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The matching process and the implications of the competitive market system

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Abstract. *In the broad field of economic research, the process of resource allocation and the degree of manifestation of the freedom of the competitive market are relevant points of interest in order to achieve in terms of microeconomic performance. Through this work, we have proposed to investigate the extent to which competitive markets tend towards that form of perfection and what are the main challenges and implications for the market freedom. The novelty of this study counts in bringing to the forefront the match-making process, implicitly the study of the match-making market, introduced by the American economist Alvin E. Roth in 2015. In particular, it analyzes a new valence of the competitive market, the operating mechanism being aimed at highlighting a specific terminology, such as linguistic decryption of markets. This paper has extended the concept of matching, by analyzing the ethical issues involved, as well as the way in which we are witnessing a crescendo of concrete examples of the functioning of these markets. At the same time, we used the use of methodological tools specific to the analysis of statistical data on measuring the degree of competitive freedom in the main key sectors in Romania in 2015 and 2019, by applying The Aggregate Index of Competitive Pressure (AICP). The results showed the degree of openness to competition of the main sectors in Romania, as well as the fact that the matching market assumes the effective operation and manifestation of the competitive mechanism.*

Keywords: matching process, competition, competitive market, The Aggregate Index of Competitive Pressure, linguistic decryption.

Introduction

This paper aims to draw attention to the functioning of competitive markets, based on theoretical and empirical studies. Starting from the premise that the market is the arena that is intended for cooperation, collaboration, but also competition between various participants (consumers, producers, distributors, intermediaries), true fighters who militate to meet countless needs or needs, economics emphasizes the impact on which has the freedom of action and choice in such an organized framework.

Also, along with the manifestation of free initiative by traders, found in the form of demand and / or supply bearers, the existence of that competitive and innovative spirit (Bresnahan & Reiss, 1991), encountered in the manner of a continuous fair "competition" underlying the fundamental organizing mechanism, functioning and delimitation of the market.

At the same time, in a market, characterized by specific elements, such as: homogeneity of products, high degree of substitutability between goods, atomicity of demand or mode of entry / exit from the market, it must operate in a coherent and optimal way, based on -it is mostly on solving the problems exposed by economic science, namely meeting the needs by using those

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optimal resources, not necessarily, thus the idea of waste and its irrationality of entrepreneurial behavior.

Starting from the established types of the competitive market, from the monopolistic, oligopoly, or monopsony market, the paper aims to bring to the fore those atypical markets, (those of matching), through which to highlight the mechanism of operation, the concrete exemplification as well as to focus on the true existence of those free markets in which state interventionism does not coercively affect their proper functioning (Decker, 2009).

Therefore, the scientific approach pursued starts from the characteristics and implications highlighted by the competitive market, the competitive mechanism and freedom, followed by a presentation of the matching process and its implications.

Literature review

Market freedom and competition mechanism

The free market is a concept introduced by liberal politics, which is considered only a mirage. For this reason, every market is constrained by rules and restrictions that diminish freedom of choice.

The choice of each individual in society is influenced by both objective and subjective factors, such as consumer purchasing power and the usefulness of the desired product, both favoring the formation of consumer balance, with an essential role being within the personal budget. debated in economics on this concept remains the same: if the government were to decide what economic agents are allowed to do and what not, then limited resources would get to where they would be used inefficiently, people would have to be "free to choose" what to do it brings them the most benefits at low cost (Bogliacion et al., 2016).

The market seems free only because we, consumers and producers, unconditionally accept the implicit restrictions (Sen, 1993). Proponents of the free market say they are trying to eliminate political interference, but the only definition given to this concept is political. In this era of globalization, many of the products that are not marketable. Unauthorized drugs, court sentences, votes, places in universities have been virtually eliminated by political decisions (agreements, negotiations, and regulations) while emphasizing the role of politics in the economy (Christiansen & Kerber, 2006).

On the other hand, essential to this contemporary society are changes brought about by fluctuating changes in technology, innovation and technological progress, becoming those essential sources of change in all key areas of a state's economy (education, health, tourism, culture, etc.).

