INNOVATION – THE MAIN SOURCE OF SUSTAINABLE DEVELOPMENT

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(Received May 2014; accepted September 2014)

Abstract

Economy - is the sum of population activities and economic progress is due to the innovative ideas of individuals from that population.

Competition in innovation domain is driven by the desire for financial gain. As the private economy is driven by the desire to make profit, in the same way innovation is motivated by consistent income that may occur.

The applying of innovations in economy brings benefits for all, including for those who do not innovate or do not work in innovative sectors. For a country to have a competitive economy it must produce itself applied knowledge and not to wait to get, to buy innovation from outside. Consequently, the necessary conditions for innovation must be provided: access to performant education, encouraging competition by rewarding achievements, and all these can happen only in a developed society.

Romania has made huge efforts after the 2nd World War to overcome the economic backwardness, the lacking element at that time being the owned technology. Later, in '80 the deficient element, but not only in Romania, but in all European communist countries, became creativity, its lack of performance due to the lack of wisdom of the leaders of these countries - lack of wisdom due to poor education, lack of higher and university education - that would have opened their horizons for understanding economic phenomena, for relations between the economic development and social aspects etc..

Raising people's income is possible only by increasing productivity. Always those working in the field of high technology, those having the highest qualification, have had the highest productivity and of course the highest wages.

Even now those working in the innovative areas have the highest salaries. For example, those who work at Apple, IBM and Microsoft, have salaries over $ 100,000. Romania should also learn from the experience of other countries that have developed innovative areas, that allow sustainable development not only to the economy but also to social, and care for the natural environment.

Keywords: economy, population, productivity, economic growth, research, innovation.
J.E.L. CODES: O31.

Introduction

Economy, as a result of population activity

Economy - is the sum of population activities and economic progress is due to the innovative ideas of individuals from that population.

The evolution of global GDP and GDP per capita – at the level of the entire population of the planet, during 1900-2010, shows steady growth of revenues of the world's population once with increasing global GDP, although in the same

period the population increased from approx. 2 billion to nearly 7 billion people - see Table 1 and Figure 1 and 2.

Table 1 - Evolution of global GDP and GDP / capita, at world population level

Year	Global GDP (billion $)	GDP / capita (thousands $)
1900	2.000	1400
1920	3.000	1900
1940	4.000	2100
1960	7.000	2800
1980	16.000	4200
2000	35.000	5700
2010	45.000	6700

Source: Maddison -2010
(data„updated" to the value of the dollar in 2000)

Figure 1 – Global GDP evolution 1900 - 2010

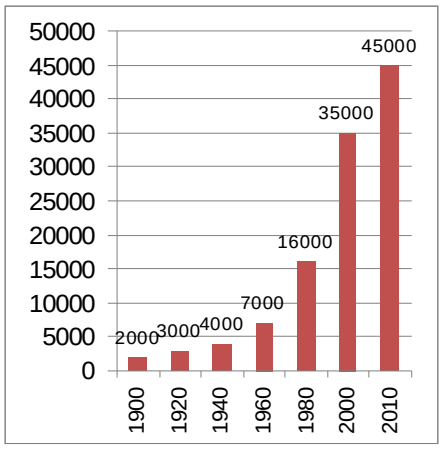
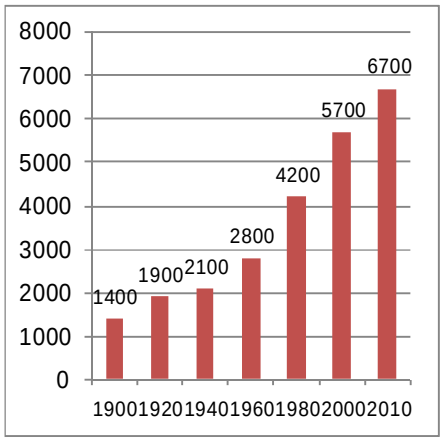


Figure 2 - GDP / capita evolution, at world population level



From the above, we see the greatest increase in household income during the 1960-1980 period, growth of approx. 50%, followed by 1980-2000 period with an increase of approx. 36%. The growth slowdown of GDP / capita in recent years is mainly due to the exponential growth of world's population, and especially the crisis that swept western states.

We note that the global population has increased since 1956 by one billion every 12-15 years, ranging from 3 billion in 1956 to 7 billion in 2012. For this period of 56 years it represents an increase of the world's population with 133%.

Does the world's population growth slows down ?

The answer is conditioned by the element to which we refer.

