GLOBAL ECONOMIC OBSERVER

No. 1, vol. 4/2016

http://www.globeco.ro
contact: globeco@univnt.ro globeco@iem.ro

ISSN 2343 - 9742
ISSN-L 2343 - 9742
ISSN(ONLINE) 2343 - 9750

CONTENTS

ARTICLES

EU International Cooperation in the Field of Research, Development and Innovation

Ph.D. ECATERINA STANCULESCU
Institute for World Economy,
Romanian Academy, Bucharest,
ROMANIA
estanculescu@yahoo.com

Abstract: - The article tries to bring a contribution to the study of the main aspects involving European Union and its Member States in the sphere of international cooperation for research, development and innovation (RDI). Having in view the importance of management of human, financial and material resources for obtaining the best results in the RDI field, the European Commission and the other EU institutions have deployed sustained efforts for achieving the best results. An effective instrument is the completion of both the material and human resources and the participation of other states (non members) in the multitude of areas and issues of general interest within the modern society. The major forces in RDI, like the US, Japan, China, South Korea, and BRICS members, were important partners for the EU for a longer or a shorter period in RDI areas like: health, environment, transport, nanotechnologies, information technologies and communications, new materials, conventional or unconventional energy, etc. The article analyzes the main EU directions of cooperation in RDI areas with major non member countries and the most current issues that regard today's world, trying to draw the more constructive and pertinent conclusions for the future of this collaboration.

Keywords: European Union, international cooperation, science, technology, innovation, partner states.

1 Introduction

There is general consensus in the world today on the major economic challenges facing humanity and how they must be solved with the help of scientific research. EU is opened to a more intensive international cooperation in RDI, because on one hand these problems are common to all countries in the world and the collaboration in scientific research is the best solution for avoiding overlaps or duplication, and on the other hand, the movement of information in Internet era is much easier and quicker, helping to tackle instantly the major challenges of the present world.

The European Union is currently one of the two major knowledge centre at global level (together with the US), carrying out almost a third of the scientific and technological production. Furthermore, while cumulating only 7% of the world population, EU achieves 24% of overall investment in research, 32% of high impact scientific publications and 32% of patent applications (EU Delegation in China, 2015).

In European Union, the program "Horizon 2020" or simply H 2020 (EC 2015-1) is the ever largest research program. It will run from 2014 to 2020, with a budget of almost 80 billion euro. The program envisages "big challenges" facing the mankind, in general, and therefore the EU. Both the precedent 7th Framework Programme (EC 2015-2), and H 2020 envisaged international cooperation activities with other countries, developed or emerging (such as the BRICS countries, those associated with or included in policy of close neighbourhood). Also, there are other programs open to international participation, in terms of joint financing and scientist participation from third countries.

The main objectives of the analysis point to the identification of contractual coordinates and the fields of interest for RDI international cooperation of EU and Member States, the situation in the last 7-8 years, the already visible or expected impact of cooperation activities already deployed and the future prospects. Romania is less integrated in RDI legal cooperation actions with other countries outside the Union, but there are some preoccupations with this situation. The author presents the conclusions and the proposals regarding the Romania’s increased participation in RDI cooperation with countries like China, India or Brazil. The data used

in the undertaken analysis come mainly from the European Commission (studies, analyzes, policy documents) but also from countries with which the EU carries out R&D collaboration.

The purpose of this paper is to better understand the activity of RDI sector from EU, to identify areas of interest for our country and to discern the future integration opportunities.

2 The major challenges of the contemporary world that EU international cooperation is working to meet

In the table 1 one can see the major challenges in the field of RDI that EU international cooperation is trying to approach and which are found in Horizon 2020.

Table 1 . The three priorities areas of Horizon 2020

Excellence in science	**Industrial leader status**	**Societal challenges**
European Research Council	Leadership in Key Enabling Technologies (KETs), ICT and Space	Health and wellbeing
Emerging and future technological research	Access to venture capital	Food security
Marie Curie actions	Innovation in SMEs	Transport
Research infrastructure		Energy
		Climate action
		Society
		Company security
24 billion Euro	**17 billion Euro**	**31 billion Euro**

Source: European Commission - Horizon 2020, a EU Framework Programme for Research and Innovation

In the table 2 one may find the main priority research areas from the EU and the third countries with which EU maintains close relations of cooperation, with the mention that these topics cannot be studied by all countries (such as food security or inclusive society carried out by US or safe society studied only by the EU of the four entities), but one may also find issues where collaboration could bring better results.

Table 2 . Comparison of R & D priorities in the EU, China, India and the US

	EU	**China**	**India**	**US**
MC1*	Health, demographic change and wellbeing	Biotechnology	Better prevention and health care	Initiative "The brain and saving lives at birth"
MC 2	Food Security	Food Security	Rural transformation and sustainable growth of agriculture	
MC 3	Safe and clean energy	Energy and new materials	Ensuring India's energy future	SunShot
MC 4	Inclusive societies		Effective and inclusive markets	
MC 5	Smart transport	Clean energy vehicles	Accelerated development of transport infrastructure Urbanization management	Electric Vehicles (EV) everywhere
MC 6	Climate change	Climate change, environmental conservation	Environmental Management	
MC 7	Secure societies			
MC 8	Others	New IT, advanced equipment and technology production	Strengthening the growth capacity, reinforcing the professional skills and the faster growth of employment, political decentralization, power and information, technology and innovation, improved access to education	Asteroids

* **MC** = **Major Challenges**

Source: European Commission - The international dimension of research and innovation cooperation addressing the grand challenges in the global context. May 2014 (EC 2014-1)

Under the program H 2020 international cooperation generally follows the strategic collaborations lines from the Framework Programme 7 (FP 7) with EFTA countries and the countries included in the EU Neighbourhood Policy, based on a selection process having as guiding mark the professional merits. The EU provides funding to the states whose research power can fill the gaps of the Community research, with allocations coming prevalently to entities that can contribute to the EU societal changes and industry challenges.

European Research Council (ERC 2015-1), an institution founded in February 2007 by the European Commission, whose role is to manage the Specific Programme "Ideas" of the 7th Framework Programme for Research and Development, which continues in the current Program Horizon 2020. In its Activity Report for 2014 (ERC 2015- 2) it is mentioned among the latest achievements of this institution, that after the introduction of the grants system in 2011, more and more applications were received every year, some being evaluated as very interesting, this showing that ERC efforts managed to produce good results, making the EU a more attractive area both for European researchers and also for those outside EU joining them. This means a good way to attract talents from outside EU, but also to retain the existing ones in Europe.

In July 2014, the ERC researchers presented some research results, covering a wide range of technologies, to business and academia as well as to venture capital holders. According to the 2015 plan, grants were available for frontier research in three main scientific areas: life sciences, physical and technical sciences and human and social sciences. It paid more attention to researches having an impact on a large circle of citizens, institutions or companies. It should be emphasized that over 50% of these proposals came from foreign researchers or research institutions.

An example of encouraging results of the RDI cooperation with foreign researchers is the “systems and communications technology" domain that financed 130 projects for nine major global themes: (1) brain-computer interfaces, (2) communication (3) technical tools, (4) emerging and future micro- and nano-electronics (5) emerging and future opto-electronics and photonics (6) networking, (7) new generation of components and systems (8) robotics (9) methods and tools for signal processing.

Another example of fruitful cooperation is in the nuclear energy area - fission and fusion - and nuclear safety, involving numerous foreign researchers and academic institutions from US, China, Russia, India, Japan and South Korea (Euratom 2015).

3 States and areas of interest for the EU international cooperation in the RDI sector

In the 2015 edition of the Global Innovation Index (GII - 2015) with the theme "Effective policies innovation for development" there are presented some developments in recent years in the innovation capacity of 141 countries worldwide. IGI is an indicator that is useful in assessing the overall classification of the states in terms of innovation activities. It is composed of two sub-indices: a) inputs in innovation and b) innovation results (outputs) and is calculated from 79 individual indicators.

In GII ranking for the years 2014 and 2015 there are summarized all the 28 EU Member States, with their obtained place and score. Seven countries (UK, Sweden, Netherlands, Finland, Ireland, Luxembourg and Denmark) are among the first 10 countries of the world and another 6 countries (Germany, Austria, France, Estonia, Czech Republic and Belgium) are among the top 25.

Outside the EU, other countries are placed in leading or good positions in the ranking GII, the EU maintaining close cooperation links with them: Switzerland (ranked No. 1 in GII), USA (the 5th), South Korea (the 14th), Canada (16), Australia (17), Japan (19), Norway (20), Israel (22), BRICS Member States: China (29) Russia (48), Brazil (70), India (81) and South Africa.

In the 36th edition (September 30th, 2015) of the International Competitiveness Report for the year 2015-2016, World Economic Forum (WEF, 2015) shows the evolution of competitiveness of the world countries (140 countries analyzed), according to a global index - Global Competitiveness Index (GCI). GCI is grouped into three sub-indexes and 114 simple indicators. According to the respective ranking, the developed MS from EU are placed in the top 20 countries: Germany (4th place), Netherlands (5), Finland (8) Sweden (9) United Kingdom (10) Denmark (12), Belgium (19) and Luxembourg (20), which are also presented in the top

of the most innovative countries from world, presented in the GII 2015.

However competitiveness is largely determined by the degree of involvement in the global knowledge flows, and therefore by a country's ability to participate in international cooperation projects in the RDI field. Hence, a more active participation in such agreements and collaborative actions brings good results for the countries with a higher level of competitiveness, such as Germany, Sweden, Great Britain, Holland, Denmark, Belgium, Finland from the EU and to extra-EU states, such as US, Canada, Switzerland, Japan, Hong Kong, and China, India, Brazil and other emerging countries (Stănculescu, E. 2015-1).

ln the "Cooperation" section of FP7 (EC 2015-3), there were mentioned EU key thematic areas for collaborative research which continue in the current program H 2020. They are:

- Health,
- Food,
- Agriculture and fisheries and biotechnology;
- Information and communication technologies;
- Nanosciences, nanotechnologies, new materials and new production technologies;
- Energy,
- Environment (including climate change);
- Transport (including aeronautics);
- Socio-economic sciences and humanities;
- Space and
- Security.
- Euratom covers researches on nuclear fusion and nuclear fission safety.

The program H2020 emphasised the importance of the "societal challenges" concept. The societal challenges identified in H 2020 are:

1. Health, demographic change and well-being;
2. Food security, sustainable agriculture and forestry;
3. Secure, clean and efficient energy;
4. Smart, green and integrated transport;
5. Climate action, environment, efficiency of resources and raw materials;
6. Europe in a changing world - inclusive, innovative and reflective capacities societies;
7. Secure societies - protecting the Europe and its citizens freedom and security.

H2020 creates a point of contact with other nations in scientific research. For example, there is some pressure from the US to cooperate directly with the EU and not with Member States in maritime field, as suggested by the "Alliance of the Transatlantic Ocean Research".

As we know, the 21st century is called "technological society", the progress of this area, occurred in the last decades, is radically changing the way of people life, through a variety of machines, tools, devices used daily, which save time and make life easier.

European Parliament Report of January 2015 (EP - 2015) acts as a barometer for detecting the interest of policy makers and general public for new trends in technological progress. The ten technologies identified in the report as having a particularly important perspective in economic and social life of EU citizens, but also around the world are: autonomous vehicles, graphene, 3D printing, virtual currencies, portable technologies, drones, acvaponic systems, new smart home-oriented technologies, electricity storage (hydrogen) and so-called key enabling technologies (KETs).European Commission identified at European level six areas of interest: nanotechnology, micro and nanoelectronics, industrial biotechnology, photonics, advanced materials and advanced manufacturing technologies (EC, 2012).

One of the increased interest forms in KETs is the proliferation of programs aimed at developing and supporting them. Without intending to give an exhaustive list we mention some examples: ARRA; Make it in America; ARPA-E in the US; National program for R&D in high-tech field in China; Assistance program for setting up innovation centres in Japan; Act to promote foreign investment in South Korea; Centres on innovative multinational R&D in Taiwan; Schemes for companies to stimulate research and technological innovation program in Singapore etc.

A goal to be reached in 2016 that would facilitate international cooperation actions in the EU RDI is the Digital Union (EC 2015- 5). The purpose of creating the digital single market is the removal of regulatory barriers separating the 28 national markets in the EU. The Commission will make a thorough analysis of the role of online marketing platforms (search engines, social media, app stores, price comparison websites, etc.) given their impact in economic and social life (they permit to consumers to find information online and to

companies to exploit the advantages of e-commerce). In the European Commission view, a fully functioning digital single market will bring significant benefits for consumers, Small and Medium Size Enterprises (SMEs), start-up companies, creative and industry sector within the EU, but also for cooperation actions in RDI sector.

The benefits of creating the digital single market will be seen in the context of international R & D collaborations, because the creative sector will dispose of:

- New business opportunities in the EU;
- An environment conducive to cultural diversity, creativity and exchanges among member countries;
- Improve the enforcement of rights and more effective action to combat piracy;
- Increasing legal access to digital data users, that would bring greater benefits for authors and would reduce piracy;
- Clarifying the rules for all actors on the EU internal market, including intermediaries that use content protected by copyright;
- Fairer remuneration of copyrights, involving all players in the value chain;
- Adapting media legislation to the digital era and ensuring the promotion of European works, especially online platforms for video on demand.

Romania has a poor participation in EU programs of international cooperation in RDI

Ranked 54 in 2015 (55 in 2014) in GII ranking, Romania faces far greater challenges than the Western Europe developed countries, in terms of research capacity development and innovation. RDI Strategy for 2007-2013 has envisaged ambitious goals focused mainly on increasing scientific production and local research human capital and also internationalization process and helped to establish a system of governance and institutional framework through which the administrative procedures involved in international cooperation could be simplified.

RDI National Strategy identifies several objectives regarding the development of international cooperation on regional and global level. Firms become key operators for innovation and excellence in RDI internationalization.

The National Plan for Research, Development and Innovation III (PNCDI III -2015), for the period 2015-2020, supports the participation of Romanian institutions in international research projects, in order to facilitate the researchers mobility and their access to programs that are not available in Romania.

4 EU partners in RDI international cooperation

4.1. USA

United States is a long-haul partner for the European Union, with official relationships starting in 1990 by the adoption of the Transatlantic Declaration. Since the 2007 US-EU Summit, the Declaration on Enhancing Transatlantic Economic and Growth Integration established a dialogue agenda for economic growth (EC 2014 - 2).

In February 2014, US entities have already participated in FP7 in 486 projects, signing agreements worth of 76.4 million euro. Top field participants of the American institutions and researchers to FP7 were at: Health - 55% of the total, ICT - 11%, KBBE (Knowledge based bio-economy) - 6%, NMP (Nano-sciences, nano-technologies, new materials and production technologies)-4%; Energy-7% Capacities (section of the Framework Programme 7) - 4%.

An underway project FP7 is BILAT EU – US (BILAT USA 2.0), whose aim is to examine areas relative to the framework cooperation conditions (ex. intellectual property, financing the US participants in common R&D programs, contractual issues, financial problems that include audit, participation rules, cooperation schemes, technology transfer and innovative knowledge, transatlantic mobility, etc.).

US was designated as important cooperative partner in the first work program of H2020 for the years 2014-2015, being encouraged to cooperate in areas such as marine and arctic research, health, transport (including aeronautics), raw materials, ICT , energy and security. Joint researches in the new bio-oriented technologies field hold also an important place. The Strategic Forum for International Cooperation (SFIC) acts for the development of synergies in the US and EU cooperation, including Member States' activities. For the future, the EU-US RDI cooperation will focus on the following activities: marine and arctic area, health, transport, raw materials, energy, e-infrastructure, nuclear fusion and fission, medicine, transport, etc (Stănculescu, E. 2015-2).

4.2. Japan

Scientific relations between Japan and the European Union have developed into a steady pace over a

period of 20 years. Japan is one of the world leaders in science and technology. In 2013, the gross expenditure on R & D was 3.7% of GDP, based on a long-term target of 4% of GDP.

Having the same problems (energy security, access to raw materials, population aging) and similar approaches for other international important issues as climate change and security, Japan may be considered one of the closest collaborators of the EU on the international scene (EC 2014-2). In the first stage of the Euro-Japanese agenda one may find the negotiations on the Free Trade Agreement (FTA) and the Strategic Partnership Agreement (SPA), launched as early as April 2013, and focused on political dialogue, the cooperation to solve regional and global problems and sector cooperation (including science and technology).

By February 2014, the Japanese institutions and researchers have already recorded 108 participations in FP7; by signing financing agreements, Japan has received a total contribution of 8.9 million euro from the EU. Japanese participation in various sub-programs of FP7 is: 26% - Euratom, 22% - "Capacities" section, 16% - ICT, 10% - Health, 10% - NMP (Nanosciences, nanotechnologies, new materials and production technologies), 7% - population aging 3% - SSH (socio-economic sciences and humanities), 2% - transport, 2% - space research, 1% - security and 1% - KBBE (Knowledge-based bio-economy).

4.3. South Korea

Relations between the EU and South Korea are based on the Framework Agreement (entered into force on June, 1 st 2014). South Korea is the only country with which the EU signed a Framework Agreement (2010), a Free Trade Agreement (2011) and a Crisis Management Agreement (May 23, 2014).

ln 2012, South Korea had the second national budget allocated to R & D, as a share of GDP, in the world (over 4%). EU and South Korea are important trading partners. European companies are the largest investors in South Korea. South Korea is the tenth major EU trading partner and the EU is the fourth largest export destination for South Korean goods (after China, Japan and the US).

Under FP7, the greatest share in the total value of the EU-South Korea R&D contracts is owened by the following areas: ICT - 29%, health - 24%, "Capacities" - 25%, NMP - 9% and environment - 6 % (EC 2014-2).

In the H2020 program there were included joint actions of the two parties:

• co-ordinated applications regarding the future ICT networks (5G, cloud, IoT (Internet of Things), experimental platform);

• nano-technologies: nano-safety standardization and regulation (participation in the program NANOREG);

• 5G network infrastructures for the future Internet;

• nano-materials impact assessment on the environment;

• increasing the performance capacity of nano-safety evaluation;

• micro- and nano-electronics enabling technologies;

• building international partnership and support the dialogue with countries with a high GDP;

• recycling and reproduction technologies and equipment for the product sustainable lifecycle management;

• specific cooperation between JET[1] and Kstar[2] programs in the nuclear fusion field;

• Korean participation in specific activities with broader potential approach.

4.4. China

Collaboration in research, development and innovation is an essential component of particular importance to the strategic partnership established in 2003 between the EU and China and also one of the fundamental pillars of the EU and Member States relationship with this Asiatic partner.

China is already the second largest global investor in research and development, an area in which its investments were over 2% of GDP in 2015 (Brauner, O. 2011). EU-China RDI cooperation is governed by the EU-China Science and Technology Agreement, signed in 1998, and renewed in 2004 and 2009 and other agreements and arrangements having as the main objective to reinforce various aspects of bilateral scientific cooperation (China 2015). Under FP7, 383 Chinese organizations participated in 274 cooperation projects, which summarised a total EU contribution of 35.24 million euro. In addition, Marie Sklodowska-Curie program counted on 959 participations from China (EC 2015-3).

4.5. Other BRICS states

In recent years, other Member States of the BRICS group (Brazil, Russia, India, South Africa) have

[1] Jet European Torus=the greatest industrial equipment for nuclear fusion

[2] Korea Superconducting Tokamak Advanced Research – Korean nuclear fusion

concluded cooperation agreements and participated to EU programs in the field of scientific research. The main areas of cooperation between these countries and the EU under the Framework Programme 7 and H 2020 (EC 2014-2) are:

Brazil: health, KBBE, "Capacities", ICT, energy, SSH, NMP and transport. Marine and bio-economy researches, food security and nanotechnologies are added.

Russia: transport, health, "Capacities", ICT, energy, and space research, KBBE. We may also add future demographic changes and material welfare, climate change, nanotechnologies, etc.

India is a partner of major concern for EU cooperation in RTD. Important institutions and researchers from India participated in FP7 with significant weight at sections: health (46% of total funds accessed), environment, KBBE, energy and ICT. In the future other areas of interest could be Euratom, water, bio-economy and others.

South Africa had RDI cooperation actions with the EU mainly in the areas of health, environment, KBBE, "Capacities", ICT, transport and SSH. There will be added in the future, as both parties intend, the Earth observation, research infrastructure, pole (Antarctica) research, raw materials etc.

Generally, many emerging countries are invited to participate in EU research programs, based on the principle that in the sphere of scientific research they have common interests with those of the EU and dispose of qualified staff for this sector.

5 Conclusions

Based on the analysis undertaken in this article one may draw several conclusions.

RDI international cooperation is becoming more intense every day, because, on the one hand, the problems are common to all countries worldwide and it is much more effective to collaborate in scientific research than to overlap or duplicate the research efforts, and, on the other hand, the information spreads much easier and faster today, helping to tackle fluently the major challenges of scientific progress.

Through international cooperation, one may allocate to the RDI financial and human resources existing in developed and emerging states more effectively on sub-domains of major interest to mankind. Some challenges and priorities identified by some nations are not taken into consideration by others and therefore international cooperation is an important factor for an easy access to knowledge for the states or groups of states.

The last EU Framework Program-FP7, concluded in 2013, had a special section entitled "Cooperation in R&D" and its achievements have been encouraging in terms of EU international collaboration. The current program, H 2020, supports the interest for international cooperation in RDI, especially in the following areas : health, food, agriculture and fisheries, biotechnology, information and communication technologies, nano-sciences, nano-technologies, new materials and production technologies, energy; environment (including climate change), transport (including aeronautics), socio-economic sciences and humanities, space and security. There is a wide variety of mechanisms for cooperation: joint research projects (the most common), experience exchanges, conferences, workshops, researchers'mobility. The EU can provide funding to the states with a power research that may fill the gaps in Community research, the allocations returning with priority to entities that can contribute to societal changes and industrial challenges set by the EU program. H 2020 encourages scientific research targeting both demand-side and supply-side. A tool for strengthening the links between the Member States and the EU citizens but also for RDI international cooperation activities is the Digital Union, planned to be completed by the end of 2016.

The most important EU partners in RDI cooperative activities are: USA, Japan, South Korea, BRICS Member (Brazil, Russia, India, China, South Africa), Canada, Israel, Turkey and countries from Africa, South America and Asia. These countries participate in EU programs and actions in the field of research and development: H 2020, Euratom, ITER, Marie Curie Actions, EUREKA, JET and other lesser extent programs that the EU has opened for a broad involvement of foreign institutions and persons. The importance of EU cooperation with the US, Japan, South Korea and BRICS countries (especially China and India) is shown by the large number of cooperative actions and agreements concluded with these countries. The most important areas of cooperation are health (away the first as a share of the funds received by joint actions), environment, ICT, energy (nuclear and non-nuclear), bio-technology, security, demographic changes, new materials, nano-technologies and new production technologies.

Romania's policy in RDI is governed by the National Strategy for 2014-2020 which states that Romania's participation in the European Joint Programme Initiatives (JPI), the Joint Technology Initiatives

(JTIs), the European Innovation Partnerships (EIP), the bilateral programs and those programs organized by a number of international bodies will be financed by the state. Another problem that may help to achieve this goal is the level of education and qualification of the Romanian researchers, hence the need to allocate adequate material and financial resources for ensuring their training and mobility.

References:

[1]Brauner, O. (2011) – *China's Rise as a Global S&T Power and China-EU Cooperation*, Institute on Global Conflict and Cooperation, University of California, SITC Research Briefs, September 2011;

[2]*** *Bilat USA 2.0 Project (Bilat USA -2015)* - online at http://www.euussciencetechnology.eu /content/bilat-usa-20-project-incl-work-packages

[3]European Commission (EC 2015 – 1), *Horizon 2020, a EU Framework Programme for Research and Innovation*, online at http://ec.europa.eu/programmes/horizon2020/

[4]European Commission (EC 2015 – 2), *Research and Innovation, FP7*, online at https://ec.europa.eu/research/fp7/index_en.cfm

[5]European Commission (EC 2015 – 3), Cordis, *FP7 – COOPERATION – Specific programme „Cooperation" implementing the Seventh Framework Programme*, online at http://cordis.europa.eu/programme/rcn/846_en.html

[6]European Research Council (ERC 2015-1), S*upporting top researchers from anywhere in the world* accesibil la https://erc.europa.eu/

[7]ERC European Research Council (ERC 2015 – 2*), Annual Report on the ERC activities and achievements in 2014*, Prepared under the authority of the ERC Scientific Council, 2015

[8]European Commission, (Euratom 2015), *Energy (Euratom) – International Cooperation* online at http://www.euratom.org/

[9]European Commission (EC 2015-4) - *A Digital Single Market for Europe: Commission sets out 16 initiatives to make it happen*, Brussels, 6.5.2015.

[10]European Commission (EC 2012), *Responsible Research and Innovation, Europe's Ability to respond to societal challenges, 2012* online at https://ec.europa.eu/research /swafs/pdf/pub_public_engagement/responsible-research-and-innovation-leaflet_en.pdf

[11]European Parliament (EP 2015), *Ten technologies which could change our lives, Potential Impacts and policy implications*, January 2015, online at http://www.europarl. europa.eu/EPRS/EPRS_IDAN_527417_ten_trends_to_change_your_life.pdf

[12]European Commission (EC 2010-1), *A Digital Agenda for Europe*, Brussels, 19.5.2010. European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, (EC 2012): *A European Strategy for Key Enabling Technologies - A Bridge to Growth and Jobs*, COM (2012) 341 final.

[13]EU Delegation in China (China 2015) – *EU-China Research & Innovation Cooperation, online at* http://eeas.europa.eu/delegations/china/eu_china/research_innovation/index_en.htm

[14]Erawatch (2011) - *Medium- and Long-term National Plan for Science and Technology Development 2006-2020*, Policy Documents, 8.09.2011, online at http://erawatch.jrc.ec.europa.eu /erawatch/opencms/information/country_pages/cn/policydocument/policydoc_mig_0004, accesed on September 2015;

[15]European Commission (EC 2015 -4), *Research and Innovation, FP 7*, online at https://ec.europa.eu/research/fp7/index_en.cfm

[16]European Commission (EC 2015-5) - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A Digital Single Market Strategy for Europe*, Brussels, 6.5.2015.

[17]European Commission (EC 2015-6), *European Union Scoreboard 2015*, online at http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/files/ius-2015_en.pdf

[18]European Commission (EC 2015 -7), *International Research Newsletter, Issue 56, May 2015* – online at http://ec.europa.eu/research/iscp/index.cfm?pg=newsletter

[19]European Commission (EC 2010), *EUROPE 2020, A European strategy for smart, sustainable and inclusive growth*, 3.3.2010.

