Munich Personal RePEc Archive

Determinants of competitive intensity: substitutability and pricing policy

Cocioc, Paul

Babes-Bolyai University, Cluj-Napoca, Romania

27 January 2021

Online at https://mpra.ub.uni-muenchen.de/108654/
MPRA Paper No. 108654, posted 08 Jul 2021 00:21 UTC

DETERMINANTS OF COMPETITIVE INTENSITY: SUBSTITUTABILITY AND PRICING POLICY

Paul COCIOC[a*]

[a)] *Babeş-Bolyai University, Faculty of Economics and Business Administration, Cluj-Napoca, Romania*

Please cite this article as:

Cocioc, P., 2021. Determinants of competitive intensity: substitutability and pricing policy. *Review of Economic Studies and Research Virgil Madgearu,* 14(1), pp.5-16.
doi: 10.24193/RVM.2021.14.70.

*

Abstract: *The article offer a critical perspective of several elements and some associated indicators used in characterizing and estimating the intensity of competition (i.e., the extent to which the mutual pressure of rivals is exerted on the market). We focus on the pricing policies of the firms and its impact and expected responses from competitors. Influences of substitutes and overall production capacity surplus are also analyzed.*

Key words: *competition; competitive intensity; imperfect competition; price signals*
JEL Classification: *D40; D43; L11; L13; L41.*

* Corresponding author. *E-mail address:* paul.cocioc@econ.ubbcluj.ro.

1. Introduction

The evaluation of the level of competition and / or concentration (monopolization) existing at a given moment in a particular market will impose the consideration of various elements, especially related to the way of achieving the defining conditions of competition. The ends of a competitive process (Hotelling, 1929; Cocioc, 1999) are the real elements that count in estimating the functionality of the competition mechanism. In this approach, structural concentration in markets is less important than the use (and abuse) of a dominant position. Or at least are not the (only) fundamental indicators to define competition. If a specific market does not allow any successfully anticompetitive practices and rivals have the power to counterbalance the leaders actions, it seems that the number and comparative dimensions are irrelevant. A sufficient competitive pressure is present.

The appreciation of the competition and its level of manifestation cannot be done through a single indicator, due to the complexity of the phenomenon, but requires the consideration of several aspects related to the competitive environment and its specific conditions, aspects that must be covered at least the following directions (Cocioc, 2014):

- analyzing the degree to which the defining conditions of free competition (understood as a perfect or at least workable one; for further details see Stigler, 1957 or Robinson, 1980) are found on the market, more preciously the minimal conditions required by modern theories (or modern interpretations of the classics, see for instance Cocioc, 2000);
- the market structure and its dynamics (reflected by the degree of concentration, economic power and monopoly power);
- prevailing competitive mechanisms, strategies, and instruments (i.e. price competition versus nonprice competition, economic or extraeconomic practices, prevalence of active or passive policies);
- the economic and social efficiency provided by the existing mechanisms (if competition goals are achieved, nothing else matters; i.e., observing the ends it is sufficient to appreciate the entire competitive process).

A general description of the market structure and the competitive behaviour of the economic actors involved. And all influence and determine a certain level of what is called the intensity of competition. Competitive intensity represent the strength of the mutual pressure permanently exerted by rivals in a particular market (or industry).

Basically, a characterization of the perfection of the competition and related to that an estimation of the existing and potential market failures. Because imperfect competition will represent at least a risk in any situation. Imperfect competition equals market failure. Even if in the economic literature (Ledyard, 2008) there are and other cases that describe the causes of those failures (e.g., externalities, information asymmetries, or public goods), we consider all just as imperfections of competition. In almost all situations, externalities (Laffont, 2008) are strictly related to the ability to benefit from free advantages of others activities or from an artificial diminishing of expancies (of private costs, but with the same economic costs). There are possible if and only if we are confronted with limited market transparency, imperfect resource allocation, and lack or insufficient public control (non-economic market intervention, including laws and law enforcement, to prevent and remedy in due time), all being deviations from perfect competition. Adverse selection (Akerlof, 1970) or moral hazard (Kotowitz, 2008) as the main discussed examples of information asymmetry or other incomplete markets derived also from imperfect information. And public goods are either situations of monopoly or severely unbalanced markets (i.e., critically insufficient supply).