Regarding the demographic explosion of the planet, according to UN statistics, in October 2011 we reached the border of 7 billion people, triggering a new alarm that the mankind would move towards a Malthusian crisis, the depletion of natural resources, mainly drinking water and food crisis, overall environmental degradation etc. However, we can say that the alarm is inappropriate because the world's population growth rate slows down, although the last 3-4 billion came in an accelerated pace, of 1 billion to every 12-15 years, see Table 1:

Table 2 - The dynamics of world's population since 1950

Year	World's population	Absolute annual growth	Natural growth to 1 bill. People
1956	3 bill.		
1972	4	62.51 mil	20.83
1987	5	66.67	16.67
1999	6	76.90	15.38
2011	7	83.33	13.88 mil.

Source: Calculated after Raboca - 2011
* population growth, in million people

Reported to 1 billion people, world's population growth rate has decreased in the last approx. 60 year from 20.83 million to 13.88 million, which expressed as percentage represents a decrease of population growth of 33.36% even though during this period there was a significant increase in life expectancy.
According to the latest UN projections, the world's population growth rate will fall to zero in the middle of this century. But the greatest challenge that the world will face in the future is ageing. It is well known that the developed world is already experiencing population ageing, due to lower birth rates and rising of life expectancy. In the following decades this phenomenon will include also the developing countries.
However, population growth to 10 billion on our planet, will be a very difficult exam to ensure decent living conditions: food, drinking water, housing etc.
If we relate with each billion of world's population growth from 1956 to 2012, to the number from which the increase takes place and to the number of years in which the new billion of people has appeared, we obtain the values:

1956-1972: (1 : 16) : 3 = 1 : 48 = **2,08**
1972-1987: (1 : 15) : 4 = 1 : 60 = **1,67**
1987-2000: (1 : 13) : 5 = 1 : 65 = **1,54**
2000-2012: (1 : 12) : 6 = 1 : 72 = **1,39**

values that show a trend of relative downward of natality worldwide. In other words, the average number of birth of a woman decreased during this interval by a third?
Economic growth - is the product of two factors: population growth and and productivity increase.

Today, for the first time developed countries face with their population decline, especially middle-class population. The period during which this phenomenon occurs, since the latter part of the twentieth century, is called "the post-industrial".
It is not known how this demographic shift will affect developed economies, but certainly the impact will be significant. It might be just one of the major causes of deep economic crisis the diminishing of the middle class, phenomenon which by decreasing the purchasing power triggered the contraction of global markets, be.
In Romania, the demographic decline may also have significant implications. Prior to 1990, the number of children of a family was 2 or 3 - being above the threshold of 2, 1 considered as necessary for the natural replacement of the population. In the '90s fertility rate fluctuated around 1.8 and after 2000 it dropped to 1.3.
Some of the effects of this demographic change have already made their presence felt. For example, the number of admissions in higher education has increased continuously since 1990, and the number of students from approx. 235,000 got up to over 900,000 in 2007. This thing has helped increase the service sector, which as you know requires people with higher education, such as banking services, IT & C services, economic consulting services, legal services etc.
Since 2008, when the generation of 1990 entered college, the number of those enrolled in higher education began to decline. By 2011, the enrollment has decreased with 40% from the peak in 2007, the number of students dropped to 540,000, and the trend is still going downward. To this natural downward tendency, we add, since the last 2 years, increased baccalaureate requirements, which make only approx. 60% of high school graduates to be able to enroll in a university. So it is expected that in the coming years the number of students in our universities to fall down to less than 400,000.

Labor productivity

Wishing to raise the purchasing power, wage increases - are possible only by increasing labor productivity. All the time the employees who were able to deal with high technology, those with the highest qualifications, had the highest wages.
Also now those who work in innovative areas have the highest salaries. For example, those who work at Apple, IBM or Microsoft have salaries sometimes over $ 100,000 annually.
But we have to bear in mind at the same time, a very important fact: innovative areas create jobs and indirectly jobs for related activities necessary for normal life of a community.
The **productivity** of a worker grows naturally related to the number of hours he works in a day, week, month, etc. This way the productivity of workers increased in communist countries in the 50s and 60s. But in the second part of the twentieth century it was found out that in order to achieve performance is not so important how much people work, but how efficient are the technologies and the equipment available to each country's economy.

Thus, we would be tempted to believe that in countries like Germany, Switzerland, France etc. people work the most, and that in Romania, Bulgaria and Eastern European countries people work the least.
The realityis different, which results very wellfrom Table 3.