[20]European Commission (EC 2014-1) - *The international dimension of research and innovation cooperation addressing the grand challenges in the global context. May 2014*

[21]European Commission (EU 2015 - 5) – *EU-China Research &Innovation Relations* 1975-2015, online at http://ec.europa.eu/research/iscp/pdf/policy/1_eu_CHINA_R_I.pdf ;

[22]European Commission (EC 2014-2) – *Roadmaps for International Cooperation – Report on the Implementation of the Strategy for International Cooperation in Research and Innovation {COM(2014)567 final}*, Brussels, 11.09.2014
[23]***Era Learn 2020 (EL 2020), *Network CONCERT-Japan*, online at https://www.era-learn.eu/network-information/networks/concert-japan
[24]Johnson Cornell University, INSEAD, WIPO, *Global Innovation Index 2015 (GII 2015)*
ICD (2015) – *Joint Statement*, EU-China Cooperation Dialogue (ICD), Brussels, 29 June, 2015
[25]Johnson Cornell University, INSEAD (The Business School for the World), WIPO (World Intellectual Property Organization), *Global Innovation Index 2015 (GII 2015)*, 21 September 2015, online at https://www.globalinnovationindex.org/content/page/GII-Home;
[26]Ministry of Education and Research, National Authority for Scientific Research, the National Plan for R & D and innovation, http://uefiscdi.gov.ro/userfiles/file/ROST/PN2ro.pdf;
[27]The National Research Development and Innovation Strategy 2014-2020, http://www.research.ro/uploads/politici-cd/strategia-cdi-2014-2020/strategia-cdi-2020_-proiect-hg.pdf;
[28]The National Plan for Research and Development and Innovation III (PNCDI III -2015) for the period 2015-2020, July 22, 2015, http://gov.ro/ro/guvernul/sedinte-guvern/planul-national-de-cercetare-dezvoltare-i-inovare-iii-pentru-perioada-2015-2020-aprobat-de-guvern;
[29]Stănculescu, E.(2015-1) – *European Union: innovation activity and competitiveness. Realities and perspectives*, Global Economic Observer No.1.Vol.3/2015, Institute for World Economy, Bucharest, Romania;
[30]Stanculescu, E. (2015-2) - *Highlights on EU-US cooperation in science and technology*, Journal of World Economics No.4 / 2015 Institute of World Economics, Bucharest, Romania;
[31]World Economic Forum (WEF 2015), *Global Competitiveness Report 2015-2016*, 30 September 2015

Financing the European Agriculture: A Comparative Approach across the Member States

Ph.D. ANDREEA-EMANUELA DRĂGOI
Ph.D.(c) ANA-CRISTINA BÂLGĂR
Centre for European Studies
Institute for World Economy, Romanian Academy
13 September, No.13, Bucharest
ROMANIA
andreeadragoi@iem.ro, anacristinabalgar@gmail.com
http://www.iem.ro

Abstract: - This paper aims to highlight through a comparative analysis the main trends and challenges for the Member States under the new Common Agricultural Policy financial framework. Our research will base its assumptions on the most recent statistics published by the Member States and also on the DG Agriculture& Rural Development reports. Our article will also assess, through a SWOT analysis, the opportunities and the weaknesses for the financial support granted to the Member States under the new regulations of the Common Agricultural Policy. In the final part of our paper we will present some conclusions related to the future of Common Agricultural Policy as a tool for addressing some financial gaps in the national rural development strategies of the Member States.

Keywords: - European Agriculture, Common Agricultural Policy, Member States, SWOT analysis

1 Introduction

Throughout its entire existence the Common Agricultural Policy (CAP) has constantly evolved both in terms of objectives and of main financing tools (Direct Payments, Rural Development Programmes). If in its early years CAP has supported production subsidies, presently this policy focuses on granting financial support for the European farmers, the sustainable rural development and the environmental protection. Some analyzes (EC, 2014) show that through its financial tools, the CAP has evolved gradually from the support for production to the support for producers in order to meet one of its major challenges: the growing demand for agricultural products in the context of European Union constant enlargement. Currently, some authors (Bleahu, 2005) shows that CAP has several main objectives: financial support for farmers' incomes, guaranteeing a stable and affordable food supply and promoting the sustainable development of rural space in the European Union. Moreover, some analyses consider that CAP is essential for Europe food security (Debating Europe, 2016) emphasizing that without this common policy the European Union would be dangerously dependent on fluctuating imports. Some analyzes (Ghinea, 2009) shows that although in the Member States " the agricultural policies are targeting some common European objectives", CAP is currently facing the so-called "prisoner's dilemma[3]": although its major objectives are agreed by all Member States, during the inter-governmental negotiation process, each country is trying to support some national interests. Given this status quo, in our research we propose a comparative analysis of the financing of the agricultural sector in Member States, emphasizing both the compliance with CAP objectives and the pursuit of some distinct national goals.

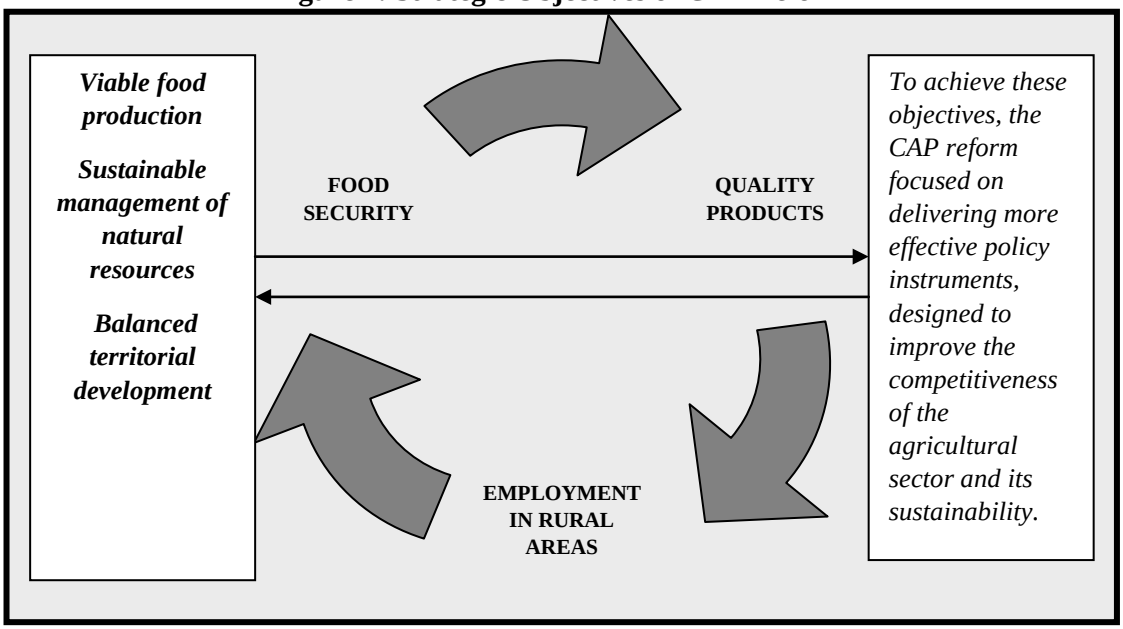
2 Financing the agricultural sector in the Member States during 2014-2020: main trends

In order to meet both the challenges of globalization and those imposed by the *Europe 2020*, the CAP has undergone through a series of reforms: the MacShary Reform (1999), which granted fixed compensatory payments to farmers; the 2001 Reform concerning the adoption of Pillar II – the rural development and the

[3] The *prisoner's dilemma* is a standard concept in game theory that shows that two or more completely "rational" individuals might not cooperate, even if it appears that it is in their best interests to do so.

most recent Reform from 2013 with its three major objectives: assuring food security, high quality agricultural products and an increase of employment in rural areas (see Figure 1).

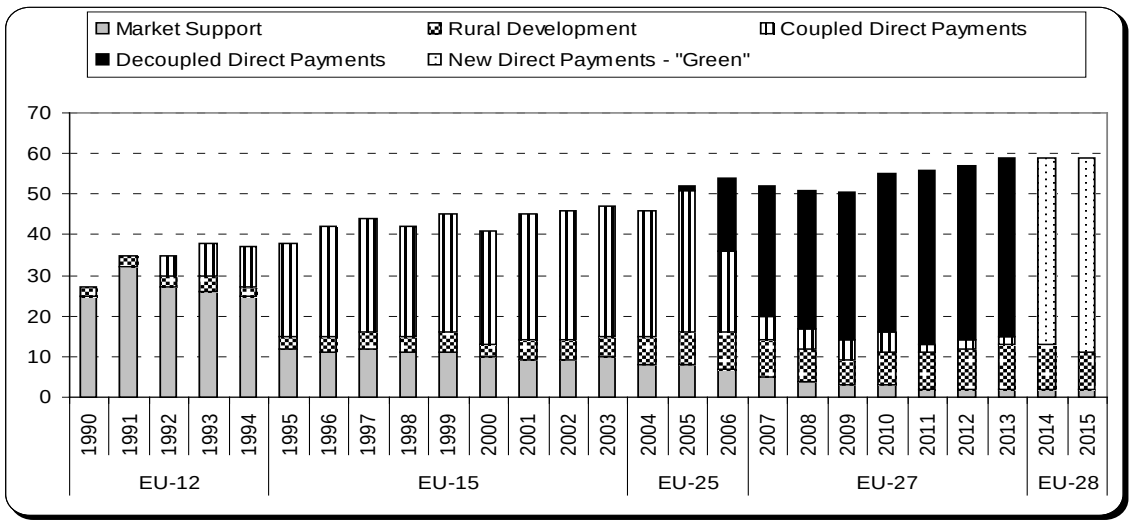
Figure 1: Strategic Objectives of CAP Reform



Source: Authors representation based on European Commission - *Overview of CAP Reform 2014-2020*

During 2014-2020 a major CAP priority is to reduce the inter-regional development disparities. In order to meet this specific objective the Member States are allowed to select measures adapted to their needs and to manage national programs addressing their specific vulnerabilities (through the co-funding process).
In this context, it should be noted that since 2014, the European Agricultural Fund for Rural Development (EAFRD) is part of the new Common Strategic Framework, as are the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF) and the European Maritime and Fisheries Fund (EMFF). Through the co-funding process Member States may implement rural development projects in order to achieve the Europe 2020 strategic goals: sustainable, smart and inclusive growth. In the new financial framework, the budget for sustainable rural development may be used to finance agricultural activities (flexibility in the application of common mechanisms). The radical changes generated within the Common Agricultural Policy under the various reforms are illustrated by Graph 1 which shows the historical development of this common policy from its market orientation to the support for farmers and measures related to sustainable development and environment protection.

Graph 1: The path of CAP expenditure in the Member States (billion EUR)



Source: Authors, based on DG Agriculture & Rural Development data.

The last reform has outlined the strategic objectives for which Member States may grant financial support during 2014-2020, keeping the two pillars of the CAP (the support for agricultural markets – the first Pillar and for rural development – the second Pillar), but increasing the interdependence between them. Consequently, through the flexibility mechanism will be possible to transfer up to 15% of funds between the two pillars, which will enable Member States to achieve some national rural development objectives. In this respect it should be mentioned that while there is a new flexibility for Member States in the budgeting and implementation of first Pillar instruments, acknowledging the wide diversity of agriculture and of socio-economic conditions across the EU, this trend will be framed by budgetary limits in order to ensure that common objectives are met. The CAP set the framework, but it is Member States responsibility to ensure the right balance between possible benefits and the burdens of red tape for producers as well as for administration and controls.

CAP new regulations will support the Direct Payments which are becoming better targeted and more equitable. At the same time, the new CAP framework will preserve the sustainable component of financial support (through the Green Direct Payment that are becoming compulsory) also strengthening the rural safety nets (emergency support in case of market crises or external shocks[4]).

Some analyzes (Was et al., 2014) indicate the huge potential existing in the new financial framework of CAP in terms of sustainability and "greening" the agricultural practices in the Member States. In this context, it should be noted that since January 2015 the "cross-compliance" mechanism is mandatory for Member States and has become more eco-friendly by introducing a new tool: the Green Direct Payments. The Green Direct Payments are mandatory for Member States and must represent 30% of all Direct Payments. Farmers will receive Green Direct Payments if they respect some mandatory agricultural practices: maintenance of permanent grassland, ecological focus areas and crop diversification. The Green Direct Payments will enable the Member States to improve their environmental performance through financing more sustainable production methods.

Although the new rules are requiring the compliance of some mandatory objectives related to rural areas sustainable development, they still offer Member States the possibility to finance some specific national objectives, adapted to local needs. Such measures (e.g. those funded under the LEADER Axis) are supporting the "bottom-up" rural development. In order to implement this type of financial support for agriculture and rural areas, the Member States benefit from complementary tools: the Farm Advisory System, funds from the European Innovation Partnership and funding for applied research projects to support European farmers to find solutions for the specific problems they face. Moreover, presently, due to its multiple reforms, CAP became capable of responding to external challenges which may have a negative impact on the agricultural sector from the Member States (e.g. the Russian ban[5] that affected European producers of fruits, vegetables and dairy products that received compensatory funds[6]).

The Russian import ban has highlighted the strategic importance of CAP reform for the agricultural sector from the Member States. Some analyzes (Drăgoi, Bâlgăr, 2015) showed that the CAP reform allowed the funds transfer between the two pillars, providing a true "safety net" for European farmers, helping them to mitigate the negative effects produced by some external (Russian ban) or internal (natural disasters such as droughts, floods, fires) crises. The mechanisms by which reformed CAP may support European farmers include: public buying (government agencies may purchase the agricultural products which remain unsold due to some exceptional circumstances) and aid for private storage, those public policy tools aiming to stabilize markets and to prevent a drastic decrease in revenue for European farmers. All these mechanisms have been introduced as part of 2013 CAP reform, being necessary because in recent years the crises in the European agricultural sector have increased in frequency and intensity. To meet this specific challenge during 2014-2020 the Member States may request funds from the Emergency Mechanism for Market Intervention. Such financial support may include loans for European farmers, as well as insurances in case of harvest loss or inability to sell it.

[4] See the case of Russian ban.

[5] On August 2014, the Russian Federation introduced import restrictions on a variety of agricultural products from EU, notably fruit and vegetables, dairy products and meats.

[6] In response to the Russian ban, the European Commission, with the help of Member States, enforced a range of emergency measures notably for the fruit and vegetables sector, aimed at addressing market pressure, stabilising prices and finding alternative sales opportunities.

One of the fundamental changes imposed by the latest CAP reform is the increased transparency of financial support granted to rural areas in the Member States (DG Agriculture & Rural Development, 2014). The new rules aimed at increasing transparency were introduced by Regulation 1306/2013. Under the new regulations some improved management procedures concerning financial support will be enforced by a more rigorous control of the financed projects.

Some analyzes (Hogan, 2014) show that the role of new transparency requirements is crucial in supporting the European farmers from the Member States (given the fact that they are often forced to comply with stricter rules on organic farming, environmental requirements and animal welfare, compared with their global competitors). The new transparency regulations are applying both to the Direct Payments and to private investment projects. Improving transparency requires an annual publication by Member States of the beneficiaries of Direct Payments, detailing the precise amounts and destinations for which they are used, including the specific objectives covered by that funding.

Those new regulations raise the question: why were needed these additional rules in order to improve transparency in the financing of rural areas in the Member States? As previous experience shows (2007-2013), since 2010 there has been a decision of the European Court of Justice (see combined cases C-92/09 and C-93/09) stipulating that some regulations related to financing Rural Development Programmes (RDPs) violated the principle of proportionality for "individuals" (“individuals” must be interpreted in opposition to the term "legal person", which referred to the European associations and farmers' organizations), due to insufficient information on nature and objectives of financial support. In this context it must be noted that not only the direct CAP funds are subject to transparency rules. In many cases, the projects for rural areas are co-funded through the European Regional Development Fund, the Cohesion Fund, or the European Social Fund - for instance for projects related to increasing employment and regional development. Moreover, in the current financial framework (2014-2020) about 80% of the rural development funds are managed by the National Agencies under a shared management procedure with the European authorities.

The shared management procedure will require to the Member States to publish on the national authorities websites information related to: the beneficiary name, source of funding and description of each objective funded. Referring to the shared management procedure some authors (Gray, 2012) have shown that this will reduce the administrative burden for European authorities increasing at the same time the responsibility of national authorities.

3 Direct Payments – main tool for financing the agricultural sector in the Member States

The Direct Payments are the main instrument for granting financial support to the European farmers who face systemic risks due to the high volatility of agricultural prices as to the occurrence of some weather events that may adversely affect the quality and quantity of agricultural production. Some analyzes (Dewbre et al., 2001) showed, however, that the Direct Payments may have a negative effect on the European agricultural sector, due to the fact that European farmers are sometimes disadvantaged compared to their international competitors because they need to respect the environmental standards this resulting in higher production costs.

In order to respond to such challenge, the Member States may use the Green Direct Payment tool that allows them to finance agricultural activities in compliance with environmental standards. To avoid distorting the free competition within the internal market, these Direct Payments are based not on production levels, but on the type of agricultural practice.

According to DG Agriculture & Rural Development estimations during 2015-2020 around 252 EUR billions are allocated for Direct Payments at EU-28 level. The Member States that have allocated the largest funds were France (over EUR 45 million), Germany (over EUR 30 billion) and Spain (over EUR 29 billion). Regarding Romania, it occupies a middle position in the European hierarchy, with an allocation of over EUR 10 billion (see Table 1).

Table 1: Direct Payments - ceilings by Member States (EUR billion)

MEMBER STATE	2015	2016	2017	2018	2019	2020
BELGIUM	0.544	0.536	0.528	0.520	0.515	0.505
BULGARIA	0.642	0.721	0.792	0.793	0.794	0.796
CZECH REPUBLIC	0.875	0.874	0.873	0.872	0.872	0.872
DENMARK	0.926	0.916	0.907	0.897	0.889	0.880

MEMBER STATE	2015	2016	2017	2018	2019	2020
GERMANY	5.148	5.144	5.110	5.076	5.047	5.018
ESTONIA	0.110	0.121	0.133	0.145	0.157	0.169
IRELAND	1.216	1.215	1.213	1.211	1.211	1.211
GREECE	2.047	2.039	2.015	1.991	1.969	1.947
SPAIN	4.833	4.824	4.815	4.886	4.880	4.893
FRANCE	7.586	7.553	7.521	7.488	7.462	7.437
CROATIA	0.113	0.130	0.149	0.186	0.223	0.261
ITALIA	3.953	3.902	3.850	3.799	3.751	3.704
CYPRUS	0.051	0.050	0.050	0.049	0.049	0.048
LATVIA	0.168	0.195	0.222	0.249	0.275	0.302
LITHUANIA	0.393	0.417	0.442	0.467	0.492	0.517
LUXEMBOURG	0.033	0.033	0.033	0.033	0.033	0.033
HUNGARY	1.272	1.271	1.270	1.269	1.269	1.269
MALTA	0.005	0.005	0.005	0.004	0.004	0.004
THE NETHERLANDS	0.793	0.780	0.768	0.755	0.744	0.732
AUSTRIA	0.693	0.693	0.692	0.691	0.691	0.691
POLAND	2.970	2.987	3.004	3.021	3.041	3.061
PORTUGAL	0.557	0.565	0.573	0.572	0.590	0.599
ROMANIA	1.428	1.629	1.813	1.842	1.872	1.903
SLOVENIA	0.138	0.137	0.136	0.136	0.135	0.134
SLOVAKIA	0.377	0.380	0.383	0.387	0.390	0.394
FINLAND	0.523	0.523	0.523	0.523	0.524	0.524
SWEDEN	0.696	0.696	0.697	0.697	0.698	0.699
UNITED KINGDOM	3.548	3.555	3.563	3.570	3.581	3.591

Source: DG Agriculture &Rural Development (2015)

In should be noted that while the CAP reform introduced a new system for the Direct Payments allocation, providing a basic layer of fixed income support for all European farms, another important outcome is that the European farmers would be less vulnerable to fluctuations in prices and income. The new allocation of Direct Payments will enable a better production diversity also supporting agriculture in specific areas with significant spillover effects on food supply chain and rural economies.

4 Rural development programmes

The rural development programmes (RDPs) will continue to provide financing in the Member States in the period 2014–2020, for business, environmental and social projects, and the priority financing objective will be the support for the development of SMEs in rural areas. The budgets allocated by the Member States vary (see Table 2) and they illustrate the adaptation of national plans to the rural and local development priorities, focusing however on incentivising the business environment and private investment in the rural area.

Table 2: Financial allocations by Member State through rural development programmes (EUR millions)

MEMBER STATE	2014	2015	2016	2017	2018	2019	2020
BELGIUM	78	78	78	78	78	79	79
BULGARIA	335	335	334	334	333	333	332
CZECH REPUBLIC	314	312	311	310	308	307	305
DENMARK	90	90	90	89	89	89	89
GERMANY	1,178	1,177	1,175	1,174	1,172	1,170	1,168
ESTONIA	103	103	103	103	103	103	103
IRELAND	313	313	312	312	312	312	312
GREECE	601	600	600	599	598	598	597
SPAIN	1,187	1,186	1,185	1,184	1,183	1,182	1,182
FRANCE	1,404	1,408	1,411	1,415	1,418	1,422	1,427
CROATIA	332	332	332	332	332	332	332
ITALIA	1,480	1,483	1,486	1,489	1,493	1,496	1,499
CYPRUS	18	18	18	18	18	18	18

MEMBER STATE	2014	2015	2016	2017	2018	2019	2020
LATVIA	138	138	138	138	138	138	138
LITHUANIA	230	230	230	230	230	230	230
LUXEMBOURG	14	14	14	14	14	14	14
HUNGARY	495	495	494	493	492	492	491
MALTA	13	13	14	14	14	14	14
THE NETHERLANDS	87	87	86	86	86	86	86
AUSTRIA	557	559	560	562	564	565	567
POLAND	1,569	1,567	1,565	1,563	1,561	1,558	1,555
PORTUGAL	577	577	578	579	580	581	582
ROMANIA	1,149	1,148	1,146	1,145	1,143	1,141	1,139
SLOVENIA	118	119	119	119	120	120	120
SLOVAKIA	271	270	270	270	269	269	268
FINLAND	335	336	338	340	341	343	344
SWEDEN	248	249	249	249	249	249	249
UNITED KINGDOM	371	370	369	368	367	366	365

Source: DG Agriculture &Rural Development (2015)

As it can be seen in Table 2, Romania ranks very well among the Member States in terms of allocations for rural development programmes in 2015. However, in order to improve its performance, a stronger focus on environmental and climate change objectives and a gradual abandonment of income support and of most market measures would be useful. Establishing a clear financial direction regarding the environmental and climate change aspects through the framework created by the national rural development policy would encourage the development of regional strategies to guarantee the fulfilment of EU objectives. This could be achieved by means of better targeted measures which would also be easier to understand by the Romanian farmers. These measures would imply higher expense effectiveness and a more careful focusing on the added value of implemented projects. Such a direction would enable an approach of the economic, environmental and social challenges in Romania and would increase the contribution of agriculture and of the rural area to the achievement of the objective of the Europe 2020 strategy regarding smart, sustainable and inclusive growth.

5 SWOT analysis

As regards the impact of CAP reform on the new financing directions in the field implemented by the Member States, Zahrnt (2015) considers that, although in its over fifty years of existence this policy has incontestably improved its performances, there are still aspects of its regulations that may lead to distortions of free competition on the EU internal market, sometimes placing low-income farmers at a disadvantage. Some CAP critics (Brunner and Huyton, 2008) also said that this policy is still insufficiently targeted in order to provide an efficient response to the unprecedented challenges that the EU agricultural sector may be confronted with if major natural disasters occur. For example, a study from the European Court of Auditors (ECA, 2008) identified a series of structural “weaknesses” of the CAP, from the insufficient targeting of sustainable economic development objectives to the fact that from an economic point of view, the only net CAP beneficiaries continue to be the farmers and landowners who pay less in terms of contribution to the EU budget than they receive through this policy. The ECA showed in its analyses that the new CAP financing context is characterised by the beneficiary paying a single payment independent from production (a process called “decoupling”). One essential element of the new Common Agricultural Policy provides however that the due payments may be reduced if the beneficiaries do not observe certain already existing rules regarding the environment, food safety, animal and plant health and animal welfare or if they do not comply with the newly established requirement that the agricultural land be kept in good agricultural and environmental condition in its entirety.

Therefore, the full rate of the single payment is now subject to certain conditions and cross-compliance has also been extended to the payments made for certain rural development measures.

The ECA report regarding the benefits of the cross-compliance policy shows that the CAP objectives in the field have not been stated in a precise, measurable, relevant and realistic manner and that, at agricultural

holding level, many obligations remain purely formal, thus having little chance of determining the expected changes, whether in terms of the reduction of payment volume or in terms of a change of agricultural practice.

Below, we propose an overview of a SWOT related to the future of CAP financing in the Member States (see Figure 2), with an important focus on the potential benefits/disadvantages of the cross-compliance policy.

Figure 2: SWOT analysis of CAP financing directions for the 2020 horizon – implications for the Member States

STRENGTHS	WEAKNESSES
Through the flexibility mechanism, the CAP became an adaptable policy that enables the transfer of funds between the two pillars, so that the Member States may achieve their specific objectives related to rural development. The CAP reform led to a change of paradigm from the direct production financing support to encouraging the observance of environmental standards (Direct Green Payments are now mandatory in all Member States). Member States have transposed the cross-compliance standards into obligations applicable at agricultural holding level. Cross-compliance represents an essential element of the Common Agricultural Policy, which may bring undisputable benefits in terms of sustainable rural development. By supporting the settlement of the young population in the rural environment (Direct Payments to young farmers), the CAP converted into a catalyser of employment increase in the rural environment.	The control of the observance of the cross-compliance obligations is deficient and, in certain cases, inexistent. One of the reasons is the fact that these controls are mainly performed during the summer months, which means that a significant number of obligations cannot be adequately performed because they refer to agricultural practices that are conducted during other seasons. The introduction of cross-compliance weakened certain key-elements of the rural development control and sanction system. Moreover, the delineation between cross-compliance and the agri-environment measures is not always clear. There are cases where the data sent by the Member States to the European Commission are not reliable, as they overestimate both the farmer control rates and the rates of compliance with the obligations. The system implemented by the Commission for monitoring these data is deficient, being affected mainly by the absence of performance indicators and reference values.
THREATS	**OPPORTUNITIES**
The limited reduction of direct payments does not observe cross-compliance because of control-related shortcomings, and because of the inappropriate structure of the sanction system. For example, the audit performed by the ECA starting in 2008 showed that the conduct of 11 633 controls pursuant to the Birds Directive and of 14 896 controls pursuant to the Habitat Directive over a period of two years in four Member States did not identify any case of breach of the cross-compliance obligations.	In order to increase the effectiveness of the CAP provisions on cross-compliance and Green Payments, the public authorities may define precise and measurable objectives, susceptible of being transposed into obligations that may be controlled at agricultural holding level. The autonomy enjoyed by the Member States in the application of RDPs allows them to simplify, clarify and prioritise the rules applicable to the financing of projects in the rural area.

As regards the difficulties related to the cross-compliance control, Brunner and Huyton (2008) point out that increased strictness is necessary in the context in which there are fears that direct green payments may be used to disguise subsidies to certain farms, rather than as an incentive for sustainable agricultural practices. It must be mentioned, in relation to these fears, that in certain Member States there are example where direct payments classified as "green" payments financed activities that effectively caused damages to the environment.

6 Conclusion

In our opinion, the future of CAP financing must focus on the "green" component of this policy, in the context in which the relation between agriculture and biodiversity is a symbolic one in Europe. For example, traditional agricultural techniques for mowing and low-intensity grazing maintained a series of semi-natural pastures in Europe and contributed to the preservation of a rich biodiversity.