In our paper, we will analysis some market imperfections that are mainly related to the behavior of competitors (active and passive), both in terms of the possibilities for action (we presume the willingness as existed in all cases) and the instruments used. Because any strategy can be favored or, on the contrary, made more difficult, depending on the competitive conditions in the market. At the same time, their presence, level and forms are proof of the functioning of competition with certain intensity. For a global view, we will combine elements related to Porter's competitive forces (Porter, 1980; such as substitutes, industry rivals, and potential entrants) with more direct

factors (e.g. concentration, differentiation, cost leadership) in at least three dimensions: ability, availability and possibility.

2. Product substitution and differentiation

Contemporary competition in the absence of differentiation is inconceivable. The cross-elasticity of the (individual) specific demand an the essential element for assessing the degree of substitution and, implicitly, the level of product differentiation. The higher it is that elasticity of demand, the more homogeneous are the products involved, and the price competition can more fully manifested. We appreciate that product differentiation does not reduce and certainly does not eliminate competition but, on the contrary, can have effects in the direction of its intensification and leads, in most situations, to improving the quality of goods and services, to increasing their accessibility and better meeting the differentiated needs of consumers. In such approach, the differentiation is clearly a vertical one (i.e., involves quality differentiation). Furthermore, consumer demand will vary mainly depending on wealth: those with high incomes are willing to buy high-quality goods while those with low incomes are oriented towards low quality goods (Rainelli, 2004). And such horizontal differentiation can be more easily highlighted through the income elasticity of demand. Even if the starting point of the market is a horizontal differentiation (therefore, based rather on the perception of products, which are varieties of equal qualities and separated in an illusory way: presentation, brand) we appreciate that the endings of the competitive process remain a more deep qualitative differentation of products.

Monopoly power indisputably depends on the existence and availability of substitutable products. Monopoly itself becames imperfect if there are substitutes. And the larger is the range of alternative choices, the lower is the power to control or to influence the market equilibrium. In our perspective, the imperfect monopoly supposes substitutability as a unique conditionality. This is one of the situations in which the monopoly is not perfect. The other refers to an incomplete monopoly implying a significant external risk

related to potential competition, characteristic mainly to contestable markets (Baumol,1982). Notice that often the potential rivals are at origin producers of similar goods (which diversify production in the absence of major entry barriers and low sunk cost). Some sort of a double pressure also depends on the initial substitution degree for what would be an imperfect and incomplete monopoly. Such an interpretation is adaptable to any less monopolized situations (e.g., duopolies, oligopolies or monopolistic competition). The elasticity of substitution remains the central element. Our analysis goes till the extreme case of a limited monopoly (imperfect or incomplete) as defined above. In several key points is corresponding to the partial (or relative) monopoly suggested by Forchheimer (1983, translated article from 1908). In essence a model of dominant firm price leadership.

In a certain form, these elements are also highlighted by the elasticity of individual demand. Where there are no close substitutes, the price elasticity of demand is often more inelastic. However, it is also possible to determine how different individual alternatives influence monopoly power (if existing, how close and numerous are; the diversity of sources), and this is done by using the cross-elasticity.

The relation between two alternative goods (x and y) can be underlined in a broader form, which takes into account the evolution of sales as a result of a visible and durable change in the price of one of them. More precisely, we refer to the change in the ratio between the incomes resulting from the sales of (pairs of) sustituible goods. Such an indicator would have the following form (Karier, 1993, p. 31):

$$Is_{yx} = \frac{\dfrac{\Delta(p_y q_y)}{p_x q_x}}{\dfrac{\Delta p_x}{p_x}}$$

It reflects the change in the value of sales of a product “y” (*Δpyqy*) in relation to those of product “x” (*pxqx*) as a result of a certain relative change in the price of product “x”. Given the set of “n” substitutable products of a product “x” that are currently on the market, a synthetic

indicator of the conjugate influences induced by these relations can be determined. The monopoly power is inversely proportional to this indicator:

$$PM = \frac{1}{1 + \sum_{i=1}^{n} Is_{ix}}$$

According to this relation, when there are more substitutes, the denominator will have a higher value and the monopoly power will be lower. And the more (closer) substitutes there are, the closer this power will be to zero.