Table 3 - The number of worked hours / week in some EU countries

Greece	42.1	Netherlands	30.5
Czech	41.2	Norway	33.6
Bulgaria	40.9	Denmark	33.7
Slovakia	40.6	Ireland	34.9
Poland	40.5	Switzerland	35.2
Romania	40.3	Germany	35.5

Source: Eurostat - 2012

Thus it appears that the richest countries are also the most productive, and not the worked hours are the determining factor in achieving well-being. According to the data in the table, the Greeks work about 40% more hours per week than the Dutch, but the GDP per capita is higher in the Netherlands almost 2 times.
Since 1956, Robert Solow (Nobel Prize for Economics - 1987) in the study: "A Contribution to the Theory of Economic Growth", he explained why the United States succeeded to sustain higher growth rates than Europe, despite achieving an extreme level of industrialization. United States of America transferred manual work to automatic machines.
This process was then quickly mastered by the Japanese, who had already in the early 80s the biggest number of industrial robots. This fact determined the Japanese automobile industry to be the most performing, sales covering all continents, including Europe and North America, Japan becoming the largest automobile manufacturer in the world.
To reduce the gap in productivity growth in the developed capitalist countries, **communist countries in Europe** have decided in the 60's-70's to purchase and this way to assimilate, western technologies. As seen, the success was not as expected, the technologies were not the best.
Globally speaking productivity in industrial technologies domain grows steadily year by year, through innovation. Today, to produce a car the worker works only 25% hours / employee, compared to 60 years ago. It is noted the fact that the labor productivity in high technology sector grows at an accelerated pace due to the innovation from this area. Increased productivity also leads to wage increases and therefore increase the living standards of workers.
Productivity cannot be planned, designed, it can only be encouraged.

Productivity in the Romanian economy is below the European average
The issue of productivity in the Romanian economy is rooted in technical and technological endowment before 1990 and is not specific only to our country but represented the great disability of all communist countries economies.

Although in the latter part of the 20th century these countries have made huge efforts for development and even achieved some economic successes, assuming even the implementation of licensed technologies, paid to the West, since the '80s it became evident that the East no longer able to keep pace with the technological boom and the management of the West.
For example, below are compared the productivity in some fields in 1990. Of course, the differences pertain primarily to technical and technological endowment owned by Romania at that time:

Table 4 - Productivity in some fields in Romania, compared to other European countries - in 1990

Textile industry	Portugal / Romania	6 / 1
	Spain / Romania	6 / 1
Woodworking	Sweden / Romania	8 / 1
	Italy / Romania	7 / 1
Mining	Germany / Romania	4 / 1
	England / Romania	4 / 1
Agriculture	France / Romania	5 / 1
	Netherlands / Romania	6 / 1
Electronics - Electrical	Germany / Romania	4 / 1
	Belgium / Romania	4 / 1
Automotive industry	Italy / Romania	3 / 1
	France / Romania	3 / 1
Energy consumption per unit of product	RO / EU	3,5 / 1,0
State subsidies in Romania	Mining, nonferrous metals	6,0 / 1,0
	Mining, coal	2,5 / 1,0

Source: Adumitrăchesei I.D., Niculescu N.G. - 2002

The above show why the Romanian economy of the '80s -'90s was not compatible with the EU countries' economies and why a relatively long period of transition was required and also the reorganization of our economy.
The transition is the way from state economy (centralized - command economy) to market economy (free market).
Reorganization: transition from state-owned economy to private economy ... knowing that the state is the most nonperforming owner - manager.

Democratic institutions represent the favoring factor of the development
Niall Ferguson in his "*Civilization: The West and the Rest*" shows why the U.S. have managed to grow so rapidly over the past two centuries. The ultimate argument is that Americans have managed to impose a number of more efficient institutions, which allowed citizens to enjoy a number of freedoms.
Americans were given large areas of land in ownership, they were encouraged to start businesses out of which they have made substantial profits, the power

structures allowed the communities a high degree of autonomy, and people naturally had access to these structures.
As long as citizens have difficulties in holding, trading and mortgaging land and real estate properties, it will be much more difficult for them to become active players in economic growth. Instead, landowners can take bank loans providing the owned plot of land as collateral, thus being more likely to obtain financial resources and to invest in order to develop various businesses and this way to participate to the economic growth and prosperity.
Democratic institutions easily available are needed in many other sectors to allow the formation of a more creative and more productive population. The education system is essential to the overall development of a society. Countries with a more educated population are more developed than the countries showing gaps in the education system.
The best institutions are those providing public services to protect people's basic freedoms, providing access to power and opportunities. These institutions protect the rights and property of individuals, provide the access to a good education, balance market forces, promote positive experience and correct negative aspects that can hinder development.

Development is concentrated in towns
"Global Development 2009 Report: Reshaping Economic Geography" shows that world development is unbalanced, some regions develop faster than others. Development is concentrated in cities, they become engines of economic development. These cities, developed areas, offer many opportunities: jobs, education, including universities, access to health services, leisure etc.
Table 5 presents the cities in Romania which after 1990 managed to become engines of economic development, modernizing their industry and the services sector, aligning with the demands of a competitive world imposed by globalization.