In this context, we consider that the current contribution of Green Direct Payments to the support of traditional agricultural practices is vital in these conditions and that the viability of the European agricultural sector may not be improved without financial support for sustainable rural development, materialized into agri-environment measures.

Moreover, the current common policy concerning the use of agricultural land is an adequate instrument, as shown by the experience of recent years, for correcting the so-called "market failures", as well as for concomitantly stopping the decline of biodiversity (as shown by the success of the Nature 2000 direct payments). Agri-environment schemes for European farmers enabled them to continue agricultural activities by adopting more environmentally friendly practices and techniques. Leitao (2006) and Vickery (2004) consider that these types of financing measures proved to be both an economic success and an adjuvant for habitat preservation, while other analysts (Donald and Evans, 2006) underline that these funds may create long-term benefits for environmental protection and the preservation of natural landscapes in the EU.

In the conditions in which climate change will continue to have a strong impact on the economic environment in Europe, the "green" component of the financing for the rural environment must represent a catalyser for the rural development strategies of the Member States because the quality of agricultural habitats will determine the ability of the European Union to ensure the future sustainability of quality food supply and to be competitive in the international produce trade arena. Using the Green Direct Payments, Member States may contribute to ensure viable food production in order to improve the competitiveness of the agricultural sector and increase its share in the food chain, as the agricultural sector is very fragmented compared to other segments of the food chain which are better organised and therefore have greater negotiation power. Moreover, European farmers face worldwide competition while at the same time they must comply with the high standards regarding environmental, food safety, food quality and animal welfare objectives requested by European citizens, and the "green" payments may represent a compensating incentive for them. For the 2020 horizon, the new financing framework enables Member States to encourage environmentally friendly growth through innovation, which may determine the adoption of new technologies, the development of new products, the change of production processes and the support for new demand patterns, in particular in the context of the emerging bio-economy.

The CAP reform was directly reflected in the most used agricultural financing instrument, the Direct Payments. The new conditions under which financing is granted by means of Direct Payments stress the three major objectives of the change: the redistribution, redesign and better targeting of support in order to provide added value to the expenses and make them more effective. There is considerable agreement in the literature regarding the fact that the distribution of Direct Payments should be revised and designed in a manner that would make it easier to understand by the taxpayers. The criteria should be both economic, in order for the Direct Payments to fulfil their role of offering a basic income, and environmental, in order to support the supply of public goods. The increased environmental performance of the CAP by means of the green element led to the need for a series of priority actions to be taken by the Member States. These measures may take the form of simple, generalised, non-contractual and annual environmental actions that go beyond the cross-compliance requirements and are related to agriculture (for example, permanent pasture, green cover, crop rotation and ecological set-aside,).

Through the new financing directions, Member States are able to promote the sustainable development of agriculture in areas with specific natural constraints, by offering additional support to the farmers in these areas, in the form of area payments, as a supplementation of the support granted under the second pillar.

Moreover, in order to take into account the specific problems faced by certain regions where certain types of agriculture are considered particularly important due to economic or social reasons, optional coupled aid may continue to be granted, in observance of certain clearly defined limits (support based on established elements: areas, productivity or number of animals).

Analysing the strengths and weaknesses of the new financial framework, it becomes obvious that Member States should direct their RDPs so that the environment, climate change and innovation may represent central themes, and better target their natural rural policies. For example, investments should increase the economic and environmental performance, environmental measures should be designed in order to provide a better response to the specific needs of the regions and even of the areas with high natural value (HNV), and the measures seeking to contribute to the unlocking of the potential of rural should be particularly receptive to the innovative ideas regarding the business environment and local governance.

References:

[1]. Bleahu, Ana, (2005), *Dezvoltarea Rurală în Uniunea Europeană*, în Revista „Calitatea Vieţii", XVI, nr.3-4, pp. 289 -300.

[2]. Brunner, A., Huyton, H. (2008), *The Environmental Impact of European Union green box subsidies*, ICTSD Working Papers.

[3]. Debating Europe (2016), *Arguments for and against the Common Agricultural Policy*, http://www.debatingeurope.eu/focus/arguments-for-and-against-the-common-agricultural-policy/#.VzchINR96t8.

[4]. Dewbre, J., Antón, J., Thompson, W. (2001), *The Transfer Efficiency and Trade Effects of Direct Payments*, în Journal of Agricultural Economics, vol. 83, nr. 5, pp. 1204 – 1214.

[5]. DG Agriculture and Rural Development (2014), *Information Note on the Russian Ban on Agri-Food Products from the EU*, Brussels, http://ec.europa.eu/agriculture/russian-import-ban/pdf/info-note-03-09_en.pdf.

[6]. DG Agriculture & Rural Development (2014), *CAP transparency in the perspective of 2020*, Brussels, http://ec.europa.eu/agriculture/policy-perspectives/policy-briefs/05_en.pdf.

[7]. DG Agriculture & Rural Development (2015), *EU agriculture spending – focused on results*, September 2015, http://ec.europa.eu/agriculture/cap-funding/pdf/cap-spending-09-2015_en.pdf.

[8]. DG Agriculture &Rural Development (2015), *Regulation Direct payments - ceilings by Member State*, http://ec.europa.eu/agriculture/cap-funding/budget/mff-2014-2020/direct-payments_en.pdf.

[9]. Donald, P., Evans, A. (2006), *Habitat Connectivity and Matrix Restoration*, în "Journal of Applied Ecology" vol. 43, nr. 2, pp. 209–218.

[10]. Drăgoi, A., Bâlgăr, C. (2015), *The Common Agricultural Policy Role in Addressing External Shocks - the Case of Russian Import Ban*, in Global Economic Observer, No. 1, Vol. 3 / 2015.

[11]. European Commission, (2011), *Impact assessment for "CAP towards 2020"*, Brussels, http://ec.europa.eu/agriculture/policy-perspectives/impact-assessment/cap-towards-2020/index_en.htm.

[12]. European Commission, (2012), *Greening the CAP – Impact Assesment on Common Agricultural Policy*, Brussels, http://ec.europa.eu/agriculture/direct-support/greening/index_en.htm.

[13]. European Commission (2013), *Overview of CAP Reform 2014 -2020*, http://ec.europa.eu/agriculture/cap-post-2013/graphs/graph2_en.pdf.

[14]. European Commission (2013), *Rural Development in the European Union: Statistical and Economic Information*, Report 2013, http://ec.europa.eu/agriculture/statistics/rural-development/index_en.htm.

[15]. European Commission (2014), *Exceptional support measures for EU agricultural producers in the context of the Russian ban*, Brussels, http://europa.eu/rapid/press-release_IP-14-932_en.htm.

[16]. European Commission (2014), *Regulation (EU) No. 913/2014 for temporary exceptional support measures for producers of peaches and nectarines*, Brussels, http://europa.eu/rapid/press-release_IP-14-932_en.htm.

[17]. European Commission (2011), *Impact Assessment – Common Agricultural Policy towards 2020*, Brussels, SEC (2011) 1153 final, http://ec.europa.eu/agriculture/policy-perspectives/impact-assessment/cap-towards-2020/index_en.htm.

[18]. European Court of Auditors (2008), *Information note of the European Court of Auditors concerning Special Report No 8/2008 "Is cross-compliance an effective policy?"*, ECA/08/30.

[19]. Ghinea, C. (2009), *O ţară şi două agriculturi. România şi reforma Politicii Agricole a UE*, Studiu CRPE, No.4.
[20]. Gray, J. (2012), *The Common Agricultural Policy and the Re-Invention of the Rural in the European Community*, în Sociologia Ruralis, Vol. 40, pp. 30 -52.
[21]. Hogan, P. (2015), *New CAP transparency rules take effect*, in World Grain, 6/1/2015.
[22]. Leitao D., Jolivet C., Rodriguez M. And Tavares J.P. (2006), *Bustard Conservation in Europe in the last 15 Years: Trends, Best Practice and Future Priorities*, RSPB/BirdLife, Sandy, Bedfordshire, UK.
[23]. Vickery J.A., Bradbury R., Henderson I.G., Eaton M.A. (2004), *The role of agri-environment schemes and farm management practices in reversing the decline of farmland birds in England*, Biological Conservation vol. 119, nr. 1, pp. 19–39.
[24]. Was, A., Zawalińska, K., Britz, W. (2014), *Impact of „Greening" the Common Agricultural Policy on Sustainability of European Agriculture: from Perspective of the Baltic Sea Countries* in "Journal of Agribusiness and Rural Development", 4(34), pp.191-212.
[25]. Zahrnt, V. (2015), *Public Money for Public Goods: Winners and Losers from CAP Reform*, ECIPE Working Papers nr. 8.

Romania after 25 years of transition: historical and meta-structural factors of influence

FLORIN BONCIU
Department "Models of Economic Development"
Institute for World Economy
Calea 13 Septembrie no. 13, Bucharest
ROMANIA
fbonciu@gmail.com

Abstract: - The paper analyzes the impact of certain historical and meta-structural factors (such as the adoption of Western style democracy, the adoption of profit as the implicit rule of the game and the accession to the European Union as well as some global factors of influence) on the direction and manifestations of the transition process in Romania after 1989. The aim of the paper is to identify and differentiate the role of historical and objective meta-structure factors versus the role of subjective factors in the establishment of a new institutional and legislative framework in Romania since 1990. The conclusion is that such historical and objective factors are fundamental in understanding what happened in the past 25 years and also for conceiving any feasible strategy for improving the current conditions and characteristics.

Keywords: - transition to a market economy, democracy in a transition country, side effects of adoption of the community acquis.

1 Introduction

25 years is a significant amount of time by any standards and it offers a large enough perspective for identifying some trends and drawing some conclusions with reasonable accuracy about the evolution of a society, be it in a period of relative stability or a period of transition. At the beginning of 1990 my perception was of a gradual improvement of Romania's economy and socio-cultural environment, a vision that started from what Romania was as an economy and society and which presumed that a logical and reasonable governance would eliminate distortions and inefficiencies and optimize and modernize what existed to the point of making the jump to a new qualitative level, that of a developed country. In 1990 it seemed that the transition to a market economy should be simple as long as the objective (the market economy) was such a clear target, well documented after several centuries of experimenting and honing of the model in the nowadays developed countries of the world.

2 The grand perspective

25 years later the result is quite far from this positivist and rather naïve vision and the obvious question is why. As anyone can expect, there is no simple answer to that. But an answer can be found, at a systemic level, in the nature of the processes and rules of the game that most of the time directly and indirectly governed the transition. Many analysts or laymen quite wrongly assumed that transition started with a clean board where decision makers or masses had a total free will to choose one path or another. It was famous from this point of view the debate on the option between a "shock therapy" and a "gradual transition" (Pettinger, 2013). But reality has been far from this voluntary approach and while certain options existed indeed, they were far more limited than usually accepted.

Therefore, my short answer to the question why Romania's transition to the market economy was so long, so inefficient and so unsatisfactory for a majority of the population is that there were **3 + 1 processes** that generated by their intersection this outcome. In my view these three processes have been:

- The mechanical adoption and implementing of the Western style democracy;
- The adoption of profit as the implicit and the de facto only rule of the game;
- The accession to the European Union that implied the adoption of the acquis communautaire (the ensemble of rules, mechanisms and institutions that characterize the European Union).

To these three processes we have to add a much larger one (**the + 1 factor**) which includes the whole world economy, a process which combines globalization and a period of discontinuity or disruption in the post second world war model of production and consumption.

This "+ 1" process refers therefore to the global trends and profound changes that affect in one way or another all countries of the world, including Romania. These phenomena deal with technological, geopolitical, demographical and climate changes (to name just the obvious ones) that are laying the foundations for a new economy and society that most experts expect to see in place well before 2050 (European Commission, 2012).

In the following parts I shall detail my interpretation of the impact of each of these processes on the outcome of the transition in Romania. Before that one clarification is necessary. These three plus one processes are not specific to Romania, they can be found in all Central and Eastern European countries. What is different in case of each country is the starting point in a very broad sense. This is why the title of this paper contains the "meta-structural" approach. In my view the starting point of the 1990 transition in Central and Eastern Europe is not located in 1989 but 500 years earlier or even more. It is about the long history of each of these state entities, about how they were established, how they evolved from economic, social, cultural, political points of view, about their social structure (among other dimensions of notable importance is the rural/urban ratio of population), about their entrepreneurial spirit, about governance traditions.

The starting point is not just a moment in time, say year 1990. The starting point is present at any moment through mentalities, traditions, culture at large, and therefore the starting point influences not only the initial decisions and behaviours but also the subsequent ones, until the present day.

In the context of this starting point I have to mention that the different evolutions of the Central and Eastern European countries after 1989 raised to the fore a number of simple and quite often forgotten truths:

- **History is important**. The sense of this statement is that the historical evolution or roots are very important in explaining the trajectory of a state entity. In analyzing Romania's transition a lot of commentators pointed to the fact that in 1990 Romania had a similar GDP/habitant or steel production per habitant (or a number of other quantitative indicators) with Poland, Czechoslovakia or Hungary. Such commentators assume that 1990 was a sort of equal starting point and therefore explain the different outcomes only by subsequent (and presumably more or less efficient) political decisions (Sachs, 1996). Anyway, if we go a number of centuries ago and analyze the development level of the mentioned state entities, the differences are so notable that the present results are fully explainable (Murgescu, B., 2010).
- **Geography is important**. The transition countries from Central and Eastern Europe can be easily divided into two groups: a) those which have a border with a Western developed country; b) those which have not. Looking at the two resulting groups the differences are again very clear: the countries that have a border with Western developed countries achieved the transition faster and more efficiently; the other ones (including Romania) have been slower, more hesitant and less efficient. Geography should not be regarded in a static way, meaning only from the point of view of year 1990. Geography means interactions, cultural influences and easiness in doing business for the very simple reason of proximity. At the same time, proximity, in a geographical sense, has influenced history and therefore, for better or for worse, these two factors (history and geography) have acted in a synergic manner.
- **Socio-cultural roots**. Under this very broad umbrella we may include many things from religion to the share of urban population, from entrepreneurial traditions to specific folklore characteristics. In the end it is about people, about their perception of life and society, about their vision on the future and the significance they give to the elusive concept of "a better life". And again there is a correlation: the socio-cultural roots are influenced by history which, in turn, it's influenced by geography.

I want to stress as hard as I can that these simple truths are not explaining everything. Anyway, they have determined or influenced in one way or another the "raw materials or inputs" that entered in 1990 into the 3 + 1 processes that will be presented at large in the following.

3 The 3 + 1 processes at work

3.1. Adopting and implementing the Western-style democracy

In order to understand how adopting and implementing the Western-style democracy in Romania affected the outcome of the transition to a market economy some analysis of the democracy concept itself is required. When speaking about democracy, even at the most superficial level, we are confronted with at least two "absolute truths" (please do not miss the inverted commas): a) democracy comes from ancient Greece meaning "power of the people" (demos & kratos); b) in terms of Western style "political correctness"

democracy is in an absolute manner the desired and ideal form of social organization which can not be questioned.

In case we try anyway to go beyond these two "absolute truths" some intriguing aspects emerge (Hansen, 1999). **First** of all, the Greek democracy was applied in urban entities which were very small according to contemporary standards: Athens in year 500BC had over 200,000 inhabitants but slaves represented a considerable proportion; the majority of ancient Greek city states were much smaller: Sparta had about 50,000 - 60,000 people, Argos about 15,000 people, Corinth had about 10,000 people. **Second**, not all the people living in the ancient Greek cities had a voting right because women did not, slaves did not, non-citizens did not and the list can continue. For instance, in ancient Athens from about 200,000 inhabitants only about 35,000 men were voting citizens, in Sparta from about 60,000 inhabitants only about 25,000 had voting rights. **Interestingly, in Sparta the voting citizens had to have their education completed in order to accede the voting rights**. The previous figures have to be taken with a dose of relativity given the fact that they refer to a period of over 2,500 years ago, anyway they give a clear image of the often forgotten roots of democracy.

The conclusion of the above is that democracy was not initially designed and therefore it is not guaranteed to function properly in case of populations that count tens of millions, hundreds of millions or even billion plus inhabitants. Above and beyond that, in order for democracy to produce an efficient and effective governance it is necessary that the people with voting power have sufficient information and sufficient education and rationality to ponder on options and vote for those most beneficial ones at the same time for the person who votes and for the respective society/community/nation at large. Looking from this perspective we can find a logic in the ancient Sparta requirement of a completed education (according to the norms of that time) for the citizens to obtain the voting rights.

If we take into account these two aspects (the relatively small size of societies in ancient Greece where democracy functioned for a limited time and the selectively attributed voting rights) it is evident that democracy as it is known nowadays in the Western world is far from being effective and efficient for intrinsic reasons. To these two aspects we can add the fact that in ancient Greece the democratic systems had existed in periods when the state had an absolute power to which no individual right could be opposed (de Coulanges, 1984). Therefore in the ancient Greek city states the importance of the voting rights had been based on the importance and power of the state which applied the will of the voting citizens. Not to mention the fact that in ancient Greece individual rights were of little importance (Boia, L., 2013).

As for the present times, in many Western countries, despite tremendous progress during the 21st century, the population presents still huge differences in education and understanding of complex issues: in some cases there are urban and rural areas with people that have different problems to solve and therefore different targets; there are, in some other cases, large populations of immigrants with voting power that have a very different agenda and different values from the natives.

My point here is that if we take a population large enough (millions, tens of millions or even billions of people) and consisting of a number of relatively homogenous groups which are rather different (such as the urban and rural population, the more educated and less educated groups or the affluent and poor groups) then the democratic mechanisms, even in the **best scenario possible** (meaning no interference in the voting process, high participation or even 100 % participation to the vote and so on), will generate distorted or unpractical outcomes, stop and go policies, unmanageable expectations.

And the more complex the issue (for instance attitude toward global warming, exploitation of shale gas or deforestation, genetically modified organisms, a.s.o.), the more the differences in understanding and attitudes will prevent an effective and efficient functioning of a democratic state. Particularly in cases when the topics under debate are perceived as rather distant in space and time (such as European Parliament elections or the dangerous increase in global temperature at the 2050 horizon) the participation to vote is far less than significant.

The real importance of the best case democratic scenario mentioned above is that it eliminates the influence of manipulation, interference with voting mechanisms, different access to mass-media and similar distortions that happened or were invoked as causes of a long and inefficient transition in Romania or other Central and Eastern European countries. Such distortions did happen. But what the best case democratic scenario demonstrates is that even in the most perfect case democracy (as it is understood today) would not be effective and efficient and would determine a rather hesitant progress on the path to the market economy.

This is an important aspect to clarify at this point particularly because many people tend to think in black and white terms. The arguments presented here are not a case against democracy and, at the same time, they do not represent a ready made alternative which is simply not available. What this paper presents are the

limits and side effects of democracy (as it is understood today) when applied with the best intentions to large, segmented populations that lack both a clear vision on the future and very concrete goals that are widely accepted.

The best proof of this statement is the current situation in the Western European countries which are, without any doubt, both developed and democratic: Scotland had a referendum for exiting the United Kingdom and just narrowly miss it; in Spain Catalonia was advocating its independence by means of a non-authorized referendum renamed for this reason a "large consultation"; the Northern part of Italy has discussed about secession; in Belgium there are long time discussions about the separation between the Flemish and the Valone parts; Venice is discussing about becoming again a city state. Just looking at this enumeration we may wonder if indeed social entities are manageable only when they have similar sizes and conditions like those in ancient Greece. A proof in this line of thought is represented in modern time by Switzerland which is developed, democratic (being famous for the large number of referendums that are organized) and based on administrative divisions / federal states – the 26 cantons – that have a small number of population, with similar values, education and issues to be solved (Statistical Atlas of Switzerland, 2015).

3.2. Adopting profit as the (de facto only) rule of the game

The transition to a market economy of the formerly centrally planned economies meant essentially the transition to private property as well as the adoption of interaction between supply and demand and profit as rules of the game. This is what capitalism is all about and it has worked imperfectly but reasonably well for several centuries in many parts of the world. This model is far from perfection and it is historically famous for failures (often called market failures) that create large crises, huge unemployment, pollution of the environment, sub-optimal allocation of resources and, in certain cases and conditions, significant social inequality.

In our view, the main problem in case of the transition from a centrally planned economy to a market economy has been the way in which societies as a whole implemented the market rules of the game. We do not refer here to persons or political parties but to society as a whole. From this point of view what is relevant refers to: which are the main social categories at the beginning of transition, which are the parties that represent them or are based on these social categories, how homogenous or divided is the population that implement these rules, how much entrepreneurial expertise this population has and how able it is to understand complex socio-economical issues placed in a historical perspective.

The transition to a market economy implies a lot of legal and institutional changes but again we have to see the essence and not the details. And the essence in case of this transition is the adoption of profit as the main rule of the game for using resources, for social recognition, for access to power.

In case the population is segmented (people with access to power vs. people without access to power, urban vs. rural, young vs. old/retired, entrepreneurial experienced vs. non-entrepreneurial experienced and so on) then the profit motif will be applied by each population segment according to its understanding and its access to power and opportunities. In such a case the short term, personal objectives will prevail and the overall results will be rather chaotic.

The participants are not to be blamed anyway because they were given a rule of the game ("profit is good" or "profit is king") and they just applied it. It happened in a similar manner in all countries of the world in the early stages of capitalism. And even if we have nowadays access to all the historical experience I think that we cannot blame too much Romanians or other people in similar situations that they did not transfer overnight all this historical experience about capitalism to each and every citizen. I am rather sure such a thing would have been impossible.

The profit drive has been so strong in Romania particularly because it operated in an environment where the idea of planning was heavily rejected after 1989 in a non-discriminatory way and no other counter balance was provided. The profit drive favoured short term, personal targets against long-term, society wide ones. As result, the profit drive supported the consolidation of tabloid style media, the disruption of production chains in both industry and agriculture, the disappearance of any operational strategy and long term planning and generally a reactive/opportunistic type of behaviour.

One important aspect to stress, in the same way that I did before with the implementing of the Western style democracy, is that the profit drive in itself is not good or bad and it is not automatically leading to a reactive/opportunistic type of behaviour. The same profit drive may determine in the United States or Great Britain or Germany a pro-active, ethical based attitude. What makes the difference is the background of the companies or individuals that adopt this profit drive, their entrepreneurial experience, their business environment, their availability of capital and last but not least their intrinsic ethical code.

By this clarification I want to stress that I do not blame the profit drive but I just point out that the outcomes of this drive can be very different function of who is using it. In order to even better explain this let us take the case of Nordic countries or that of Switzerland. The profit motivation operate also in these countries but in the background there are also other rules, traditions, values, customs. The companies or people in these countries want to make profit, but they also think about environment protection, about social protection, about care for the old and disabled and so on. These other rules and values and traditions are the result of specific types of historical evolution and they influence the approach to profit and market economy in general. These other rules are not part of the economic or management behaviour but they are at the intersection of economic and management behaviour with culture in a broad sense.

The absence or minimization of such rules, values and traditions generated in Romania a direct approach to the profit drive with no other considerations attached. Again the differences among countries from Central and Eastern Europe may be explained by the different initial conditions (including long term historical characteristics) with which they entered the transition to a market economy.

In some countries there has been a private sector during all the socialist era (the agricultural sector in Poland, the small and medium sized enterprises in Hungary), or the civil society has maintained a stronger form of traditional values and customs (like in the Catholic countries), or some reforms have been implemented in the 1980s (like in Poland, Hungary or Czechoslovakia). The former German Democratic Republic is an even more extreme example of different transition than in Romania because in that case, after the reunification of Germany, the Western socio-economic model has been 100 % implemented, transforming the transition into an almost engineering exercise.

3.3. Accession to the European Union and the adoption of the acquis communautaire

The discussion about the impact of Romania's accession to the European Union on the transition characteristics is to a large extent a discussion about institutions in a broad sense (which include both the institutional and legislative framework). Romania applied for European Union membership on June 22, 1995 and the European Commission recommended the opening of the negotiations on October 9, 2002. The negotiations proper started on February 15, 2000 and the Accession Treaty was signed on April 25, 2005. The mentioning of these dates has in view to position the preoccupation for the harmonization of the legal and institutional framework in Romania with the European Union one during 1990 – 2014 time frame.

The topic of the impact of Romania's accession to the EU is often very sensitive because to many people it is rather a blasphemy to question the significance of this impact and it is automatically assumed that it should be positive. Anyway, in reality, the answer is more complex and mixed. And the first aspect to be mentioned refers to the time scale. Numerous econometric models show that there is a convergence taking place between Romania and the EU average, at least as regards the GDP/habitant levels. But the content itself of convergence as it is defined is open to debate while the time necessary for achieving a true convergence is not even estimated which transforms it rather into a desire more than into a reality.

The first issue here is that the general theory of economic integration states that in order to be successful the economic integration needs two prerequisites: a) a similar level of development; b) a strong political will in favor of integration based on a large public support.

If we look at the two prerequisites from the Romanian point of view it is extremely obvious that while the second one has been fully satisfied (Romania being according to Eurobarometer findings the most enthusiast supporter of accession), the first one has not as long as the level of development of Romania expressed by a very imperfect but still acceptable indicator, GDP/habitant, was at the moment of accession of about 1/3 of European Union average.

The requirement regarding the existence of a similar level of development for a successful economic integration is put there for a reason: a similar level of development means (at least in principle) similar issues/problems and therefore similar solutions. In such a case economic integration is beneficial and creates synergies and economies of scale. A second aspect, at least equally important, is that each level of development is characterized by a certain level of effectiveness and efficiency of institutions (regarded in the broadest sense, from national to regional and local levels).

In case two entities decide to pursue economic integration and they do not satisfy this requirement of similar level of development a number of obvious problems arise:

- Different levels of development imply different priorities and therefore different policies. For a less developed state the first priority is **to "catch up"** with more developed countries. Catching-up strategies and policies are very different from strategies and policies of already developed countries.

- Different levels of development imply that the effectiveness and efficiency of institutions are less favorable for the less developed states.

The fundamental problems mentioned above have created after the accession of Romania to the EU a vicious circle represented by the following: Romania is in fact a developing country with central and local institutions characterized by the effectiveness and efficiency specific to developing countries.

As result of accession to the EU Romania has to follow the same macroeconomic indicators as much more developed members (for example Germany) while, in fact, Romania needs to apply institution building and catching-up policies.

At the same time the effective and efficient use of the Cohesion Policy and associated funds require effective and efficient institutions which Romania lacks. Applying the principle of subsidiarity the European Union leaves for the Romanian institutions to adopt and implement the proper policies for catching- up. But Romanian institutions can not do that exactly because they are not developed enough (a fact known from the very beginning).

Therefore the adoption of the acquis determined a number of constraints while not providing an overnight improvement of the Romanian institutions. As result Romania has had in 2014, after the first 7 years of participating as a member in the EU, a limited absorption of European funds and the maintaining of numerous gaps as compared to European average in fields that range from agricultural efficiency to education, infrastructure or health care.

These statements do not represent in any way a criticism vis-à-vis the European Union but rather a request for more and not less European Union. By more European Union I imply more involvement of the European Union in directly managing and in fact implementing the catching up process. An example may further clarify this position. As it is well known Romania lacks adequate infrastructure and this is a major shortcoming. At the same time, at the European level a number of infrastructure plans have been decided upon under the name of Ten-T (Regulation (EU) No 1315, 2013 and Peijs, K., 2015). The selection of these infrastructure characteristics has been done in full consultation with the involved member countries. After that, under the current mechanism, the implementation of the projects has been left with the respective countries. And in some cases, Romania included, not so much progress has been achieved because of institutions fragility and lack of effectiveness.

