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Modeling Growth – between Public Policy and Entrepreneurship

The Need for Environmental Indicators Coverage. The Ecological Footprint

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Abstract: Our paper's aim is to review some of the most relevant indicators describing the environmental damage and to affirm the need of better understanding and evaluating it. As a result we discuss the ecological footprint as an improvement in this field and as a more comprehensive and reliable descriptor for environmental interests.

Keywords: environmental indicators; CO_2; ecological footprint; environmental damage

Introduction

It is widely recognized the need of better understanding the complexity and amplitude of environmental damage (Agostinho, Pereira, 2013). Even if we are talking about greenhouse gases (CFCs (chlorofluorocarbons), HFCs (hydrofluorocarbons), PFCs (perfluorocarbons), SF_6 (sulfur hexafluoride)), deforestation or inappropriate water usage there is still an important amount of damage insufficiently assessed. This is important because the contingency measures cannot be taken if the risks are not fully evaluated. The ecological footprint is one of these new indicators developed as a response to this acute need of knowledge regarding the scale of the environmental damage (Wacckernagel et al., 2005).

Environmental Indicators - a Review

The variety of environmental indicators show the great interest of academics and decision makers to understand and acknowledge the critical sustainability issues of our time.

Nevertheless it is hard to choose one single indicator or a category of ecological variables for assessing the environmental issues. The complexity of environmental issues itself is the first big impediment for it. The human activity affects the quality of air, water, damages the ozone layer, contribute to natural resources depletion and so on. That is why a single complex index is hard to establish and use to describe all the damage we provoke to the environment.

Below is a selection of such indicators for different categories of environmental harm and coverage.

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Table 1. Environmental indicators - a review

Indicator	Category	Coverage
CO_2 emissions	Pollution	Climate change
CH_4 (methane) emissions	Pollution	Climate change
CFCs (chlorofluorocarbons) (commercial name: "Freon")	Pollution	Climate change
SO_x & NO_x emissions	Pollution	Air quality
Indices of apparent consumption of ozone depleting substances (ODS)	Pollution	Ozone layer
Waste generation intensities (urban; industrial)	Pollution	Waste
Waste water treatment	Pollution	Freshwater quality
Threatened species	Natural resources & assets	Biodiversity
Deforestation	Natural resources & assets	Forest resources
Intensity of energy use	Natural resources & assets	Energy resources
Area of degraded land	Natural resources & assets	Forestry
Decreased deforestation due to environmental education	Performance	Education
Home gardens contribute to income generation	Natural resources & assets	Income generation
Carbon footprint	Pollution	*Including carbon dioxide and methane emissions of individuals, industry or designated activity, calculated as "carbon dioxide equivalent" - CO_2e*
Ecological footprint	Pollution; Natural resources;	*Including carbon, food, housing, energy, goods and services. Calculated as "number of Earths" needed to sustain the world's total population at a given level of impact/consumption.* *Evaluated at any given level (individual, community, region, industrial sector, etc.)*

Own selection based on numerous sources (OECD, etc.).

The Ecological Footprint

The ecological footprint is a relatively new concept introduced basically to describe the way of life and the impact of it upon the natural environment as a whole (Rees, 1992; Wackernagel, 1994).

It was designed to include different aspects of human existence ad effects of it at different levels: carbon emissions, alimentation behavior, housing and energy usage, goods and services (including transportation) consumption. Assessing all these aspects the final result shows the "total number of Earths" needed to sustain the whole human population if behave such as the respondent.

Conclusion

As the ecological issues became more critical in the last decades, the academics and the professionals developed studies and researches trying to design proper indicators for assessing the impact of human activity upon the environment. These indicators covered a diversity of pollution or degradation factors but few were complex enough to properly explain the amplitude of the environmental damage. Our future research will be oriented in describing the correlation between the ecological footprint and other economic variables for the case of Romania.

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Characteristics of the Entrepreneurial Environment in European Union Countries: a Comparative Analysis

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Abstract: The major importance of entrepreneurship for economic growth, competitiveness, creating jobs and innovation is widely recognized. The objectives of our paper are to realize a comparative analyze of the characteristics of entrepreneurship in the EU countries, as well as to identify the perceptions about it. For our analysis we use the values for the key indicators obtained from data base and reports of Global Entrepreneurship Monitor. Also, in order to realize the comparison we use the classification of EU countries according to their development level. The results obtained show that there are important differences between the EU countries regarding entrepreneurial activity, but also among the countries in the same group. The countries with a higher economic development have a better entrepreneurial environment than those less developed. Regarding the perception about entrepreneurship, our results show that almost half of working age population from EU observe good opportunities in the region for starting a business, but almost as many of them affirm that a big constrain in starting a business would be their fear of failure. Overall, the results of our research allow identifying the measures that would be required to be taken by policy makers to stimulate entrepreneurship in European countries.

Keywords: entrepreneurship; entrepreneurial activity; economic development; GEM

JEL Classification: L26; J23; O31

1. Introduction

Internationally it is widely recognized the major importance of entrepreneurship for economic growth, competitiveness, creating jobs and innovation. The role of entrepreneurship in achieving economic and social objectives and the need to promote the entrepreneurial spirit is in the spotlight of the decision makers at EU level, being highlighted by the European Commission both through the Lisbon Strategy and the current Europe 2020 strategy. The concern of the European Commission for the promotion of entrepreneurship it is highlighted also by the Small Business Act, adopted in 2008 and which aims to promote and support entrepreneurship and SMEs growth (European Commission, 2008). In the context of reviewing, in April 2011, of the Small Business Act, the European Commission proposed Entrepreneurship 2020 Action Plan (European Commission, 2013), which was adopted in January 2013 as part of Europe 2020 strategy. This plan aims to facilitate the creation of new businesses, but also to create a more favourable environment to entrepreneurs so they can develop, and it is targeting three strategic areas, namely: *developing entrepreneurial education and training* to support the growth

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and creation of enterprises, *creation of a favourable business environment* (through adopting measures for improving the access to finance; supporting entrepreneurs in key steps of the life cycle of the business and supporting their growth, launching new business opportunities in the digital age; facilitating the transfers of businesses; adopting a new approach regarding bankruptcy and enterprise insolvency, and offering a second chance for honest entrepreneurs; adoption of clearer and simpler regulations), and *promoting models of entrepreneurs to follow*.

The major negative implications of the recent international crisis on the national economies has brought into focus of the policymakers the crucial need for entrepreneurship promotion, that may have a key role in supporting economic recovery and reduce unemployment, which in some countries has reached alarming levels.

Starting from those stated above, the objective of our paper is to discuss and highlight the characteristics of entrepreneurship in the EU countries, expressed through key indicators that are measured and monitored by the Global Entrepreneurship Monitor. The rest of our paper is structured as follows: section two realizes a comparative analyze of entrepreneurial activity in EU countries, highlighting some similarities, but also major differences that appear according to the level of economic development; the third section is analyzing the perceptions regarding entrepreneurship in the EU countries. The study ends with conclusions.

2. Analysis of the Main Indicators Measuring Entrepreneurial Activity in EU Countries

For our analysis we consider the countries from the EU28. For each investigated indicator, the number of countries analyzed will vary according to the data available regarding their entrepreneurial activity. The data for the indicators are taken from the Global Entrepreneurship Monitor – Key indicators (2015) which measure the level and nature of entrepreneurial activity around the world. The considered countries are presented in Table 1 classified by their economic development level. We consider this classification important for our survey because we anticipate differences between countries regarding entrepreneurial activity according to the economic development level they are included.

The World Economic Forum is grouping the 144 world states considered for their analysis into 5 levels of economic development, as follows: a) stage 1 – economies focused on the basic requirements; b) transition from stage 1 to stage 2; c) stage 2 – economies focused on efficiency; d) transition from stage 2 to stage 3; and e) stage 3 – innovation-driven economies (Schwab, 2015). In order to allocate the analyzed countries into a stage of development are used two criteria: the first is the level of GDP per capita at market exchange rates; and the second criterion makes the difference between the countries that, based on income, are beyond stage 1, but where prosperity is based on the extraction of resources. This criterion measures the share of exports of mineral goods in total exports. The countries that have more than 70% of their exports made up of mineral products (reported to a five-year average) are considered to be factor driven economies. The countries situated between the main three stages of development are considered to be "in transition."

Table 1. The EU28 countries considered in the analysis, grouped by their Economic Development Level

Factor-driven	Efficiency-driven	Innovation-driven
-	Bulgaria, Croatia, Hungary, Latvia, Lithuania, Poland, Romania	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany Greece, Ireland, Italy, Luxemburg, Malta, Portugal, Slovakia Slovenia, Spain, Sweden Netherlands, United Kingdom

Source: Processed by the authors after Kelley et al., 2016, p. 11.

As we can observe from Table 1, in the European Union we do not have countries included in the factor-driven category. Also, only seven countries are included in the second category (efficiency-driven), the rest being considered developed countries, and included in the innovation-driven category.

Following we will analyze each key indicator of the entrepreneurship, realizing a comparison between the considered countries. By analyzing these indicators we want to identify the impact of the entrepreneurship on the society but also to what extent the society sustains entrepreneurial activity. The most important indicators measuring the entrepreneurial activity are: total early-stage entrepreneurial activity (TEA), motivational index, established business ownership rate, business discontinuation rate and entrepreneurial employee activity.