Table 5 - The cities with rapid development in Romania, excluding Bucharest

1.	ClujNapoca	6.	Ploieşti
2.	Timişoara	7.	Oradea
3.	Piteşti	8.	Sibiu
4.	Braşov	9.	Arad
5.	Constanța		

Source: Financial Newspaper no. 3862 / 13.032014

Cluj-Napoca is the only city in Romania which has not lost the number of population since 1990, Timişoara being the 2nd in this regard. This shows the concern for modernization and rapid development that these two cities have had since 1990.
Regarding the development of different areas of a country, a question naturally arises: why in a developed country, all parts come to be relatively equally developed ?

Table 6 - The counties with the most rapid development, excluding Bucharest

1.	Argeş	6.	Constanța
2.	Timiş	7.	Bihor
3.	Cluj	8.	Sibiu
4.	Prahova	9.	Mureş
5.	Braşov		

Source: Financial Newspaper no. 3862 / 13.03.2014

The answer is: because no area can develop indefinitely, due to the lack of human resources, space and natural resources! Therefore, a highly developed area starts to send to those around her the germs of development, something that looks like, a much smaller scale of course, with what happens in the process of globalization, when big companies spread their branches all over our planet in order to seek optimal conditions to maximize their profit.

Having this answer, it is weird why the Bucharest area grows excessively and does not let other counties to develop. The disparity between Bucharest and the rest of Romania is incomprehensible.

Romania - in time it was characterized by inventiveness and innovation in several industrial fields managing to affrim itself internationally.

The steam locomotives produced in Reşița have been at that time at the highest technical and technological level, the same way were the fighters IAR-81 in the 2nd World War, then the offroad cars Aro, which won several international competitions. For a long time we were the best at oil equipment, exporting drilling and extraction oil probe all over the world.

Even now we are appreciated for the ingenuity in high level science and technology domains. Thus, we are among the few producers of "heavy water" since the 1980s. Heavy water is required by nuclear power plants. Recently Romania put into operation the strongest laser on the scientific research platform in Măgurele, a 380 million Euro investment.

Our IT ists, computer programmers, software makers are among the most efficient in the world, being sought by all the major companies, at Microsoft working more than 300 Romanian specialists, being praised by the incomparable Bill Gates.

Romania produces performant cars and engines in Piteşti and Craiova for Renault and Ford, all shown being the indisputable result of inventiveness and creativity of our engineers. Ecoboost gasoline engines for Ford cars and TCe.i engines for Renault cars, engines made in collaboration with Titu Research Center - Romania, exceed in performance engines that became "classics", by:

- Increased power by 30-50% with the same displacement,
- Fuel consumption reduced by 25-30%
- And developing a higher torque by 50-70% and remarkable fact, the car has, increased torque at lower engine revs, performances comparable to diesel engines.

Maramureş county (important for the author of this paper) begins to be attractive for foreign investors in the metropolitan area of Baia Mare, where some large multinational companies are already placed.

Such a company is EATON Powering Business Worldwide, American investment in Fărcaşa (25 km from Baia Mare) factory with over 2200 employees which provides electric-electronic equipments and components, mechanical and hydraulic, for vehicles, ships, aircraft and vessels space. EATON Center Baia Mare is the most powerful firm in Romania in this domain benefitting from technical equipment, technology and management at the highest levels of the global performance (Statistical Yearbook - 2012).

EATON Powering Business Worldwide Concern has registered in recent years (2010-2013) sales growth of 14-15%. Despite the global economic slowdown, EATON markets have double potential growth towards the global output growth by capitalizing megatrends with long term potential.

This explains the constant development of EATON Center Baia Mare, which besides the location in Fărcaşa now develops an investment in Buşag with the latest technology in the world.

EATON is as size the 4th Company in the world in its field, with over 100,000 employees, an annual production of approx. $ 17.6 billion, and delivers in 59 countries (Eaton Global Magazine, Volume 8, Issue 1/2014).

Starting from the reality that the world is in a continuous changing, that in the last 20-30 years much of industrial production is carried out in developing countries, Eaton invests both in developed countries and in the emerging countries such as Russia, Eastern Europe (Romania), Latin America, Middle East, Sub-Saharan Africa, India and China.

EATON's behavior in the global economic environment is presented by the Company's management as follows: "Our customers know that we are innovative and reliable. This is especially important in new products launches, those who must work properly even since the launch. We must fulfill our promises and for this each EATON's employee must contribute. The key word is "now." We have to grow and we can make it only by "perfect" quality and by the creation of new solutions came from our creativity and innovation. Our relationships with customers must be accurate, keeping our commitment to the highest ethical standards. This is our belief to move forward. "