The launch of technology is positioned at the center of modern economic growth, starting with the Industrial Revolution, at the end of the eighteenth century, where they occurred in the manufacturing field, the changes occurring with an increasing rate, leading to intensified competition and increased state capacity to promote competitiveness, increasingly based on adapting, establishing and consolidating those strategic plans. The main drivers of economic growth and development are: (a) research and development activities; (b) the establishment of those cross-border business relationships; (c) the expansion of international trade; (d) attracting foreign capital and foreign direct investment.

In this direction goes the Austrian economist, Joesph Schumpeter, who believes that new innovations, technological and information initiatives lead to "creative destruction", a process in which companies and sectors that have physically and morally used technology lose losses, while sectors and companies that have advanced technologies benefit in the "market" game (Schumpeter & Backhaus, 2003).

His study also concluded that each economic sector is undergoing a series of changes, but the transition from one stage to another is conditional on the implementation of knowledge of an economic nature, as well as the establishment of an open relationship that facilitates this transfer. of knowledge organizations (those promoters of streamlining the managerial ability to promote new methods, solutions, procedures and techniques in the cognitive sphere) and knowledge workers (holders of composition that can contribute to progress and create a competitive advantage in the field of expertise).

The most visible changes that can occur in a given sector (Schumpeter & Backhaus, 2003) are: (a) **progressive changes** that occur when the main assets and activities are not threatened by external factors. In this sense, the most prone to these changes are: the IT sector, the real estate sector and the tourism sector; (b) **creative changes** occur when basic goods are threatened, while activities are stable. In this case, companies must continue to find ways to restore the goods, while protecting the relationship between customers and bidders. We can think of the financial-banking sector, the pharmaceutical sector or the energy sector, often being subjected to offering new innovations, solutions and techniques based on knowledge transfer; (c) **intermediate changes** occur when core activities are threatened by moral wear and tear, the relationship between the customer and the bidder is fragile, while the core goods retain their ability to generate benefits. Often, insurance or brokerage firms may face a number of threats from the way they operate and manage the knowledge exposed.

Also, according to the study conducted by (Sum & Jessop, 2013), the knowledge economy is based on everything that indicates openness to the manifestation of global competitiveness and increasing the appetite for innovation, innovation and use of technology, crossing several stages , including: (1) theoretical paradigm since 1960; (2) political paradigm in the years 1980-1990 (promoted by institutions as that capacity to manifest the macroeconomic stability of a state); (3) integration in competitiveness oriented knowledge brands and human capital development in the current period. Also in this study (Sum & Jessop, 2013), more and more emphasis is placed on the implications of the knowledge-based economy, in this sense education becoming that essential integrated factor aimed at full employment in an entrepreneurial society.

To conclude, the freedom of a market is influenced by the perspective of each individual to look at what is happening in society. Some markets seem free only because people comply with the existing regulations and policies; if the contrary, they would consider that the market is "unfree", surrounded by false government regulations (Kleiner & Kudrle, 2000). Illustrative in this sense is the analogy between the illusion created by the use of piano strings by kung-Fu masters to defy the law of gravity and the paradox of invisible free market rules (Chang, 2010).

The matching process

The matching theory (or search and matching theory) attends to describe the formation of new relationships (matches) mutual beneficial for related parts over time. Important applications of the matching theory on labor market, especially in understanding the unemployment, increased its recognition and widely acceptance among economists.

In 2010, Peter Diamond, Dale T. Mortensen, and Christopher A. Pissarides, known as founders of the matching theory, received The Nobel Prize Award for their analysis of market with search frictions and the model they developed (DMP model) in order to match searchers that interact. Starting from a real experience (Roth, 2015), according to which several people were willing to donate a kidney (being considered one of the most essential parts of the human body) to several people in urgent need of this transplant, it is found out that resources (in this case, being

the kidneys and airspace) are quite difficult to access in a relatively short time, although they are vital for those individuals, and economics involves that science around which limited resources revolve.

According to the mini-max principle, their efficient allocation involves the entire activity of the economists. Thus, through the efforts of an atypical economist, Alvin Roth, winner of the Nobel Prize for Economics in 2012, who, by the detailed study of markets that correspond to the increasingly common needs in today's society, identified a new market value: matching which refers to making those matches - between the characteristics of a market participant in the "demand" sphere and the one in the "supply" sphere to support and validate the argument for the efficiency of resource allocation, a paradigm increasingly debated by researchers in the economic and social fields.

