THEORIES OF COMPETITION

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Abstract: *This study presents some of the most important theories about competition, its mechanism, its role, and its effects.The sequential competition makes a huge difference among strategic economic interactions, characterised by oligopolist competition, on the chain supply markets.It is presented as a form of networking, as a widespread game where competitors play different roles and each one of them follows the other. Inside competition struggle, equilibrium is depending on the utility.In this extensive game competitors play different roles and each one of them is subsequent to the next one.The attempt to explain the mechanism of competition must be understood through different theories of the past.The purpose of this study is making a comparison between competition theories of important economic authors, and also to try to establish wich model would be the best.As stages, I have tried to define competition, and then configure the role of competition according to market determinants.The competitive perspective depends on the theoretical approach that we apply to the market, and therefore on the competitive theory chosen for criticism. The research also has a hystorical perspective upon competition developement.*

Keywords: *competition; the role of competition; creative destruction; invisible hand; cooperation.*

JEL Classification: *D41; D42.*

1. Introduction

Competition is a very active form of free initiative, a free initiative generated by private ownership, wich in turn is an essential feature of a market economy whose mechanism is competitive, and it represents the open confrontation, the rivalry between economic agents, selling the bidders to atract the clients

First, I intended to define and structure the concept of competition and engage this concept in models described by great economy authors like: Adam Smith, Alfred Marshall, Von Hayek, Joseph Schumpeter, Kirzner, Porter, Bain, J. Ferguson, J.E. Stiglitz.

Each of those authors, that I have mentioned has a different perspective upon the competition structure.The evolution of those perspectives is being determined by economical and mathematical expresions and calculations associated.

The most important variables that determine competition are: price, costs, quality, quantity of work, the balance between supply and demand, the level of profits, outputs and inputs of goods.

Understanding the concept of competition starts from understanding the role of competition.

I also wanted to explain concepts like: “barriers to entry on the market“, market equilibrium, the concept of “creative destruction“, wich are very important in configuring the lines of the whole concept.

In this context, market equilibrium is being conditioned by the choices that entrepreneurs make between practicing competition or cooperation.

2. The Concept of Competition

Competition concept tries to unify different concepts about competition and economy in a global framework. (Listra 2015) To understand competition we need to concentrate on concrete, realistic matters. Also many misunderstandings occur when we come to explain the whole complex.
Competition and competitivenes are used in business and economic public discussions acording to their objectives.
The concept of competition contains many explanations and can be percieved as: rivalry, the absence of barriers to entry and exit, a selection mechanism, price taking behaviour.
Competition means rivalry between individuals, groups or nations, and it arises when two or more parties strive for something that all can obtain (Stigler, 1988).
This negative sense of competition means struggle, conflict of interests and contest.

2.1. Definition of Competition
Competition is a sine qua non element about the existence of market economy, a true regulatory force for it.
It can be defined as the "confrontation between economic agents with similar activities, exercised in the open field of the market, for the purpose of winning and preserving the clientele, in order to profit from their own enterprise." (Barbu, 2011, p.5).
The objectives of competition aim at:
- understanding the variables of competition(price, quantity, quality etc).
- targeting the level of achievement
- finding a competitive process that is determining the strategic objectives

“Rational competition“ is a modern concept, that comes from mixing the neoclassical competition paradigm with the austrian economics (Hayek 1996, Kirzner 1978, Porter 2004, 2008).
Competitive firms and companies can be classified as:
- internally and externally static firms
- firms that are able to easily adapt
- firms that are able to adapt by improving their capacities
- firms that are able to influence competition

Competition renders from the level of uncompetitivenes to the level of very competitive.
The levels of competition depends on the income and outcome levels.
Economic theory describes three levels of competition:
- from firms to market and industry level
- from local, regional to country level
- from small firms to international country level

The objectives of competition have to be sustainable and achievable.
The field of competition must contain the following elements: objectives, strategy, external / internal factors, business environment/ industry market, market networks, institution processes(Listra 2015).