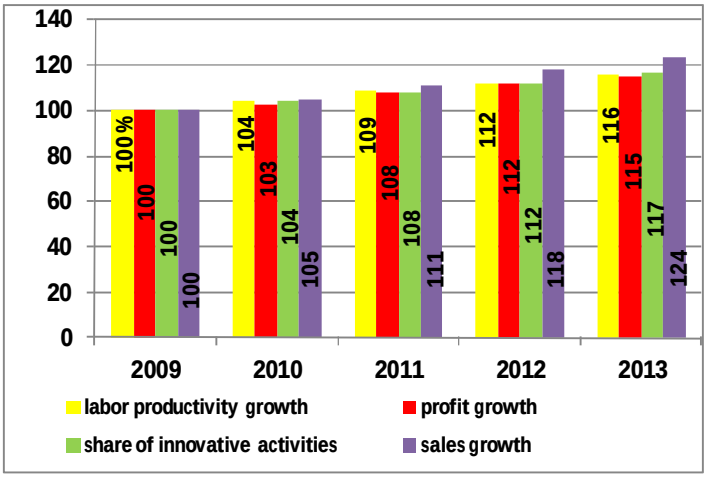
Eaton's products are the fields in the various machines and agricultural equipment, are in the air in commercial or military aircraft, are on the road in a car that can be even your own car, or they can be in a hydraulic system used to build the tallest buildings in the world, or in an offshore oil rig etc. So EATON is everywhere. The annual growth of EATON's products was 4-5 % / period, after 2000.

In terms of technological innovation applied in EATON Baia Mare, it is realized also in EATON on other continents and in EATON Baia Mare. Here, the teams of engineers are formed by highly experienced professionals from abroad, together with young Romanian engineers most of them trained at North University of Baia Mare.

Regarding the economic frameworks, most are graduates of the University "Vasile Goldiş" Baia Mare branch, even the General Manager - Pamela Pop graduated here: "Legal and Accounting Financial Management of Firm" Master.
In the 11 years since the start of EATON Baia Mare, the economic performance indicators have improved continuously. Consequently, just from 2010 to present:
- Labor productivity increased in different sectors between 9 and 21%
- Costs for the output decreased by 6.5 to 8.7%
- And profit in the same activity sectors increased by 8-19%.

All these having a positive effect on the overall balance of the firm, which determined Eaton's Management to develop a new investment in Baia Mare, the one from Buşag located 8 km from Baia Mare, with the latest technology in the world, the main effect being the increase of production and sales by 24% over the past five years.
The innovation process of the last five years is 17% out of the total work at the Eaton Baia Mare, the share of the activities benefiting from technologies and innovative management is increasing, as it can be seen in Figure 3.

Figure 3 – The evolution of some economic performance indicators at EATON Baia Mare (%)



UAC - Dumbrăviţa, Union Alloy Corporation, American investment (10 km from Baia Mare) factory with nearly 1,000 employees, provides aluminum profiles and components for the world's largest aviation companies: Boeing and Airbus. The capacity of Dumbrăviţa - Baia Mare is growing, the present UAC's remarkable developing forecasts a need for 300 new engineers over the next five years, the total employees would pass 2000.
In this company the share of highly specialized staff, engineering staff, is approximately 23%, allowing a better use of semi-finished and raw materials

entered in production, creating high performant products required by competition, as a result of economic globalization.

The American company UAC - Union Alloy Corporation, has workstations, in addition to the United States, over all continents, seeking to seize the advantages of the lower prices of raw materials, energy and costs of qualified human resources.

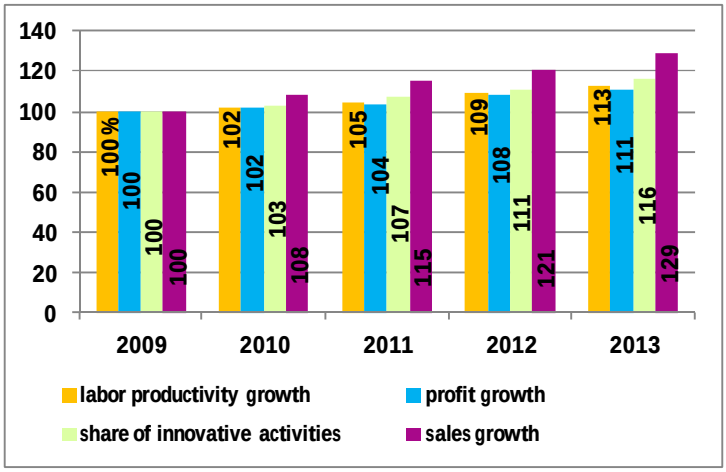
In Europe, UAC has branches in Switzerland and recently in Romania, Baia Mare - Dumbrăvița. It should be noted that the activity from Baia Mare is continuously growing, even at the expense of Switzerland.

The arguments of production growth in Baia Mare are related to location, with expansion possibilities, excellent and uncluttered road located near the M3 motorway - Hungary, which allows a rapid distribution of its production across Europe, given that the aluminum profiles and assemblies for the structure and furniture inside the Airbus planes are used in the factories from France, Germany, Netherlands, Great Britain, Italy and Spain.