In such a case ”more European Union” could have implied that after the direction of the Ten-T corridors has been established in consultation with the involved countries, the implementation could have been done directly under the supervision of the European Commission (European Commission, 2014). In this way the fragility of local (in this case Romanian) institutions could have been overcome by the use of presumably mature, experienced and efficient Western institutions. But such an approach is not possible under the current rules of functioning of the EU institutions and Romania, as well as other countries which lack mature and effective institutions, lags behind in the catching up process.

3.4. The impact of the + 1 process: global trends and profound changes

Some may argue that the profound changes that are taking place in the world economy are more related to the period after year 2000 and, as such, they have not influenced substantially the transition period that started in 1990. To this argument we state that profound changes are long term phenomena that are initiated long before they become evident.

In this respect we can mention changes related to demography, technology or geopolitics. They are definitely long term and their onset can be relatively easy to identify in the late 1980s.

Being part of Europe Romania is affected by the aging process and is one of the countries with the fastest decline of population and, at the same time, increase of the older segment. This aspect, in correlation with others (like social stratification/inequality and urban / rural distribution) has influenced a lot the political options, the attitude towards change and taking of entrepreneurial risks, the openness to innovation and experimenting.

Technology driven changes are even more of immediate importance. The big changes determined by the Internet have been already present at the beginning of the 1990s and they generated a further division of Romanian society and business which can be labelled as “digital divide”. One specific characteristic of the Internet or knowledge based economy is that it does not generate trickle down effects (Crow, 2014). While the industrial era meant huge factories and related transportation facilities, schools, hospitals, recreational or public spaces, therefore providing certain living conditions for the majority of the population, the Internet era is much more segregated and based on the individual. This latter situation can be easily exemplified by the block of flats in which an apartment where a young adult is writing market analyses or doing some accounting, sending the

result by email and being paid in an account by some client from US or Australia, while, separated by just a wall, in the neighbouring apartment, we can find some retired couple that is barely making a living from a very small pension. The two life models are separated by just a wall but they are worlds apart. This process did not help Romanian society (and, in fact, a lot of other societies, including those in developed countries) and make it more divided than it had been.

Technological changes, correlated with opening of the markets allowed also for easy imports from Europe but also from the rest of the world. The sudden exposure of Romanian companies to this kind of competition, correlated with the dismantling of existing factories and disappearance of central planning transformed Romania into a primarily consumer market. Romanian capitalists are often blamed for lack of entrepreneurial drive and initiative but they could not have emerged overnight, after 1990, as a mature capitalist class.

New technologies also allowed for establishment by foreign investors of high productivity units that could be very easily connected to the global value chains. Such units have very little impact on local suppliers or the so-called horizontal economy.

The +1 process includes also more abstract phenomena but with huge immediate impact, among them the political correctness (in its various interpretations) and multiculturalism in its normative manifestation. These two dimensions may open endless debates and replace pragmatic approaches with rather abstract and hypothetical ones.

4 Conclusions

The interaction of the **"3 +1 processes"** analyzed in this paper requires a coherent, long term approach from the part of Romanian society and such an approach is not possible, in our view, without proper governance. The building and consolidating of an efficient and effective governance mechanism at all levels represent in our view the essential element for any credible attempt of leading Romania towards a developed status.

This apparent simple solution is much complicated by the fact that the access to such an efficient and effective governance can not be foreseen as a magical on-off process (that is overnight) and, at the same time, can not be conceived either as a bottom-up (which would require a mature, coherent and consistent social structure) or a top-down approach (which would require a centralized approach). The elimination of these two known possibilities does not imply that a solution for a better governance is not possible. It just means that a systematic research for a solution is requested and that there will never be enough participants to this quest.

The future can be much better. We all just have to believe and act in this direction. The 21st century, as well as the 20th century, but in different way, offers huge opportunities and unprecedented challenges. Very different from other times before, now we have access to all the experience of humankind available for a proportion of the population never imagined. Therefore we can all think, search, propose, experiment and interact with each other. While the exact pictures of the future of humankind and of Romania are still far away from us, what we can know for sure is that these future pictures will be based on networking and interaction at the local, regional, national and global scale.

References:

[1] Boia, L. (2013), *Mitul democrației*, Ediția a III-a, Humanitas, p. 15

[2] Crow, D. (2014), *Digital divide exacerbates US inequality*, Financial Times, 28 October 2014, at page http://www.ft.com

[3] De Coulanges, F. (1984), *Cetatea antică*, Meridiane, vol. 2, p.186

[4] Hansen, M. H. (1999), *The Athenian Democracy in the Age of Demosthenes: Structure, Principles, and Ideology*, University of Oklahoma Press

[5] Murgescu, B. (2010), *România și Europa. Acumularea decalajelor economice (1500-2010)*, Polirom, 2010, p. 19.

[6] Peijs, K. (2015), *Rhine-Danube: Work Plan of the Coordinator*, European Commission, p.5

[7] Pettinger, T. 2013, Shock therapy economics, http://www.economicshelp.org

[8] Sachs, J. (1996), *The Transition at Mid Decade*, The American Economic Review, Vol. 86, No. 2, Papers and Proceedings of the Hundredth and Eighth Annual Meeting of the American Economic Association San Francisco, CA, January 5-7,pp. 128-133

[9] European Commission (2012), *Global Europe 2050*, Directorate General for Research and Innovation

[10] European Commission (2014), *20 Years of TEN-T Policy*, http://ec.europa.eu/transport/themes/infrastructure/ten-t-policy/index_en.htm
[11] Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU
[12] Statistical Atlas of Switzerland (2015), *Regional Portraits 2015: Cantons*, FSO, ThemaKart – Neuchâtel

China's Transition to the Innovation-Driven Economy: Stepping Stones and Road-Blocks

SARMIZA PENCEA
Institute for World Economy, Romanian Academy
ROMANIA
pen_sar@yahoo.com

ANA-CRISTINA BÂLGĂR
Institute for World Economy, Romanian Academy
ROMANIA
anacristinabalgar@gmail.com

Abstract: - Besides its past outstanding accomplishments in terms of extensive development, China has also accumulated multiple distortions and structural imbalances and has reached a crossroads, where a major qualitative switch is a must. Its outdated export-oriented economic model has covered both the factor-driven and investment-driven stages of development and now China needs to more firmly advance towards the stage of innovation-led growth, transiting from cheaply processing and assembling foreign-designed goods, using foreign-designed technologies and supplying foreign markets, to producing high quality, services-and-knowledge-intensive products, using locally-devised technologies and meeting, primarily, its own domestic demand. This paper looks at the progress attained in recent years in the Chinese research, development and innovation system, sketching its landscape in terms of structure, endowment and goals, inputs and output improvement, significant shifts and trends paving the way to an innovation-driven economy, as well as to potential road-blocks on the way.

Keywords: - China, innovation-driven development, innovation-led development, innovation-intensive, R&D, S&T, science and technology, development model

1 Introduction

Recent economic development history provides compelling proof of innovation playing a crucial role in the catching up endeavour of emerging economies and in their successful avoidance of the middle income trap. Absorbing foreign knowledge, adopting and adapting foreign technologies and know-how at early stages of the catching up process when input costs are still low, help foster industrial upgrading, productivity gains and competitive advantages, leading to higher GDP growth and, ultimately, to improved living standards. However, just capitalizing on technology transfers is never enough for any economy, as, later on, when having attained a higher development level and having got closer to the technology frontier, indigenous innovation capacity becomes a must. Therefore, a wise approach to economic development should always see to building a strong local innovation capacity beforehand, way before the moment when foreign technology transfers no longer suffice and the only pathway left available is that of the in-house innovating effort to push further the technology frontier.

China has both the historical background and the potential to become an innovation powerhouse. For much of human history the Middle Kingdom was not only the largest economy in the world, but also the leading science and technology fountainhead. Some of the greatest inventions of mankind, having a major bearing on the world evolution – the earliest known cast metal coins, paper, the first paper money, the first commercial advertising notice, the printing press, the iron plough, the nautical compass, some of the first oceans and sky maps, gun powder, porcelain, silk and many others - were ancient Chinese discoveries. China's economic decline, which started in early1800s, seems to have had structural reasons – according to the historian Mark Elvin's theory – a condition called "the high-level equilibrium trap", when "… the country ran well enough, with cheap labour and efficient administration, that supply and demand could be easily matched in a way that left no incentive to invest in technological improvement" (The Economist, 2015). The 19th century was extremely troubled for China, which was torn by wars, rebellions, natural disasters and famine, lost tens of

million people, wealth and territories, its economy plunged and the empire demised at a time when exactly the opposite happened in the Western world, where economies flourished as the industrial revolution unrolled. As it kept lagging behind, China ceased to play a significant role on the global scene, both as an economic power and as a knowledge, or technology provider.

It was only after 1978, when following a bold investment-led and open-to-the-world strategy designed by Deng Xiaoping, that Chinese economy has visibly changed course and managed, in only three decades, an amazing come-back: it achieved large-scale industrialization, urbanization and modernization, growing yearly by an average rate of almost 10% and becoming the second largest economy in the world (2010) behind the USA; it also became the largest global manufacturer (2010), international trader in goods (2012) and foreign reserves holder (2006) and it took dominant positions in various markets, influencing global demand, international prices, trade flows and global economic growth. The country also managed an outstanding poverty alleviation, creating tens of million jobs yearly, pulling out of poverty hundreds of million people (about 500 million according to the World Bank) and improving their living standards and life expectancy (Pencea, Bâlgăr, Bulin, 2015). And although in recent years the growth rate kept declining - getting almost halved to 7.3%, between 2007 and 2014 - according to the IMF, China became the largest economy worldwide by its 2014 GDP at PPP, while the US slipped into the second position for the first time in 142 years (Duncan&Martosko, 2014).

The export-oriented and investment-driven model implemented in China, which turned the country into the "workshop of the world", able to manufacture and deliver almost everything, anywhere, at the lowest price, has performed very well for about thirty years, but it has progressively reached its limits and, in particular after the outbreak of the global economic crisis and the implementation of the stimulus package of 2008-2010, it revealed its negative outcomes: inefficient resource allocation, wastage, structural imbalances, asymmetries, development and income gaps, growing non-performing loans and skyrocketing debt, expanding shadow banking, economic bubbles, corruption, widespread pollution. After 2010, the economy has decelerated, returns on investment kept decreasing, the RMB gradually appreciated, the demographic dividend kept fading away, while wages went up eroding the competitive advantage. Additionally, some of the reforms envisaged by the new leadership, targeting improved allocation by liberalizing interest rates, energy and commodities prices, are expected to have a similar short-term outcome. In other words, against the backdrop of a development model that is turning obsolete, the whole economic environment is profoundly and swiftly changing and, in response, Chinese economy requires an entirely different approach to development.

Through a quantitative and qualitative approach, our paper explores the way in which China is trying to operate this complex change, looking at its challenges, at the steps already taken or planned for the future, at the current accomplishments and potential road blocks.

2 Literature review

In his famous book *The Competitive Advantage of Nations,* Michael Porter (1990) identified four stages of economic development in a nation's evolution: (i) factor-driven, (ii) investment-driven, (iii) innovation-driven and (iv) wealth-driven development. In China's case, the old investment-led and export-oriented development model has covered both the factor-driven and the investment-driven development stages. Therefore, from now on, to help rebalance its economy and ensure sustainable growth, China needs to more firmly advance towards the stage of innovation-led growth. Even if it managed a spectacular economic revival and re-emergence at the top of the world economic rankings building upon manufacturing, ***in terms of knowledge creation, research, development and innovation, China is still a follower, not a leader***, and it still has a long way to go before it becomes an innovation-driven economy and a genuine new technology provider. The signals coming from both the domestic and the external markets express the urgency of its transition towards a new, innovation-driven development model, focussed on quality, productivity, competitiveness, deference to nature and accountability for the ways in which its resources are used and the environment changed. These signals imply that China must foster R&D, promote indigenous innovation, encourage companies to rise productivity and climb up the technology ladder, adding more in-house value to goods and services, so that employees are paid higher wages and, consequently, they consume more and save less (Pencea, Bâlgăr, Bulin, 2015).

The same comes out of a recent study by McKinsey Global Institute (MGI), which concludes that China faces the imperative of innovation which is needed in order "[… *to contribute up to half the Chinese GDP growth by 2025, or about USD 3 trillion to USD 5 trillion in value per year*]" (McKinsey, 2015). Similarly, Zilibotti (2015) considers that introducing policies and institutional reforms that trigger the switch from investment-led, to innovation-driven growth is "[*the crux to escape the middle income trap*]". On the

other hand, according to Michael Schuman (2015), "[*It is easier to jump from a very poor country to a middle-income nation, than to advance from that middle-income status to the ranks of the truly developed*]". A poor country can quite easily generate GDP growth, using its cheap labour and other resources in a modern economic system, because low wages attract investment in labour-intensive industries, accelerating growth. These countries catch up quite quickly by encouraging investments and by copying foreign technologies (Zilibotti, 2015), but, as costs rise and basic industries become less competitive, they need to start improving skills and developing their own intellectual property, so that they become more capable to compete in high-technology industries. At this point, those who do not activate their own innovation capabilities risk falling into the middle-income trap, no longer being able to compete in either the low-tech industries, (as they have lost their competitive advantage), or in the high-tech industries (because they have not yet created their own new technologies, skills and know-how to compete with the truly advanced nations). This is the point where China finds itself now.

Historically, in the last half of the century just a few developing countries managed to successfully transit to the group of the highly developed economies, while the bulk of them got stuck "*in the middle*". A 2012 ADB[7] research found out that 35 of the 52 middle-income economies reviewed were trapped (Schuman, 2015). With an average income of USD 7129 per capita, China is quickly approaching this turning point[8] when companies become increasingly unable to further compete in terms of costs and are compelled to focus on innovation and quality improvement, to foster brands and climb the technological ladder. As Schuman underlines, citing an Eichengreen, Park and Shin study, "[…*elements of the China growth story make it vulnerable to the middle income trap*]": its extremely high growth rate when it was a poor country; its high investment to GDP ratio coupled with its decreasing returns on capital; its high and growing old age dependency ratio. He therefore concludes "[… *the way to escape the middle-income trap is to successfully change a nation's growth model*]."

3 Pieces in the Chinese innovation-led growth puzzle

3.1. A dominant top-down approach to the innovation system

The innovation system in China still bears the footprint of its initial model, the Russian one: it is still strongly centralized under the control of a small number of top institutions that establish the goals, design the strategies, the policies, the measures to be taken and their implementation modes, under a top-down approach. The main decision power in these matters belongs to the State Council (the government), through its Leading Group on Science, Technology and Education which makes the most important decisions and coordinates their implementation, while another important governmental body is the National Development and Reform Commission (NDRC), which is in charge with designing short-term (5 years) and long-term (15 years) strategic plans that underpin resource allocation. Then, there are the second-tier institutions, ministries and academies, with the Ministry of Science and Technology (MOST) playing the most important role in relation to policies designed to meet the long-term plans and their implementation, formulating laws and regulations for science and technology (S&T) development and reform. Finally, the third tier is that of the research institutes, universities, laboratories, think tanks and enterprises with RDI activities developed inside or outside science and industrial parks (Bichler & Schmidkonz, 2012).

3.2. Strategic planning for innovation-led selective industrial policy

Until very recently, the fundamental document regarding China's strategy on RDI was the "Outline of Medium and Long Term Plan for National Science and Technology Development, 2006-2020" (MPL), issued by the Chinese government in 2006, with the goal of underpinning China's strategic target of becoming a country that "[…develops, influences and owns the core intellectual rights over the next generation of technologies that will power global economy]". MLP was meant to help strengthen indigenous innovation capabilities so that China could become an innovation-driven country by 2020, and a world leader in science and technology by 2050. It provided for rising R&D investments to 2.0% of GDP by 2010 and to 2.5% by 2020 (Lin, 2013). It was the first official document that spoke of, and stressed on indigenous innovation[9], while

[7] Different studies identify it at either around USD 10 000-11, or around USD 15 000-16 000 per capita, the average income of a country that risks becoming captive in the middle income trap (ADB, 2012).

[8] 2005 PPP dollars.

[9] *Indigenous innovation* was defined as encompassing three different forms (i) *original, genuinely new, independent innovation*, (ii) *integrated innovation*, resulting from combining existing technologies in a new, innovative way, and (iii) *assimilated innovation*, obtained by improving and adapting imported technology.

MOST and NDRC defined, in a later document, the products considered indigenous innovation, by certain attributes.[10] Another important strategic document issued by Chinese authorities in mid-2012 was China's Five Year Plan (FYP) for Strategic Emerging Industries (SEI), which nominated 7 emerging strategic fields that were to benefit primarily from governmental funding[11] and established for these industries the goal of reaching 8% of GDP in 2015, and 15% in 2020 (Reuters, 2012). This specific FYP for high tech industries has not only brought a substantial rise in R&D funding for these sectors, but it also announced a radical change of approach to Chinese-foreign R&D cooperation, by abandoning the previous protectionist stance in favour of encouraging international R&D partnerships and cooperation (Pencea, 2014b). As 2015 is the last year of the 12th FYP 2011-2015, it is expected that a draft of the 13th FYP (2016-2020) will be submitted to the National People's Congress in March 2016, followed in the second half of the year by the industry-specific FYPs, including the new FYP for SEI. According to the announcements by NDRC, China's new FYP (2016-2020) for strategic emerging industries will further boost innovation efforts (Lan, 2015).

However, the most recent and important strategic document already in force is *Made in China 2025*, released in the summer of 2015 and seeking to further guide China's advancement to the status of a country with an innovation-led development. This strategy draws direct inspiration from Germany's "Industry 4.0" plan and envisages a comprehensive upgrade of Chinese industry around the central idea of intelligent manufacturing, which basically means applying information technology (IT) tools to production, connecting SMEs more efficiently into the global value chains (GVCs) and global production networks (PNs), for an efficient customisation of mass production. In its view, this thorough rethinking and reform of manufacturing could help Chinese producers, whose efficiency and quality are highly uneven, to overcome the challenges they are expected to face and avoid being squeezed between the low-cost producers and the high-tech ones (Kennedy, 2015). The new strategy rests on a few guiding principles - making manufacturing innovation-driven, focussing on quality over quantity, optimizing the industrial structure and nurturing human talent – all of which aiming at transforming the Chinese industry so that it occupies the highest links in GVCs. It also establishes the goal of raising the domestic content of core components to 40% by 2020, and 70% by 2025, and, although the plan is to upgrade the industry at large, it, nevertheless, highlights 10 priority sectors.[12]

"Made in China 2025" is considered better conceived and adapted to China's present situation and national interest as compared to MLP and SEI, as (i) it focusses on the entire production process not only on innovation, (ii) it caters to the development of both advanced and traditional industries, as well as to modern services; (iii) it still implies state involvement, but gives greater prominence to market mechanisms and forces; (iv) it includes clear and specific measures for innovation, quality, smart manufacturing and green production, with benchmarks for 2013 and 2015 and goals set for 2020 and 2025.

3.3 The R&D investment rush and its hall-marks

The cornerstone of innovation-driven growth is the R&D activity, as it provides for the knowledge creation that underlies the development of new products, services and technologies. R&D activities require considerable investments on a constant basis, while they are time-consuming activities, with little or no guaranties of success. When they succeed, their short-term impact may be significant, but the big payoff generally comes in the longer-run, provided that the intellectual property is well protected. Given these specificities, companies are reluctant to committing themselves to research and, as such, RDI can develop only in very supportive environments, which enable and nurture both a bold, creative mind-set and risk-taking.

As they are aware of the importance of a robust research sector for successfully switching to an innovation-driven development pattern, Chinese authorities have substantially increased the annual R&D investments, by 12% to 20%, over the past 20 years. Consequently, China became the second largest R&D investor in the world, after the US, with annual amounts totalling about 61% of the American ones. At the

[10] Three attributes distinguished indigenous products: (a) they were developed mainly by domestic companies, (b) the intellectual property rights belonged to domestic owners, and (c) they represented a leap in technology, compared with existing products (Bichler & Schmidkonz, 2012).

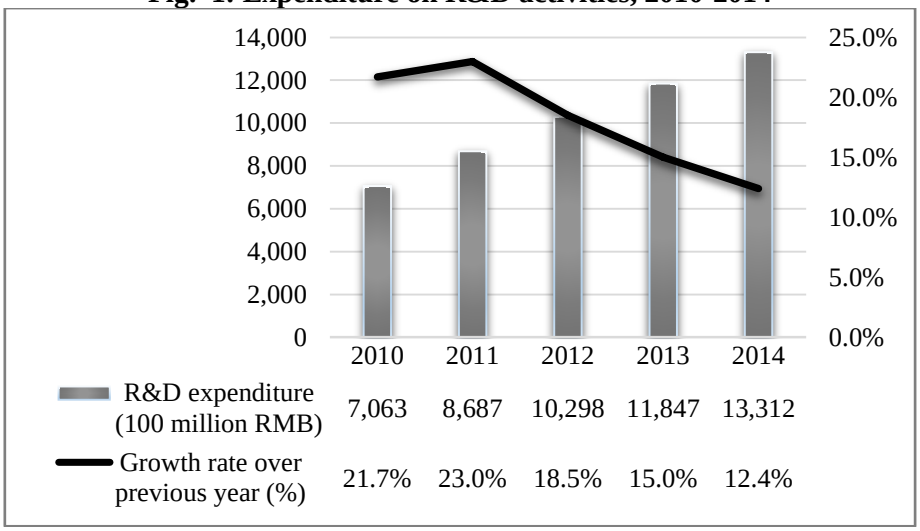
[11] New vehicles; energy-saving and environment protection; next generation IT; bio-technology; advanced equipment manufacturing; new energy; new materials.

[12] These sectors are: new advanced IT; automated machine tools & robotics; aerospace and aeronautical equipment; maritime equipment and HT shipping; modern rail transport equipment; new-energy vehicles and equipment; power equipment; agricultural equipment; new materials; biopharmaceuticals and advanced medical products.

current rate, China is expected to better the US by 2022, when each of the two are estimated to reach around USD 600 billion in annual R&D spending (R&D Magazine, 2013).

According to CNBS[13] (2015), in 2014 the total R&D expenditure in China grew by 12.4%, y-o-y, reaching RMB 1331.2 billion (about USD 217.6 billion[14]) (Fig. 1). Out of this total, the fixed asset investments in scientific research and technical service have increased by 34.5% on a yearly basis, reaching RMB 420.5 billion (about USD 68.7 billion) and accounting for nearly one third of the total.

Fig. 1: Expenditure on R&D activities, 2010-2014



Source: China National Bureau of Statistics (2015).

Against the backdrop of the global economic crisis, with the great majority of countries curtailing their R&D expenditure, China followed firmly its high R&D investment drive, increasing its share of the total global R&D spending, from 10% in 2009 to an estimated 17,5% in 2014 (R&D Magazine, 2013). While the country is still positioned and perceived as a location for cost-effective manufacturing – the high tech production included -, its efforts of developing an advanced research infrastructure and of educating the scientist to operate it, are linked to its goal of evolving from a manufacturing-centred model, to an innovation-based one by 2020.

Chinese R&D investment, accounting already for over 2.0% of the 2014 GDP, goes to both academic research institutions and industrial research firms. But the way funds are split between fields, with only 5% of the total amount for basic research – compared to 15-20% in many OECD countries – and the bulk going to applied and product development research (Van Noorden, 2014) is telling about the pragmatic stance taken by the Chinese regarding the system. Unlike in the US or Europe, in China R&D tends to build on existing products, services and technologies rather than creating new ones, innovating "[…fast enough to keep pace with the moving technology frontier without advancing that frontier themselves]" (Murphree & Breznitz, 2015).

While the central government's plans to promote innovation have been broadly quite unsuccessful, much of the real innovative activity takes place at the local level, where governments have supported entrepreneurship among both private start-ups and foreign investors. As such, a unique and sustainable Chinese innovation system seems to have been born – the "second generation innovation" - embedding specific patterns of local behaviour (risk aversion, preference for proven business models and short-term profit maximization), while successfully keeping up market positions by adapting, re-engineering and improving products and services invented in foreign countries.

A recent research by MGI (2015) - which looks at a database of 20 000 public companies that account for about 30% of GDP and classifies industries as strong in innovation provided they are able to capture more than 12% of the global revenue (which is China's share of the world GDP) - demonstrates that China has

[13] CNBS= China National Bureau of Statistics.
[14] At the end of 2014, the central parity of the RMB against the USD was 6.1190 RMB per dollar (PBoC, 2015).

already built considerable R&D strength in a number of industries: the customer-focused[15] and the efficiency-driven industries. The first category includes industries which innovate mainly to better satisfy customers. Companies in these industries became very good at identifying and responding to specific market requirements and at offering better products, with features similar to the foreign ones, but at considerably lower prices. Relevant examples are the electrical appliances industry (which captures 36% of the global revenue), or the internet services and software (15%). The second category, of the efficiency-driven innovators, includes companies which innovate in order to cut costs, reduce waste, improve productivity, using a variety of approaches (agile manufacturing, modular design, flexible automation, clustering and networking, etc.). This category comprises industries such as solar panels (51%), or the textile industry (20%) (Woetzel & Baily, 2015; Roth, Seong & Woetzel, 2015).

So far, results are quite impressive, and leading innovation indicators show that gaps are quickly bridged and China is approaching parity with the West. If for the past four decades global research investment was dominated by Europe, US and Japan, it is highly probable that in a matter of only a few years China will take the lead. It gained on Japan in 2011 with higher R&D investments and it is estimated that it will do the same with Europe (34 countries) in 2018 and the US in 2022. At the same time, it should be noticed that, of late, China has become aware of the importance of international cooperation in research, pursuing about a third of its advanced research in collaboration with the US, and about a quarter with European research organizations (R&D Magazine, 2013). A brief outline of China's steadily improving international positioning in the global research landscape, as a result of its R&D investments and commitment to attaining technological prowess, is sketched by the data of Table 1.

Table 1: World top 5 countries by their share in total R&D spending, research intensity and gross expenditure on R&D (GERD) 2012-2014

Country	2012			2013			2014 (e.)		
	R&D expenses in total spending (%)	R&D as % of GDP	GERD (PPP)* Billion US$	R&D expenses in total spending (%)	R&D as % of GDP	GERD (PPP)* Billion US$	R&D expenses in total spending (%)	R&D as % of GDP	GERD (PPP)* Billion US$
1. US	32.0	2.8	447	31.4	2.8	450	31.1	2.8	465
2. China	15.3	1.8	232	16.5	1.9	258	17.5	2.0	284
3. Japan	10.5	3.4	160	10.5	3.4	163	10.2	3.4	165
4. Germany	6.1	2.8	92	5.9	2.8	92	5.7	2.9	92
5. South Korea	5.9	3.6	59	5.8	3.6	61	5.6	3.6	63

Source**:** author based on Battelle and R&D Magazine, 2013. Notes:*PPP – purchasing power parity; (e) – estimates.