2.2. The Role of Competition

Competition is a crucial component of the mechanism required for any economic changes and can be thought as an interaction process, in an environment characterised by incomplete information, irreversibility and imperfection.

If we look more closely at the conditions that must be fulfilled in order to produce perfect competition, we realize immediately that outside of agricultural mass-production there cannot be many instances of it.

Thus we can speak more of Monopolistic Competition, because entrepreneurs use prices and quality strategies for their own purposes, and each manager will have his small market.

The case of oligopoly contains no determinate equilibrium at all and there might be an endless sequence of moves and countermoves, an indefinite state of warfare between firms. (Laino 2011)

Competition has many positive aspects: it keeps us alert and helps us asess our strengths&weaknesses, it makes us creative, helps us manage the succces & failure, increases our quality, makes us persevere and enganges us for the long term planning.

The negative effects of competition can be: society becomes unproductive, entrepreneurs become corrupt and in the end it leads to exhaustion.

Joseph Schumpeter considers the process of "creative destruction" as essential to the dynamics of capitalism, but also that state intervention is crucial for competition. Many times he ridicules the concept of market equilibrium and he vouches more for monopolies, oligopolies and the ability to realise the economies of scale, the standardize production and the advantage of the control markets.

More important for competition at high level, Schumpeter pays attention to innovation.

Schumpeter defines capitalism as a "process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroys the old one, incessantly creats the new one.

Destruction becomes an essential fact about capitalism".(Schumpeter, 1942, p1)

The theory of "creative destruction" is an expansion of Marx′s theory of capitalism, and Schumpter considers this to be esential to the dynamics of capitalism.

3. "Barriers to Entry on the Market"

J. Bain, considers that a "barrier to entry is an advantage of established sellers, wich is reflected in the extent to wich established sellers can persistently raise their prices above competitive levels without attracting new firms to enter industry" (Bain 1956, p3).

Next, the competitive price level concept was replaced by a concept of hypothetical price, of a long term balance, inside perfect competition and finally he changed it into the concept of minimum average costs (Bain, 1956).

In conclusion the condition of barrier existence is to be valid, if the scale price is situated above the average costs of production.

J. Ferguson defines the "barriers to entry on the market", as a factor that is trasforming the potential entrants from profitable agents into unprofitable ones.

The enterprises can fix their prices above the marginal costs and obtain monopolistic profit (Ferguson 1974).

J. Bain and N. Coterelli agree upon the idea that " barriers to entry" take place when a sale price exceeds the average costs of production in the long run(Coterelli, 2002).
G.J. Stigler considers that barriers to entry cover the production costs(for specific or at any level of scale) that have to be incurred by enterprises who are entering the business and are not incurred by entities that have already been on the market (Stigler, 1968).
H. Demsetz thinks that barriers to entry constitute various opportunities that occur among enterprises in business and outside of it. Their action is connected with the necessity of incurring additional costs which can't be reimbursed after entering the market (Demsetz, 1982).

4. Economies of Scale

Economies of scale represent in microeconomics the cost advantages that enterprises can obtain because of scale operations, measured by the output produced, calculated as costs per unit of output that is decreasing with an increasing scale or quantity.
Economies of scale occur when the average cost starts to fall, while the outputs grow, and also anytime when this cost is lower than the average cost.
The concept was invented by Adam Smith and the idea of growing the production is related to the use of the division labour.
Diseconomies of scale are opossed to the economies of scale.