Total Entrepreneurial Activity (TEA) is considered by Global Entrepreneurship Monitor (GEM) as the most known indicator to reflect the entrepreneurial phenomenon within an economy. It measures the percentage of working population who are either already running a business or is in the process of starting a new business. At macroeconomic level, from this group of entrepreneurs it is expected to bring the most dynamism, job creation and innovation in the economy. TEA rates are decreasing when the countries have higher levels of economic development. We also observe important variation among economies at the same development level, particularly in the efficiency-driven group. As we can observe from Figure 1, the efficiency-driven economies show varying TEA rates, starting from 4.40% in Bulgaria to 13.30% in Latvia. Also, we observe substantial variation of TEA rates among the innovation-driven economies. The countries with the smallest TEA rates are Italia, Germany, Belgium, Spain and Finland with less than 6% of the adult working-age population starting or running new businesses. On the other hand, the countries with the biggest rates are Slovakia and United Kingdom where more than 10% of the adult population was starting or running a new business. From the countries included in the efficiency-driven group there are three countries (Latvia, Romania and Lithuania) which have the value of TEA rates higher than the European Union average. The same number of countries can be selected from the innovation-driven group (Slovakia, United Kingdom and Portugal). All the other analyzed countries have values of TEA below the EU average.

Similar patterns in entrepreneurial activity can be explained by the economic development levels of the countries and also by the regional location, but the variations that we observe among our sample of countries show that are also other factors with an important impact on entrepreneurial activity, respectively supporting access to finance for entrepreneurs, the support and government policies, regulatory environments, entrepreneurship education, market conditions, but also cultural and social norms about entrepreneurship (Amorós & Bosma, 2014).

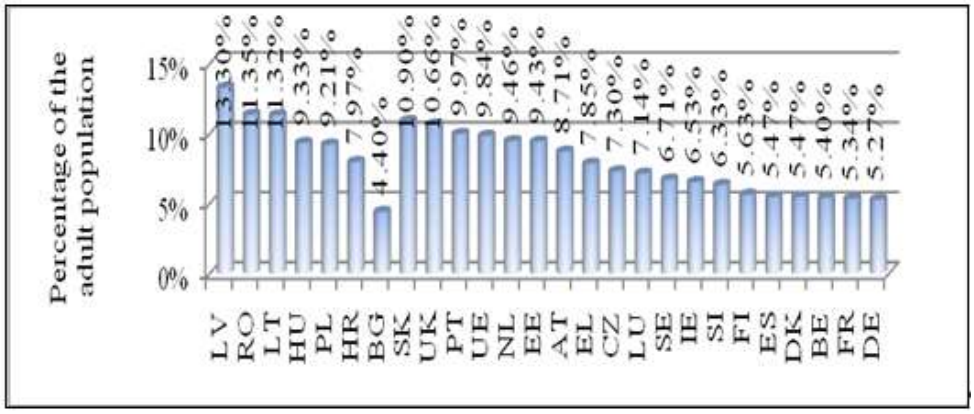

Figure 1. Total entrepreneurial activity in 25 EU countries, 2014.
Source: Processed by the authors after data from GEM- Key indicators, 2015.

Another important indicator in measuring entrepreneurial activity is *Established Business Ownership*, which represents the percentage of the population between 18 and 64 years who are currently owner and manager of an established business. This indicator helps examining the level of mature business activity relative to start-ups. To realize this analysis in Figure 2 we test the relationship between the established business ownership rate, which represents the percentage of working-age population who are currently owner or manager of an established business, and new business ownership rate, which represents the percentage of working-age population who are currently owner or manager of a new business.

From Figure 2 we observe that for the countries in the efficiency-driven group there are between 12 to 20 established enterprises reported to 10 new businesses, all below the UE average of 23 established enterprises reported to 10 new ones. The countries with less than 16 established enterprises reported to 10 new ones are Romania, Latvia and Lithuania. In the innovation driven group the results vary significantly, for example for UK there are only 14 established business owners for every 10 new entrepreneurs, and for Ireland there are 40 established business owners for every 10 new entrepreneurs. The countries situated above the EU average regarding this indicator are: Ireland, Greece, Sweden, Italy, Austria, Spain and Finland. This results show that, in the developed economies there are fewer people that are starting a new business, but, there are proportionately more that have made it to the mature business phase. And, also the fact that in the efficiency-driven economies there are fewer established businesses.

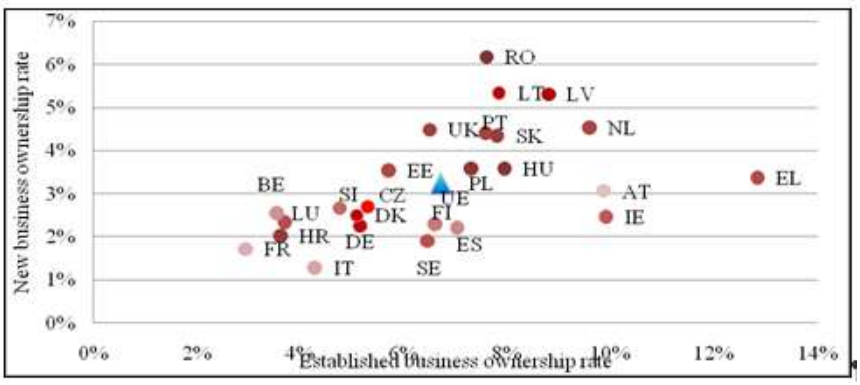

Figure 2. The relationship between established business ownership rates and new business ownership rates, in 25 EU countries, 2014
Source: Processed by the authors after GEM- Key indicators, 2015.

Entrepreneurial Employee Activity (EEA) is another important indicator measuring entrepreneurial activity**,** which is used by GEM from 2011 in order to highlight more accurate the entrepreneurial phenomenon across the economies**.** EEA is a special type of entrepreneurship that can substitute independent entrepreneurship or can complement entrepreneurial activity focused on starting a new business. According to GEM Reports (Bosma et al., 2012; Singer et al., 2015), this indicator measures the proportion of the working-age population which in the last three years had an important role in the development of new activities for an employer, for example developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary. In accordance with the analysis realized by GEM, Entrepreneurial Employee Activity (EEA) has smaller values in the efficiency-driven economies, as Figure 3 shows. On the other hand it accounts for a substantial portion of entrepreneurial activity in the innovation-driven group, reaching in some countries values close to the level of TEA. Across our sample, EEA is lowest (under 2%) in one country from the efficiency-driven group (Bulgaria), and three economies from the innovation-driven group (Italia, Spain and Greece). Less than 20 percentage of the adult population is starting a business for their employer in these economies. On the other end of the scale, Ireland shows an EEA rate of nearly 7%. Luxembourg, Sweden, Estonia, Netherlands and Belgium are also among those with high EEA rates higher than 6%). High values of EEA confirm the presence of more entrepreneurial proactive and innovative culture in the business sector of the countries.

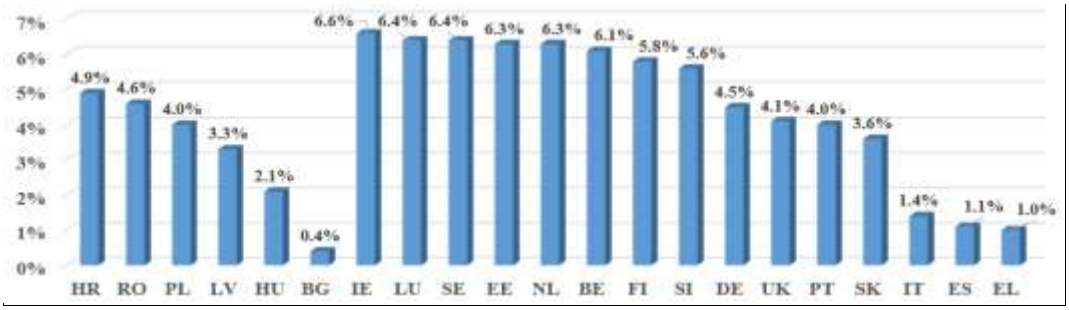

Figure 3. The Entrepreneurial Employee Activity in 21 EU countries, 2015.

Source: Processed by the authors after Kelley et al., 2016.

To observe the proportion between the improvement-driven opportunity entrepreneurs and those motivated by necessity, Global Entrepreneurship Monitor has created the *Motivational Index.* Some people may be determined to start a business because they have no other work options and need a source of income, this are the necessity driven entrepreneurs. Also, other people become an entrepreneur to pursue an opportunity, this are opportunity driven entrepreneurs. This index helps us to better understand the entrepreneurial capacity of a country.

The results obtained for this index show that there are twice as many entrepreneurs driven by improvement opportunity then necessity-driven ones, on average, in the efficiency-driven economies, and in the innovation-driven economies, there are three times as many entrepreneurs driven by improvement opportunity as necessity-motivated entrepreneurs. The countries where a big part of the entrepreneurs have started their business out of necessity are: Bulgaria, Croatia and Romania. Also, if we analyze the countries from the innovation-driven group we observe large difference between the economies, so, Sweden and Luxembourg have over five times as many IDO entrepreneurs as those motivated by necessity. On the other end of the scale, are situated two European economies Greece and Portugal, where a big part of the early stage entrepreneurs started their business out of necessity.

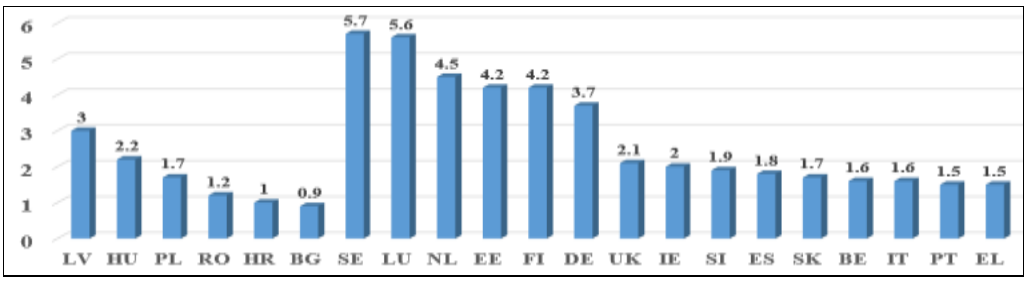

Figure 4. The value of the motivational Index in 21 EU countries, 2015.