Nevertheless, while the state is pouring billions into the country's scientific research, improving China's indices and international rankings, most of the companies are still risk-averse and seem unready to seriously invest in research and innovation. While the R&D intensity – the ratio of the R&D budget to the company's total revenue – is, on average, 3.57% for the Japanese firms and 2.93% for the US ones, for the Chinese large and medium-sized companies it is only 0.97%, a level which shows not only a still low commitment to innovation, but also a certain risk of non-survival for the companies with a R&D intensity below 1% (Cai, 2015). There surely are many innovative companies in China, but, unless the bulk of Chinese companies fundamentally change their attitude towards innovation, many of them might face a grim future.

3.4 Human resources for R&D

With a view to nurturing its human capital, the Chinese Government has constantly allocated important amounts to higher education. At present, it allocates 1.5 % of the GDP to tertiary education. By founding colleges, universities, research centres and other academic and R&D institutions, China has developed the robust physical infrastructure necessary to enhance knowledge in different technological and non-technological fields of study. Currently, there are over 2,200 public higher education establishments of various types, from

[15] The cited paper identifies 4 innovation archetypes in China – *customer focused*, *efficiency driven*, *engineering based* and *science based* – and finds out that Chinese companies in the first two groups perform well globally, while the ones included in the other two, still don't.

state universities with a large range of specialisations, to small, narrow specialization colleges. The Chinese higher education system also includes around 1,300 private universities, accounting for around 6% of the total annual higher education enrolment.

There are 24 million students in China, accounting for around 2% of the population over 18 years of age. Most of them, over two thirds, study science and engineering. While the annual number of graduates grew from 1.1 million in 2001 to over 7 million by the end of 2014, and the uptrend continues, the number of doctors in science also grew swiftly: currently, Chinese universities deliver over 30,000 doctors of science annually, most of them (70%) in exact sciences and engineering (Roth, Seong &Woetzel, 2015);

Some of the top Chinese universities have already gained worldwide reputation for their outstanding teaching and research facilities, allowing China to sign agreements with almost 40 countries on mutually recognizing diplomas. Among these there are Peking University (PKU) - similar in status and performance to Oxford and Cambridge - and Tsingua University - the most important technical university in China, equivalent of MIT. Remarkably, Peking University (PKU) ranks 1st in China and the 37th among the first 200 universities in the world.

Additionally, owing to its Top 5 academic institutes and universities that have dominated scientific activity for many years – Chinese Academy of Sciences (CAS)[16], University of Science and Technology of China, Tsingua University, Peking University and Shanghai Jiao Tong University –China was recently worldwide recognized as a science superpower, becoming a growing challenger to American scientific and technological primacy (Shapiro, 2012).

Besides enrolling a growing number of students and improving the quality of higher education, China has started to attract talented and skilled human capital from other countries, using suitable incentives.[17] The MLP has drawn concrete directions whereby, within one decade, as many as possible top level foreign scholars, scientists, engineers, entrepreneurs and senior managers from overseas will be attracted to China. Until 2013, this number was estimated at over 2,000 (Song, 2013). Also, as the Chinese scientific diaspora numbers well over 400,000 scientists (Schiermeier, 2014), another important part of the Plan is to bring talents back to China and involve these foreign-trained Chinese professionals in building their native country's vision for the 21st century – that of a knowledge and innovation world leader. Attracted by the prospect of lucrative funding and new career opportunities, about 2, 265 of Chinese academics and scientists have relocated back home since the scheme was established (Bound et. al, 2013).

On the other hand, since 2011, as China has embarked on a more ambitious Five-Year-Plan (FYP 2011-2015)[18], it has focussed more intensively on increasing the number of researchers. Consequently, according to Chinese statistics, in 2014, the number of researchers reached a total of 3,600,000, placing China first in the world in this respect (Song, 2015). A few hundred thousands of these researchers work in the 1,500 research and development centres opened in China by foreign multinationals, taking over and developing foreign know-how. The others work in the about 4,000 research institutes and the 2,200 universities financed by the government, as well as in the numerous local industrial businesses. (Pencea, 2014b).

Besides the graduates of local universities, the Chinese research system also benefits from an increasing number of graduates from the Western universities. The largest number of Chinese students study in the USA (30%) [as compared to the UK (21%), Australia (13%) and Canada (10%)], which has been the number one receiving country for Chinese cross-border students for the last almost 35 years (Chinese Ministry of Education, 2013). The number of Chinese students has grown by nearly 300% over the last 8 years, and as a result they now account for 23% of the total number of foreign students in the USA. In 2013, China was for the fourth year in a row the country which had sent the largest number of students to the American universities -

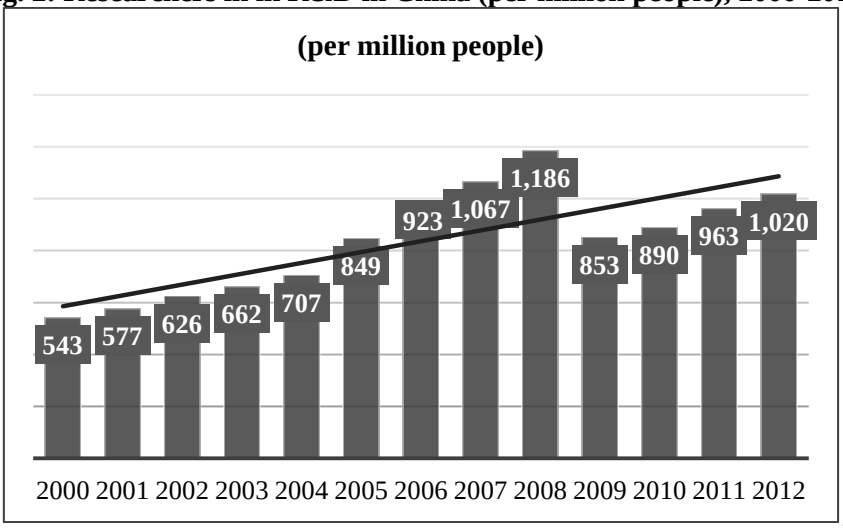
[16] Albeit CAS began as an academy to carry out basic research, it evolved into an academy that endeavoured to strike a balance between basic and applied research over the years (Varaprasad, 2015). Accordingly, at present CAS comprises over 100 research institutes, 12 branch academies, 2 universities and 11 supporting organizations though-out the countries. These institutions host more than 100 national key labs and engineering centres, being located in over 1,000 sites and research stations across the country.

[17] As for instance one of the sub-programs of the "*Recruitment Program of Global Experts*" (*1000 Talent Plan*), the Recruitment Program of Foreign Experts (RPFE), launched in 2008 with the purpose of recruiting non-ethnic Chinese experts, strategic scientists, top experts in science and technology able of advancing the high-tech industries and promoting new scientific disciplines.

[18] The National Development Program for 2011-2015, approved by China's National People's Congress in March 2011, emphasises "*a higher quality growth*" with a special focus on increasing expenditures for R&D to 2.2% of the GDP, by 2015.

followed by India and South Korea. (Neubauer & Zhang, 2015). Also, remarkably, over 30% of the PhDs obtained in the USA belong to students from China. All these factors have contributed considerably to an enlarged and increasing pool of specialists involved in Chinese R&D, as illustrated by the evolution in (Fig. 2).

Fig. 2: Researchers in in R&D in China (per million people), 2000-2012



Source: World Bank Data (2015), UNESCO Institute for Statistics (2015)[19].

3.5 Scientific output

- **Published scientific works**

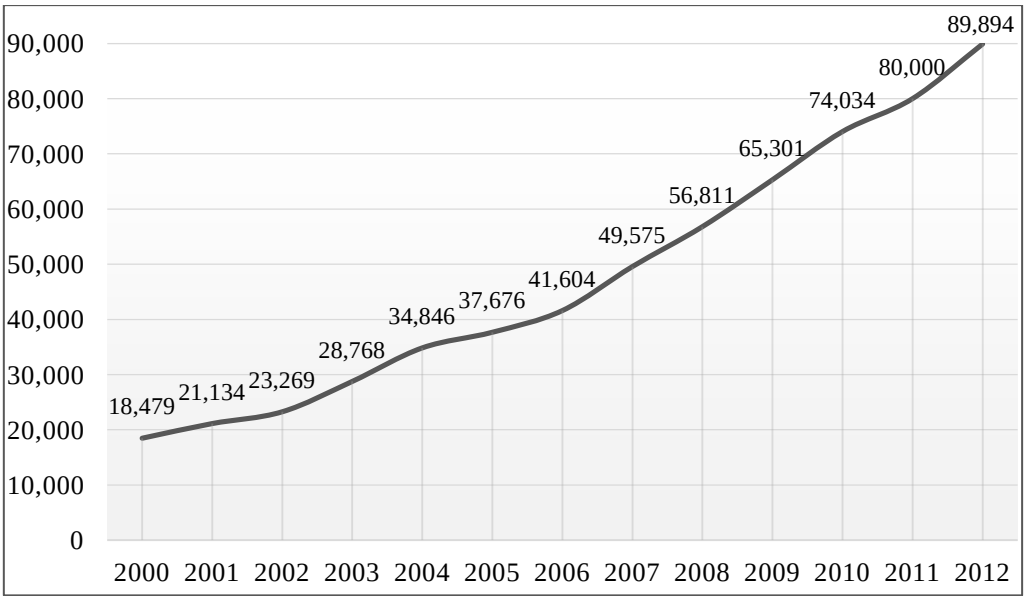
Scanning scientific production, specialists from Thomson Reuters reached to the conclusion that China's achievements surpass from afar those of any other nation (Bound et. al, 2013). Over the last three decades, China has attained the most rapid growth ever seen in the scientific research output of a national research system, achieving a remarkable increase, from around 2,000 to over 150,000 published journal articles[20] per year (2013). The country's scientific production, as assessed from the perspective of peer-reviewed works published after 1981, grew 64 times, with the studies in chemistry and material science accounting for the largest share of the total.

According to Royal Society – the oldest scientific academy of the world in continuous existence – if only 15 years ago the USA was publishing almost 300,000 scientific works on an annual basis, while China was publishing less than 30,000, not before long the USA could be bettered by China in terms of scientific production. As the gap between the two kept closing, in 2008 China was already able to claim the second position behind the United States. Between 2000 and 2012, its scientific output measured by the number of yearly published articles has grown over four times so that, by the end of this time-frame it has already accounted for two thirds that of the United States (Fig.3).

Fig. 3: Scientific and technical journal articles published by Chinese researchers in China, 2000-2012

[19] Note: According to the classical definition of the World Bank, researchers in R&D are considered professionals and postgraduate PhD students engaged in the conception/creation of new knowledge, products, processes, methods and systems. The number of researchers also includes the scientists involved in the management of R&D projects (World Bank, 2015).

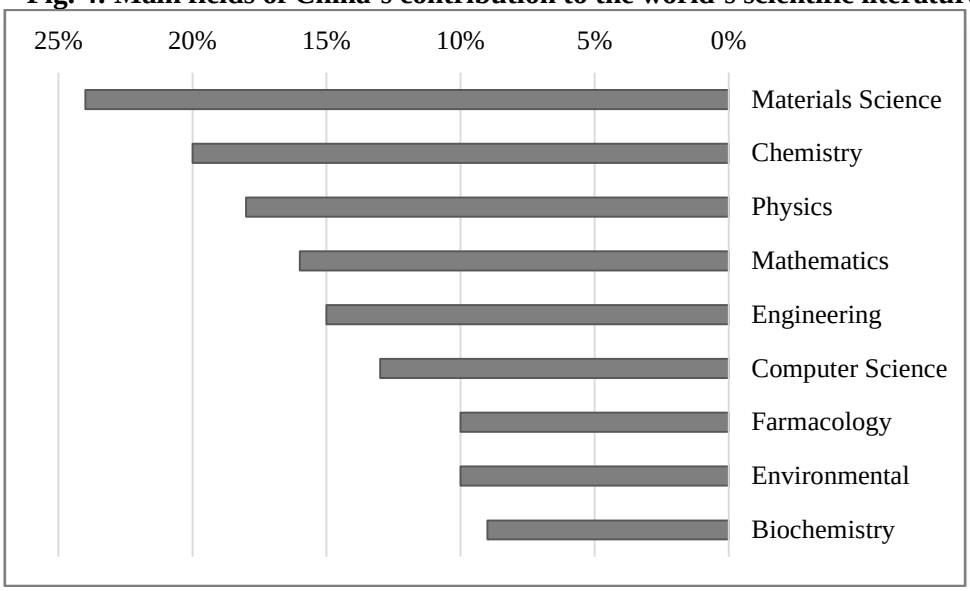
[20] This number refers only to higher quality "Web of Science" journals.



Source: World Bank Data (2015).

The country's ascendancy in the total world scientific production has also been accompanied by a gradual and significant improvement in quality, quantified by the number of citations per article provided by Thomson Reuter's Web of Science: China has steadily improved the average citation counts over the past two and a half decades, with the ratio between China and the US rising from around 26% in 1990 to almost 60% in 2012. Furthermore, China originates an increasing percentage of global scientific literature, in various cutting edge fields (Fig.4).

Fig. 4: Main fields of China's contribution to the world's scientific literature (%)



Source: Thomson Reuters Web of Science (2013).

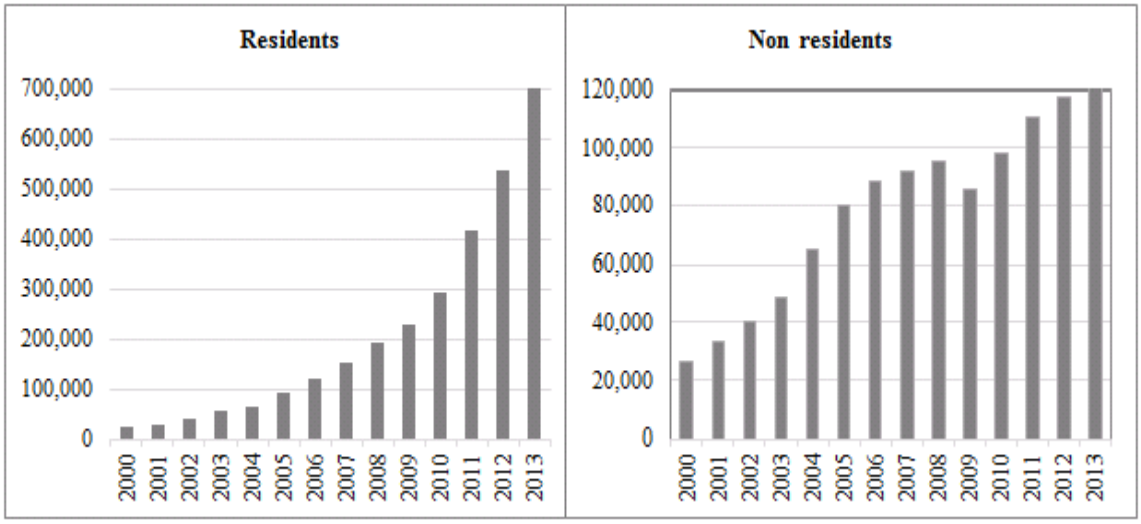
- **Patents**

China is making significant progress in accumulating intellectual capital, measured not only by the number of scientific works and articles published, but also by the total registered patents. Before 2011, in the world hierarchy of countries by number of patents registered at the offices for patents and trademarks, the USA ranked first (with 35% of the total), followed by Japan (27 %), Europe, South Korea and China – geographical areas which cumulated together 75% of all the patents in the world (Grueber, 2011). China has continuously enhanced its number of registered patents and, consequently, in 2012, it held for the first time the top position both as a destination and as a source of patent filing in the world. China residents accounted for almost 561,000

patent applications, much above the next ranked, Japan, with 486,000 applications filed by its residents (WIPO, 2013). In addition, in the same year, the State Intellectual Property Office (SIPO) of China registered the largest number of applications received by any single Intellectual Property (IP) Office: around 653,000 applications, as compared with 543,000 for the United States Patent and Trademark Office (USPTO) and 343,000 for the Japanese Patent Office.

In terms of technological profile, the structure of China's patent portfolio is similar to that of other countries that are large holders of registered patents. Each of the large actors has similar shares in the total of its patents for IT, audio-visual technologies, electric devices, consumer goods, telecommunications, agriculture, chemical engineering, etc. (WIPO, 2013). As for itself, China is focusing on obtaining patents in particular in the following fields (in decreasing order of importance): digital computers, telephony and data transmission systems, radio broadcasting and line transmission systems, natural products, polymers and electro-(non)organic materials. The trend of patent registration applications in China is strongly ascending, in terms of patents submitted both by residents, and non-residents, as also shown in the graphs below (Fig. 5). At the end of 2013, China-registered total number of patents raised to 4.2 million patents in force, of which 3.5 million belonged to residents (83%). Also, a total number of 825,000 patent applications for new inventions were accepted, of which 693,000 belonged to residents (84% of the total) (NBSC, 2014).

Fig. 5: Patent applications (by residents and non-residents) in China, 2000-2013



Source: World Bank Data (2015).

3.6 International commercial exchanges and cooperation

- R&D and international trade

The massive technological transfer to China that has occurred over the last decades from the developed countries – first through trade, then by outsourcing productive activities and, more recently, through relocation and development of R&D activities to Chinese cities – had a major impact on the evolution of the Chinese economy. The productive system has developed and has become structurally diversified, it widened and deepened its range of specialisations, it expanded its geographical scope, creating millions of jobs and business opportunities while companies, both older and newer, learned to cope with competition to gain market share, becoming increasingly better organised, better managed, more productive, efficient and competitive. All these advances became measureable through the export achievements of Chinese companies, both in terms of quantity and, increasingly over the recent years, in terms of quality.

Box. 1: From technology transfers to in-house innovation

a. The case of the high-speed rail industry

One potent strategy China has used to penetrate some HT fields in the global markets of which it subsequently became an important contender, if not the most powerful one, was that of building upon the technological transfers attracted from the developed economies. The high speed rail transport is one of the most successful such cases of foreign technology absorption, followed by a national innovation effort to

improve and push forward that technology. Facts unrolled as it follows: in exchange for a share of China's market, the former Ministry of Railway lured the relevant foreign companies (Bombardier, Kawasaki, Alstom and Siemens) to transfer their technology to their Chinese partners. Afterwards, a huge effort of money, energy and time was put into absorbing, indigenizing the imported technology and, more importantly, developing the core know-how which the foreign companies had refused to share: 25 leading universities, 20 key national laboratories, 40 national institutes and 500 companies were involved in developing the new Chinese high-speed railway technology.

They succeeded, over last decade, to improve the imported technology and to develop their own intellectual property under Chinese IP rights, so that currently China not only has the largest high-speed railway network in the world (about 60% of the global network, or, in other words, a larger network than all the others in the world put together), but it is also in the position to export this proprietary technology or involve itself in building high-speed railways in other countries.

b. The case of the telecommunications industry

Another successful case is that of the telecommunications industry, where Chinese companies were both forced and helped to develop their own telecommunications standards - including 3G, 4G and 5G - and the specific new equipment. This helped, in some cases, to develop a company culture of permanent investment in new technology and standards. For instance, Huawei normally allocates 10% of its annual revenue for R&D and another 10% for fundamental research. But in 2014 the company invested 14.2% of its revenue for R&D, which accounts for an amount of RMB 40.8 billion (about USD 6.6 billion[21]). Such a philosophy not only has pushed Huawei in leading positions in the global market, but it has also repositioned China from a follower into a creator and provider of new telecommunications standards and technologies. At present, Huawei is the largest supplier of telecommunications gear and derives 70% of its income from outside its home country.

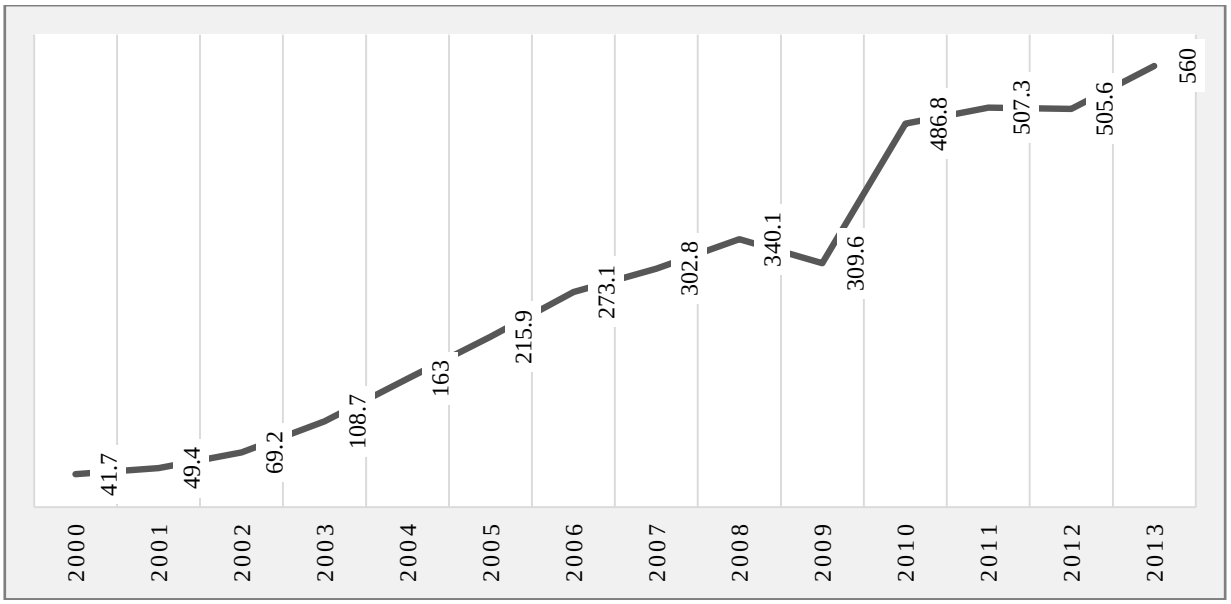
Source: Cai (2015); Rucai (2015).

China is rapidly advancing on the technological ladder changing its position in the global production chains and taking over increasingly superior technologically activities, with higher complexity, knowledge and highly-skilled workforce content. R&D and innovation increasingly become the core and the source of growth and performance in an increasing number of activities, which trigger structural changes in the export supply and an increased share of HT products in the value volume of annual trade.

According to the World Bank Database, in 2013, China reported exports of high-tech and new tech products worth USD 560 billion (almost 10% up, y-o-y), accounting for around 27% of its total export of processed products. These are highly R&D-intensive products, such as those made by the aerospace, computers, pharmaceuticals, scientific instruments and devices, or electrical equipment industries. The graphs below provide an overview of the evolution of these exports as an expression of the increasingly higher contribution of the R&D and innovation activities to industrial performance.

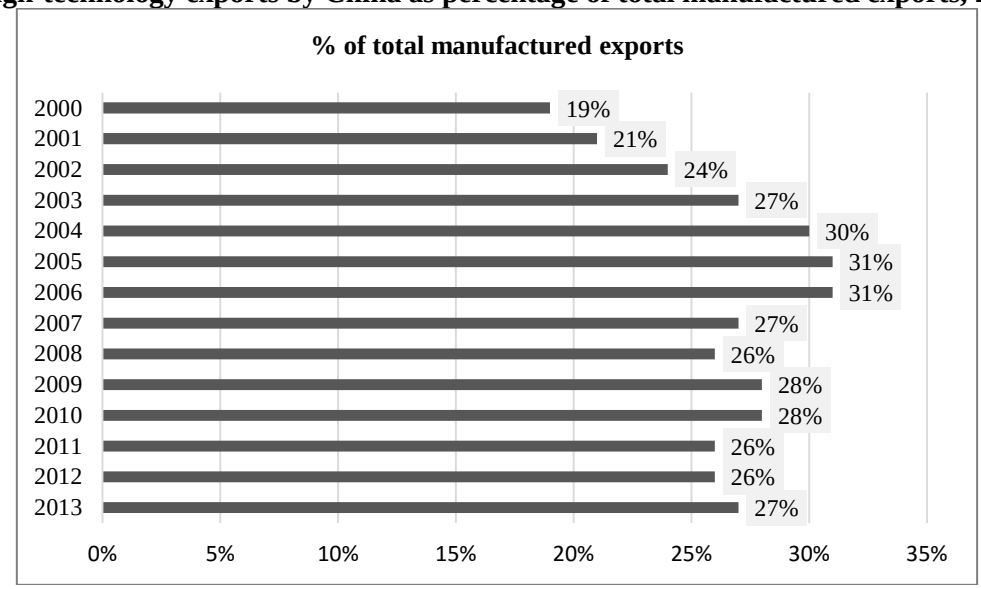
Fig. 6: High-technology exports by China, 2000-2013 (USD billion)

[21] The 2014 estimated average exchange rate: 1 USD= 6.1428 (CIA, The World Factbook, November 2015).



Source: World Bank Data (2015).

Fig.7: High-technology exports by China as percentage of total manufactured exports, 2000-2013



Source: World Bank Data (2015).

3.7 R&D internationalization

Globalization strongly impacts on innovation. Growing R&D infrastructure availability and improved capabilities in more of the world's regions increase the scope and opportunities made available by various forms of international cooperation and interaction, while rising R&D costs and intensified global competition push in the same direction. Innovation is no longer the exclusive prerogative of the economically advanced nations, and countries such as China, which have been successful in their catching up endeavour, have come to possess remarkable R&D capacities and innovation capabilities that recommend them as important potential sources of knowledge creation, as well as attractive locations for R&D investment and desirable partners for international cooperation.

Companies change the way in which they innovate, developing globally extended research and innovation networks and selecting locations and partners by considering the attractiveness of local R&D capabilities, local costs, the domestic and regional markets size, friendly regulation and incentive schemes, if available. Many, if not all of these drivers, exist in China, and that is why, besides its attractiveness as a host country for manufacturing FDI, the country has become in recent years (2007) the most attractive destination for R&D investments (RRA, 2008).

MNCs have played a significant part in China's modernization and global integration, by transferring technology, knowledge, good practices, skills, managerial and organizational know-how, by including Chinese producers in GVCs and helping them adapt to international rigors, vital for successfully facing competition. Of the globally first largest 500 companies ranked yearly by the "Fortune" magazine, over 400 already have one or more research centres in China and the trend is on the rise. The number of research centres set up by foreign MNCs in China has exceeded 1500 units. They favour technology-intensive fields - such as the auto, chemical and pharmacy industries, IT and computers, electronics and telecommunications, software, etc. - on the one hand and, on the other hand, the East or South-East coast cities, especially Beijing, Shanghai and Guangzhou, where the highly-skilled human resource pool is larger.

According to certain analyses, over 50% of the foreign companies established in China have already set up R&D units there (Yan, 2012) and some of the fields they operate in have already shifted from the technological transfer phase to the technological adjusting-to-market-specific phase, and even to the stage of original innovation, as MNCs aim more and more at tapping into the highly creative and yet not capitalized on potential of the local scientists, to create new technologies and products for other markets. Already about 40% of the MNCs which are present in China develop products for other markets than the local one. Over the last ten years, a dynamic shift has happened in what motivates MNCs to set up research units in China. If in the beginning many of them intended to set up some sort of low-cost support for their local operations (cost-drive R&D), they gradually moved to adapting technologies so that the local demand is better met (market-driven R&D) and, more recently, having recognized the country's rise as an innovation power, their motivations started gliding again to tapping into China's science and technology base and into its high-skilled pool of researchers, to pursue fundamental research (Jolly, McKern &Yip, 2015).