Table 1. Barriers to entry on the market

No.	Barrier	Author (authors) (year)
1.	Product differentiation	Bain J. (1956), Heflebower R.B. (1957), Baron D. (1973)
2.	Absolute cost of economies of scale: capital barrier, the level of sunk costs	Bain J. (1956), Heflebower R.B. (1957), Baron D. (1973), Solop S. (1979),
3.	Economy of production scale	Bain J. (1956), Heflebower R.B. (1957), Baron D. (1973).
4.	Amount of factories inside enterprises	Saving T.R. (1961), Lyons B.R. (1980),
5.	Level of expenditure on advertisement, In an advertisement or sales factor	Greer D.F. (1971), Strickland A.D., Weiss L.W. (1976), Orstein S.E. (1973).
6.	Average size of entity in concentrated branch	Ornstein S.E. (1973)
7.	Law aspects	Solop S. (1979)
8.	Contract between buyer and seller	Sheperd W.G.(1973), Aghion P., Bolton P. (1987)

Source: (Tomasz Bernat, 2019)

5. Competition vs. Cooperation

Motto 1: "Homo homini lupus est" (Man is a wolf for men).
Competition and cooperation have each one of them positive and negative aspects.
Normal people in general choose competition, especially due to the fact that cooperation is part of the context of current capitalism.
For example, in sports, competition has always positive effects, because the most capable ones are victorious.
That is why the winners will be those who deserve, and those who do not deserve will lose.
Even the Bible, says "You will know men by fruit"(Matthew 7:15-20).
That is the fact that in a context of money and not necesarilly a christian context, we must compete with one another to save our skin.
But in reality capitalism is not so close to Christianity, such as the case when we come to talk about competition, nor is the world in which we live Christian predominant.
Philosophers often talk about competition as a reflection of enlightened selfishness.
In order to be competitive, we must focus on personal interest and afterwards check the interest of the majority.
In a competitive world, we tend towards a model in which each of us follows our individual interest.
This perspective is also described in the book "Leviathan" by Thomas Hobbes (1588-1697).
In his book Hobbes, skeptically describes man's way of characterizing him as an aggressive being prepared to attack his fellow men anytime.
He defines man as a wolf, "Homo homini lupus est".
By accepting this condition, people seem to be in a state of war against one another.
Each struggles against the neighbour for the individual's good, by "bellum omnia contra omnes".
Hobbes explains positivism as being stupid and deceptive, because in the present informal warfare state the property of each of us is threatened.
In this way the world will be governed by the concept of the highest law in wich the strongest will lead.
The generalization of this hostility can lead to the disappearance of industry, earth culture, lifting and moving instruments, time measurement, which would lead to the emergence of a generalized fear of violent death.
Competition, says Hobbes, alters the concept of human love, and normal individuals try to save themselves from it's influence.
But, Hobbes's theory draws attention to the negative elements of competition.
A pro competitive slogan will sound like: "Fools are only the ones who do not make money!".
In reality, there could be a participatory sense of society, but only at socially close levels of income.
The competition punishes those who remain in the queue, those who do not take risks, but also the ones who are not performant.
Competition indicators can be classified into:
- Sectorial indicators
- Indicators of the relevant market

Sector Indicators:
- Number of enterprises in the sector
- Mobility rate in the sector
- Penetration rate of imports
- The Herfindahl-Hirshman Index (HHI)
- Average figure of business / employee / sector
- The degree of differentiation of products in the sector
- Presence of economies of scale
- Concetration Ratio (CR)

Relevant Market Indicators:
- Evolution of ROE / ROA Profitability Rates

ROE= NetIncome/Shareholder Equity
ROA= NetIncome/Total Assets
- ROBOR (Romanian Interbank Offer Rate) is the interest rate at which the banks contributing to the calculation of this index are willing to lend in the form of deposits in lei to the other contributing banks
- The incidence of consumers petitions
- Barriers to entry on the market
- Evolution of the price of the product
- Other specific healers

Calculation formulas:
Mobility rate in the sector
Mobility rate = (number of companies 2011-number of companies 2012) / number of companies 2011
Import penetration rate = annual import volume / product annual consumption
The herfindhahl-Hirschman index (HHi) is most often used to measure market concentration.
It ranges from 0 (perfect competition) to 10000 (monopoly).
HHI = Σ (i = 1 to n) Si * Si.
Where n = represents the number of active enterprises on the market
Si = the market share of the enterprise.
The degree of concentration varies from low to high.