Source: Processed by the authors after Kelley et al., 2016.

Moreover, if we take into account the countries that have participated in the GEM survey in the last three years, we observe that Poland, Slovakia and Spain have registered an increase in their motivational index from one year to another (Amorós & Bosma, 2014; Singer et al., 2015; Kelley et al., 2016). These improvements show that more people are seeking to improve their lives through entrepreneurship but fewer are driven to start a business out of necessity.

Business discontinuation rate is another important indicator for entrepreneurial activity, which is measuring the business exits, respectively the percent of the population with the age between 18 and 64 that in the last 12 months have interrupted a business, either by selling, shutting down or otherwise discontinuing an owner/management relationship with the business (Kelley et al., 2011, p. 64). According GEM (Singer et al., 2015) a too high intensity of discontinuations might be due starting a business that was not well prepared or a bad management of the venture. On the contrary, a too low intensity of business discontinuation could indicate a low dynamic of the economic system that maintains inefficient business structures.

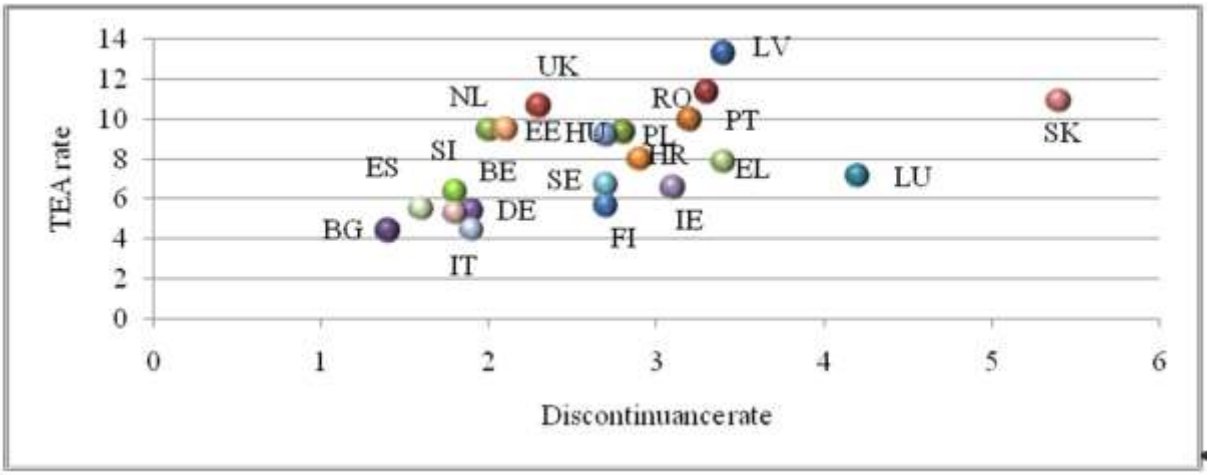

Figure 5. The relationship between discontinuance (% of adult population) and TEA rates, in 21 EU countries, 2015.

Source: Processed by the authors after Kelley et al., 2016.

Usually, the rate of business discontinuation is higher in less developed economies and it declines as economic development increases (Xavier et al., 2013; Amorós & Bosma, 2014; Singer et al., 2015). As Figure 5 shows, a high rate of entrepreneurship is predictive of a high discontinuance rate. Low rates of discontinuance (less than 2% of the working-age population) are reported in six European countries: Bulgaria, Italia, Belgium, Germany, Slovenia, and Spain). These countries also register low TEA rates.

High value for the discontinuance rate, above 3% of the working population, show that more than three-tenths of working age adults have discontinued a business in the past year. These high values are registered in the countries where are also registered high TEA rates (like Latvia and Romania from the efficiency driven group and Slovakia, Luxembourg, Greece, Portugal and Ireland from the innovation-driven group).

In the case of some countries, the level of business exits is very high in relation to the number of start-up efforts. For example, in Slovakia, Luxembourg, Portugal, Croatia, Finland and Sweden the value of discontinuance rate is higher than the new business opportunity rate, this high level of business exits shows that entrepreneurs are not starting viable ventures, or that they do not have the ability or inclination to create longer term sustainability for their businesses.

The business exits can be caused by a variety of reasons. Figure 6 shows the reasons for exiting businesses in the European Union countries. The lack of profitability appears to be the major reason mentioned for business discontinuation in the European Union. More than one-third of business exits are due to this cause, on average. Also, the lack of finance is the fourth major reason for leaving a business. Together, the lack of profits and problems obtaining finance explains almost half of the exits in the European Union countries. Between the countries where the lack of finance has influenced in a big proportion the business exits are: Croatia, Italy, Slovenia and Bulgaria.

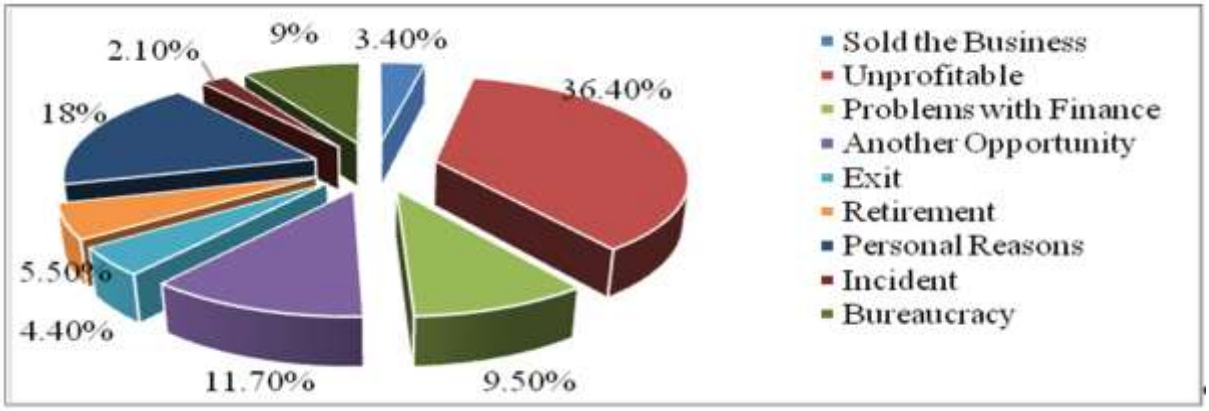

Figure 6. Business exit reasons for EU countries, 2015.
Source: Processed by the authors after Kelley et al., 2016.

Besides personal reasons (which represent 18% of the reasons), another opportunity and bureaucracy are important factors influencing discontinuance rate, as economies develop and institutionalize, bureaucracy arises as a big problem which can lead to fewer start-ups and more informal, unregistered firms. Exits due to sale, retirement or incident, being included in the category resulting from the choice of entrepreneur, account for fewer than 6% of the reasons mentioned by the EU countries.

3. Analysis of the Perceptions Regarding Entrepreneurship

For evaluating the perception regarding entrepreneurship in the EU countries we take into account three indicators: *Perceived opportunities*, which is measuring the percentage of working age population who see good opportunities to start a firm in the area they live; *Perceived capabilities*, which represents the percentage of working age population who believe that they have the required skills and knowledge to start a business; *Fear of failure*, represented by the percentage of working age population who say that fear of failure would prevent them for setting up a business.

From Figure 7 we observe that for all the countries from the efficiency-driven group the population who see good opportunities to start a firm has a smaller percent than the average of the European Union. On the other hand, in the innovation-driven group of countries we have some really high values: 70% of the working population in Sweden sees good opportunities to start a firm in their country, and almost 60% of the working population in Denmark has the same opinion. Small values, fewer than 20%, for this indicator are obtained in Croatia, Greece and Slovenia.

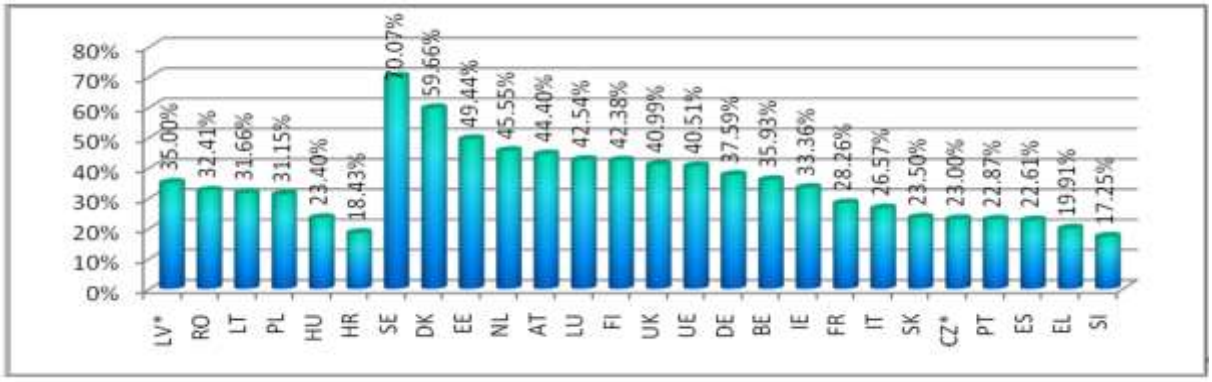

Figure 7. Perceived opportunities of entrepreneurial environment, in 25 EU countries, 2014 (* data available only for 2013).

Source: Processed by the authors after GEM- Key indicators, 2015.