Matching dates back to ancient times, with symbolic connotations, according to which, it would have appeared on the urge of the Creator, and the motto "Made pairs", in economic language, suggests those combinations of resources found in different stages of our lives to enable us to meet the needs based on the reasoning, the optimal choice, the professional abilities and the availabilities, both the monetary ones and the ones referring to the opportune moment to make this choice/these choices (Hagel & Roth, 2000).

Therefore, this innovative system consists of two stages, one in which you will apply as a carrier of the application and one in which you will be selected based on sets of tools and methods of recruitment and selection, derived from the supply side.

In order to understand this mechanism, an example can be useful: as an individual, one cannot say that he or she will attend the courses of the School of International Business and Economics at the Bucharest University of Economic Studies, unless he or she is subject to tests and requirements, following which he or she will have to be admitted (baccalaureate grades, GPA of high school years, writing of a motivational essay). We can extend this example of matching: not only will that person be admitted to that faculty, but following the results obtained at the entrance exam, he or she can take certain courses that person want or will be able to benefit from getting a scholarship or a better place at a students' hostel.

The term match also means achieving a "match" between the characteristics of a market participant in the "demand" area and the characteristics of a market participant in the "supply" area making a "pair" or correlation between these characteristics. The matching market reverses the roles (Roth, 2015) deeply rooted in the classical theory of economics, in which the extremely important place is taken by price which determines the quantity sold of a good / service.

Another facet of matching is that some do not even involve money exchanges, i.e. in crisis situations, such as the shortage of places in the most famous schools or when there are not enough organs to perform transplants, because access to education and life are not conditioned by money, the solution being to rethink the possibilities of choice (Roth & Sotomayor, 1992).

The process of matching suggests developing a complementary discipline, namely: market design, allowing free markets, to work really free, under appropriate operating conditions. From this perspective, many markets operate in an environment bordering on the two antitheses: the "invisible hand" developed by Adam Smith, which refers to the freedom of the market, in which the market is characterized by coercive state intervention, which offers mostly unfavorable aspects (existence of numerous deficits and surpluses, continuous removal of the market from equilibrium).

This new subject deals with the issue of innovative and interconnected computerized markets based on a special operation. He tries to reorganize the market, to discover its other less pronounced and analyzed sides, to introduce the terms design on the market or market design. The

markets in different hypostases, from the largest (New York Stock Exchange) to the most insignificant, operate in accordance with certain rules and regulations that must be observed, (Roth, 2015) leading to an operation under the name of market design. There are two types of design on the market: (a) "bad" design - which involves the perpetuation of a malfunction that blocks the way to reach the optimal potential; (b) "good/well-made" design - which appears extremely slow, being defined by the transmission of perpetuated ideas in practice.

Also, the principle of functioning of the markets: "laissez-faire" is erroneous and invalid, in view of the fact that the market takes place in an organized environment, where each one is governed by rules and requirements well known and observed, and adjusting these rules means market design, to allow a revival of markets. For example, through the National Resident Matching Program (NRPM), almost all American physicians can obtain employment through a compensation center (there are currently over 4,000 residency programs in the United States).

Another merit of economist Alvin Roth, is the design of a new program entitled New England Kidney Exchange Program (Roth et al., 2004): an algorithm will enable us to allocate kidney donors, leading to the idea that markets are really interconnected treasures, wish the Internet facilitating more and more exchanges of this kind. Usually, in the present-day society, markets present a faulty way of functioning as a result of the evolution of the rules exercised by the institutions leading to their drifting and collapse.

At the same time, the concept of matching markets refers to the so-called markets that should be familiar to anyone who has been in the situation of going to school, applying for a job, or using a website in hope of finding a partner (Roth, 2015). In this sense, it is justified that the choice is not only of the candidate, but also of the university that chooses to admit a student. Basically, this situation goes beyond the issue of prices, essential to balance supply and demand being the identity of the two parties involved. From this we deduce that this example outlines a defining feature of matching markets. Thus, Roth's study highlights different types of current markets: school / university admission market; the market for obtaining jobs; the market that facilitates the exchange of organs (an unusual market in which there is no price); capital markets with fast transactions, namely High Frequency Trading (Glaeser, 2017).