Another reason, perhaps more important, is the cheap human resource and appropriate qualified, even engineering staff, most of them coming from North University of Baia Mare, with specialization in technology of materials, electromechanical, electronics, robotics etc. These young engineers are highly skilled human resource, the factor that actually performs innovation, they bring into the company new things needed to achieve progress in raising the performance of outsourced activities in Baia Mare.

The innovation process of the last four years reaches 16% of the total work performed by UAC in Baia Mare and the share of the activities benefiting from technologies and innovative management are increasing, sales were 29% higher as it can be seen in Figure 4.

Figure 4 – The evolution of some economic performance indicators at UAC Baia Mare (%)



The innovation effect is felt both in productivity growth and in the products performance growth. But at the same time, innovation led to a reduction of costs and this way to profit growth. Thus, as an effect of innovation, according to Union Alloy Corporation Newsletter no. 2/2014, between 2010-2013:
- Labor productivity increased in different sectors between 7 and 16% ,
- Costs for achieving various production milestones decreased by 4.8 to 7.1% ,
- And the profit in the same sectors increased by 7.3 to 14.4% .

All these having positive effects on the overall balance of the company, which determined UAC's Management to develop the newly established UAC Baia Mare, and to decide the diminution of Switzerland activity.
Many other companies join these two large companies, in the field of woodworking and furniture production, furniture components and fittings (ITALSOFA, PLIMOB, EUROFOAM ...) smaller firms, but with growing innovative potential, Baia Mare metropolitan area having an enviable perspective in this way.

Conditions for realizing innovation

Capitalism, ensuring a decent living for the vast majority of the population, made possible that individuals to have available time to meditate and to deliver new ideas, to dream and to take care to implement the desires, this way participating more individuals to the innovation process, and if they benefit from a democratic and performant education system, the results may be the most spectacular.
However, innovative individuals are less, relative to the entire population. To advance in technology, a country must have a big human capital basis - people who think and do things differently, those who find new ways to produce. They are the ones who generate knowledge and ideas that bring changes propelling technological advances.
Examples such as Bill Gates, Steve Jobs, Mark Zuckerberg etc. are few, but anytime and anywhere can appear other geniuses, formed by societies with performant education systems.
In fact, all of them (Bill Gates, Steve Jobs, Mark Zuckerberg) did not graduate from college, but they were all brilliant regarding the orientation to the future, creating innovations that have changed the world, generating IT & C boom in the 90s, the emergence of iPod, iPhone, iPad devices and Facebook social network. Their companies, Microsoft and Apple, as well as the social network Facebook, thanks to the knowledge held and to the highly trained and qualified staff, worth now more than 10 times the material assets and technology owned.
Bill Gates is the richest man in the world with a fortune estimated at $ 76 billion, and Mark Zuckerberg, at only 30 years has a fortune estimated at $ 17 billion (Forbes Magazine - 2013).
We have referred only to the innovations in the IT & C domain because this domain through its dynamics, is very important to the current post-industrial society. However, no less valuable and important are innovations in the automotive industry, the aviation industry, medical technology, biotechnology, etc.

NassimTaleb in his book "Black Swan" shows that "innovations that changed the world were generally unexpected events, surprising, that few people would have predicted some time earlier. Economic growth is not a uniform process, suddenly in all areas, but rather a collection of disparate events that push the economy to progress. The more and different events are generated in an economy, the more the economy will be strong and dynamic".

Research - aims mainly at the optimization of resource use, by more efficient technologies, promoting more efficient business models, resulting in increased productivity and competitiveness of firms, under the new requirements required by the sustainable development where the economic performance criteria begin to be eclipsed by the stringency of regulations imposed by the need to protect the natural environment for future generations.

Only a small but growing number of individuals innovate efficient. To achieve innovation, some essential conditions are required. These conditions are:

- A developed society,
- Access to performant education,
- Encourage competition and reward successes.

Important is the fact that the application of innovation in the economy brings benefits for all, including those who do not innovate or do not working in innovative sectors.

Those working in these related areas (shops, restaurants, education, hospitals, real estate agents, banks, justice, beauty, construction, auto service), the local services, services that do not "export" but must be consumed where they are produced, represent 60-70% of cities' workers, a share that has not changed appreciably in the last 50-60 years in developed countries. Although these represent the vast majority of jobs available in an innovative area, they are only the "effect" and not the "cause" of economic growth there

For example,in the U.S.-the country withthe most powerfuland innovativeeconomy in the world:

- The number of jobs in the field of the Internet has increased by 634% in last decade
- And in the field of software the growth was 562% over the past two decades,
- With 300% increased the number of jobs in life sciences research, without taking into account those researching in universities
- Engineers from the field of biomedicine, biochemistry and biophysics are also the first on the list of occupations expected to have the highest growth over the next 10-15 years.