This indicator appears in contrast with the fear of failure. Almost all the countries from the efficiency driven group (except Croatia) have a fear o failure bigger than the EU average (see Figure 8). In the innovation driven group we have different results, for example in Greece, where perceived opportunities was among the lowest one from EU, the fear of failure is the highest.

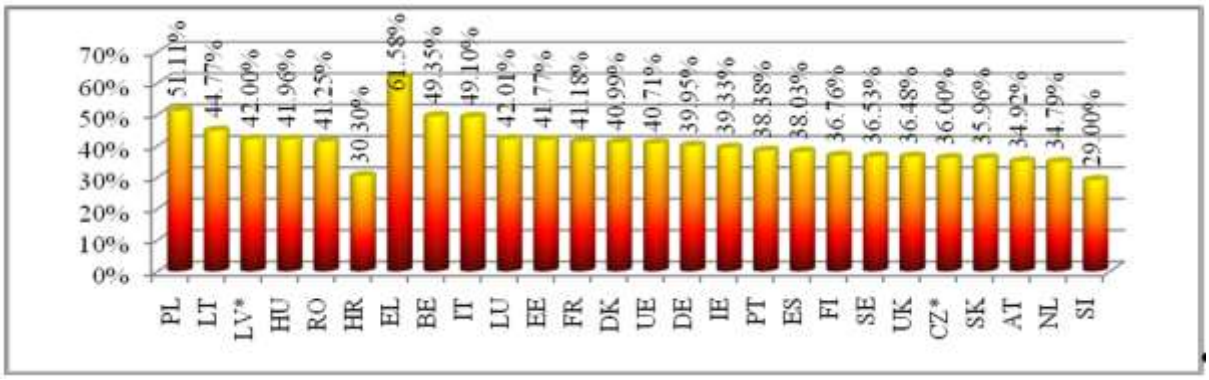

Figure 8. Fear of failure, in 25 EU countries, 2014 (* data available only for 2013).

Source: Processed by the authors after GEM- Key indicators, 2015.

A special situation appears for Slovenia, where perceived opportunities are the lowest but the fear of failure is also the lowest, fact that shows us that in this country the way of perceiving entrepreneurship is not due to the fear of failure, but due to other factors.

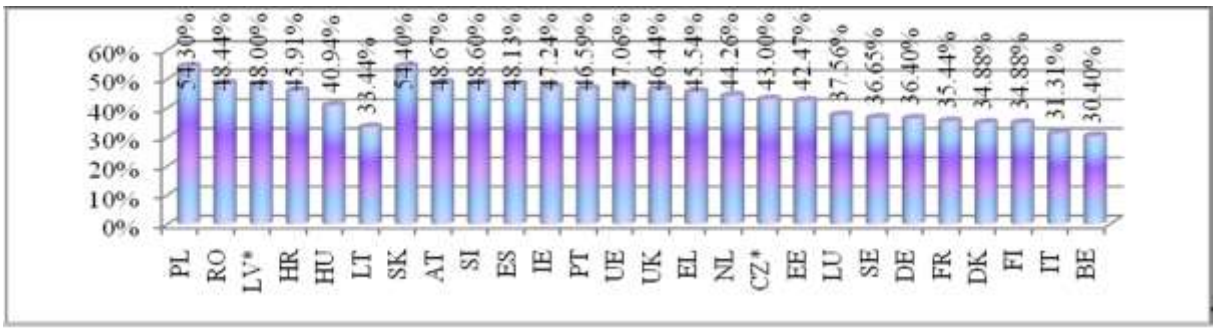

Figure 9. Perceived capabilities, in 25 EU countries, 2014 (* data available only for 2013).
Source: Processed by the authors after GEM- Key indicators, 2015.

The results obtained for the perceived capabilities indicator show that at the European Union level 47% of the working age people consider that they have the skills and knowledge necessary to start a business. Analyzing the countries (see Figure 9.) we observe interesting distinctions between the southern and northern regions, for example Denmark, Estonia, Finland and Sweden have registered beliefs about capabilities lower than average, and, other countries: Slovakia, Slovenia, Ireland, Portugal and Spain have above average views about entrepreneurial capabilities. Moreover, on average perceived capabilities for efficiency driven group of countries are higher than the average perceived capabilities for the innovation driven group.

4. Conclusions

The results of our study show that average TEA rates tend to be higher in the efficiency-driven group, but are decreasing when the level of economic development is increasing. Established business ownership is also higher for the efficiency-driven countries compared to innovation-driven ones, although the proportion of established business owners relative to TEA is smaller than in the innovation-driven economies. Entrepreneurial Employee Activity (EEA) is highest in the innovation-driven economies and is decreasing at the same time with the decrease of the economic development level. Ireland, Luxembourg, Sweden, Estonia, Netherlands and Belgium have the highest EEA rates, more than 6% of their adult populations.

The rate of business discontinuation declines as economic development increases. So, discontinuance is highest in the efficiency-driven countries. The lack of profits or problems with finance explains almost half of business exits. Another opportunity or bureaucracy also represent an important factor influencing business exits.

Focusing on the motivation of entrepreneurship, from our results, we observe that there are twice as many entrepreneurs driven by improvement opportunity then necessity-driven ones, on average, in the efficiency-driven economies, and in the innovation-driven economies, there are three times as many entrepreneurs driven by improvement opportunity as necessity-motivated entrepreneurs.

Regarding the perception about entrepreneurship, the results of our study show that, on average, 40% of working age adults from the European Union economies observe good opportunities in the region for starting a business, but almost as many of them affirm that a big constrain in starting a business would be their fear of failure. However, on average, almost half of the population between 18 and 64 feel they have the ability to start a new business. Overall, the results of our research allow identifying the measures that would be required to be taken by policy makers in order to stimulate entrepreneurship in European countries.

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Economic Thinking from Hesiod to Richard Cantillon

Gina Ioan[1]

Abstract: The paper makes an analysis between the two effects, considering the general case of an Allen utility function. We can say that about economics that it is a relatively young science, economic and social phenomena we find debated in philosophical thinking of Hesiod Xenophon, Plato, Aristotle. These phenomena were only economic management rules of common affairs of the city. Thus, the study of the economy began to emerge timidly, gaining not only the form that we know it today, but also the importance for a developed society, the very cornerstone of its.

Keywords: economic thought; scholasticism; mercantilism

1. Greek Thought

Representative of Austrian Economic School, Murray N. Rothbard, in the work E*conomic Thought Before Adam Smith, An Austrian Perspective on the History of Economic Thought, Vol. I,* thinks Hesiod the first economic thinker. In his poem *Works and Days*, author besides instilling the idea of justice, talks about the importance of productive work, efficiency, because who is able to work, that will fulfill its mission.

After 400 years from Hesiod, Xenophon takes the concept of economic efficiency and applicable across entire economy.

At the end of the fourth century B.C., Athens faces a broad social and political crisis, coupled with a moral and intellectual crisis. Within the extensive debates on politics, which in fact were critical laws of the city, stands Plato and his student Aristotle. Plato's ideal city cannot exist without the support of an ideal economy. Plato considered beneficial to society that the goods to be owned in common, in an ideal city everything belongs to all. As such, Plato society is divided into three categories: soldiers or guards, producers (farmers, artisans, merchants) and leaders. The society is equitable only if that ones who make laws aimed sole purpose, namely, the supreme virtue, the guards defending and producers take it lying down the authorities. This point of view has led some commentators to talk about Plato's communism.

Unlike Plato, Aristotle devotes more positive side to the economic problems. He is not a supporter of common possession of the goods, but would endorse for private property, market economy issues being dealt with by the one of justice always. Trying to understand the mechanisms of market economy and beyond, we can say that Aristotle is the originator analyzes regarding the theory of value

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that we meet along the entire history of economic thought, the value putting on not only different meanings but also definitions as different.

He is not opposed to the exchange of goods, and obviously agrees with the use of money as long as the process itself (and use currency exchange goods) is done in order to obtain a use value and for their needs. Instead, Aristotle notes that not always, the exchange of goods is limited to the issues mentioned above, but it aims to achieve profit, currency this time being a tool that allows unlimited accumulation of wealth. This unlimited accumulation of wealth, which Aristotle calls chrematistics is rejected and condemned by the philosopher, it is considered a factor that can lead to fragility of the unity and stability of the city.

For Aristotle the ideal city was that in which true justice means to give him each of its members after its merits.

When Aristotle wants to discover those underlying principles of healthy cities (whose purpose is to lead people to happiness), he speaks about the principle of distributive justice and commutative justice.

On distributive justice, the philosopher argues that equality is not when it is each citizen equally distributed, but true equality exists when given more deserving of more, and less, one who deserves less. With regard to commutative justice (in contracts, exchanges), Aristotle made an initial discussion on the value of goods, anticipating both the labor theory of value which we find it debated by economists of XVIII and XIX centuries and he, also, explain the value of things by the utility (like neoclassical economy). Exchange, for Aristotle, cannot exist without equality, and equality itself cannot exist without measurability. And Aristotle continues saying that in reality it is impossible for goods very different to be commensurable. This statement made Marx to declare that from this point, Aristotle did not anymore analyze the form of value. Why? Because Aristotle failed to discover the common measure, that element which is identical between the changed goods. Obviously, this common measure is nothing but work incorporated into goods. How Ancient Greece, those who worked were slaves (slavery being motivated as an indispensable guarantee of free men to be able to devote time to governance of the city) for Aristotle would have been impossible to find that common measure, the core value still remaining an enigma.

2. Scholasticism

Between of the fifth and the tenth centuries B.C., Europe experienced a severe economic crisis and moral, favoring the emergence of new economic and social structures. This period in which economic thinking, whether it knew the same crisis or information relating to this area have not been kept, was called by Joseph A. Schumpeter *great gap.*

A revival of economic thought and the economy occurs in the 13th century, one full of radical changes in the political, moral, economic and intellectual, marked, also, by the rediscovery of Aristotle's ideas. In these times, when the church occupies cultural space and it must express a view on economic and social issues long ignored, we find Thomas Aquinas who in his Summa Theologica (containing an important social doctrine but not an economic one) outlines the economic and social principles underpinning a virtuous life.