To conclude, some matches do not even involve the exchange of money, analyzing this statement from the perspective of the access to public education or in view of the illegal functioning of the organ transplant market, thus resulting in the allocation of resources through a matching process. Matching aims at the globalization of markets, the defining feature being its density, leading to a permanent updating of the controversial concept: market (Hagel & Roth, 2000). A further problem facing "contemporary" markets is the failure, as the result of a huge success (success curse). The market success has resulted in this immensely computerized society innovate range of opportunities that you are offered.

Methodology

The main research question is to show to what extent markets are open to the free manifestation of competition in a dynamic and challenging environment, as well as the way in which the matching market is a new form of representation of that truly free market that tends to a perfect concurrence.

That being said, the assumptions from which we start concern the current type of market economy which involves the following main features: (a) it is a business economy, where private property predominates; (b) it is a decentralized economy, being based on the free initiative of economic agents; (c) the calculation is presented in the monetary expression for the economy; (d) it is the multipolar economy based on initiatives, experience, organizational decisions by

economic agents that leads to economies of scale and purpose; (e) the influence of the government is reduced, its role consisting in supply of public goods (security, defense, justice, infrastructure, etc.), correction of market failures (elimination of monopolies, cartels, etc.), redistribution (in favor of certain disadvantaged social categories); (f) profit designates the main purpose of economic agents, because they closely follow the profitability of the company calculated in both absolute and relative terms (Bodislav et al., 2016).

To exemplify the impact of competition on a market in Romania, we used The Aggregate Index of Competitive Pressure (AICP) which is an analytical tool developed by the Competition Council to measure the competitive bias of industries in the national economy (Consiliul Concurenței, 2016), based on a sound economic context. Being a composite index (Paun & Prisecaru, 2014) based on which an annual ranking is made for the most inclined sectors in the free manifestation of competition, it includes a series of indicators, such as: number of total firms in the industry, degree of market concentration and transparency, barriers to entry, homogeneity of products, bargaining power of buyers, existence of those structural links, level of profitability of the market, general level of prices applied, etc.

The AICP methodology is based on a solid and widely accepted microeconomic theory, refined over several years by both competition practitioners and academics (Consiliul Concurenței, 2016). As a consequence, the AICP is a robust tool for economic analysis, which can prove useful to the competition authority, helping to standardize the monitoring process of industries in the national economy. The measurement of each primary factor underlying the Aggregate Index of Competitive Pressure is done by means of a seven-point scale (Consiliul Concurenței, 2016), the lower value of the scale representing the most harmful situation from a competitive point of view, while the higher value is the most favorable situation for competition. In other words, potentially problematic situations from the competitive perspective receive a lower number of points and pro-competitive situations have been assigned higher scores, which means that, at an aggregate level, a lower value of the AICP is associated with an industry with limited competitive pressure, increasing the authority's competitive concerns (Consiliul Concurenței, 2016).

Consequently, the proposed methodology was analyzed the concept of freedom within the market specific competitive framework was analyzed, the methodology used being directed towards the analysis of statistical data regarding the annual reports of the Competition Council. Depending on the evolution of competition in the Romanian sectors, we chose to focus on 2015 and 2019, as we were able to show concretely the degree of openness and manifestation of free competition. Thus, according to the use of The Aggregate Index of Competitive Pressure which measures the competitive pressure at the level of each key sector and by describing and presenting the variables that make it up, we were able to make a ranking of the best performing sectors in Romania, as well as those are the least oriented towards free competition (Consiliul Concurenței/Romanian Council of Competition, 2019).

Results and discussions

Competitive framework analysis

According to the figure 1 and 2, it shows the dynamic evolution of The Aggregate Index of Competitive Pressure in 2015, respectively in 2019 (Consiliul Concurenței, 2016; Consiliul Concurenței, 2019).