Nevertheless, while multinationals obtain higher profits by tapping into the local, comparatively cheaper, but highly qualified, human resources and capitalize on the large local market and economies of scale, Chinese companies have also benefitted significantly from the foreign MNCs presence in their country: it has been estimated that as of 2010, more than half of the technology owned by Chinese firms was obtained from foreign companies (Holmes, McGrattan & Prescott, 2015).

The current trend is that powerful companies from all the countries, China included, will increase their search for foreign locations and R&D partners, as they will rely more on external sources of innovation. Owing to its comparative advantages and local capabilities, China will continue to attract important foreign investment in R&D and strong foreign partners, but it will also seek itself, as part of its "*going out – going global*" policy, to tap into the R&D capabilities of other countries. The recent shift of focus in its outbound direct investments (ODI) from the predominance of natural resources-motivated investments, to investments justified by the access to new technologies, foreign innovative potential and established brand names, unveils just this strategy, which is vital for building an innovation-driven economy back home. There is a growing number of Chinese multinationals searching the world for opportunities, and some of the most searched for opportunities are those relating to research, development and innovation in cutting edge fields, as China needs to come closer to the knowledge frontier and even try to push it further. Developments of the recent few years, with a growing number of Chinese MNCs becoming more visible in the global rankings of innovative companies – as for instance Alibaba, Baidu and Tencent which appear in the top 50 Forbes rankings – or of companies which file an impressive number of patent applications – as for instance ZTE, which ranked first in the world in 2012, from this point of view – as well as the outstanding accomplishments of other companies in aerospace, computing, submersibles, speed rail, green energy and many other fields, provide every reason to believe that China may succeed.

4 Conclusions

At its present development stage, with changed economic fundamentals and accumulated imbalances and asymmetries after decades of frantic export and investment-led development, China is at the cross-roads. The wrong moves could lead it into the "middle-income trap", where many developing economies have been blocked for years, or even decades, while the right strategy, policies and management, which experts believe that should focus on fostering R&D, education and international cooperation in S&T, as building blocks of an innovation-driven economy, could propel China into the group of the highly advanced economies. Accessing this elite is China's declared dream, but "making the leap from the investment-led, to the innovation-driven economy" is a recommendation which comes with almost no details about how to do it, because there is actually little good practice and no recipes on this matter. That is why the road forward will presumably be quite long and difficult, with roadblocks on the way. Some road-blocks come from the price controls which are

the root cause of the massive capital misallocation in Chinese economy, hampering the innovative activities of smaller private companies or start-ups. Other road blocks come from the still un-restructured, unaccountable and unsustainable activity of many SOEs, whose preferential treatment and monopoly positions act as a disincentive for innovation. Other challenges may derive from the very structure and geographic pattern of the Chinese innovation system, which, on the one hand, lays too strong an accent on D/development activities, while somehow neglecting R/research itself and, on the other hand, is highly concentrated in just a few big cities, generating a growing innovation gap between regions.

A strong hindrance is also exerted by the poor enforcement of intellectual property rights, which severely discourages creative initiatives and risk-taking. Furthermore, excessive focus on security provision, which limits communication and the spread of ideas, may turn into a road-block on the path to an innovation-driven economy and society, as well as the outdated mind-sets, which are prone to rejecting new ideas. In fact, one may appreciate that, on the whole, the Chinese socio-economic environment is not conducive enough for innovation, lacking flexibility, sufficient freedom and incentives to create, communicate, exchange and refine ideas, cooperate and compete.

Of course many challenges and risks can be thought of, and presumably many others cannot yet be imagined, but the Chinese leadership and society have the inner resources to meet them and seem now prepared to brace to the ride.

References:

[1]. Battelle (The Business of Innovation) and R&D Magazine Joint Study (2013), *2014 Global R&D Funding Forecast*, available online at: http://www.battelle.org/docs/tpp/2014_global_rd_funding_forecast.pdf;

[2]. Bichler, Josef/Schmidkonz, Christian (2014), The Chinese indigenous innovation system and its impact on foreign enterprises, in *Munich Business School Working Paper*, University of Applied Sciences;

[3]. Bound, Kirsten/Saunders, Tom/Wilsdon, James and Adams Jonathan (2013), China's Absorptive State, *Research, innovation and prospects for China-UK collaboration*, Nesta, London;

[4]. Cai, Peter (2015), China's fast track to innovation, *Business Spectator*, September 10, 2015;

[5]. Duncan, Hugo/Martosko, David (2014), America usurped: China becomes world's largest economy - putting USA in second place for the first time in 142 years, *Daily mail 09.10.2014*, available online at: http://www.dailymail.co.uk/news/article-2785905/China-overtakes-U-S-world-s-largest-economy-IMF-says-economy-worth-17-6trillion-America-falls-second-place-time-1872.html;

[6]. Dutta, Soumitra/Lanvin, Bruno/Wunch-Vincent, Sacha (Ed) (2014), *The Global Innovation Index 2014: the Human Factor in Innovation*, Cornell University, INSEAD and WIPO Fontaneibleau, Ithaca and Geneva;

[7]. Grueber, Martin (2011), 2012 Global R&D Funding Forecast: China's Momentum, *R&D Magazine*, available online at: www.rdmag.com;

[8]. Holmes, Thomas J. /McGrattan, E.R./Prescott, E.C.: (2015), The cost of quid pro quo. China requires technology transfer for market access, imposing short-term costs on firms and long-term costs on global technology investment, *Economic Policy Papers*, Federal Reserves, Mineapolis;

[9]. Kennedy, Scott (2015), Made in China 2025, *Centre for Strategic and International Studies*, 01.06.2015, available online at: http://csis.org/publication/made-china-2025;

[10]. Lan, Lan (2015), Plan for emerging industries on cards, *China Daily* 06.06.2015, available online at: http://europe.chinadaily.com.cn/business/2015-06/06/content_20925854.htm;

[11]. Lin Jie (2013), Policy framework for innovation-driven development in China, *Globelic Academy*, CASIMP;

[12]. MGI/McKinsey Global Institute (2015), The China Effect on Global Innovation, October 2015;

[13]. Ministry of Education of RP China (2013, 2014), *Statistical Data*, available online at: www.moe.edu.cn;

[14]. Murphree, Michael/Breznitz, Dan (2015), The Still Running Red Queen - China Since the Financial Crisis, Business &Innovation, *World Financial Review*, 25.03.2015;

[15]. Nature Publishing Group (2013*), Publishing Index 2012: China*, Macmillan Publishing Limited;

[16]. (NBCS) - National Bureau of Statistics of China (2014), *Statistical Communique of the People's Republic of China on the 2014 national economic and social development*, available online at: www.stats.gov.cn;
[17]. Neubauer, Deane/ Zhang, Jiangxin (2015), The Internationalization of Chinese Higher Education, Council of Higher Education Accreditation (CHEA) *Publication Series, International Quality Group*, USA;
[18]. *OECD Science, Technology and Industry Scoreboard 2011* (2011), available online at: http://www.oecd-ilibrary.org;
[19]. Opening Report from the USA (2014), Quoted from Centre for China and Globalization (CCG), *Blue Book of Global Talent: the Development of Chinese Students Studying Abroad*, Beijing: Social Sciences Academic Press;
[20]. Pencea, Sarmiza/Bâlgăr, Cristina/Bulin, Daniel (2015): Building Blocks of Chinas Path to Technological Prowess and Innovation-led Development, *National Strategies Observer*, NOS 2015, International Workshop Oxford-Bucharest;
[21]. Pencea, Sarmiza (2014 a), The new season of Chinese miracle and its challenges, *Global Economic Observer no*.1/2014, Institute for World Economy, Romanian Academy, Bucharest;
[22]. Pencea, Sarmiza (2014b), De la „Fabricat în China" la „Creat în China'', *Revista de Economie Mondială* no.1/2014, Institutul de Economie Mondială, Academia Română, București;
[23]. Shapiro, Gary (2012), The Chinese strategy to recapture their best and brightest from America, *Forbes Magazine*;
[24]. PBoC/People's Bank Of China (2015), China Monetary Policy Report Quarter Four, 2014, *Monetary Policy Analysis Group of the People's Bank of China*, February 10, available online at: http://www.pbc.gov.cn/image_public/UserFiles/english/upload/File/2014Q4MPR(EN)-after%20nancy-with%20index(1).pdf;
[25]. Roth, Erik, Seong, Jeongmin, Woetzel, Jonathan (2015), Gauging the Strength of Chinese Innovation, *McKinsey Global Institute* (MGI), October 2015;
[26]. RRA/Russell Reynolds Associates (2008), *Building Successful Research and Development Centres in China.* Leadership and Organisational Challenges;
[27]. Rucai, Lu (2015), China's High-Speed Railway Comes of Age, in *China Today* 03.03/2015, available online at: http://www.chinatoday.com.cn/english/economy/2015-03/03/content_672110.htm;
[28]. Schiermeier, Quirin (2014), China: at a crossroads, *Nature International Weekly Journal of Science no. 507*;
[29]. Schuman, Michael (2015), Can China Escape the middle-income trap?, *Project Syndicate*;
[30]. Song, Yonghua (2013), Professor at Zhejiang University and former Director of the Chinese National Office Recruitment Program of Global Experts (1000 Talent Program) until 2012: in his speech delivered to *the Conference Understanding Higher Education in China*, Beijing;
[31]. Song, Yonghua, (2015), International Collaboration of Chinese Universities in China's Innovation Drive- The Case of Zhejiang University, *Going Global 2015*, Beijing;
[32]. The Economist (2015), *China's Future*, available online at: http://www.economist.com/news/essays/21609649-china-becomes-again-worlds-largest-economy-it-wants-respect-it-enjoyed-centuries-past-it-does-not;
[33]. Thomson Reuters Web of Science (2013), Country Profile: China, *Science Watch*, available online at: http://archive.sciencewatch.com;
[34]. United Nations Educational, Scientific and Cultural Organization (UNESCO, 2015) Institute of Statistics, available online at: http://www.uis.unesco.org;
[35]. Van Noorden, Richard (2014), China Tops Europe in R&D Intensity, *Nature*, vol. 505, MacMillan Publishers Limited January, 9, 2014;
[36]. Varaprasad, S. Dolla (2015), *Science and Technology in Contemporary China*, Cambridge University Press;
[37]. Woetzel, Jonathan/Bailey, Martin Neil (2015), Innovation with Chinese Characteristics, *Project Syndicate*, October, 28;
[38]. World Intellectual Property Organization (WIPO, 2015): *2013 World Intellectual Property Indicators*, WIPO Economics and Statistics Series, Switzerland;
[39]. World Bank Data (2015), available online at: http://data.worldbank.org;

[40]. Xue, Linguo (2015), Outward FDI, the extension of production chains and upgrading of China's GVCs, IWEP, *International Investment Studies*, Working Paper no. 201504, Beijing;
[41]. Yan,Yiki (2012), Research in overdrive, *China Daily*;
[42]. Zilibotti, Fabrizio (2015), China – From investment-led to innovation-led growth, *University of Zurich*.

Social Progress in Romania and other Central and Eastern European Non-Eurozone States

VIRGINIA CÂMPEANU
Centre for European Studies
Institute for World Economy
Romanian Academy, Bucharest
ROMANIA
virginiacampeanu@gmail.com
http://www.iem.ro

Abstract: - Our research paper refers to the social progress achieved in the last 10 years by Romania, Bulgaria, Czech Republic, Croatia, Poland and Hungary as non- Eurozone members (CEE-6), compared to the minimum and maximum levels in the EU-28, depending on their economic development levels. This analysis is a part of the larger-scale study regarding the readiness assessment of Romania and other five Central and Eastern European countries (CEE-6) for accession to the Eurozone in terms of the real convergence. We extended the analysis of the real economic convergence to the sphere of social convergence. The purpose of the extended analysis is to compare the living standards in Romania, CEE-6 and other European Union member states (EU-28) and to draw conclusions on the social convergence as a complement to real economic convergence. Using a new analytical tool, the global composite index "Social Progress Index" at different levels of disaggregation, this article reveals the social gaps between CEE-6 and the EU and identifies strengths, and weaknesses for these countries to achieve social progress on the road to real economic and social convergence with the EU. The aim is to provide to the national decision-makers some milestones to remove weaknesses and to turn threats into opportunities in the future social and economic policies.

Keywords:- Wellbeing, Analysis of social progress, Romania, Central and Eastern European countries, SPI 2015

1 Introduction

Our article is based on a recent research study conducted at the Institute for World Economy, Romanian Academy (Câmpeanu et al., 2015) with the overall objective to assess in terms of real convergence the readiness of the 6 Central and Eastern European member states of the European Union (CEE-6)) to adopt the euro. The work extended the analysis of real economic convergence to social convergence by taking into account a global composite index as a measure for qualitative performance and progress for each country. The authors have used a new analysis tool, namely a global composite index - Social Progress Index 2015- carried out for 133 countries by an American organization (Social Progress Imperative, 2015). It is for the first time that a scientific research paper uses the new instrument- the Social Progress Index- to make a comparative analysis of social progress between EU member states, including Romania.

In this article we present the results of a comparative analysis regarding the social progress in CEE-6 and EU-28 and we draw conclusions on social convergence, as a complement of the real economic convergence. Given the change of paradigm in the 21st century, when the international literature reveals more and more objections regarding the use the GDP / capita as a measure of the living standards and progress of nations (Constanza et al., 2009), our work performs a qualitative analysis of living standards in the EU-28, based on the global composite index –Social Progress Index- that measures social progress in the last 10 years. The purpose of this analysis is to verify previous findings on the trend of real economic convergence measured by the GDP / capita (PPP), to compare the standard of living, in terms of quality, in the Central and Eastern European non- Eurozone states with the levels of EU-28 and to draw conclusions on social convergence, as a complement of real economic convergence. In this way, we try to balance the significance of GDP (with its variants) in the analysis of real economic convergence with those components that reflect sustainable prosperity for all.

2 Methodology

The analysis compares the social progress achieved in the last 10 years by CEE-6 non- Eurozone members: Romania, Bulgaria, Czech Republic, Croatia, Poland and Hungary with the average, minimum and maximum levels in the EU-28, depending on the levels of economic development. The benchmarking tool for social progress is "Social Progress Index", a new global composite index developed by Social Progress Imperative, USA and coordinated by the well-known Professor Michael Porter. The authors of the Social Progress Index (SPI) consider this new composite index as a tool to "*assess the efficiency with which the economic success of a country shall be converted into social progress and vice versa*" (Social Progress Imperative, 2015)

The Social Progress Index Model (SPI 2015)

The Social Progress Index focuses on the answers to three questions:

a. Can a country ensure the essential needs of the population?
b. Are there necessary fundamentals for individuals and communities to develop and sustain the well-being?
c. Are there opportunities for all individuals in a country to reach their full potential?

These 3 questions define the three dimensions of the (aggregate) social progress index: Basic Human Needs, Foundations of Wellbeing, and Opportunity. Each dimension is the result of 4 different components aggregation; each of the 12 components of SPI 2015 is quantified on the basis of 3-6 indicators, so 52 indicators are used for each of the 133 countries included by SPI 2015 (Porter, M. at al. (2015). Social progress index aggregated by dimensions and components is measured on a scale determined by the authors from min 0 to max 100 by identifying the best and the lowest overall performance on each indicator, in each of the 133 countries analysed for the last 10 years. The statistical data used in the model come from international organizations, based on reports of each individual country or from surveys conducted worldwide by renowned organisms (ex. Gallup World Poll).

Our analysis is focused on the 28 Member States of the European Union out of the 133 countries, in order to determine the minimum and maximum levels registered by Social Progress Index (SPI, 2015) at the aggregate level and at different levels of disaggregation. These levels will be the basis of our comparative analysis between Romania, the CEE- 6 countries and the EU-28 regarding their social progress in the last 10 years.

3 The results of social progress comparative analysis in Romania, other CEE-6 and the EU-28

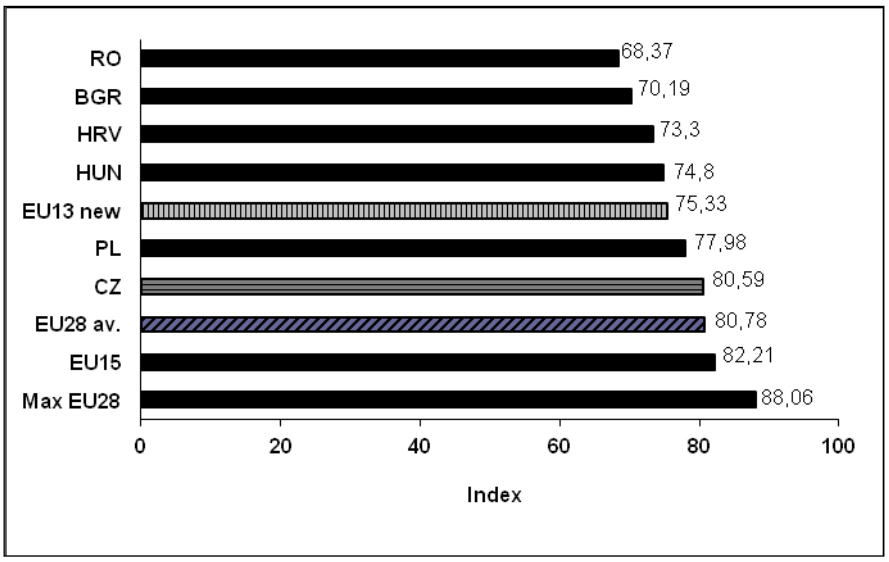
3.1 The global and the European Social Progress Index

In terms of global social progress during the last 10 years, the global hierarchy of top 10 most performing countries includes seven European countries. The Nordic countries are the most performing area of Europe with the highest scores of the Top-10 countries, both in the aggregate index and almost every component thereof. Norway ranks first in the world, with a score of 88.36 followed by Sweden and Switzerland.

The European Union does not appear as a homogenous group in the hierarchy of the 133 countries covered by the SPI 2015, but only each of the 28 Member States. However, the authors of SPI 2015 advances for the EU-28 a hypothetically score of 80.78 that would place it on the 22 world ranking. They make a distinction between core EU-15 and the other 13 states that have joined the EU since 2004. The EU-15 would have 82.21 score (18^{th} in the world) and the EU-13 a 75.33 score (32^{nd}).

The global comparative analysis shows that while some EU-28 member states recorded very high social progress in the last 10 years (4 states) and some others high social progress (15 countries including Czech R. and Poland)) there are also countries registering upper middle social progress (7 countries). Romania, Hungary, Croatia and Bulgaria belong to the last mentioned group of countries with upper middle social progress.

Fig. 1 CEE-6: Over performers and Underperformers on Social Progress in the European Union

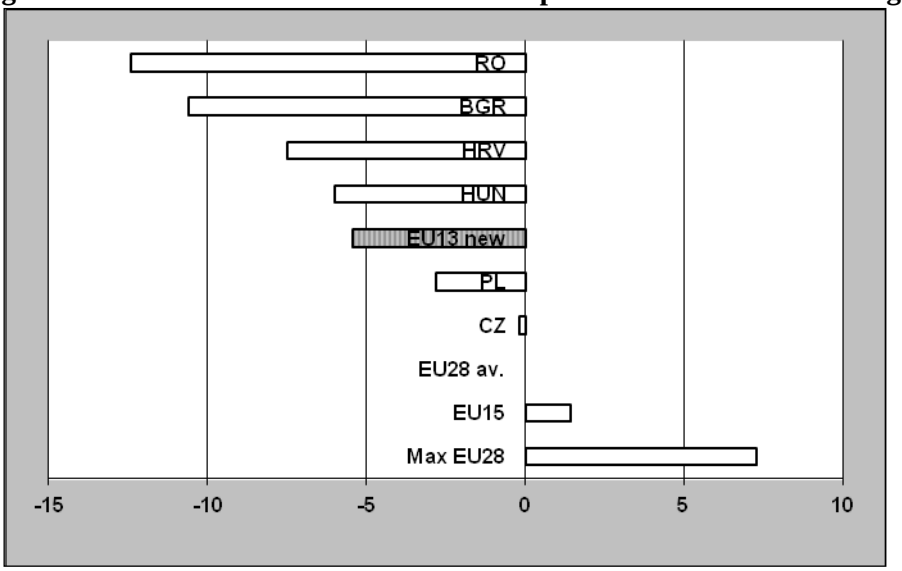


Source: the author, based on SPI 2015 data

In the overall ranking of the 133 surveyed countries in terms of social progress (Social Progress Imperative, 2015), Central and Eastern European non Eurozone members have very different positions: Czech Republic and Poland are between the top 30 countries; Hungary and Croatia rank in the top 40 countries while Bulgaria and Romania belong to the top 50 countries.

The comparative analysis on the social progress index in CEE-6 and EU-28 leads to the conclusion that all 6 countries are underperformers compared with EU-28 average (Fig.1); Czech R. recorded the smallest difference, but Romania and Bulgaria the highest compared with the EU-28 average (Fig.2).

Fig. 2 CEE-6 SPI Scores: the differences compared with the EU-28 average



Source: the author, based on SPI 2015 data

The analysis of data regarding GDP / capita reveals similar tendencies with the social progress scores: Czech R. (27,959 $ PPP) shows the slightest difference to the EU-28 average, but Bulgaria (15,700 $ PPP) and Romania (18,200 $ PPP) presents the highest gaps compared with the EU-28 average.

3.2 Analysis of Social Progress Index disaggregated on dimensions and components

SPI 2015 has three dimensions: Basic human needs, Foundations of Wellbeing and Opportunity. Romania and other five CEE countries outside the Eurozone registered the best performance on Basic human needs with the smallest differences between the analysed countries. The lowest scores were registered on the Opportunity dimension.

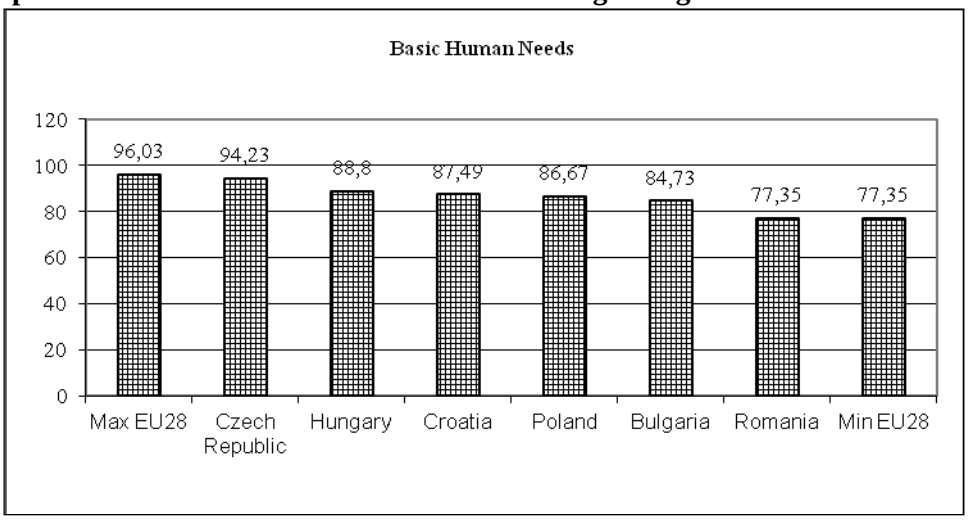
3.2.1 The "Basic human needs" dimension and its components; strength and weakness

The highest scores on Basic human needs dimension were registered by the Czech Republic, Hungary and Croatia, where the gaps against the maximum level of EU-28 (Denmark) were between 2 and 8.5 points.

The comparative analysis between the six CEE countries shows that Romania registered the lowest score which is also the minimum level in the EU-28 (Fig.3). The gap between the Romania's score and the maximum level in the EU-28 (Denmark) to this parameter is nearly 20 points and about 17 points compared to the first ranked in CEE-6, namely the Czech R.

The authors of the Social Progress Index (Porter at al, 2015) found that the Basic human needs of a nation consist of the following four components: nutrition and basic medical care; water, sewage and sanitation facilities; shelter; and personal safety. These components have different influence on the score, some positively, others negatively.

Fig. 3 Social performances of Romania and other CEE-6 regarding "Basic human needs" of SPI 2015



Source: the author, based on SPI 2015 data

Nutrition and basic medical care: the comparative analysis between Romania and the other CEE -6 countries and EU-28 shows that of the four components mentioned above, the highest scores of countries are registered on the component nutrition and basic medical care, with slight variations between countries (about 2 points). It means that there are few problems of malnutrition and food shortages, and basic medical care is virtually assured in all EU countries. On the nutrition and basic medical care component Romania ranks 42 of 133 countries (versus ranks 50 for the total value of aggregate Social Progress Index).We can say that this is a strong point for Romania. However, there are two other indicators within the component - deaths from infectious diseases and child mortality rate - which exercise negative influence on the component' score and constitute weaknesses for Romania.

The component *Water, sewer, and sanitary facilities* registered maximum scores (100) in eight EU Member States, and 5 out of 6 CEE countries are close to the maximum level of the EU-28. Romania is far away from all the countries of comparison, registering a minimum score of the EU-28. The component Water, sanitation facilities, along with component *shelter* are the main weaknesses of the basic human needs of Romania. *Shelter* component recorded one of the lowest score and global rank (127), which means this is the weakest point on which the future Romanian social policies should focus, namely: housing available at reasonable prices as well as the quality of the available electricity.

The *Personal Safety* component*:* Italy registers the lowest score in the EU-28, with high levels of crime and perceptions of crime, and Romania the lowest level among the CEE-6 countries. In Romania *a positive influence* exerts some relatively low indicators' levels regarding homicide rates, violent crimes, perceived crime and political terror. But the relatively higher traffic deaths (as high as in Poland) have *a negative influence* on personal safety performance component, resulting in a lower score.

3.2.2 The "Foundations of Wellbeing" dimension and its components; strength and weakness

The comparative analysis between the 6 countries of Central and Eastern European non-members of the Eurozone, in terms of Foundation of Wellbeing reveals that the highest scores is recorded by Czech Republic

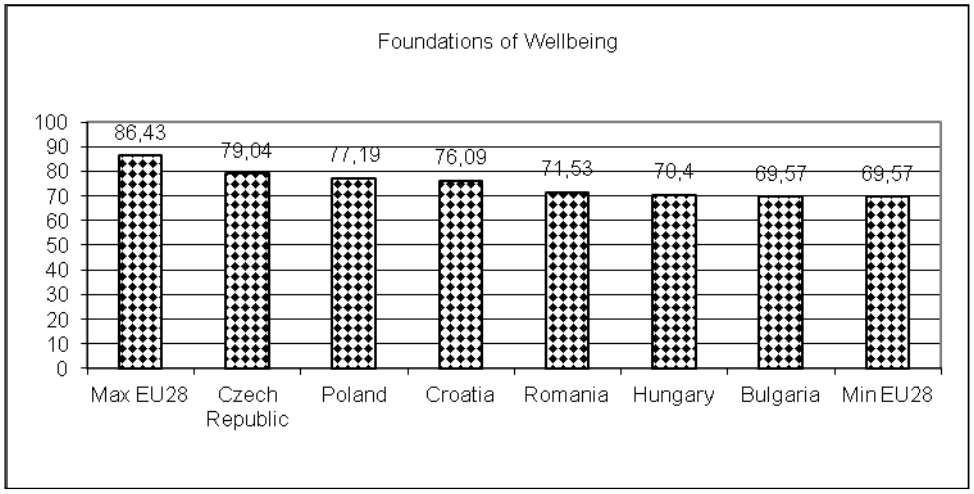
and Poland and the lowest by Hungary and Bulgaria, the latter making the minimum level in the EU-28. On an intermediate position is Romania with a score of 71.53 points.