Thomistic doctrine relies heavily on Aristotle's ethics, but we now find that Aristotelian ethics is intertwined with religious doctrine (obviously condemnation of slavery and rehabilitation work, the belief that every human being there is a free soul).

St. Thomas of Aquinas supports the principle of free market and the existence of private property provided the moral factor to be always present. It also sees no harm in merchandise practiced to obtain commercial profit, but here he determines that the intention merchant to be a moral one, that the expected profit is not intended for enrichment unlimited but ensuring livelihood of the family or help the poor persons. The issue raised by St. Thomas Aquinas was actually that of a profit just and another problem related it is the fair price. Regarding the just price or fair, it was a price that's just gross ensure merchant or correct forward previously. Regarding labour, St. Thomas of Aquinas considers it a worthy activity (contrary to the philosophy of ancient Greece), which had established a fair wage just as necessary to assure worker a decent life. Reading the works of Thomas Aquinas, it is noted that economic issues are subordinated to moral therefore St. Thomas of Aquinas could not say how to fix a fair price, a fair profit or just a salary.

The work of St Thomas and the whole scholastic doctrine aimed not only analyze economic phenomena, they have tried to trace some religious standards by which to justify economic behavior. It is understandable, if we refer to the time we see a society of economic activity early in factors of production (labor, land and capital) were not subjects to market transactions and the behavior, the traditions and not least authorities played an important role.

Throughout antiquity and the Middle Ages, the economy has not had a proper object of study, it was not a reality that will take the whole society, yet we have seen that ideas about the economy were inserted into philosophical, ethical or religious works. Since the 14th century, we are witnessing an economic context with a new spirit, characterized by the development of commercial capitalism and the emergence of a class of merchants, bourgeoisie, protected by the royal power. This economic context is accompanied by a new intellectual context marked by Renaissance ideas and some opposed religious doctrine. Thus, natural law-abiding world can be known by all men on the basis of reason and experience and who was thy merchant can now accumulate wealth, considered a divine blessing.

3. Mercantilism

In this landscape appears and develops economic thinking that is no longer subject to religious doctrine, favoring the emergence practical the economic policies. This economic thinking is defined and known in the literature as the *mercatilism*. Since mercatilism, then continuing with the physiocrats, Adam Smith, David Ricardo, the economy as a scientist walks into a milestone that builds own paradigms through which the real economy is explained and understood.

Mercantilist' approach is practical as possible, because it is based on the idea that the state should increase its wealth based on its economic development force, enriching citizens. Mercantilists see wealth as the sole purpose of social and economic life.

Development of trade during this period required increase in money supply in circulation, not anyway, but with constant purchasing power in the long run. As a result, the first analyzes of mercantilist turn to monetary problems. With the discovery of the New World, the monetary fluctuations have made Europe to face an incresing of prices. In 1569 in an attempt to analyze the relationship between the volume of goods in the market and the volume of money that middle exchange, Jean Bodin, in "*La Response au paradoxe de monsieur de Malestroit, touchant l'encherissement de toutes choses, et le moyen d'y remedier"* gives rise to controversial discussions that build later (along the nineteenth and twentieth centuries), the quantity theory of money.

In 1556, 13 years before Jean Bodin, Martin de Azpilcueta, demonstrated that the main factor that determines changes in the price is the amount of money in circulation, what prompted Mark Blaug to affirm that the quantity theory of money is the old economic theory.

In "*Comentario resolutorio of cambio"* Martin Azpilcueta write "in lands where there is shortage of money, all other things are selling, even labor, there are given less money than when there is plenty of money; For instance, experience shows that in France, where less money than in Spain, bread, wine, linen and labor cost much less; and even in Spain, in the old days when there were less money, selling things and labor were given on much less than after the Indies were discovered and covered with gold and silver Spain. Their cause is that the currency is worth more when and where less than when and where it is abundant. "

Another thinker of mercantilist doctrine is William Stafford whose point of view we find exposed in "*Exposure critical requests of our compatriots*" (1581). Considering currency reform unnecessary since all goods are paid in goods, the author recommends that there should be bought from abroad more than it sells to foreign countries.

One of the most famous thinkers of this period is mercantilist Antoine de Montchrestien, author of "Traité de l'économie politique" (1615), who first used the term *political economy*. The author besides link the economic sphere of politics, he imposed distinction between normative and positive economy but also enshrines the name of science, as *political economy*.

In *Treatise on Political Economy*, the author considers the merchants most important category of society, being very useful to the state. Although he agreed with encouraging any trades, he sees commerce the goal of all trades, this being the only reliable means of enrichment. Internal Trade is seen as a zero sum game, losing a merchant equal to the gain of another, and across the national economy did not lose nor win. Notthe same he saw things in terms of foreign trade. Therefore it was against the luxury considering that "*luxury is for the state as a plague and a ruinous cancer; because of silk (import luxury goods), our gold flows into Turkey and Italy"*.

In France, mercantilism reached a great period during Jean Baptise Colbert (1619-1683), a period that was called colbertism. Jean Baptiste Colbert was the finance minister of France between 1665-1683. In 1664, Jean Baptiste Colbert sent a letter to King Louis XIV in which he exposes his own ideas about economic reform to put upon France among the industrialized countries, a letter which it is now known in specialty literature as "*Memorandum on Trade, 1664"*

Colbert's measures proposed and implemented during his tenure as Finance Minister were aimed at creating a national industry and employment with state support:

- Improving the system of taxation;
- Waiving of customs tariff prohibitive;
- Promoting a moderate protectionism;
- Abolition of internal customs between provinces;
- Establishment of national companies in foreign trade;
- The establishment of manufactories based patent holding royal monopoly in a particular area;
- Free entry to France of craftsmen;
- Regulate production to prevent abuses and to impose French products on the international markets.

The French mercantilism without having too many theorists, it has the merit that was bent analysis of the fundamental problems facing the economy at that time.

Mercantilist doctrine obviously has never had any criticism at the time and no later. The gravest error of mercantilists is considered that of confusing money with capital, error that was the essence of Adam Smith critics on the their thinking mercantilist, stating that *"mercantilism is nothing but a web of observations thrust on the neck of a parliament venal of our traders and industrialists, based on the popular adage that wealth consists of money".*

In defense of mercantilist doctrine with rational arguments, came Gustav von Schmoller, the representative of the German historical school, in the work *"The Mercantile System and Its Historical Significance"*, realizing that the expected outcome of mercantilist, as reinforcement and extension of state power. This view was accepted by exegetes of mercantilist economic literature. Later another point of view that comes to defending mercantilist we find exposed in the "*General Theory*", Book VI, Chapter 23, *Notes on mercantilism* ... In this chapter, Keynes had considered the initiators mercantilist idea that fear goods insufficient and shortage of money causes unemployment and striving them to attract as much gold in the country was by no means a "childish", moreover, the author of the General Theory assigns mercantilist merit of being intuited a link between the amount of money and the interest rate. Aware that "weakness of stimulate investment has always been the key economic issues" J.M. Keynes is convinced that for the lack of investment, the best thing is to inflate the currency in a trade balance surplus. The surplus contributes to rising prices, inward flow of gold recorded smaller gains, favoring in this way investment and employment.

Towards the middle of the eighteenth century, mercantilist doctrine enters a phase of decline. Now, some representatives of this trend, which would be better to call precursors of classical liberalism evolves into another direction, meaning that they become aware of the analytical errors of their predecessors. They recognize that no economy can maintain a trade balance surplus in the long term and moreover trade can be mutually beneficial, sensing the importance of specialization and division of labor. In search of new paradigms, many writers recommended that government intervention should be minimized.

Among these writers it is distinguished doctor William Petty concerned with identifying sources of growth of national wealth. W. Petty's contribution to the development of economic thought is outstanding. The influence of two great philosophers and scientists of the time, Thomas Hobbes and Bacon determined W. Petty to base his analyzes on a specific quantitative accuracy, convinced that math and senses must be the basis of all rational sciences. Karl Marx considered him the founder of Political Economy, W. Petty is the first to explicitly supported using statistical methods to measure social phenomena.

The most important works written by W. Petty are: *Treaty on taxes and contributions* (1662); *Political Anatomy of Ireland* (1665); *Political Arithmetic* (1676), *Something about Money* (1682), *An Essay on Population Growth* (1686).

One of the great achievements of the eighteenth century is considered to be "*Political Arithmetic*". In its preface, Petty mentions that he strove to avoid simple words and intellectual arguments and use arguments of sense, like, number, weight and measure, in order to be manipulated mathematically, arguments to which Petty has remained trusty in all its scientific efforts.

Among the merits attributed to W. Petty on development of economy as a science (some pioneering) we have to say that since then, Petty is declared for a system of national accounts.

With his intellectual rigor that runs through all his work, he reveals the importance of the velocity of money and their multiplier effect, he first formulated a theory of interest, clarify the distinction between value and price.

In the production, W. Petty only accepts two inputs: labor and land. The capital was considered an accumulated work.

The analysis started by Aristotle, on the value continues with William Petty considers that the land and labor mean wealth (*the land is the mother of wealth, but the labor is her father*).

The issue that has preoccupied throughout his life was to find a common denominator of land and labor so that the value of any work to be measured only by one of these two factors of production (labor and land). William Petty is the first economist who believes that a good value is given by the labor time spent on its implementation and captures both quantitative and qualitative implications of labor-value-price relationship.