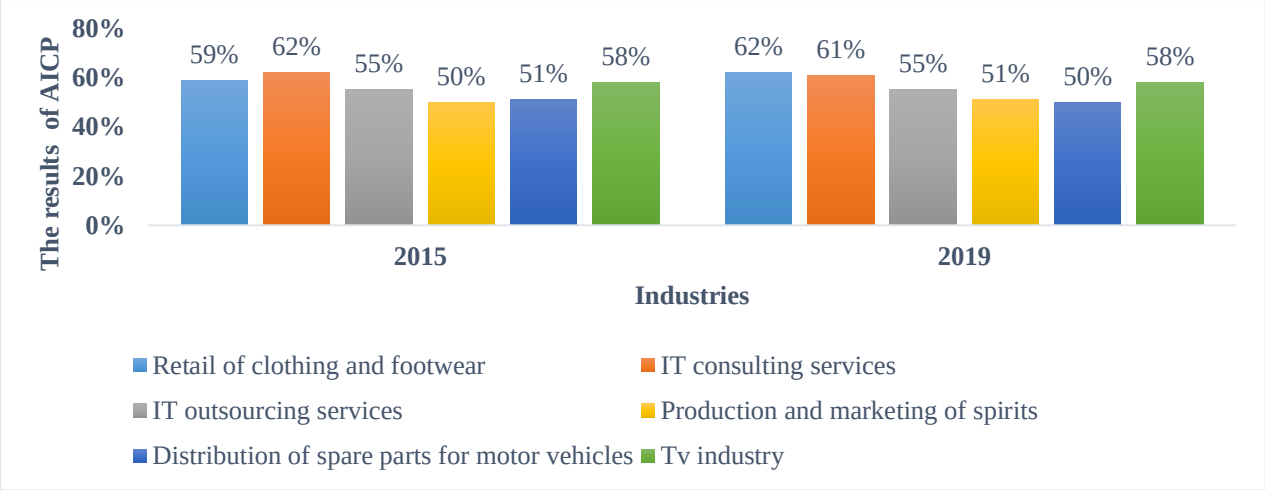


Figure 1. Top industries according to the results of AICP in 2015 and 2019

Source: Authors' own research.

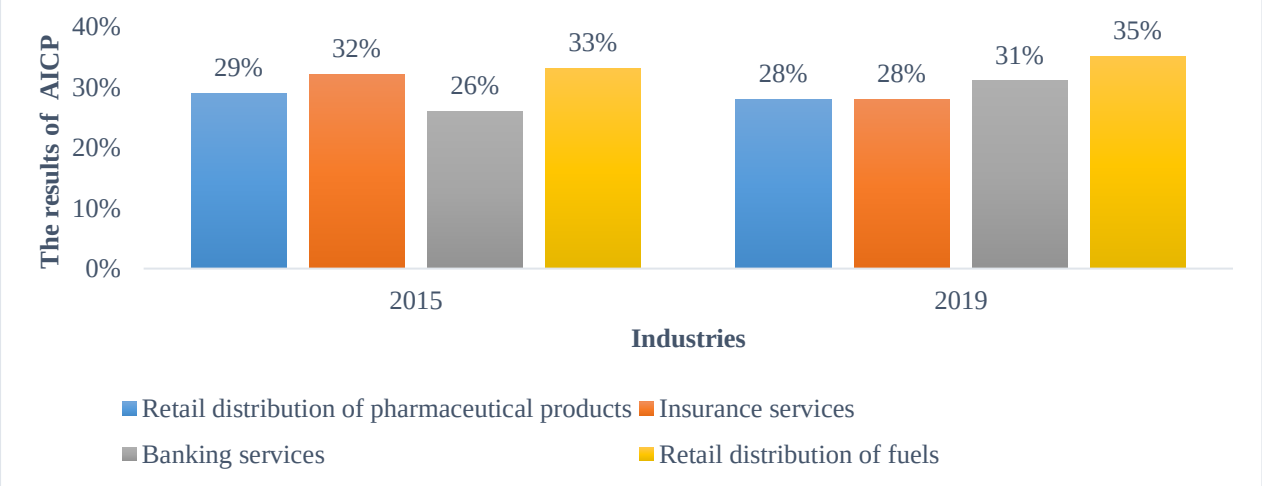


Figure 2. The bottom industries according to the results of AICP in 2015 and 2019