3. Other price signals: price differentiation and variability

In most economic literature as well as in general public perception, lower prices are the obvious sign for functional competition. From that point of view, any voluntary change in price level is not only a strategic action proving competition but also a possible measure of its intensity. In this approach, we mention three main directions: differentiation degree of the selling prices; predatory practices based on "dumping" and the presence and nature of price discriminations.

Referring especially to the selling prices, such *differentiations* seem to be the evidence of price competition. And its size can express the degree and intensity of the competition. This assertion are valid, if not exclusively, at least predominantly, in the conditions of competition with homogeneous products. In the case of differentiated products, things get a little bit complicated. In such situations, what seems more important is not the gap between the different firms' selling prices - justified, at least in part by the products differentiation - but the evolution of those prices, their mobility. That move is important both in proving the existence of (price) competition (as already shown), and how unilateral price changes made by a firm are or are not followed by other competitors (and in such cases we must further analyze thru the elements such as: form of reaction; necessary period for response and its intensity).

By *dumping*, some companies offer products at a price inferior to the production costs. The purpose of such practices is, surely, the elimination of rivals (by using an unfair economic tool), in order to obtain a privileged position on the market and by thus controlling the competition. These is not itself a goal. It is just a mean to an end: an opportunity for even larger profits. Sacrificing immediate gains occurs if and only if through this the firm will obtain higher profits in the long run (correlated with the risks involved and which also cover losses registered during the dumping period). It should be noted that such predatory pricing policies can be successfully applied only by those companies that already have a certain market (monopoly) power and for a limited period. In these conditions, the expected response from the competitors cannot be significant either in terms of duration or size. The benefits obtained in the medium run covered the losses caused by pricing the goods below their cost. Significant reactions from rivals and the lack of a profit maximization perspective, as well as regulations, limited those practices. Limitations which must not understand as restrictions of competition, not even of the competitive intensity. The predatory practices remain anticompetitive actions even if for a while they give the impression of price advantages for buyers.

Some *forms of price discrimination* may have stimulating effects on competition, while others are evidence of an effective monopoly or oligopoly. In this case, both the nature of the discriminations (personal, material, or geographical) and the size are important (measured by the difference between the "normal" price level and the level of the corresponding supply price). The discriminations are possible thru an easily and costless differentiation in the demands of different consumers related to their incomes, specific intensity of needs, individual and social behavior, style of life, and others, measurable by the specific (price) elasticity of demand. Personal discriminations are mainly based on estimated consumers incomes; material discrimination is related to the final usage of the good; geographical discrimination takes into consideration the client origin or the place of delivery and consume; and by all these the inclusion

of each and every potential buyer into a more large category and implementing an appropriate pricing policy. Price differentiation may be objective when the associated services and terms of sale are different and generates supplementary implicit and/or explicit costs (e.g., place and conditions of delivery - packaging, storage, transport, credit, risks, or handling). The usual price rebates offered to buyers for large acquisitions also have an economic justification. It is a mistake to regard such discrimination as likely to conduct to the "impurification" of competition. Some of them can also find in particular situations of perfect competition.

Starting point of any finding must be the simple observation of the generalization level of such discriminations in the market: a general common practice in the matter obviously leads to its elimination from specific anticompetitive practices.

What is required to be observed and analyzed is the price discrimination for homogeneous goods delivered under the same terms for the same customers' type. The differentiation determined by the significantly distinct demand elasticity of separate consumers' groups is not included into this category. Such discrimination could be represented by (1) the gap between the different prices of the same good sold by the same firm or (2) the additional income appropriated by the seller as result. Combined with market concentration, those are evidence of the use of monopoly power, either by a firm or by a group.