Another prominent figure in the journey toward economic liberalism was undoubtedly Richard Cantillon. His main work "*Essay on the general nature of trade*" was written in 1743 but published posthumously in 1775. The work of Cantillon, although dealing with explaining concepts and fundamental economic problems, it was partially ignored until 1881 when it was rediscovered by W.S. Jevons describing it as the first systematic treatise on political economy and the cradle of the economy.

Being considered an Austrian, he is the most fascinating characters in the history of economic thought Murray Rothbard calls Cantillon the father of modern economics.

Critical on mercantilism which assimilated wealth to stock of precious metals, for Cantillon, wealth represents goods that the land offers and labor is the instrument that produces it. For him money is only an illusion of wealth. Countries which have the precious metal are not rich in its opinion. Rich countries may be that are developing their domestic production and on export can purchase the precious metals through a favorable trade balance.

Being himself a successful businessman, outlines in his writings and develops a theory of the entrepreneur.

The economy of Cantillon distinguishes three types of economic agents: owners who are the main consumers and the entire production (supply) meets their wishes (demand) and the other two are different only by the nature of the revenues which are unsafe and uncertain or fixed.

One who lives on an uncertain income is entrepreneur and one who lives with a fixed income it is the worker who receives salary. Cantillon's entrepreneur acting under risk and uncertainty because buying goods at a price known at present, but they are sold at unknown prices in the future. In pursuit of profit, the entrepreneur must take risks because he operates in a market where uncertainty is always pervasive. Therefore, successful entrepreneur will always get profit, the less successful will lead a life in poverty or even go bankrupt. The role of entrepreneur is one of the most important Cantillon's contributions to the development of economic thought.

Speaking about salary as an income of worker and about the profit, that income that it receives entrepreneur, Cantillon approached (intentionally or not) a distribution theory. As for price, very close to the Austrian school vision, Cantillon considered it is determined by demand and relative scarcity. Demand is seen as a subjective concept that is more about system needs of the people, the intensity and diversity, and along with rarity, determine the market price, that price paid by the buyer. Richard Cantillon, separates the concepts of market price and market value for the price and value.

Market price and the market value is the price and the market value arising from economic forces confrontation. Price and value are used to describe the opportunity cost of the resources used in producing the goods (labor and land).

4. Conclusions

The beginnings of economic thought can easily be placed in the mists of time because the economy was in any period, the foundation on which the society was developed. The issues the economic phenomenon concerned people long before father economy, Adam Smith, and this edifice of science, we admire or blame it today, did not start with him, but it culminated with him.

Although the economic thinking has occupied a secondary place in antiquity to other sciences, economic ideas were not missing, they concerning society for a regulatory framework and from this perspective, once with the advent of money and the development of trade and exchange, interest about economy exceeded descriptivist and pragmatic heading, already enrolling on the line of economic theory.

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REALITIES AND PERSPECTIVES

Analysis of the Evolution of Statistics in Romania

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Abstract: This article examines the evolution of statistical data (in this case GDP) from their temporarily character to the final one. It has highlighted a number of inconsistencies or opposite evolutions which implies that the use of statistical data not definitive may lead to erroneous conclusions.

Keywords: GDP; statistics; index

1. Introduction

The approach of building theoretical models for forecasting, quality and quantity of data is an essential precondition for establishing relations both, but especially for their applicability.

A model that theoretically provide all kinds of functional relationships is required to consider the possible application in practice, otherwise becoming pure speculation with no utility.

In the activity of collecting the data needed for verification of a model or another, we found over time as they undergo changes, sometimes essential, that overturns the theory formulated from the start. It is clear that a well-designed model must take into account the stability of the solutions to changes in the parameters or variables. Conjuctural models based on the same kind of behaviour or on periods "well chosen" will never have a scientific character, remaining on a purely speculative level.

This analysis follows a study, but not very profound scientific, of data (*provided by the National Institute of Statistics of Romania in its official documents*) variability. Will not interest us too much the causes of these changes, but more their implications for the modeling activity or setting verdicts on the Romanian economy.

As indicator of the analysis, we considered the Gross Domestic Product (*key indicator in the diagnosis of any economy*) in the period 2006-2014, data on both quarterly (*unadjusted due to the fact that the activity comparison refers to the corresponding period of analysis*) as well as annual, so they result from INSSE Monthly Statistical Bulletin of the above period.

2. Analysis of Changes in GDP Reports

Analyzing statistical data disclose by Monthly Statistics Bulletins of INSSE, regarding both the absolute size of GDP (*in current prices*) and the growth indices, we found that over three years (*time*

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when they are present in reports in that bulletin) they remain constant (*with very little exception, for 2012, when the indicators have changed during the fourth quarter of 2014*) over the entire year.

GDP recalculations are made at the end of the year, an interested user not having the ability to track the dynamics of adjusting on intermediate time intervals.

In what follows, we understand by "year 1" - the data at the early next year of those of reference (*for example, for 2010 – data reported in January 2011*), "year 2" - the data at the beginning of staggered 2 compared to the reference (*for example, 2010 - data reported in January 2012*), "year 3"- the data at the beginning of delayed by 3 compared to the reference (*for example, 2010 – data reported in January 2013*). Specifying these periods (*on which, repeating again, GDP remains constant*) is necessary because, during the year in question on a quarterly basis, the level of GDP is reported, but at the end it changes. It should be stated that in statistics, as they appear in the Monthly Bulletins have the mention for year 1 – "provisional data", year 2 – "semifinal data", year 3 – "final data". The only exception were the data on 2008 who underwent a correction in the fourth year also.

Table 1. Evolution GDP reports (million current prices)

Reference year	Year 1	Year 2	Year 3
2006 - Trim.I	60985,7	61081,8	61828,7
2006 - Trim.II	75967,2	76224,1	77102,2
2006 - Trim.III	92989,4	94205	92818,4
2006 - Trim.IV	112476	113025	112901
2006-TOTAL	**342418**	**344536**	**344651**
2007 - Trim.I	68841,5	73268,9	74162,8
2007 - Trim.II	87063,7	92080,5	92519,5
2007 - Trim.III	111035	111653	112223
2007 - Trim.IV	137769	135759	137102
2007-TOTAL	**404709**	**412762**	**416007**
2008 - Trim.I	91130,3	93862,8	93666,7
2008 - Trim.II	115074	116467	116496
2008 - Trim.III	138324	142491	142418
2008 - Trim.IV	159430	161833	162119
2008-TOTAL	**503959**	**514654**	**514700**
2009 - Trim.I	96616,7	97214,2	93395,9
2009 - Trim.II	112073	113309	115300
2009 - Trim.III	130289	132052	134340
2009 - Trim.IV	152295	155432	158104
2009-TOTAL	**491274**	**498008**	**501139**
2010 - Trim.I	97263,3	95209,1	101402
2010 - Trim.II	117127	118965	122652
2010 - Trim.III	139408	143103	143085
2010 - Trim.IV	159843	165284	156555
2010-TOTAL	**513641**	**522561**	**523693**
2011 - Trim.I	105129	108216	108434
2011 - Trim.II	130553	129159	129230
2011 - Trim.III	158927	154126	154262
2011 - Trim.IV	183943	165207	165423
2011-TOTAL	**578552**	**556708**	**557348**
2012 - Trim.I	112443	111662	114035
2012 - Trim.II	136291	138486	141037

2012 - Trim.III	163935	162226	164735
2012 - Trim.IV	174798	174377	176874
2012-TOTAL	**587466**	**586750**	**596682**
2013 - Trim.I	120142	121624	121621
2013 - Trim.II	146290	148146	148257
2013 - Trim.III	171539	176568	176151
2013 - Trim.IV	193158	191246	191427
2013-TOTAL	**631130**	**637583**	**637456**
2014 - Trim.I	129672	129644	-
2014 - Trim.II	156435	156354	-
2014 - Trim.III	184572	183672	-
2014 - Trim.IV	198831	197908	-
2014-TOTAL	**669509**	**667577**	-
2015 - Trim.I	140356	-	-
2015 - Trim.II	162662	-	-
2015 - Trim.III	197253	-	-
2015 - Trim.IV	209997	-	-
2015-TOTAL	**710267**	-	-

Source: Monthly Statistical Bulletin of Romania – 2006-2015.

Table 2. Evolution GDP Index reports (percent against the corresponding period of the previous year)

Reference year	Year 1	Year 2	Year 3
2006 - Trim.I	106,9	107	107
2006 - Trim.II	107,8	107,9	108
2006 - Trim.III	108,3	108,4	108,3
2006 - Trim.IV	107,7	107,9	108,1
2006-TOTAL	**107,7**	**107,9**	**107,9**
2007 - Trim.I	106,1	106,1	106,1
2007 - Trim.II	105,7	105,9	106
2007 - Trim.III	105,7	105,8	105,9
2007 - Trim.IV	106,6	106,8	106,8
2007-TOTAL	**106**	**106,2**	**106,3**
2008 - Trim.I	108,2	108,5	108,5
2008 - Trim.II	109,3	109,6	109,6
2008 - Trim.III	109,2	109,4	109,4
2008 - Trim.IV	102,9	103,1	103,1
2008-TOTAL	**107,1**	**107,3**	**107,3**
2009 - Trim.I	93,8	93,9	94,1
2009 - Trim.II	91,3	91,3	92
2009 - Trim.III	92,9	92,9	92,7
2009 - Trim.IV	93,5	93,5	94,7
2009-TOTAL	**92,9**	**92,9**	**93,4**
2010 - Trim.I	97,8	97,4	97,8
2010 - Trim.II	99,6	98,9	99,5
2010 - Trim.III	97,8	97,8	98,3
2010 - Trim.IV	99,4	99	99,5
2010-TOTAL	**98,7**	**98,4**	**98,9**
2011 - Trim.I	101,7	101,5	101,8
2011 - Trim.II	101,4	101,2	101,5

2011 - Trim.III	104,4	104,1	103,9
2011 - Trim.IV	101,9	101,6	101,9
2011-TOTAL	**102,5**	**102,2**	**102,3**
2012 - Trim.I	100,1	100,1	100,2
2012 - Trim.II	101,3	102	102,1
2012 - Trim.III	99,7	99,4	99,5
2012 - Trim.IV	100,3	100,8	100,8
2012-TOTAL	**100,3**	**100,6**	**100,6**
2013 - Trim.I	102,1	102,1	102,2
2013 - Trim.II	101,4	101,4	101,6
2013 - Trim.III	104,2	104,2	104,2
2013 - Trim.IV	105,2	105,2	105,3
2013-TOTAL	**103,5**	**103,4**	**103,5**
2014 - Trim.I	104,1	104,3	-
2014 - Trim.II	101,6	101,7	-
2014 - Trim.III	103,3	103,2	-
2014 - Trim.IV	102,6	102,8	-
2014-TOTAL	**102,9**	**103**	-
2015 - Trim.I	104,3	-	-
2015 - Trim.II	103,4	-	-
2015 - Trim.III	103,6	-	-
2015 - Trim.IV	103,7	-	-
2015-TOTAL	**103,7**	-	-

Source: Monthly Statistical Bulletin of Romania – 2006-2015.