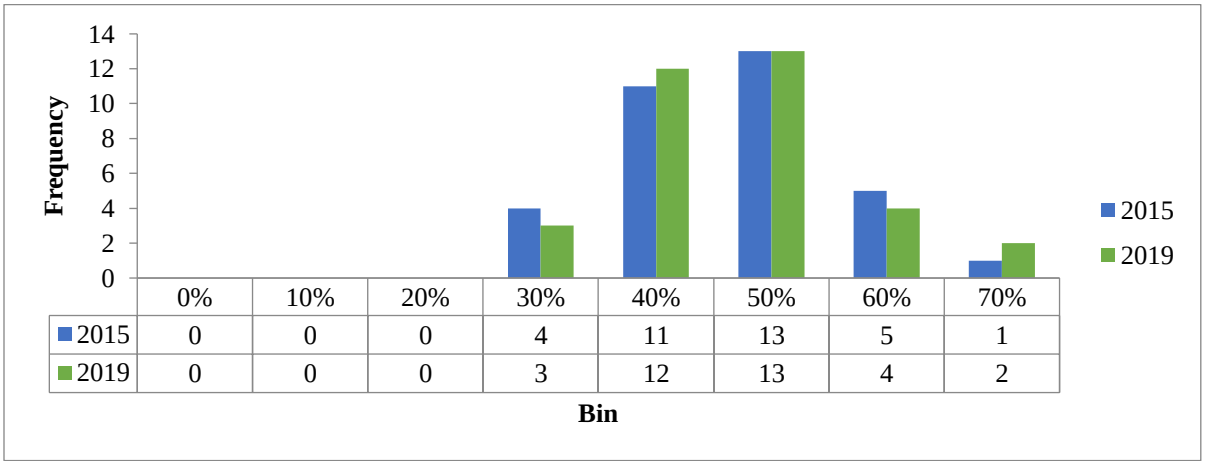
Source: Authors' own research

Thus, it can be seen that the industries most oriented on the free manifestation of competition are the retail of clothing and footwear (upward trend by 3 percentage points, from 59% in 2015 to 62% in 2019), followed by the IT industry, with a constant trend of 62% in the two years under analysis.

From the analysis performed, the next industries with an AICP of over 50% both in 2015 and in 2019 are IT outsourcing services, the production and marketing of spirits, as well as the TV industry. At the same time, it was found that the insurance sector, the banking sector (services associated with credit and debit cards), the one that deals with the retail distribution of pharmaceutical products, or the fuel sector have an average index of less than 35%, which demonstrate that they are prone to low competitive manifestation, mainly caused by difficulties in the specific organization and operation of the activities carried out.

Through the years to achieve subjected to histogram analysis according to figure 3, to split the following distribution of the number of industries based on the AICP's value obtained by competitive pressure:

(a) In the interval of 20% - 30% are located industries, which implies a low manifestation of free competition, reaching a number of 4 in 2015, respectively 3 industries in 2019;
(b) In the interval of 30% - 40%, there are industries that show a transitional competition, being considered those that can move towards a considerable competitive practice (11 industries in 2015, respectively 12 industries in 2019);
(c) In the interval of 40% - 50%, the number of 13 industries indicates an increased rate of free competition, finding the electricity supply industry, distribution of cars, fixed and mobile telephony, etc.
(d) Over 50% are considered the leading industries in terms of the phenomenon described, they are oriented towards the practice of perfect competition (6 industries, from IT consulting services, to the TV industry or retail of clothing and footwear).



	0%	10%	20%	30%	40%	50%	60%	70%
2015	0	0	0	4	11	13	5	1
2019	0	0	0	3	12	13	4	2

Figure 3. Histogram of industries according to the value of AICP in 2015 and 2019
Source: Author's own research.

Consequently, following the application of the AICP (Paun & Prisecaru, 2014), we made a ranking of the most industries oriented towards the manifestation of free competition, according to table 1.