Incomprehensible to some, in the U.S - the most powerful and innovative economy in the world - in recent decades occurred also unimaginable things. Many large cities have totally different developments. So, at the innovative extreme were San Francisco, Seattle, Austin, Boston and Washington, cities where a large number of specialists work with the most creative possibilities, being the highest paid in the world. Rather, we are all surprised to find at the other extreme, emblematic cities

of the '60s-'70s as Detroit, Flint and Cleveland, still under the shadow of traditional production of cars, locomotives etc.

- Flint, Michigan – The Center of General Motors Concern has now (unimaginably) 40% empty buildings and 25% of the population lives below the poverty line,
- Detroit, Michigan – the population declined from 1.8 million in 1950 to 0.7 million in 2013, the city was the center of Concern Ford,
- Cleveland, Ohio - a city with over 2 million inhabitants, steel and chemical industry center as well as GM and Ford cars center has 400,000 poor people.
- Conversely, Austin, Texas - center of semiconductor manufacturing, software center, wireless technology, medical equipment etc. is growing, people standing out through a constant dynamic of consumption.
- Seattle, Washington – center of giant Boeing aviation company produces equipment for transportation, software, biotechnology and medical equipment.
- Boston - financial center, center of technologies for research and development, medical equipment, food industry etc. All these great American cities managed to cross very well during the crisis started in 2007.

In 1980, the salary of a graduate employee in Austin was smaller than the one in Flint. Today the situation is reversed, the salaries of those of Austin are 50% higher than those of Flint. Wage gap for those with secondary education is even higher, reaching even 70 percent, and the differences are increasing every year.

The explanation lies in the different economic environment between the two cities. If 50-60 years ago cities of Flint and Detroit produced cars with the most advanced technology available in the world, the transition to the new economy, the one that now dominates the post-industrial society, information-based economy, communication networks socialization, pharmaceuticals, medical equipment and robotic technologies, biotechnology etc. all these have changed.

It is very important to show that in the '60s-'70s U.S. automotive industry was in an unstoppable momentum. Today, this industry is almost bankrupt, overly large American cars have lost the race with smaller, cheaper and more environmentally friendly cars produced in Korea, Japan or Europe. "Performance" is measured now, during the crisis, at different parameters from what was 3-4 decades ago. American companies have realized too late this reality.

Today the best indicator of the economic success of a community is **humancapital**, its ability to innovate. A company's success depends not only on the quality of its employees, but on the whole economic environment in which it is located. Innovative cities attract more and more, highly qualified individuals, this trend of self-strengthening the economic environment, naturally enhances the performance growth of the community, its prosperity.

Again about Romania

Communist countries - those with centralized command economy, failed to stimulate innovation in an efficient way, people with innovation potential. Due to

this fact they lost the race with the capitalist market economies, economies opened to free competition and profits - as a result of innovation.
By the '50s people from the communist countries worked enthusiastically to exit from the economic backwardness and from the postwar disaster. They worked, massive efforts to build a welfare society were seen, being motivated by the fact that they worked for them and for their future, not to enrich those above them.
The human capital was huge, the lacking element being the technology, relatively with low performant level in comparison with Western technology.
Communist Romania - has remained to heavy industry, textile industry, furniture industry, oil processing, bearings production etc., with which we were supposed to build "the dream of all mankind" – the most honest society: Communism.
But it seems that man was not created for such a society, but for a society in which competition exists, where each individual seeks to assert, to get as much as possible, to live as well as possible, a society that incites to progress ...

Scientific research in Romania

However, scientific research in Romania received before 1990 sufficient funds for some significant achievements. Approx. 2% of GDP was allocated to basic and applied research.
Unfortunately, after 1990 scientific research was the sector with fewest funds allocated from the budget, leading to late 90s at approx. 0.1% of GDP and the abolition of almost all research institutes in the country.
Since 2000, when our economy recovered, scientific research also came to the attention of government, at present to this sector being promised 1% of GDP and about. 0.5% of the private sector.
Table 7 presents the evolution of the allocations for research in Romania, and in Table 8, for comparison, the allocations for research and development in some countries and in Romania.