A first analysis will be those of the percentage of variation of data from one period to another. For a more suggestive graphical representation we calculated deviation of 100%.

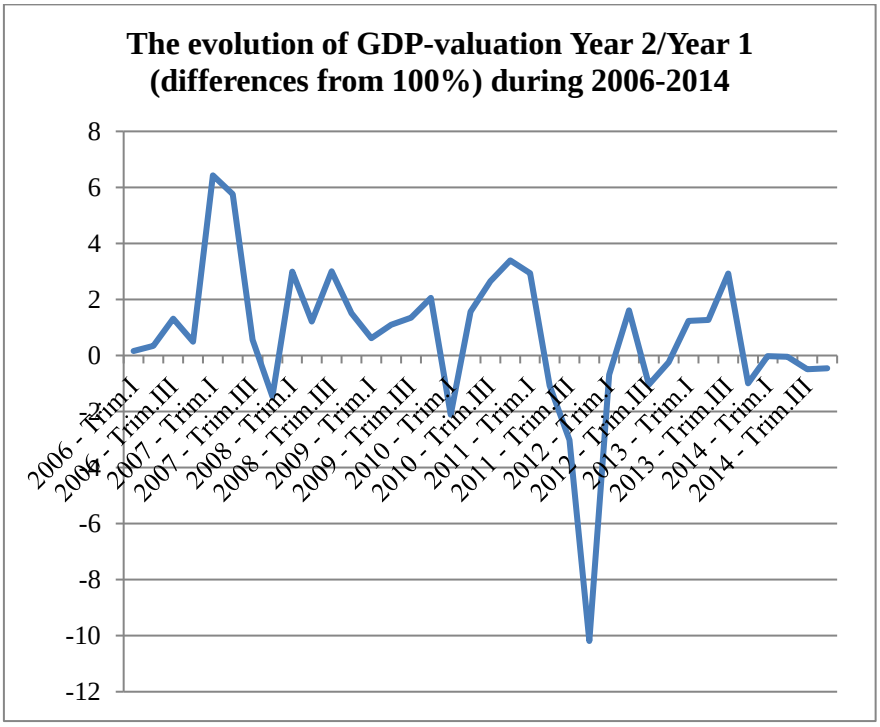

Figure 1.

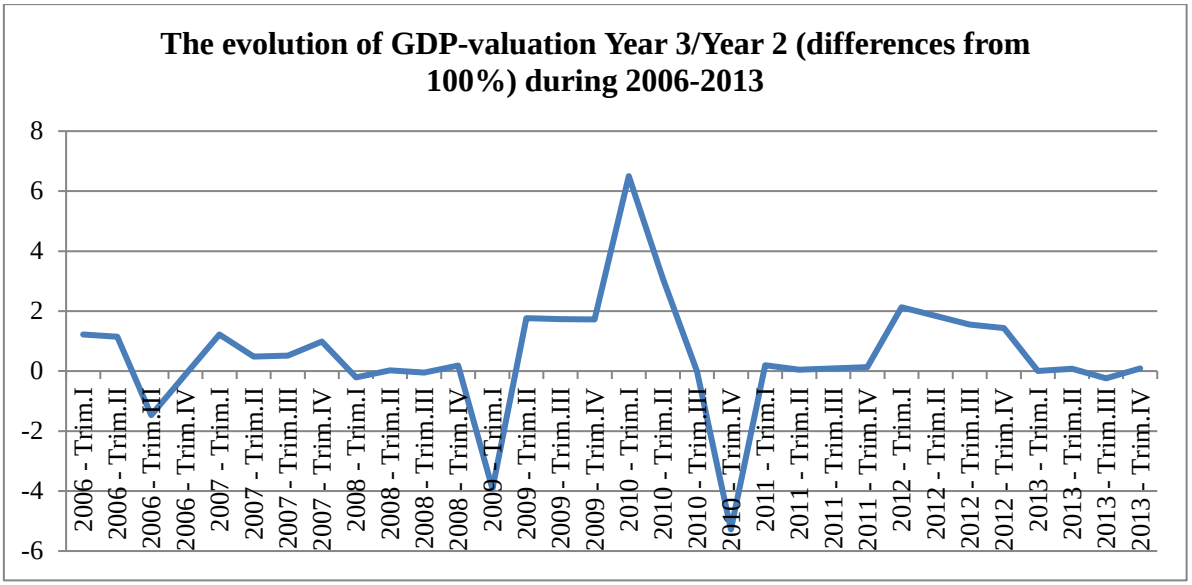

Figure 2.

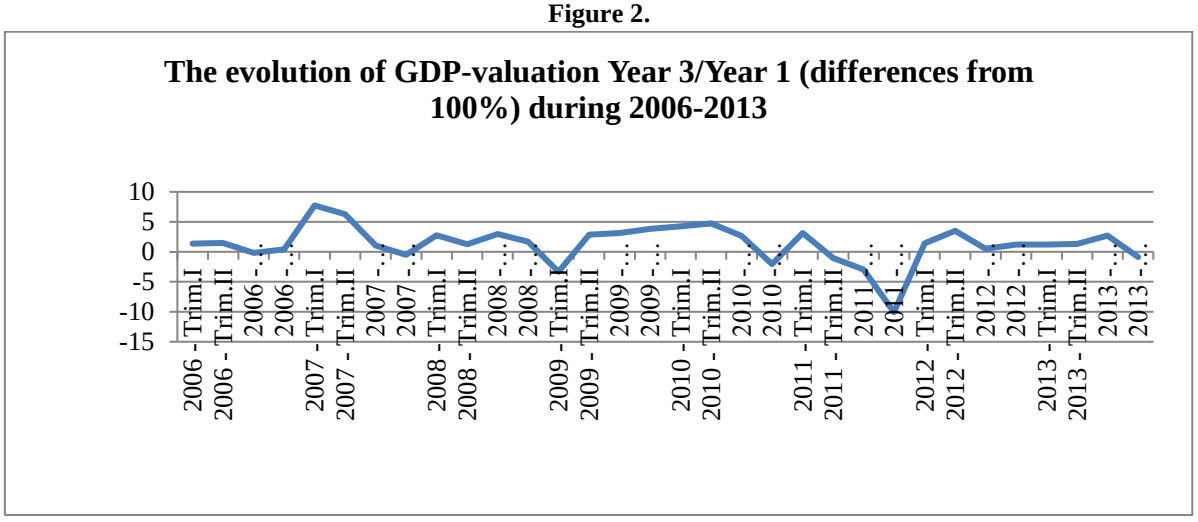

Figure 3.

Analysis of variance of quarterly values of GDP (from year 1 to year 2) reveals the following:

- In the period 2006 – 2011-Q1, forecast data adjustments have seen values supraunitary (*with two exceptions – 2007-Q4 and 2010-Q1*), which indicates an underestimation of the GDP at year-end. It may here remark extreme as those from 2007-Q1 where the undervaluation was 6.43% or from 2010-Q4 – 3.4%)
- Between 2011-Q2 – 2012-Q4, data adjustments envisaged subunit values (*with one exception - 2012-Q2*) which indicates an overestimation of the GDP at year-end. It may here remark extreme as that of 2011-Q4 when the overestimation was 10.19%
- Between 2013-Q1 – 2014-Q4 the expected data adjustments have known both subunit values and supraunitary, but within acceptable errors for data collection activity.

Variations in data from Year 2 to Year 3, however, are even more interesting. Basically, these variations should be to be very small, because if initially (*in January*) GDP forecast was not based on definitive data of the year ended, after a year statements and financial reports should be final. It appears however differences situated somewhere between -2% and 2%, but which are inexplicable

(*from a strictly economic*) are the differences from 2009-Q1 (-3.93%), 2010-Q4 (-5.28%) and 2010-Q1 (6.5%). What is even more interesting is that these corrections were contrary to earlier, meaning that if a correction from year 1 to year 2 was above or below the unity, then it changed its position regarding below or above the unity.

The coincidence of that in the first quarter of 2009, economic expectations were very high after a period of expansion and forced unsustainable economy and not recognizing the signs of the announcing economic crisis and subsequent triggering of it (*official recognition came strangely after the first reporting of GDP in 2009*) is bizarre. Even if the economy had gone into recession, reporting forecast was improved after one year (*early 2011*) and later (*in 2012*) to return and to recognize a decline in GDP compared to the forecasted 3.33 %.