Table 1. The main strengths according to the results of AICP

Industry	Strengths
It consulting & outsourcing services	- Lack of barriers to entry - Competitiveness - Innovative solutions - Increased number of companies - Existence of incentives in the development of IT services
Retail of clothing and footwear	- High number of companies - Heterogeneity of products that determines differentiation in terms of product quality and attributes - Diverse and extremely increased marketing and promotion policies
TV industry	- Relatively high number of companies in the TV industry - The existence of an increased degree of local companies - Intense differentiation of the quality of the transmitted channels - Relatively accentuated capital investment

Industry	Strengths
Production and marketing of spirits	- Lower concentration - There are no barriers to entry - The differentiation of the products is high, caused by the types of products sold, the quality level
Distribution of spare parts for motor vehicles	- Lack of barriers to entry - Own service networks - Vertical integration - Favorable business conditions

Source: Authors' own research.

On the other hand, there are industries with a low score of the indicator used, which face certain threats that come from both the regulatory sphere of the sector of activity and the structural links. According to the table 2, these include:

Table 2. The main weaknesses and threats according to the results of AICP

Industry	Weaknesses& Threats
Retail distribution of fuels	- Small number of companies - High degree of concentration - Dominance of gasoline chains of international groups - Regulation that causes considerable barriers to entry
Insurance services	- Low number of companies - The existence of barriers that cause frequent exits from this field
Retail distribution of pharmaceutical products	- Structural aspects lead to a low concentration among agents, culminating in an inelastic price elasticity of demand
Banking services	- The indispensable character of the services that determines a low degree of their differentiation - The small number of companies that cause a degree of captivity among consumers.

Source: Authors' own research.

Therefore, education and training programs related to the formation of human capital leads to economic performance, universities becoming the main networks and organizations in the development of those beneficial lines with employers in various sectors and fields. In this direction, the foundations were laid for the establishment of research hubs, incubators and science parks militating for technology transfer, and promoting an "academic capitalism" in the liberal economy that turns the faculty into an entrepreneur with full capital (Sum & Jessop, 2013). The responsibility to become employable is assigned to individual members of the workforce, who should acquire a multitude of individual skills, competencies, skills adaptation and personal arrangements to enable them to compete for jobs in the markets national and global labor.

To conclude, the direction followed by the knowledge economy focuses on economic growth in this space open to cooperation, competitiveness caused mainly by the complex phenomenon of globalization, knowledge being one of the most important competitive advantages (Bojan & Stanisic, 2013). That said, the main indicators underlying the analysis of the knowledge-based economy are: (a) factor endowments (b) unit labor costs (c) productivity growth (d) relative prices; (e) costs and exchange rates; (f) the work mark; (g) easy access to foreign capital; (h) incentives for technological improvement; (i) the optimal and efficient development of the activity of companies in the field of knowledge.

Conclusion

Taking into account the indispensable character of the market, representing the hub around which the entire present-day economic activity revolves, one can notice this continuous need of the individual to act in accordance with his convictions, values, feelings and beliefs, highlighting a precise link between what the whole competitive market mechanism (the rules of the market) entails and the attainment of that psychological level or inner well-being.

In other words, the more the society evolves from several points of view - economic growth, globalization, etc., the more ways to make a profit will be discovered and automatically, the more things meant for trading. This is commendable insofar as it helps society, while respecting the moral norms under which it acts and evaluates some facts. In principle, the sale of organs is reprehensible because it diminishes the moral value of the notion of donation, which reveals appreciated human qualities.

In this sense, the market update has materialized in the name of matching market that suggests that a continuous change, which offers options and benefits, so that operating freely is related to freedom and prosperity at the microeconomic and macroeconomic levels. Although the concept seems complex and intangible, it is highlighted that a correct functioning of the market is always based on the complementarity of supply and demand, so that the emergence of its rethinking and reorientation is possible in the present age.

On the other hand, the study of economist Alvin Roth focuses on the issue of atypical markets, considering that the role of economists is defined by understanding how markets should be designed. The new discipline, design on the market, aims at an ample analysis, explaining at the same time that the markets are in a continuous change, Alvin Roth's contributions being focused on the idea of their freedom and redesign.

The study's contribution is based on the particular analysis of the matching market in accordance with the competitive market mechanism, demonstrated by collecting updated data from the latest reports and documents. As well as by presenting case studies, it was shown the extent to which the market is new approach related to free initiative, fair competition, the decision making process of resource allocation, a direction to follow of the present study focusing on identifying possible solutions in measuring the performance of the matching market.

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