treated in De Viti's speeches in Parliament (where he was a Deputy from 1901 to 1920). Nevertheless, he often declares himself in favour of State regulation in those cases that we now call natural monopolies. For example he says: "It's [not] true that railways, as they are organized nowadays, are a monopoly, because the intervention of the State neutralizes the effects of monopoly" (De Viti 1903: 8027). It's well-known that this opinion reflects one basic assumption of the antitrust policy[9].

His political writings in support of free trade, which are frequent and even dominant throughout his life (De Viti 1929), also reveal his opinion. Again, the focus of his writings is more against protectionism, than against monopolies, but as Stigler (1982, p.5) points out, we have to remember that: "Free trade is a sort of international antimonopoly program in itself".

Summing up, we can say that in De Viti's writings there is not a consistent theory of the sources of market power. Nevertheless, we can find there many original pieces of a theory: the intuition that a minimum efficient scale which is large relative to the size of the market can generate a monopoly, the precise definition of the network-externality effect, and that of goods that are non-rival in consumption.

[7] See also Ekelund and Hébert (2003: 669).
[8] Nevertheless it has been criticized (Vickers and Yarrow 1988).
[9] The first antitrust norms adopted in the USA were in the *Sherman Act* (1890). In Europe they were contained in the *Treaty of Rome*, approved only in 1957, while in Italy a set of antitrust laws was introduced in 1990.

3. Market power for Maffeo Pantaleoni

Antonio de Viti de Marco and Maffeo Pantaleoni (1857-1924) were very close friends. In 1898 forty-year-old De Viti de Marco dedicated one of his books to his contemporary Pantaleoni in "memory of the years our lives were so closely interwoven both personally and in the habits of scientific practice" (De Viti de Marco 1898).

Pantaleoni is credited to be the first who applied marginalist analysis to public finance. He did it in 1883 (Pantaleoni 1883), before Emil Sax (1884) and before De Viti de Marco (1888)[10]. Piero Sraffa (1924: 650) reminds us that: "The fame of Pantaleoni as an economist abroad is based mainly on his *Pure Economics* (published in 1889 and translated into English in 1898)".

Pantaleoni deals with the sources of monopoly power in many works. In his first book (Pantaleoni 1882), on the theory of the shifting of taxes, he examines the effects of taxation in different market structures. It seems very interesting to me that, in Pantaleoni's analysis, the investigation of the sources of market power is strictly connected to the notion which held the pivotal position in economics, i.e. the theory of value. Following J.S. Mill's version of the classical theory of value, Pantaleoni in his book states that the value of a commodity is determined by the cost of production, provided that its technology is characterized by constant costs, and that it is produced in a perfectly competitive market. This theory leads Pantaleoni to examine all the circumstances in which perfect competition cannot be realized. The section of Pantaleoni's book which is relevant to my analysis here is the one dedicated to "commodities which can be produced *ad libitum* under perfect competition" (1882: 77). In fact it is there that he examines the nature of entry barriers.

To sum up Pantaleoni's analysis (1882: 85-90), we can say that in his view obstacles to competition come from: a) the ownership of unique resources (like talents, extraordinary abilities of the entrepreneur, special machines, natural resources), b) the lack of information about extra-profits obtained in some industries, c) impediments to a rapid adjustment of market supply to increases in demand. He also analyses some aspects of the location theory, although very superficially. Considering transportation costs as a part of the costs of production, he claims that the firms that are closer to the market have a monopoly due to their location. At the same time he mentions the customers' loyalty to firms which are located at a longer distance from the market. Moreover, briefly citing Senior's *Political economy* and J.B. Say's *Traité*, he states: "competition can be excluded in many other ways". He concludes his analysis with the consideration that, whatever be its source, extra-profit is the main signal of the existence of monopoly power.

From the conference entitled *The XXth century according to an individualist* (1900) it clearly emerges from it that for Pantaleoni competition is a dynamic process, as it was for classical economists (and, as we have seen, for De Viti de Marco as well). It consists in the following well known chain of effects: innovation in a firm generates extra-profits, which are an incentive for competitors to enter the market; the rise in demand of new inputs leads to extra-profits in the markets of inputs, and again to a process of entry into the market; the diffusion of innovation is followed by a decrease in prices and by the elimination of extra-profits (Pantaleoni 1900 ed. 1925: 272-273). According to Pantaleoni, the purpose of improving the effectiveness

[10] Pantaleoni's work was translated into English and published in Musgrave and Peacock (1967).

with which a given set of inputs are used to produce outputs[11] can be accomplished not only by innovation, but also by widening the dimensions of firms, through mergers, trusts, and every kind of agreement between firms. In Pantaleoni's view, efficiency is the only explanation for firm conduct.

A similar idea is expressed in his work on trusts and cartels (Pantaleoni 1909) where Pantaleoni distinguishes between what we now call horizontal and vertical integration. His paper is intended to demonstrate that while horizontal integration can indeed be a source of market power, vertical integration is only a way to improve x-efficiency. Moreover, he states that competition (or "selection", as Pantaleoni often calls it) endogenously determines the efficient level of vertical integration. Therefore, he is against what he considers "the persecution" of trusts made by American laws (Pantaleoni 1909 ed. 1925: 299).

It's interesting to notice that in his description of the competition process, entry always remains free: Pantaleoni does not even consider the existence of strategical or technical entry barriers. As far as economies of scale are concerned, he is aware that some industries can produce at decreasing costs, but he seems to believe that the minimum efficient scale cannot be but a low proportion of the total market demand. In his words: "if the industry is subject to the law of decreasing costs, all those who don't produce at the minimum cost will be eliminated, and there couldn't be extra-profits". Moreover he explicitly says that "potential competition […] is always a way to brake prices". With this idea in mind, it's not a surprise that he was against antitrust laws, which he considers a useless Government intervention in the economic sphere.

We can see that Pantaleoni is not worried that collusions reduce the number of firms in the market, widening their market shares. This view seems to be similar to that of the Chicago school.

Conclusions

De Viti de Marco and Pantaleoni were "militant marginalists", they both introduced marginalism into Italy. In this paper we have pointed out that for them competition was a dynamic process, as it was for the Classical school, even though they were marginalists.

The distinction between competition as a dynamic process and competition as a long -run, zero-profit equilibrium is always stressed in the works on the history of the idea of perfect competition (for example George Stigler 1957, Machovec 1995). It is common opinion that the Classical economists and Alfred Marshall dealt with the dynamic view of competition, while Cournot, Jevons and Edgeworth introduced the static notion of competitive equilibrium.

I don't think that this distinction is relevant for the purpose of my research. My topic is not the history of the notion of competition, it is that of the notion of market power. Market power is caused by barriers to entry. Freedom of entry is one of the four characteristics of a competitive market as it is described in the standard microeconomics textbooks. At the same time, entry is a dynamic, not a static concept. Hence, entry barriers are the cause of market power both in the static view of competition, as well as in the dynamic view of competition. For this reason, and as far as entry barriers are concerned, I don't see any distinction between

[11] Italian economists, from the Classics to the Marginalists, called the purpose of improving x-efficiency "the law of the minimum means".

the Classical and the Marginalist paradigms. The distinction is relevant if the focus is on the history of the notion of competition, it is not relevant if the focus is on the history of the notion of market power.

There is no surprise that in the works of Pantaleoni on this topic we find citations of Smith, Say and Marshall (the dynamic view), together with those of Cournot, Dupuit, Jevons and Edgeworth (the static view).

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