The situation of the fourth quarter of 2010 is less clear in the sense that after an adjustment of 3.4%, after one year data were decreased by 5.28%. The first quarter of 2010 had a contrary trend. If the initial adjustment was negative of -2.11%, after another year it jumped to 6.5%.

Overall, the dynamics of provisional data (*year 1*) to the final (*year 3*) had recorded variations between -3% and 3% with exceptions like worrying: 2007-Q1 (7.73%) and 2011-Q4 (-10.07%).

Annual data analysis reveals the same failures in taking real data, registering difference of about 2%, usually positive. The exception of 2011 with a deviation of -3.66% of forecast data (*year 1*) and the final (*year 3*) raises a warning for what could theorists define models for Romania's withdrawal from the crisis. If these percentages were not alarming for economies that record high pace of economic growth, for Romania, which stood, with very few exceptions (*and even then, questionable in terms of sustainability*), somewhere in the 0-2% they can lead to conclusions totally opposite to economic reality.

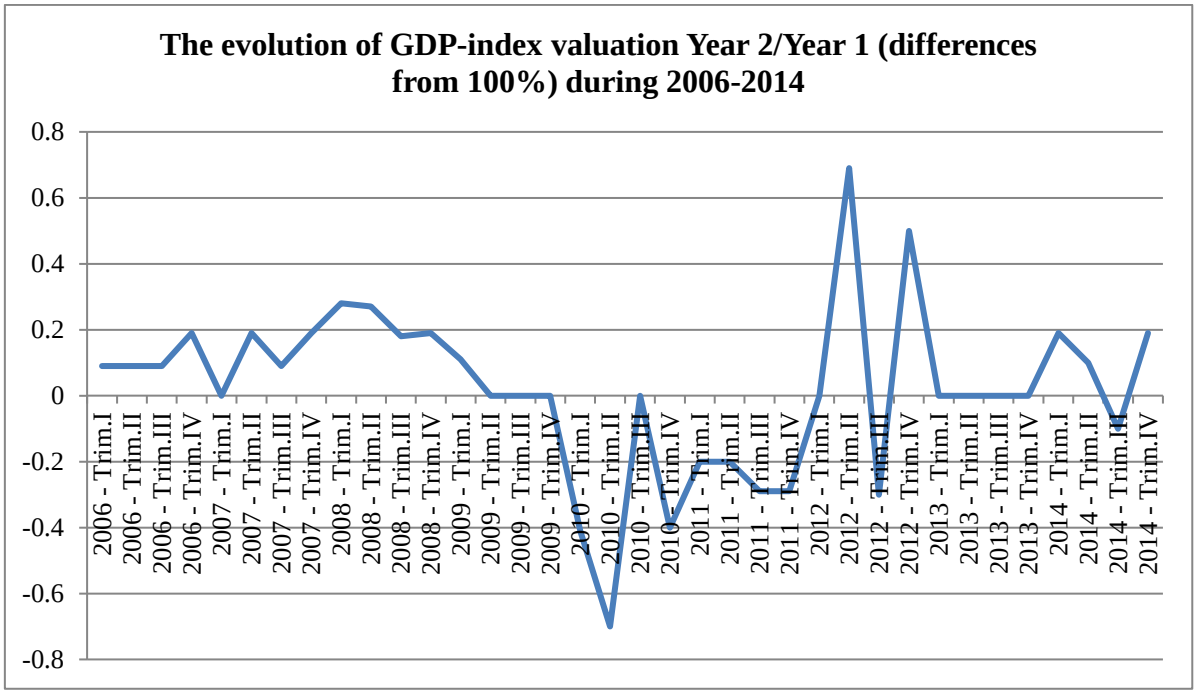

Figure 4.

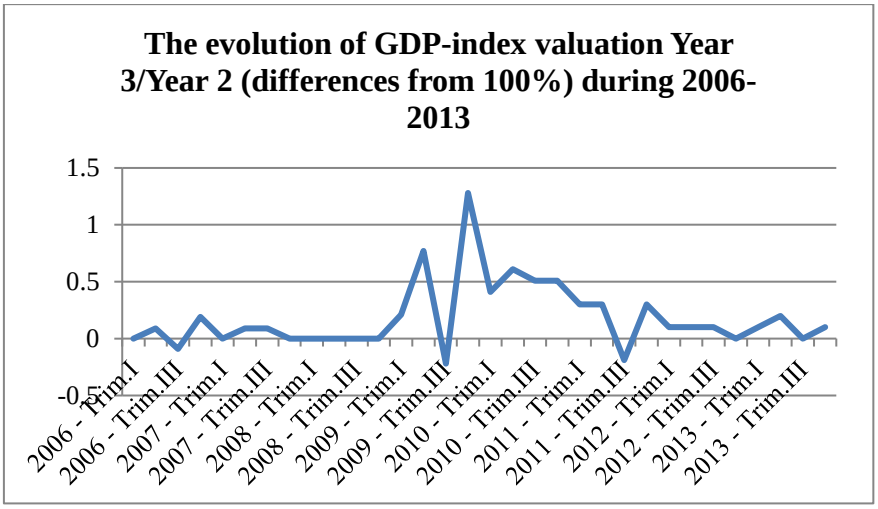

Figure 5.

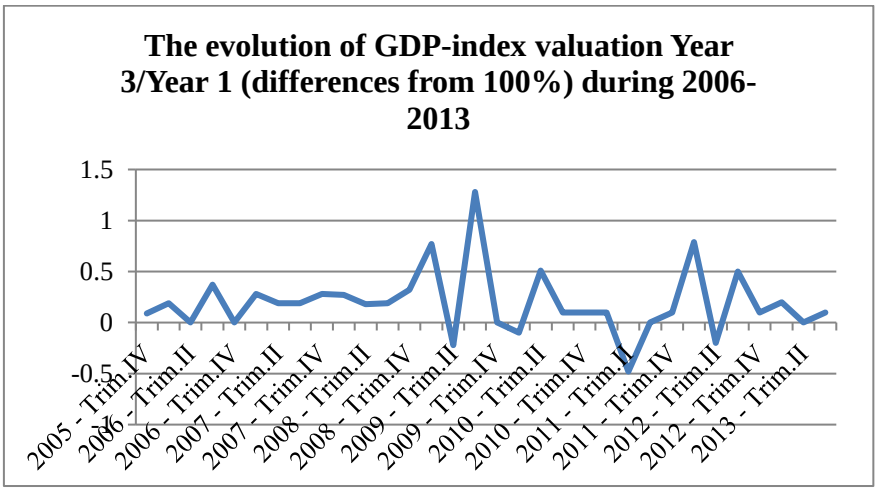

Figure 6.

The analysis of variance of the quarterly values of the GDP index (*from year 1 to year 2*) reveals that during 2006-Q1 – 2009-Q4 and 2012-Q1 – 2014-Q4, except for two negative adjustments, it recorded positive changes but not significant, ranging from 0 to 0.69%.

Between 2010-Q1 – 2011-Q4 the adjustments of the indices were negative (*although not very big - a minimum recorded in the second quarter of 2010 to -0.7%*) reflecting overestimation of economic growth even during the peak of the economic crisis.

Again, as in the analysis of raw data, the variations from the semifinal to the final data (*from year 2 to year 3*) were expected to be around 0. Unfortunately, again, where disruptions in the database were the biggest for the period of economic crisis, the changes were essential in the index, recording 0.77% in 2009-Q2, 1.28% in 2009-Q4, after this time hovering somewhere in the range 0.3-0.6%.

Correlating the two work areas adjustments (*Year 1-Year 2 and Year 2-Year 3*) we observe constant changes and opposite, between 2010-Q1 – 2011-Q4 occurring 6 (*out of 8*) changes in indices with opposite trends.

However, we appreciate that, unlike raw data, growth indices variations were much smaller which gives greater confidence in their use in the models than the first.

An interesting phenomenon occurs, however, in the case of GDP growth indices (*calculated in comparable prices*). Basically, $I=\frac{GDP_n}{GDP_{n-1}}$ where $GDP0_n$ is calculated in prices of the year "n-1". On the other hand, if we consider the adjustment of GDP_n in the 2nd year (*semi-final value*), it will be divided by GDP_{n-1} (*for year 3 – final value*). Noting that index with $I_{n,2}$. If we consider now the year 3 and GDP_n (*final value*) it will divide also by GDP_{n-1} also final date from the previous step. Let note this index with $I_{n,3}$. Therefore, at an increase in the estimate GDP_n from year 2 to year 3 will must have an increase of the index $I_{n,2}$ to $I_{n,3}$ and vice versa. The problem is that at the consultation of statistical data, is often exactly the opposite. Thus, in 2006=Q4 we have a decrease in the gross amount of 0.11% (*from year 2 to year 3*), but in the same time the index increases by 0.19%. Between 2009-Q1 – 2010-Q4 longer appear also another 4 (*out of 8*) such situations. The observation could support the change in the GDP deflator, but the data do not appear explicitly in its variations from year to year, which again leads to ambiguities on statistical.

3. Conclusions

The above analysis tries to give a possible solution to the use of statistics. In principle, the statistical data should be considered in their final values at the beginning of the third year after the end of the reference year.

In this case, however, the analysis will stop at least two years before the current year, leading at virtual models, inapplicable to the current situation, especially if the economy continues changing as the Romanian one.

Using GDP ratios is useful in very rare cases, because they do not reflect the absolute sizes and do not give information on GDP components - absolutely necessary within the models (*eg IS-LM*).

We suggest, for example, the use of regression equations for the adjustments of gross GDP data to get a definitive prognosis estimation. But this is risky, especially when the economic growth rate is almost zero, propagated errors leading to erroneous conclusions.

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