4. A collateral note: the effect of surplus production capacities

The degree of using the productive capacities in a industry is not a off-topic subject in the pricing strategies analyze, in condition in which all market determinats of optimal production af a firm must took into consideration. The intensity of the competitive rivalry depends, on one hand, on the ratio between the total installed production capacities and the size of the market, and on the other hand on the competitive behavior of the firms, especially of the most important ones. Each and every of them aimed or not to become dominant or single in industry

and, as a result, it determines active or passive individual strategies, generating a more or less aggressive competition.

If the installed productive capacities are larger than the size of the market, in other words, if there is an excess of productive capacity in industry, the intensity of competition is normally higher. And the greater is the gap between them, higher is the expected intensity. If each and every firms aims to ensure the highest possible degree of using its production facilities, in the conditions of an overall surplus capacity this objective can be achieved only to the detriment of other competitors. And by consequence price is the easisest instrument to use. Therefore, lowering prices was and remain the fastest way to act (and react) especially in the last stages of life cycle (end part of maturity and decline). Under these circumstances, plenty of firms will accept to operate beyond the optimal level of production (and in short run even below the break-even point), insofar as this is the price that must be paid for their survival.

The capacities we are referring to, concerns exclusively the unused capacities as a result of the economic recession or of too high investments made during the prolonged boom periods. It doesn't take into consideration the chronically unused facilities from the declining markets.

In many industries the determination of surplus capacities is problematic, both due to production secrets and to the particularities of the activities itself which make it difficult to establish precisely the total production capacities (as is the case for a wide range of services). If for the first case a proxy can be represented by the evolution of excess inventory and and/or surplus stocks of finished products, in the second case this approach cannot be used. An alternative could be represented by the evolution of the ratio between real income (turnovers adjusted to inflation) and the value of "net" investments (gross capital formation at the level of the economic agent minus depreciation). The first one provides information related to the result of the use of capital (indirectly of certain productive capacities) while the other one would signal the changes that occurred in their level (by identifying investments with productive capacities fluctuations).

5. Concluding remarks

If a firm's choices are influenced by the decisions of rivals or the predominant market price, we can state without doubt that there is competition in that market (European Commission, 2003 and Mehta and Evenet, 2006). Its type and intensity could differ from case to case, as may the finality. However, such a rivalry (which implies decisional independence and the existence of opposite interests of the participating entities) have represented and represents the minimum requirement for the functioning of a competitive process. Even if lately the emphasis is more on the freedom of competition (mainly on the contestability of the market and the fairness of the practices used) than on its purity, in our opinion a reference standard must exist, and it can only be represented by a perfect competition revisited model (determinable large number of price-takers firms of comparable sizes acting independently; similar and not necessarily identical products, but quasi-perfect substitutes; equal access to information for all; insignificant entry barriers; accessible resources based on economic criteria).

The intensity of competition commonly increases with: the increase of the number of rivals of comparable size (the absence of significant dimensional differences is more important than the number of competitors if they act independently); the decrease of the market growth rate (especially as a result of limited or diminishing demand), the increase of the excess of surplus production capacities (also as a consequence of the previous), the trivialization of the product (reducing differentiation and transform similar goods in almost perfect substitutes), the increase of unit production costs (result of lower outcomes and relatively constant fixed costs, generally characteristic for the last stage of product lifecycle).

In all these processes, the prices remain a major element: a signal of market changes and a strategic tool for action or reaction (related to consumers demand, inputs' prices, and production efficiency or rivals pricing policies). A lower price generally implies higher competition (especially when the demand do not change), with the notable exception of dumping or similar predatory practices. Generally, firms avoid price

cuts (at least the permanent ones) in defining their product and price strategies, considering the negative impact over their performance. At the same time, an increasing price is not necessarily explained by the restraint of competition. An important increase in demand which is not covered in due time by a proper supply (as a result of limited production possibilities or significant costs) will cause prices to escalate. At least immediately and in the short run, but such price signal will direct the production (quantitative and structural) and investments and plays a major role in long run equilibrium.