Compared to the highest score in the EU-28 (Sweden), the Czech R. ranks high in the Top-6 CEE on the dimension Foundation of Wellbeing, and close to Sweden with a relatively small gap (7 points).

The authors of the Social Progress Index (Porter at al, 2015) found that the dimension Foundation of Wellbeing of a nation consists of the following four components: access to basic knowledge; access to information and communication; health and wellness and ecosystem durability.

The strength of this dimension of SPI consists in the best performance on the component *Access to basic knowledge* in all 28 countries of the EU, which means relatively high adult literacy, high number of entries in the primary and secondary school, and a good parity between genders in enrolment to secondary education.

Fig. 4 Social performances of Romania and other CEE-6 regarding "Foundation of Wellbeing" dimension of SPI 2015



Source: the author, based on SPI 2015 data

The weaknesses of the Foundation of Wellbeing dimension are recorded differently by component and country: CEE-6 have health and wellness as the lowest performing component, while countries with greater economic development in the EU have the lowest scores on the component sustainability of the ecosystem.

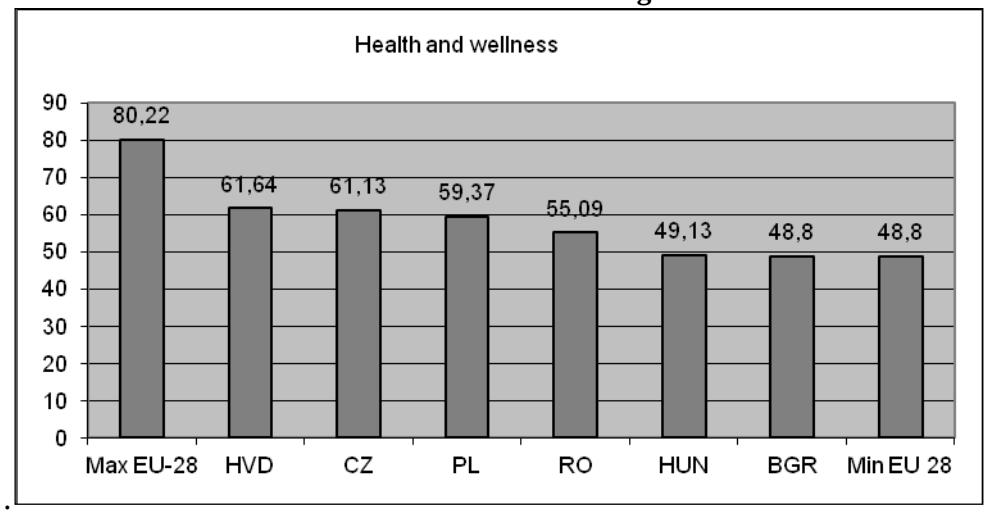
Access to basic knowledge: Spain has maximum score in the EU-28; Poland ranks first in CEE-6 with the highest access to basic knowledge, only 2 points from max level in the EU-28, followed by Czech R.; Romania registered the minimum score in the EU-28, but the gap is relatively small between max and min (less than 7 points); Romania's strength consists of relatively high adult literacy rate and enrolment in secondary school.

Access to information, communication: the scores depend on the development of the number of subscriptions to mobile phone, the number of internet users and press freedom index. Netherlands has the maxim score in the EU-28 on the component Access to information, communications (95.83) and Bulgaria minimum score, with a significant difference between these two extremes, over 20 points. Czech R. and Poland recorded the most significant progress on access to information, communication, being near the highest level in the EU-28. Romania is ahead of Bulgaria but is far from the maximum in the EU (about 18 points) having relatively small number of Internet users and mobile subscriptions; Romania's advantage is high index of press freedom.

Health and wellness: The scores of countries on this component relies on the development of indicators regarding life expectancy, premature deaths attributable to no communicable diseases (cardiovascular, cancer, etc.), obesity rate, deaths attributed to pollution outside the house and the suicide rate. Sweden recorded the max score of the EU-28 as the life expectancy is the highest (over 85 years), but other indicators levels have a negative impact on the health and wellness of the Swedish citizens. Compared with Sweden, CEE-6 recorded very large gaps; for example Bulgaria, which is at the minimum level of EU-28, the score reaches 60% of the maximum level in the EU; Croatia and the Czech Republic, holding the top two places in the CEE- 6, have scores representing about 75% of Sweden 'score. Romania has a lower score compared with Croatia, Czech R.

and Poland, and better one than Hungary and Bulgaria on the component *Health and wellness*. Three out of the five indicators of this component reveals the low level of health for the Romanian citizens. High values with negative impact are recorded on obesity and suicide rate among the population and deaths due to outdoor air pollution.

Fig.5 Social performances of Romania and other CEE-6 regarding the component *Health and wellness* of "Foundation of Wellbeing"



Source: the author, based on SPI 2015 data

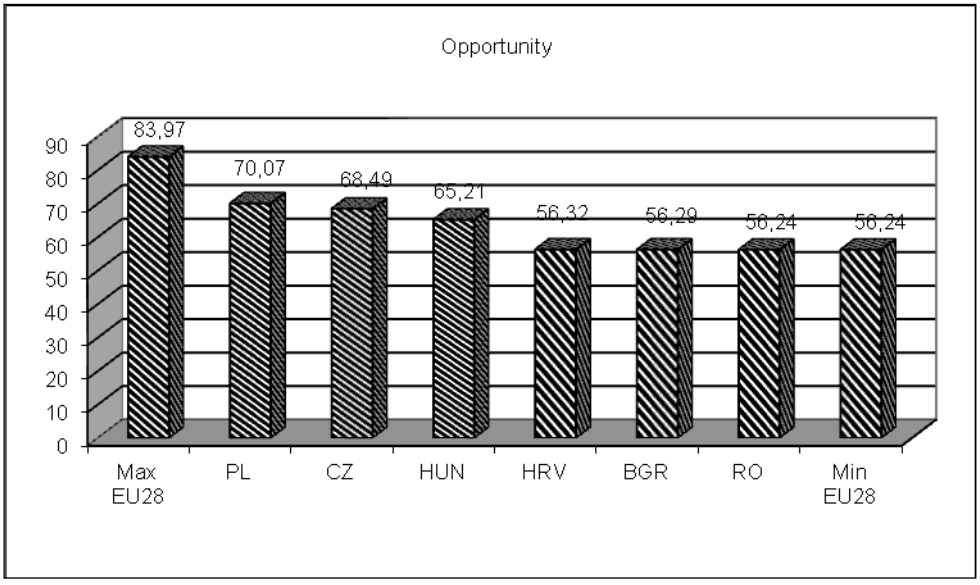
Ecosystem durability: this component of the Foundation of Wellbeing dimension was computed by the authors (SPI 2015) taking into account indicators on greenhouse emissions, water withdrawals as a percentage of total annual resources and biodiversity. The comparative analysis of the EU-28 performance on this component reveals low scores in most developed countries, so the maximum score in the EU-28 recorded in one of the new EU member states, namely Slovenia and the minimum level in Ireland (55% of the maximum level of EU-28). Czech Republic and Croatia are in top CEE-6 while Bulgaria and Hungary are situated on the last places. Romania recorded a score relatively close to the maximum level in the EU-28 (83%), with relatively low greenhouse gas emissions and high level of biodiversity and habitat. The weakness of ecosystem durability in Romania consists in water withdrawals as a high percentage of total annual resources.

3.2.3 The "Opportunity" dimension and its components; strength and weakness

This dimension of SPI measures the prospects of a country in terms of social progress. In general, the scores of the EU Member States are comparatively lower than the other two dimensions of the Social Progress Index. „Opportunity" dimension shows the aggregate size of 4 components: personal rights, personal freedom and choice, tolerance and inclusion, and access to advanced education. Maxim scores of the EU-28 are registered in UK on two of the Opportunity's four components (namely personal rights and access to advanced education); in Finland on personal freedom and in Ireland on Tolerance and Social Inclusion.

The best performance of the CEE-6 countries is recorded on *personal rights*, except Hungary which perform better on personal freedom and choice. Romania has strengths in personal rights component, based on respect for political rights, freedom of speech and other freedoms. For *the personal freedom and choice* component, Romanian indicators' value regarding modern slavery, human trafficking, early marriages and satisfied demand for contraceptive constitute relatively strong points.

Fig. 6 Social performances of Romania and other CEE-6 regarding "Opportunity" dimension of SPI 2015



Source: the author, based on SPI 2015 data

Weaknesses are registered in Bulgaria on two Opportunity's components with minimum scores-personal rights and personal freedom, and in Malta on access to advanced education. The lowest performance of the CEE-6 countries is recorded on the component *Tolerance and Social Inclusion.* Romania has the lowest score on the component Tolerance and Inclusion (score 40.9), mainly due to low tolerance for immigrants, religious tolerance and community network for personal safety. Corruption is one of the weakest points of personal freedom and opportunities for Romania.

4 Conclusion

The real convergence helps to reduce economic and social disparities between EU member states and contributes to raising living standards.

The goal of our research work is to compare the standard of living, in terms of quality, in some Central and Eastern European countries (CEE-6) with the EU-28' levels and draw conclusions on social convergence within the EU, as a complement to economic real convergence.

To this end we have conducted a comparative analysis of social progress in Romania and other CEE-6 countries and EU-28 using the new global composite index Social Progress Index 2015.

The main conclusions refer to the following aspects:

• The Central and Eastern European non Eurozone states have a number of common elements, either as strengths or weaknesses, which might have originated in the common history of 45 years of communism.

• There are differences regarding some aspect of social progress, both compared to the EU-28 and between CEE-6, due to the different level of economic development, with significant differences in GDP / capita (for example 15,000-18,000 euro in Bulgaria and, respectively Romania; over 27,000 in the Czech Republic or over 40,000 euro in the most developed countries of the core EU-15).

The SWOT analysis performed for Czech R., Hungary, Poland and Romania allows us to reveal the strengths and weaknesses of social progress recorded in the last 10 years in each of these countries.

The common *strengths* we can mention for Czech R., Hungary, Poland and Romania are the following: *Nutrition and basic medical care; Personal safety; Access to basic knowledge; Personal freedom and choice; Personal rights and Access to advanced education.*

Our SWOT analysis didn't reveal *common weaknesses for all the 4 countries*. This means that we can give some milestones to the decision makers from each country to remove their own weaknesses and to turn threats into opportunities in the future social and economic policies.

Table 1 SWOT comparative analysis of the Social Progress Index: Strengths

Strengths	**Czech R.**	**Hungary**	**Poland**	**Romania**
The ""Basic human needs" dimension				

Nutrition and basic medical care: Relative low levels of the depth food deficit, mortality rate and the number of deaths due to the infectious diseases.	x	x	x	x
Personal safety, in special: Low levels of violent crimes, perceived crime and political terror	x	x	x	x
Shelter: housing available at reasonable prices	x			
Shelter: Access to *Water, sewage and sanitation facilities*	x	x	x	
The "Foundations of Wellbeing" dimension				
Access to basic knowledge: relative high adult literacy rate	x	x	x	x
Ecosystem durability: water withdrawals as a high percentage of total annual resources	x		x	x
The "Opportunity" dimension				
Personal freedom and choice: low levels of modern slavery, human trafficking, early marriages and satisfied demand for contraceptive	x	x	x	x
Personal rights: respect for political rights, freedom of speech and other freedoms (association, movement), as well as the right to private property.	x	x	x	x
Tolerance and inclusion: Women treated with respect, Tolerance for gays				x
Access to advanced education: woman's average years in school.	x	x	x	x
Tolerance and inclusion: community network for personal safety		x		
Tolerance and inclusion: community discrimination and violence against minorities (low)	x	x		

Source: the author based on Câmpeanu et al, 2015

Table 2 SWOT comparative analysis of the Social Progress Index: Weaknesses

Weaknesses	**Czech R.**	**Hungary**	**Poland**	**Romania**
The ""Basic human needs" dimension				
Water, sewage and sanitation facilities: rural access to improved water sources and especially to the improved sanitation facilities				x
Shelter: housing available at reasonable prices		x	x	x
Shelter: Access to Water, sewage and sanitation facilities				x
The "Foundations of Wellbeing" dimension				

Health and physical and mental condition: High obesity and suicide rate among the population			x	x
Access to basic knowledge: upper secondary school enrolment.	x			x
Ecosystem durability: water withdrawals as a high percentage of total annual resources			x	x
The "Opportunity" dimension				
Tolerance and Inclusion: low tolerance for immigrants and religious tolerance. Community network for personal safety.				x
Personal freedom and choice: Corruption	x			x
Access to advanced education: low number of universities in the global hierarchy		x		x
Tolerance and inclusion: community discrimination and violence against minorities			x	x

Source: The author based on Câmpeanu et al, 2015

References:

[1] Câmpeanu, Virginia, [Coordinator] , Bâlgăr, C., Drăgoi, A, E., Iordache, L., (2015), *Decalaje economice şi sociale intra-europene măsurate prin indici compoziţi, agregaţi şi dezagregaţi*, (Economic and social gaps within Europe measured by composite index, aggregated and disaggregated), *Institute for World Economy, Project* 6.5.15, Romanian Academy, Romania

[2] Constanza, R., Hart, M., Posner, S. and Talberth, J. (2009), *Beyond GDP: The Need for New Measures of Progress*, The Paradee Papers No. 4/January 2009, Boston University

[3] Porter, Michael E, (2015*), Social Progress: The Next Development Agenda*, Oct 29 2015, World Bank Conference

[4] Porter, M., Stern, S.and Green, M. (2015), *Social Progress Index Report*, available on-line at http://www.socialprogressimperative.org/system/resources/

[5] Social Progress Imperative (2015), USA, available on-line at http://www.socialprogressimperative.org/data/spi#performance/countries/spi/dim1,dim2,dim3

[6] SPI 2015, available on-line at http://www.socialprogressimperative.org/system/resources/FINAL.pdf

The Role of the Institute of Fiscal Constitution in the System of Public Budgets in the Czech Republic

RICHARD POSPÍŠIL
Assoc. Prof., Ph. D.
Faculty of Arts,
Palacký University of Olomouc
Czech Republic
richard.pospisil@upol.cz

Abstract: - In the long run, public budgets in a great majority of developed economies suffer from recurring deficits and an increasing public debt. However, the condition of public finance deteriorated even in times of economic conjuncture, so the onset of the crisis in 2008 caught most of the developed world without financial reserves, or the so-called fiscal cushion. Thus most EU countries now fail to fulfill both the Maastricht Convergence Criteria and the Fiscal Compact Treaty, even if these are binding legal norms of the EU. Despite this, some EU countries voluntarily accepted a sort of financial debt cap, which the government of the Czech Republic accepted in February 2015 in the form of the so-called financial constitution, which contains a whole range of mechanisms at all levels of public budgets and public expenditures with a public debt in the amount of 55% of the GDP. The goal of this contribution is to analyze the content of the financial constitution, assess its structure and the aspects of its process application, and through selected public budgets also its possible influence on the whole economy. The content of the financial constitution shall also be compared to similar mechanisms abroad, especially in the neighboring countries.

Keywords: - financial constitution, public budgets, public finance, deficit, GDP.

JEL Classification: H 63

1. Long-term sustainability of public finance

A great many developed economies within the EU annually suffer from chronically repeated deficit of public finance resulting in an increasing public debt. The costs related to servicing such debts have brought some countries to the verge of bankruptcy, and only international loans provided by the European Commission and the International Monetary Fund, or the use of resources of the European Stabilization Fund saved them from going bankrupt. The increase of public debt measured by its debt-to-GDP ratio also concerns the Czech Republic, even though in comparison to most EU countries the Czech Republic shows only a small debt.

The admission of a member country of the EU into the eurozone is, besides the compliance of legal regulations of the given country with Articles 130 and 131 of the Treaty on the Functioning of the EU and the Status of the European System of Central Banks and the European Central Bank (ECB), conditioned by the achievement of a high degree of sustainable convergence. The degree of sustainable convergence is assessed in compliance with the Maastricht Convergence Criteria. These include HICP inflation (price stability), government budget deficit (long-term sustainability of public finance), government debt-to-GDP ratio, exchange rate stability, and long-term interest rates. These criteria are mentioned in Article 140 of the Treaty, and specified further in Protocol 13 on the Convergence Criteria added to the Treaty. Besides three criteria which are mainly focused on the area of currency policy, the crucial criterion is long-term sustainability of public finance[22].

The criterion of a long-term sustainability of public finance means that the given country is not subject to the decision on an excessive budget deficit. The criterion has two parts[23]:

- **The criterion of public deficit** means that the ratio of planned or real deficit of public finance to the gross domestic product in market prices shall not exceed 3% except those cases when the ratio has

[22] MF ČR, *Vyhodnocení plnění maastrichtských konvergenčních kritérii a stupně ekonomické sladěnosti ČR s eurozónou – 2014*, [cit. 19.3.2015]. Available at: http://www.mfcr.cz/cs/zahranicni-sektor/monitoring/maastrichtska-kriteria-a-sladenost-cr/2014/vyhodnoceni-plneni-maastrichtskych-konve-19965

[23] ČNB, Kritéria konvergence, [cit. 19.3.2015]. Available at: http://www.cnb.cz/cs/o_cnb/mezinarodni_vztahy/cr_eu_integrace/eu_integrace_04.html

either dropped significantly or continued dropping to a level close to the reference value, or its having exceeded the reference value was only exceptional and temporary, and the ratio remains close to the reference value. Public deficit means a deficit related to the central government including regional and local authorities and social security funds, with the exception of commercial operations defined in the European system of macroeconomic accounts,

- **The criterion of public debt** means that the ratio of public debt in market prices to the gross domestic product shall not exceed 60% except those cases when the ratio is adequately decreasing and approaching the reference value. Public debt means the gross sum of debts in nominal values at year's end, consolidated within and between individual branches of the state sector.

The criterion of the condition of public finance sets the conditions for maximum amount of the total deficit and debt of the government institutions sector. Currently, the Czech Republic is meeting this criterion. Failing to meet this criterion results for all member states of the EU in taking up the excessive deficit procedure (*Excessive Deficit Procedure, EDP*), in which the Czech Republic found itself between December 2009 and June 2014. The current goal of the fiscal policy of the Czech government (see Government Policy Statement) is to continue meeting this Maastricht criterion in the future. To be more specific – the government's fiscal strategy approaches a deficit of 2.2% of the GDP in 2015, 1.4% in 2016 and 1.1% in 2017. The main risk for this development is the not yet stable situation in the eurozone and its possible impact on the economic development of the Czech Republic.

The so-called Fiscal Pact was accepted together with the Maastricht criteria in 2012, which is an intergovernmental treaty of 25 countries of the EU on a legally enforceable stricter budget discipline of the signatories. Its full name is the "Treaty on Stability, Coordination, and Governance in the Economic and Monetary Union". The pact was meant to save the euro which suffers from an imbalanced combination of a united monetary policy controlled by the European Central Bank and independent fiscal (budget) policies which are controlled by individual countries.

The main goal of the Fiscal Pact is the requirement for the annual structural deficit not to exceed .5% of the GDP. Countries with a debt significantly lower than 60% of the GDP, which is the case of the Czech Republic, may have a deficit of up to one percent. This rule, also referred to as the debt brake, shall be introduced into the national constitutions or laws.

The ratio of the government debt to the GDP in the Czech Republic has always been under 60%. Thanks to a relatively small government debt in the past the Czech Republic has not had problems meeting this indicator, even if its debt had increased significantly between 2009 and 2012. The debt in 2014 is expected to be 43.8% of the GDP, i.e. 2.0% lower than in 2013. The decrease of the relative level of debt is caused by a gradual dissolution of financial reserves created in the previous years, and sharing liquidity of public subjects. In the mid-range horizon the relative level of government debt should continue to drop slowly until it reaches the level of 41.7% of the GDP by 2017. Long-term risks for the future development are mainly posed by expected negative impacts of aging of the population. If there are no structural changes in the pension and health care systems, it will be necessary to count with a further increase of the debt-to-GDP ratio in the long run. The following table shows the development and prediction of fulfillment of the criterion of long-term sustainability of public finance in the Czech Republic:

Table 1: Fulfillment of the criterion of long-term sustainability of public finance in the Czech Republic 2011 – 2017

	2011	2012	2013	2014	2015	2016	2017
Balance of the sector of government institutions							
Value of criterion	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Czech Republic	-2.9	-4.0	-1.3	-1.5	-2.2	-1.4	-1.1
Debt of the sector of government institutions							
Value of criterion	60.0	60.0	60.0	60.0	60.0	60.0	60.0
Czech Republic	41.0	45.5	45.7	43.8	42.3	42.1	41.7

Source: ČSÚ[24] and MF ČR[25]

2 Proposal of Financial Constitution

The concept of financial constitution is by no means something completely new. A form of debt brake has been discussed in the Czech Republic for several years, and that with a much lower public debt-to-GDP ratio. In February 2015 the government passed a constitutional bill on budget responsibility and bill on the rules of budget responsibility, and also passed a bill changing some laws related to accepting legal regulations concerning budget responsibility. However, passing the act on budget responsibility will not be easy since it is a constitutional act, which has to be passed by a qualified majority, which means five fifths of all deputies and at the same time five fifths of present senators. The president cannot veto this bill.

The Act on the Rules of Budget Responsibility is a general legal regulation to further regulations in the budget area, which is why it only contains basic requirements, which are further specified by a special legal regulation, e.g. the Act on Budget Rules of Regional Budgets, or the Act on Departmental, Area, Company, or Other Insurance Companies.

From the viewpoint of practical budget-fiscal measures at all levels of public budgets, the most important is § 13 of the bill. On reaching a debt of at least 55% of the nominal GDP in compliance with Article 4 of the Constitution Act on Budget Responsibility dealing with the way how public institutions should proceed while enforcing these measures[26]:

- The government shall pass and submit to the Chamber of Deputies a proposal for a medium-term outlook of the state budget and state funds' budgets, which lead to a sustainable condition of public finance; in case the state budget bill or state fund budget bill are submitted without actually fulfilling this condition, the government shall withdraw such a bill and immediately submit a new one,
- The government shall submit to the Chamber of Deputies proposals of balanced budgets of health insurance companies; deficit proposals can only be submitted in case that the deficit could be paid using no more than 1/3 of the financial balance of a particular insurance company from the past, or using a returnable financial aid,
- A local government unit (LGU) shall pass their budget for the coming year as balanced or surplus budget; the budget of an LGU can only be passed as a deficit one if it is possible to pay the deficit using financial means from the previous years or using a returnable financial aid. Using a contractually secured loan, credit or revenue from selling municipal bonds of the LGU is only possible to pay a deficit arising from pre-financing projects co-financed from the EU budget,
- Public institutions which were not mentioned above must not, for a period during which the debt represents at least 55% of the gross domestic product, establish new contractual commitments except commitments regarding projects co-financed from the EU budget or commitments necessary to fulfill a court verdict or a public authority decision, leading to an increase of the debt of the sector of public institutions for a longer period than one calendar year.

New regulations shall pertain to the whole sector of public institutions, which in the Czech Republic includes approximately 17,500 subjects of public administration. It means:

- Organizational units of the state (283),
- State-funded organizations (123),
- State funds (6),
- Public research institutions (67),
- Public colleges (26),
- Public health insurance companies (7),
- Basic and higher local government units (6,247 + 14),
- Organizations funded by local government units (9,819),
- Voluntary unions of municipalities, so-called micro-regions (735),

[24] ČSÚ, *Hlavní agregáty sektoru vládních institucí*, [cit. 21.3.2015]. Available at: http://apl.czso.cz/pll/rocenka/rocenkavyber.gov_a?mylang=CZ
[25] MF ČR, *Fiskální výhled ČR (listopad 2014),* [cit. 22.3.2015]. Available at: http://mfcr.cz/assets/cs/media/makro-fiskalni-vyhled_2014-Q4_Fiskalni-vyhled-listopad-2015.pdf
[26] Compare Moderní obec, *„Finanční ústava" se začíná rýsovat*, [cit. 24.3.2015]. Available at: http://moderniobec.cz/financni-ustava-se-zacina-rysovat/

- Regional territorial units - NUTS II (7),

- Corporate entities founded and financed by a public institution or controlled by a public institution entitled to nominate or remove its managers.

At the same time the salary base for the calculation of salaries of constitutional officials should decrease by one fifth, and there will be no funds for the remuneration in the sector of public institutions. The government shall also be allowed to decide on a lower increase of pensions being paid than as stipulated by law. The proposal of the department also counts on establishing a three-member National Budget Council. Its goal will be to evaluate the fulfillment of budget goals, monitor the economy of public institutions, and prepare a report on the sustainability of public finance. Besides this, there should be a seven-member Committee for Budget Prognoses which should evaluate the prognoses of the Treasury Department.

These regulations shall not apply in the following instances:

- In case of a serious worsening of the economic development for the duration of 24 months from the first day of the calendar month following the calendar month during which the Czech Statistical Authority in its quarterly national budgets publishes an inter-quarterly decrease of the gross domestic product, taking into account price-related and seasonal influences and the number of workdays in the last quarter, by at least two percent, or an inter-yearly decrease of the gross domestic product taking into account price-related influences in the last quarter by at least three percent,
- In case of an emergency, threat to the state, or state of war,
- For the duration of emergency measures declared by the government in order to increase the defenses of the state in case of a worsening of the state's defenses, or
- For a period of 24 months from the first day of the calendar month following the calendar month during which the department publishes the fact that the sum of the necessary expenditures of the state budget to remove the effects of a natural disaster which affected the territory of the Czech Republic and the expenditures resulting from the fulfillment of international treaties and other international commitments of the Czech Republic has exceeded three percent of the nominal gross domestic product.

3 Debt Brake for Municipalities and Regions

With special emphasis, the Act on Budget Responsibility deals with the economy of local government units, stipulating their basic form in § 19 of this act:

1. Shall the debt of a local government unit exceed 60% of its average income in the previous 4 budget years as of the balance date, such a local government unit shall be obliged to decrease this debt in the next calendar year by at least 5% of the difference between its debt and 60% of its revenue in the previous 4 budget years,
2. Shall the local government unit not decrease its debt, and its debt as of the next balance date exceeds 60% of its average revenues in the previous 4 budget years, the (Treasury) Department shall in the next calendar year decide in compliance with the Act on Budgetary Rules and Changes on suspending the transfer of its share in tax revenue,
3. The revenues of local government units for the purpose of this act are understood to be the sum of all monetary payments accepted into the budget in the given fiscal year, consolidated in compliance with a different regulation,
4. A debt of a local government unit for the purpose of this act is understood to be the value of unpaid obligations ensuing from issued bonds, accepted credits, loans and returnable financial aids, realization of fulfillment ensuing from pledges and issued bills of exchange.