Table 7 – The evolution of allocations for research in Romania (% of GDP)

2000	0,21 %	**2010**	0,44 %
2004	0,28 %	**2011**	0,41 %
2008	0,37 %	**2012**	0,43 %

Source: Statistical Yearbook of Romania

Table 8 - allocations for research and development in some countries (% of GDP)

South Korea	3,2 %	**France**	2,6 %
Japan	3,0 %	**Netherlands**	2,6 %
Sweden	2,9 %	**Poland**	2,1 %
USA	2,7 %	**Romania**	1,2 %

Source: Forbes Magazine 4/2013

The Launch of Sectoral Plan for Research and Development

The Sectoral Plan for Research and Development, coordinated by MER-NASR, is an instrument for the implementation of priorities in research and development

sector, priorities established under the strategic guidance of government policies specific to this field of activity.
Consequently, the Sectoral Plan for Research and Development has as general objectives:
- Capacity development and the competitiveness increase of the R-D-I national system,
- The economic impact growth of research and development activities in the public sector
- International integration of the system, and R-D-I activities,
- The quality and effectiveness increase of policies, strategies and R-D-I programs at national level.
The projects will contribute to quality growth of substantiation decisions process regarding the public research system, especially those related to human resources for research, institutional restructuring and financing instruments.
The funds allocated for the Sectoral Plan for Research and Development, for the period 2005-2011 were (Table 9):

Table 9 - Funds allocated to the Sectoral Plan for Research and Development

2005	10.1 million lei	**2009**	10.8
2006	6.2	**2010**	9.3
2007	9.7	**2011**	11.2
2008	10.6	**2012**	12.0 million lei

Source: Mihai Mihăiță, 2012* - estimate.

Assertion of Asian countries
It is good to know. Japanese, Koreans, and others like them, after the 2nd World War have bought for a period high, performant Western technologies, but they have understood that they themselves must produce applied knowledge ...
It is well known that **Japan**, a small island country, without significant mineral resources, defeated and destroyed in the 2nd World War, quickly managed to become the second largest economy in the world and through the quality of industrial products, they won the economic war, their exports reached all around the world.
South Korea, geographically speaking a country even half as Romania, but with a population of 45 million inhabitants, is the 9th industrial power of the world:
- Steel production is 60 million tonnes, Pohang Iron and Steel Company (POSCO) with a production of 26 million tons, the largest in the world
- Hyundai-Kia Company, the 4th largest automobile manufacturer in the world (after Toyota, Volkswagen and General Motors) holds at the same time the largest shipyard in the world
- The same company, sold in 2009, year of deep economic crisis in Europe, with 25% more cars than in 2008
- Automobile production exceeded 6 million units being assessed on all continents

- in the IT & C domain South Korea has the bigest company in the world: **Samsung**, occupying 36% of the global market, with an incredible growth of 233% in 2010 compared to 2009 etc.

China, this giant of 1.4 billion inhabitants, is now going to achieve economic performance, the progress made in the last 3-4 decades being outstanding. Not coincidentally, these three East Asian countries: Jpaonia, South Korea and China have reached the top performance. What these countries succeeded, is primarily the effect of a performant education system. Their universities are now among the most appreciated in the world, students here are often better prepared than those in Europe or the USA.

China - has become since 2009, the year of deep economic and financial crisis of the West:

- The world's largest exporter, surpassing Germany,
- The world's largest automotive market, here the sales reached 11.3 million units,
- Had a trade balance with surplus of 200 billion dollars and an economic growth of 10%
- In 2009 increased its gold reserves by 200 tons,
- Although one of the major economic powers, China is not using its own currency in foreign trade, but the dollar. Russia does the same thing,
- National currency, the Yuan, is kept undervalued, causing increasingly vocal criticism from the U.S. and other Western countries .

Since **2012**, China is the largest producer of automobiles (12.1 million units) surpassing Japan whose automobile production was 10.9 million units,

- China's currency reserve reached 3600 billion in 2013,
- High-speed railway network has reached 20,000 km,
- Steel production is 450 million tons, accounting for 34% of world's production. Never has a country produced more than 25% of world's steel (eg U.S. in 1945, whose steel production was 42 million tons)

Here's how the early 21st century shows the transition of the economic power from the Euro-Atlantic area to the East Asian area, the fact that especially the industrial development of the world moves now from the West to the East. It is the result of globalization process, and we have to understand that we must take part into it. Globalization presses more than ever to achieve economic performance.

Conclusions

Capitalism, ensuring a decent living for the vast majority of the population, made possible that individuals to have available time to meditate and to deliver new ideas, to dream and to take care to implement the desires, this way participating more individuals to the innovation process , and if they benefit from a democratic and performant education system, the results may be the most spectacular.

However, innovative individuals are less, relative to the entire population. To advance in technology, a country must have a big human capital basis - people who think and do things differently, those who find new ways to produce. They are the

ones who generate knowledge and ideas that bring changes propelling technological advances.
Research - aims mainly at the optimization of resource use, by more efficient technologies, promoting more efficient business models, resulting in increased productivity and competitiveness of firms, under the new requirements required by the sustainable development where the economic performance criteria begin to be eclipsed by the stringency of regulations imposed by the need to protect the natural environment.
Even for Romania, a country still developing, it is important to focus on aspects regarding economic growth through research and own innovation, understanding that we must produce applied knowledge.

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