The existence of a certain competition situation and the degree to which it is functioning, i.e., its form and intensity, is important for appreciating the necessity and opportunity for a public intervention. Orientated to its restoration or regulation (thru the institutions created and empowered).

References:

1. Akerlof, G.A., 1970. The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism. *Quarterly Journal of Economics*. 84(3), pp.488-500. https://doi:10.2307/1879431.
1. Baumol, W.J., 1982. Contestable markets: an uprising in the theory of industry structure. *American Economic Review*. 72(1), pp.1-15.
2. Cocioc, P., 2014. Measuring Competition in Romania - Basic Principles and Extensions. *Review of Economic Studies and Research Virgil Madgearu*, 7(1), pp.41-68.
3. Cocioc, P., 2000. Foundations of a revisited concept of perfect competition. *Studia Universitatis Babes-Bolyai, Oeconomica*, 45(1), pp.107-110.
4. Cocioc, P., 1999. *Teoria concurenței în retrospectivă*. Cluj-Napoca: Presa Universitară Clujeană.
5. Forchheimer, K., and Kuhn, W., 1983. Imperfect Monopoly: Some Theoretical Considerations. *Nebraska Journal of Economics and Business*, 22(2), pp. 65-77. Available at: <http://www.jstor.org/stable/40472748> [Accessed 13 November 2020].
6. European Commision, 2003. Glossary of terms used in EU competition policy: antitrust and control of concentrations. Luxembourg: Office for Official Publications of the European Communities. Available at: <https://op.europa.eu/en/publication-

detail/-/publication/100e1bc8-cee3-4f65-9b30-e232ec3064d6> [Accessed 13 November 2020].

7. Hotelling, H., 1929. Stability in Competition. *The Economic Journal*, 39(153), pp.41-57.
8. Karier, T., 1993. *Beyond Competition. The Economics of Mergers and Monopoly Power*. New York: Sharpe.
9. Kotowitz, Y., 2008. Moral Hazard. In: Palgrave Macmillan (eds.) *The New Palgrave Dictionary of Economics*. London: Palgrave Macmillan. https://doi.org/10.1057/978-1-349-95121-5_1219-2.
10. Laffont, J.J., 2008. Externalities. In: Palgrave Macmillan (eds) *The New Palgrave Dictionary of Economics*. London: Palgrave Macmillan. https://doi.org/10.1057/978-1-349-95121-5_126-2.
11. Ledyard, J.O., 2008. Market Failure. In: Palgrave Macmillan (eds) *The New Palgrave Dictionary of Economics*. London: Palgrave Macmillan. https://doi.org/10.1057/978-1-349-95121-5_1052-2
12. Mehta, P.S. and Evenet, E.J., 2006. Promoting Competition Around the World: A Diversity of Rationales and Approaches. In: Mehta, P.S. (ed). *Competition Regimes in the World: A Civil Society Report*. Jaipur: CUTS International, pp.i-xi. Available at: <https://competitionregimes.com/pdf/IntroductoryChapter.pdf> [Accessed 13 November 2020].
13. Porter, M.E., 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Free Press.
14. Porter, M.E., 1985. *Competitive Advantage. Creating and Sustaining Superior Performance*. New York: Free Press.
15. Rainelli, M., 2003. *La nouvelle theorie du commerce international*. Paris: La Decouverte.
16. Robinson, J.V., 1980. *What is Perfect Competition? Collected Economic Papers*. Cambridge, Mass.: M.I.T. Press, vol.1, pp.20-35.
17. Stigler, G., 1957. Perfect Competition, Historically Contemplated. *Journal of Political Economy*, 65(1), pp.1-17. https://doi.org/10.1086/257878.
18. ***, 2016. *Council of economic advisers issue brief* [online] Benefits of competition and indicators of market power. Available at: <https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160414_cea_competition_issue_brief.pdf> [Accessed 13 November 2020].