Table 2. Concentration degree HHI value:

Concentration degree HHI	HHI value:
Law	<1000 <1500
Medium	1000-2000 1500-2500 2500
High	2000 – 2500

Source: (Competition Council Bucharest, 2012)

Turnover / employee / sector is an average productivity indicator.
The degree of differentiation of products in the sector is measured by:
- Differentiation through horizontal features
- Differentiation by vertical quality

6. Theories of Competition

6.1. The Concept of "Invisible Hand"

The "invisible hand" is a metaphore used by Adam Smith, trying to explain the circumstances in wich welfare is achieved.
The concept was launched in, "The Theory of Moral Sentiment" and "The Wealth of Nations" by Adam Smith, 1776.
The "invisible hand" is represented by the forces of self-interest, competition, the balance between supply and demand and it represents the dynamic mechanism that ensures the efficient allocation of resources in society.
J.E. Stiglitz Nobel laureate for Economics argues that: "The reason why the invisible hand seems often invisible is because it is often absent!"
Stiglitz also believes that free market is producing too little knowledge and too much pollution.
Noam Chomsky also contests the success of the "invisible hand" in the economy.
He believes that the invisible hand destroys the community, the environment and human values in general, even the masters, that is why the business group often demands the state's help, to be protected by the forces of the market.
E. K. Hunt is also skeptical about the idea of the free market.
He introduces "The invisible leg" concept.
Hunt affirms that the "invisible foot" assures us that in a free market economy, each person is pursuing only his or her own interest, automatically and with the highest degree of efficiency.
"The invisible foot" tends also to maximize the common misery.
(E.K. Hunt 2011, Medelean, 2010).
The "invisible hand" process involves two processes:
- filter processes passing through elements corresponding to the structure
- balancing processes by which the local conditions of the structure correspond or are adapted

In terms of competition Smith discovers the importance of the "invisible hand" as a lever not only for his self- interest, but good also for the whole society (Smith, 1776).

6.2. Alfred Marshall about Competition

Marshall's theory explains that the modern forms of industrial life are different from the old ones by being more competitive.
The meaning of competition is defined by the races between people as salespersons or buyers.
This race is a secondary accidental consequence from modern industrial life.
The balance between good and evil is determined by the distance between competition and cooperation.
The term competition gathers a sense of selfishness and indifference between human beings.
Selfishness seems to be more and more related to the modern form of industry.
Marshall treats competition starting from small comunities to large ones.
Anyways he finds competition in many ways evil, but essential for mantaining the energy and spontaneity.
The purpose of competition is searching for comfort and luxury.

At first human nature seems to be uncertain about engaging in competition, this is perceived more like an anti-social phenomeon.
In modern age, competition is not well suited to describe industrial life.
In modern times competition is being stimulated by the concepts of freedom of industry, enterprises and economic freedom (Marshall. 1890 (8th edition: 1920).
John Stuart Mill believes that the law of strongest will survive and this is what characterises competition nowadays. (Mill. 1849 (1909).

6.3. Bertrand Competition Theory
Bertrand model on competition was named after Joseph Louis Francois Bertrad(1822-1900).
His model is based on the interactions between sellers and buyers and the negociation for quantities and prices.
It has been formulated by Bertrand, in a critical review of Antoine Cournot's book" "Recherches sur les Principes Mathématiques de la Théorie des Richesses (1838)".
Cournot thinks that if the firms choose quantities instead of prices, than the equilibrium outcome will take the prices above the marginal cost and the competitive price. Bertrand argues that if the firms choose prices instead of quantities than the profits will set the prices at the same level as the marginal costs, so he votes for price strategy, instead of quantity strategy.
Francis Ysidro Edgeworth in 1889 establishes a mathematical model for Bertrand's idea.Bertrand's duopoly equilibrium model explains the corespondence between the level of prices, unit costs and profits.
If one firm establishes the prices equal to marginal cost, and in this case if the competitor firm will raise it's price above the unit cost, it will lose, it will earn nothing, because all the customers will still buy from the firm that has the priviledge upon competitive prices on the market.
The equilibrium is given by the competitive price strategy.Other prices will not obtain equilibrium.
If both of the firms will set prices above the unit cost, than both firms will encounter high competition, each one of them will try hard to double the profits.
In this case there won't be any equilibrium if both of the firms will set prices above the unit cost.
If the firms will set different prices, the one that is setting the higher price will earn nothing. The best strategy for the firms with the higher price will be to lower the prices and absorb some of the customers.
The state of equilibrium can be considered only when both firms are setting their prices equal to unit costs.
Bertrand model explains the connection between constant marginal costs, firm prices level and the monopoly prices level and the way that the firm can obtain the demand acording to those variables.

6.4. Cournot (1801-1877) Vision upon Competition
His model describes competition between companies based on the output that each company produces.
Cournot competition is named after Antoine Augustin Cournot(1801-1877).
This model has the following features:
- more than one firm produces homogeneous product,
- many firms or companies are not cooperative

- the firms control the market and are powerfull, any decision could affect commodity prices
- there exists a fix number of firms
- firms compete in large quantities and pick large quantities at the same time
- firms are economically rational and have strategies oriented for the purpose of maximizing their profits

Cournot duopoly model of equilibrium depends on the marginal cost.
Notation:
p1= firm1 price, p2= firm2 price
q1=firm1 quantity, q2=firm2 quantity
c=marginal cost
Equilibrium formula prices will be:
P1=p2=P(q1+q2)
This implies that the profit will be Pr= q1(P(q1+q2)-c)
Cournot theorem claims that for an arbitrary number of firms N>1, where quantities and prices evolve normaly, the equilibrium formula is as follows:
Market demand: P(q)=a-bq= a –bQ=p(Q)
Cost function: ci(qi)= cqi
Individual firms output: Qi= Q/N=a-c/b(N+1)
Total industry output: ∑qi=Nq=N(a-c)/b(N+1)
The market clearing price: P=a-b(Nq)=a+NC/N+1
Individual firm profit: Pr=[(a-c/N+1)(a-c/N+1)](1/b)
When we don't have fixed costs of production, N goes to the infinit and Nq goes to the competitive level, when the prices go to the level of marginal cost
N=(a-c/√Fb)-1
Q=√Fb/b
N=number of firms
Q=production for each firm
Fb=fix cost for each firma
Lim p->∞=c
N=(a-c/Fb)-1
Q=Fb/b
Those formula are known as Cournot equilibrium or Marshall equilibrium formulas.

7. Conclusion

The extent to which economic agents are invested in the competition fight depends on their choice between competition and cooperation.
The goal of competition aim at success, luxury and comfort, but competition often develops an anti-social behavior, through the negative propensity that entrepreneurs develop in their struggle for profits.
Through those interesting ideas about competition i wanted to show the role of it in economy, and pull the signal upon the negative aspects of this economic slope.
The market equilibrium, in the context of competition is determined by simple variables such as prices, costs, profits, and state intervention in economy.
If Smith and Marshall's models described competition as part of the inertia of the economic system, being accentuated by concepts like "invisible hand" and being influenced by production activity and industrial development, Bertrand's model considers that the competitive phenomenon is conditioned by price dynamics, the

quality and quantity of the products sold, and Cournot's model explains that the competition phenomenon is influenced by marginal cost evolution.
Similarly, Bertrand and Cournot models explain the evolution of profits in terms of price dynamics, market quantities, quality of goods and services, and fluctuations betweeen unit costs and marginal costs.
The arguments try to prove that competition is a iminent framework of our lifes, and we have to inherit education in order to survive in the future.
Thanks to scientific research, we can easily measure competition using market indicators such as: persuasion, market concentration, profit level, number of sellers and buyers, rotation of capital, etc.
Because competition is a dynamic process, it must be deployed between businesses and economic entities, not between people.

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