As of December 31, 2013 92% of Czech municipalities had fulfilled the above-mentioned debt rule, i.e. they had a debt of up to 60% of their average revenue in the previous four budget years. As of the same date approximately 500 municipalities, i.e. 8% of the total number, had exceeded this limit. Only 198 municipalities (3.2%) had exceeded 100% of their average revenue in four budget years. Over 84% of the municipalities in question had a pledge on shared taxes of less than 5% of their total revenue, and in case of 93% of municipalities it should be less than 10% of their revenues. Almost 80% of those municipalities whose ratio of suspended tax revenue against the total revenue would exceed 10% would be able to finance this debt by means of the balance in their accounts, and over a half of them even for one or more election terms.

Higher local government units – regions – are a bit better off. As of the above-mentioned date none of them had breached this rule, with the average debt indicator showing 19.99%[27].

4 Mechanisms of the Debt Brake in Selected Countries

Certain forms of the debt brake are implemented in most countries of the EU. They were mostly accepted as prevention against a country's falling into a debt spiral, using a loan to pay off another, and thus facing the imminent risk of government bankruptcy, which some southern countries of the EU have in fact been through.

Slovakia

Slovakia has had a cap against a dangerous increase of indebtedness since March 1, 2012. The Constitutional Act has four main provisions: constitutional limitation of the public debt with a cap of 60% of the GDP, the establishment of the Council for Budget Responsibility, rules for transparency of public finance, and rules and limitations for the economy of local governments.

Shall the debt exceed 50% of the GDP, sanctions will be triggered and intensify with every increase. At 50% debt the Treasury Secretary must explain the reasons for it and propose measures to change it. At 53%, a package of measures is accepted and government salaries are frozen. At 55%, an automatic 3% expenditures freeze for the next year takes effect (except for European funds).

At 57%, the government shall propose a bill for a balanced budget, and on reaching the cap, i.e. 60% indebtedness, the government shall ask the parliament for confidence. The Council for Budget Responsibility shall have three members for seven years, whose mandate shall not be extendable. They shall be assisted by a team of analysts. This law creates mechanisms and tools for the prevention of indebtedness.

The rules of economy of local governments were reached through compromises. The government gave up a tax mix, thus the state shall not save the local governments in case of insolvency, but shall ensure financial means during the transfer of new competencies. A penalty has been implemented for those local governments which exceed a 60% debt of their normal revenue from the previous year, which is a provision similar to a provision which will also be effective in the Czech Republic in the future. An audit shall be performed in the whole public service to find out what kind of competencies local governments have and how they are secured. The state shall not transfer competencies to local governments without adequate funding.

Spain

Spain was the first state in the eurozone to implement the institute of debt brake. In September 2011 Spain introduced limits of budget deficit and public debt into the constitution. Spanish amendments to the constitution do not contain any exact limits as it is in Slovakia. However, an implementation act, which shall take effect in 2020, is a part of it. This act sets the cap of budget deficit at .4% of the GDP and sets criteria for gradual decreasing of the debt. The debt volume in relation to the GDP must not, according to constitutional norm, exceed the Maastricht criteria set for the eurozone countries, according to which public debt, as the sum of the state debt and debts of local governments, must not exceed 60% of the GDP, and the budget deficit must not exceed 3% of the GDP. Spain expected that by accepting this golden rule of budget stability it would appease skeptical financial markets. The state debt in the year of accepting this amendment reached almost 69% of the GDP and the budget deficit approached 6%[28].

Switzerland

The Swiss debt brake is a rule which restricts expenditures in order not to exceed the volume of structurally modified budget revenues. It means that expenditures must respect revenues, but not in the strict sense of annual balance. The Swiss federal budget may be adopted even with a deficit. There is no verisimilitude to the Maastricht criteria for maximum deficit: theoretically, its volume can be as large as they wish.

However, expenditures must respect the trend of revenue development. Expenditures of the federal government have a cap which is calculated as the function of budget revenues and the current position of the economy in the course of the economic cycle according to the following simple formula:

*Expenditures = Revenues * K,*

Where

[27] RYŠAVÝ, I. (2015) „Finanční ústava“ se začíná rýsovat, *Moderní obec*, 3: 2015, s. 10

[28] EUROSKOP, *Španělsko chystá dluhovou brzdu*, [cit. 27.3.2015]. Available at: https://www.euroskop.cz/8953/19506/spanelsko-chysta-dluhovou-brzdu

$K = Z / Y$,

Z = trend of the gross domestic product,
Y = current value of the gross domestic product.

Thus if coefficient K is greater than 1, it means that the economy is below its potential, thus it is possible to allow expenditures greater than revenues. On the contrary, if the economy is "overheated" and $K <$ 1, a surplus budget is required.

The goal is to keep the total expenditures of the federal government relatively independent of the economic cycle, thus the growth of expenditures reflected the trend, long-term growth of the economy. Tax revenues shall fluctuate depending on the economic cycle, which means that it is not necessary to raise taxes in the period of recession and thus deepen it. So the Swiss debt brake is not procyclic, as it does not worsen the course of a recession. On the contrary, it helps balance recessions in the spirit of Keynes' teaching. However, shall the government follow the traditional orthodox policy of balanced budgets in every budget year, the debt brake will not rule this policy out.

The Swiss implementation regulation regarding the debt brake also works with a compensation account which adds the values of deficits and surpluses once the final balance for the particular year is known. Deficits in this account must be taken into account while calculating a new expenditure cap for the coming years. If the deficit exceeds six percent of the expenditures, the surplus amount must be eliminated during the nearest three annual budgets by decreasing the expenditure caps.

We need to note that the Swiss federal budget does not distinguish standard and investment expenditures in terms of the total expenditure cap. This is intentional since it is not possible to simply claim that macro-economically speaking standard expenditures are "bad" while investment expenditures are "good". Any kind of investment in infrastructure regardless of future usefulness does not have to be better than standard expenditures on salaries or the running of the country[29].

The complete text of the Swiss debt brake is found in Article 126 of the Swiss Confederation:

1. *The Confederation shall keep its revenues and expenditures balanced in the course of time.*
2. *The cap for total expenditures, which is supposed to be passed within the budget, is based on expected revenues considering the economic situation.*
3. *Exceptional financial requirements may substantiate an adequate increase of the cap as stipulated in Paragraph 2. The Federal Assembly shall decide on every cap increase by an absolute majority of all (not only present) votes.*
4. *If the total expenditures of the federal budget exceed the cap as stipulated in paragraphs 2 or 3, it will be necessary to compensate for these expenditures by savings.*
5. *Details are to be stipulated by law.*

The Swiss debt brake was first applied relatively recently – as late as 2003. While being used, it succeeded to decrease the growth of public expenditures from an average 4.3% to 2.6%, and the total Swiss state debt decreased from 53% of the GDP to 36.5% of the GDP[30].

Poland

The Polish Constitution, effective since October 1997, stipulates such a provision, which makes the government take measures in case that the public debt reaches 55% of the GDP. Shall the debt reach 60% of the GDP, the constitution forbids the government to render loans and state guarantees, and thus further indebt the country.

This relatively less developed country has been experiencing a constant economic growth for over two decades, and is the only economy of the EU that avoided a deeper recession during the financial crisis.

[29] GEIER, A. (2011) The Debt brake – the Swiss fiscal rule at the federal level, *Working Paper of FFA No 15*.
[30] KOHOUT, P. *Nová ústava - Jak funguje švýcarská dluhová brzda*, [cit. 27.3.2015]. Available at: http://www.novaustava.cz/clanky/jak-funguje-svycarska-dluhova-brzda

A 17-year tradition of constitution-embedded anti-debt rules also probably contributes to the fact that Poland strongly supports German requirements of budget discipline and savings. The constitutional restriction of future indebtedness of both Germany and its states was passed by the German parliament in June 2009. The states will not be allowed to create new debts starting 2020, and only a deficit up to .35% of the GDP will be allowed starting 2016.

5 Conclusion

The need to introduce debt brakes throughout the member states of the EU ensues from the wording of the Fiscal Pact, which adds to the Maastricht Convergence Criteria the limit of the structural deficit of public finance, and which has been adopted by 25 states of the EU including the Czech Republic as of today. However, it will become a legally binding norm for the Czech Republic only after its entering the eurozone. The institute of debt brake, or the fiscal constitution, has been adopted by the individual countries voluntarily, since the condition of public budgets of most countries of the EU is not sustainable in the long run, and the need for fiscal correlation toward public debts is clear and objective, and is the subject of societal consensus.

Taking into account the fact that in case of the Czech Republic it is just the first proposal of a fiscal constitution, or debt brake, and might eventually become effective as of January 1, 2016, the Czech Republic will not be among the first countries to have adopted it in their legal system. However, its content is fully comparable to similar institutes abroad. The financial constitution of the Czech Republic respects the limit for long-term sustainability of public finance, mainly the limit of the state debt in the amount of 60% of the GDP. Thus it takes effect with the public debt reaching 55% of the GDP in order to have enough time to adjust the development of public budgets and public finance. The financial constitution also concerns basically all levels of public budgets, not only the state budget, but also the budgets of local governments, i.e. budget of local government units, even if those periodically show better fiscal condition than the state budget.

An inseparable question while discussing the concept of fiscal constitution are also wider issues of the macro-economic development. This concerns not only the nominal amount of deficits and the public debt, but their relative relation in respect to the GDP. It is namely this economic recovery and the growth of the GDP which lead to a better tax revenue of the state, a more favorable debt service, a smaller demand for public budgets, lower unemployment, and other positive impacts on the economy of the civil service and local governments.

Affiliation to the grant: *Work on this article is supported by a grant from the Faculty of Arts of Palacký University, IGA_FF_2015_014, Continuities and Discontinuities of Economy and Management in the Past and Present.*

References:

[1] ČNB, Kritéria konvergence [online]. cit. 2015-3-19. Available at: http://www.cnb.cz/cs/o_cnb/mezinarodni_vztahy/cr_eu_integrace/eu_integrace_04.html
[2] ČSÚ, Hlavní agregáty sektoru vládních institucí, [online]. cit. 2015-3-25. Available at: http://apl.czso.cz/pll/rocenka/rocenkavyber.gov_a?mylang=CZ
[3] EUROSKOP, Španělsko chystá dluhovou brzdu, [online]. cit. 2015-3-27. Available at: https://www.euroskop.cz/8953/19506/spanelsko-chysta-dluhovou-brzdu
[4] GEIER, A. (2011) The Debt Brake – the Swiss fiscal rule at the federal level, *Working Paper of FFA No. 15.*
[5] KOHOUT, P. Nová ústava - Jak funguje švýcarská dluhová brzda, [online]. cit. 2015-3-27. Available at: http://www.novaustava.cz/clanky/jak-funguje-svycarska-dluhova-brzda
[6] MF ČR, Vyhodnocení plnění maastrichtských konvergenčních kritérii a stupně ekonomické sladěnosti ČR s eurozónou – 2014, [online]. cit. 2015-3-19. Available at: http://www.mfcr.cz/cs/zahranicni-sektor/monitoring/maastrichtska-kriteria-a-sladenost-cr/2014/vyhodnoceni-plneni-maastrichtskych-konve-19965
[7] MF ČR, Fiskální výhled ČR (listopad 2014), [online]. cit. 2015-3-22. Available at: http://mfcr.cz/assets/cs/media/makro-fiskalni-vyhled_2014-Q4_Fiskalni-vyhled-listopad-2015.pdf
[8] Moderní obec, „Finanční ústava“ se začíná rýsovat, [online]. cit. 2015-3-24. Available at: http://moderniobec.cz/financni-ustava-se-zacina-rysovat/
[9] RYŠAVÝ, I. (2015) „Finanční ústava“ se začíná rýsovat, *Moderní obec*, 3: 2015, p. 10

Optimization of the Financial Instruments Portfolio

MĂDĂLINA ANTOANETA RĂDOI
Economic Sciences Department
„Nicolae Titulescu" University
185 Calea Văcăreşti, 4th District, Bucharest ROMANIA
madaradoi@gmail.com

ALEXANDRU OLTEANU
Economic Sciences Department
„Nicolae Titulescu" University
185 Calea Văcăreşti, 4th District, Bucharest ROMANIA
aolteanu@univnt.ro

Abstract: - The management of financial instruments portfolio is a complex activity that is based on a series of scientific models through which it is possible to assess the financial performance of securities markets, but also the risks to which investors expose themselves.Securities portfolio management aims to maximize profitability risk, relationship to allow institutional investors and individual investment behavior in close connection with the individual's attitude towards risk.
The models dedicated to management of portfolio securities shall establish the prerequisites of an analysis of the investment behavior using only the financial arguments. We have to analize in a comparative way the characteristics of the models dedicated to managing securities portfolio to see if they are complete.

Keywords: - risk premium, capital market line (CML), multi-factor model (APT), passive and active strategy for asset portfolio management, efficiency of financial markets, top-down model, bottom-up model.

1 Introduction

The financial theory owes this assessment model to the profitability of the financial instruments portfolio developed by the American researchers H. Markowitz[31] and W. Sharpe[32], who, through the studies that they drew up from 1957-1964, made a synthesis of the results obtained by diversifying the portfolio and the results obtained by the components of the total risk (the systematic component and the specific component). Actually, the CAPM model (Capital Asset Price Market) or the MEDAF model (as it is known in French), provided that the efficient financial market is balanced, the profitability of an asset is determined by a macroeconomic factor, by the general profitability of the market (R_m) and the systematic component of risk, respectively by the beta coefficient (β) of the asset (the profitability of the riskless asset is considered to be a constant).

The CAPM model takes into account a certain number of particular and general hypotheses, such as: the transparency and free nature of information on the financial market; the absence of fiscality and transaction costs; the possibility of borrowing and lending - at a riskless interest - any owed sum of money (the riskless interest rate is the same and it is considered a balance general economic factor); all investors have the same forecast horizon, i.e. only one period; atomicity of financial investments (no financial operator on the market will be capable of significantly influencing the price of an asset).

To these hypothese, one can add the ones referring to a perfect market: rational behaviour and risk avoidance (the selection of the efficient border); homogenous anticipation which makes it possible for the model to be derived (each investor associates the same probability distribution of each title's profitability); all investments are perfectly divisible and solvable, i.e. they can be instantly tranformed into a currency.

2 Literature review

[31]H.Markowitz, "Portfolio selection", Journal of Finance, march 1952
[32]Sharpe, W. (1964) – "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk", *The Journal of Finance*, September 1964

Apart from H. Markowitz, W. Sharpe develops the idea of introducing in the risky but sufficiently developed assets portfolio, a riskless asset in order to generate a potentially minimum risk, i.e. An efficient or market asset. Thus, the profitability of some risky portfolio assets (R_{pf}) can be determined in relation to the riskless asset profitability (R_f), the market portfolio profitability (R_p) and the β coefficent, which evaluates the risk degree for an individual asset in relation to the market portfolios risk:

$R_{pf} = R_f + (R_p - R_f)\beta_{pf}$ where:

$(R_p - R_f)\beta_{pf}$ represents the risk premium.

CAPM aims at quantifying the relationship between risk, profitability and the assessment of the risk premium for a given investor, on a pure and perfect financial market.

Of the two risks, the specific and systematic ones, it is only the systematic risk - determined by the evolution of the market ($R_p - R_f$) – that is remunerated because the specific risk, related to the individual characteristics of the financial asset, can be left aside by simplifying the portfolio.

In his theory, W.Sharpe takes into consideration that an investor accepts a certain level of a financial asset only to the extent to which he/she is remunerated with a profitability rate that is higher that the current level. If profitability is not satisfying, the investor is going to look for another riskless investment, with an equal interest rate for short-term credits. Thus, it results that a portfolio profitability is measured through the positive difference between the portfolio profitability rate and the profitability rate for riskless financial investments. According to W.Sharpe, the measurement of the performance is given by the remuneration of the profitability surplus for the risk unit in relation to the riskless profitability (S). That is why, the higher this rate is (S), the higher the profitability of the portfolio.

$S = \frac{R_{pf} - R_f}{\sigma}$

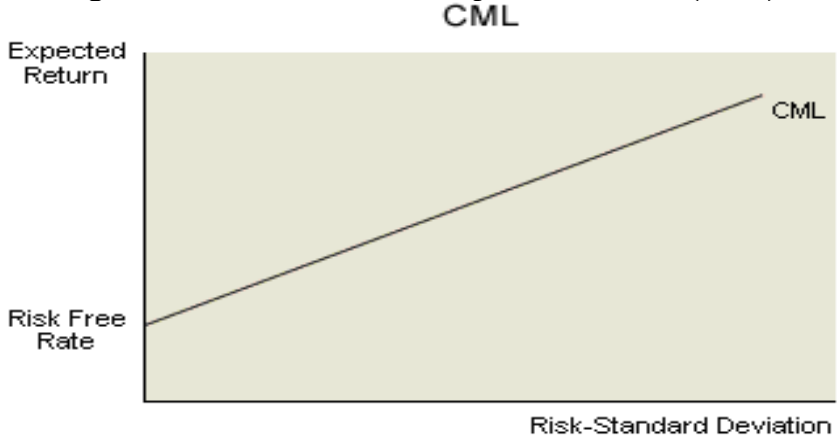
in which:

R_{pf} is the portfolio profitability;

R_f is the profitability of a riskless financial investment.

The CAPM model, being based on the diagonal portfolio selection model (the market model), further provides the existence of riskless assets within the portfolio, which will contribute to increasing the financial instruments portfolio profitability. The advantage offered by these riskless assets (R_f) and the market portfolio (R_{pf}), creates a new efficient border for investments depending on accepting or refusing systematic risk. In other words, according to the CAPM model, in case there is balance, there is a linear relationship between the profitability required for a certain investment and the risk that this investment poses. The graphic representation of the CAPM model is the capital market line (CML-
Capital Market Line).

Fig.1 The CAPM model of the capital market line (CML)



The line that unifies the profitability of riskless assets (R_f) with the M tangent point at the efficient margin of the market portfolio (for risky investments), is known as CML (the efficient portfolio line), and it is made up of riskless and risky investments. When the market is balanced, all investments are placed on this line.
The unitary price for the systematic risk (the market remuneration for a risk unity), is given by the angular coefficient of the CML. This unitary price for the systematic risk (λ) is given by the relationship:

$$\lambda = \frac{Rp - Rf}{\sigma(Rp)} \qquad (3)$$

The portfolio which is thus constituted is going to have the expected profitability of the market portfolio (R_{pf}), which is formed of riskless investments (R_f) and the remuneration by the financial market of the systematic risk (λ x $\sigma(R_p)$):

$R_{pf} = R_f + \lambda$ x $\sigma(R_p)$ (4)

On any financial market the efficient management of a financial asset portofolio depends on the forecast related to profitability and the volatile character of financial instruments. Forecast must take into account macroeconomic variations of the general market index, the variations of the interest rate, the inflation rate etc. Similarly, one must forecast the reaction of each financial instrument to different economic and social phenomena.

For the world market, the CAPM model is the most influential economic theory of this modern globalization period. In the last three decades, few economic models have successfully passed from theory to practice. The increase of the integration degree of the international financial market has, anyway, forced economists to further deepen the characteristics of the model and to search for alternatives to it.

The importance of the CAPM model come from its simple application into practice, which means that it is operational model.

Despite its recognised usage in practice, the CAPM model is far from being a complete and safe model because of its dependence on the "market portfolio". From a technical point of view, this market portfolio should comprise all the assets that are available in the world. The basic idea of this model is that the income obtained from a capital investment is mainly affected by only one risk source. This source is the market risk, which means the tendency of the assets to move towards the same direction with the capital market.

Of the criticism that may be brought to the CAPM model, we mention:

a. The is no completely riskless financial asset. A riskless financial asset is an asset with a short maturity term and whose income for that period is known beforehand. This is a conventional definition. However, in fact, this asset poses some little risk. According to the CAPM model, every investor can borrow or lend – at a given interest rate – riskless assets. Yet, this is not realistic becayse at any time it is possible for some investors not to get their payment, which means that they are not in a completely riskless situation. However, even in this situation, the general version of the CAPM model is still valid;

b. A market portfolio cannot be exactly determined. One of this model's shortcomings was defined by Richard Roll[33] - from California University in Los Angeles. He proved that a capital market index that is correct for the CAPM model is not the capital market index; this is an index that includes all physical and financial assets in the world (thus, the market includes not only the assets, but also the bonds and all kinds of stock exchange securities and similarly the physical capital properties or other non-financial assets);

c. The CAPM theory is far from being fully confirmed in real life. According to this theory, a portfolio comprised of assets that have a high β coefficient has better results than a portfolio which has a low β coefficient. However, in fact, one cannot state that investors who bought assets with a higher β coefficient enjoyed higher profitability in comparison with those who bought assets with a lower β coefficient. Some specialists appreciate that the β coefficient would function better in periods that have higher stock exchange fluctuations – shares with a higher β undervalue more in case of a bank crash in comparison with shares that have a lower β and vice versa.

Criticism brought to CAPM has led to the creation of new traditionally different models. A first improvement consisted in the elaboration of a multifactorial model for explaining the profitability of the securities, known as APT (Arbitrage Pricing Theory). Thus, whereas for CAPM the determination of securities profitability is accomplished in relation to a single macroeconomic factor – a unifactorial model - the general evolution fo the market (i.e. the profitability of the efficient portfolio can be made up of the most representative securities indicated by the stock exchange index), the APT model aims at determining the profitability of securities in relation to a set of factors that can influence it (inflation rate, exchage rate, exchange interest, the growth index for industrial production, work profitability).

3 Extensions of the APT model

The APT model (APT = Arbitrage Pricing Theory) was developed by the American researcher, S.A.Ross[34] in 1976.This model was the result of the critics brought to the CAPM model, which, for

[33]Richard Roll, "A critique of the asset pricing theory's", part I. On past and potential testability of the theory", Journal of Financial Economics, March 1977

[34]S.A.Ross, "The Arbitrage theory of capital asset pricing", Journal of Economic Theory, December 1976

determining the profitability of a financial asset portfolio, took into consideration a single macroeconomic factor, i.e. the general profitability of the market. The APT model was defined by Ross as follows:

$R_{pf} = E(R_{pf}) + \beta_1(E(F_1)) + \beta_2(E(F_2)) + ……..+ \beta_n(E(F_n)) + \varepsilon_{pf}$

In which:

R_{pf} is the casual profitability of the portfolio

$E(R_{pf})$ is the casually expected profitability of the portfolio

$B_1, \beta_2, ……\beta_n$ are the correlation coefficients of R_{pf} in relation to factors: $F_1, F_2, ……F_n$

$F_1, F_2, ……F_n$ are casual values for the macroeconomic factors that influence the financial profitability of the portfolio

$E(F_1)), E(F_2), ……..E(F_n)$ is the mathematical (average) expectation for the evolution of the factors: $F_1, F_2, ……F_n$

ε_{pf} is the residual term of regression, which indicates the risk that is specific to the "pf" portfolio.

Of the macroeconomic factors that were considered we mention: GDP evolution, inflation rate, interest rate, exchange rate, etc.

One can easily notice the similarity between the APT and CAPM models and especially the generalization that the APT model makes by establishing a link between the expected profitability of an asset portfolio to several risky macroeconomic factors. Despite these advantages, the APT model cannot indicate the number of common risky factor and nor what these risky factors are. The model only tells us that there can be "n" factors, where "n" is much lower number to the one of assets in economy. It is also difficult to determine the expected profitability that is owed to each factor F_n.

These often insurmountable shortcomings make it possible for the CAPM model, and not for the APT model, to be the most used one.

In the model that includes two risky factors, the APT relationship is graphically represented by a plan included in a cube, in which all financial assets should be found on this plan:

4 Strategies for managing international asset portfolios (the active and the passive strategies)[35]

Each portfolio administrator has his own manner of managing a securities portfolio. The purpose is always to meet his customers' expectations as to the diversification of risks and the increase of profitability, while always trying to act better than his competitors. The style of a portfolio administrator, which is the result of his financial culture and of many years of experience, determins the portfolio structure and the way this is managed.

There are two types of strategies that are used in managing a portfolio: passive and active strategies. In the modern theory of management portfolio, the hypothesis of efficient markets is a controversial issue, which has existed ever since this theory was created. The main idea refers to the fact that it is impossible to obtain unusual profits under normal conditions. Consequently, a rational management of securities portfolio must be a passive one. However, financial analysis offers many resources and technical means – with the hope of conquering the market (of avoiding risks that show up due to the factors which act on the market). This is, in fact, the objective of the active management strategy. Although 3 decades have passed since these concepts were created, debates between their supporters have not ceased. In many studies, such as the one published in "Financial Times" seem to indicate better results for the passive strategy.

A. The passive strategy

The passive strategy of portfolio management was created thanks to the CAPM model and the studies published by Markowitz[36] and Sharpe [37] in in this domain. The hypothesis of efficient markets, the market portfolio, the principle of local and international diversity, the results revealed by several empirical studies, which indicate the frivolity of active management and, especially, high costs that investors had to make, al have determined a group of institutional investors to question active management.

The hypothesis of efficient markets

The theory of efficient markets, based on the casual nature of price fluctuations and suggested by

[35]Alexandru Olteanu, Florin Manuel Olteanu, "Managementul portofoliului si al riscului pe piata titlurilor financiare", Editura Fundatia Andrei Saguna, Constanta, 2010

[36]H. Markowitz, op. cit., pct.1

[37]W. Sharpe, "Mutual Fund Performance, Journal of Business, January 1966

L.Bachelier [38] in 1990, was further developed in the 1960's by E.F.Fama[39], P.Samuelson[40] and B.Mandelbrot[41]. The theory of efficient markets furthers, in fact, the theory of financial arbitration. It precedes major innovations in portfolio manegement, particularly in the creation of index funds. In its three forms (weak, semi-strong and strong), market efficiency confines itself to suggesting that it is impossible to prevent the future variations of securities rates and that the market price of securities reflects all the available and pertinent information, thus allowing that securities to be assessed.

For example, the price of a Daimler-Benz share, simultaneously quoted in New York and Frankfurt, was supposed to reflect all the information related to world economy, moto industry, the Chrysler merger, the Euro-Dollar parity and any other information supposedly influencing the price of these shares.

Weak market efficiency reveals that in a perfect market (one that has no taxes and transaction costs), past and present costs do not allow for future prices to be predicted, which means that technical analysis would be useless.

Semi-strong market efficiency occurs when the current prices of an asset reflects all the public information that is available in relation to that asset. In such a market, the selection of securities cannot ensure a high profitability to the market and market portfolio and, consequently, investors are not able to defend the market. They must confine themselves to following the same trend imposed by the market index in order to have the same profitability.

If there is strong market efficiency, current prices on the market (the market price of securities) reflects all the publicly or privately (includingly priviledged) available information. On such a market, nobody, not even the initiated ones, can pertainingly predict the future evolution of rates because rates have already integrated all the existing information on the inner value of securities (thus, nobody can make speculations).

According to market efficiency theory, in its strong form, it is not possible to make unusual profits unless there is privileged information. History is full of such examples, in which sending misleading information on the market is followed by its usage by those who are interested in manipulating it.

There are more and more portfolio administrators who have become supporters of financial market theory. Consequently, they set up and manage their portfolios on a relatively long period, frequently changing their structurs. This is known as a "passive strategy". The simplest example for such a strategy is portfolio management index strategy.

Strategy for managing index portolios

An index fund is a portfolio that is set up in such a manner that it imitates a given index, which can be national, such as: CAC-40 in France, BET for BVB (Bucharest Stock Exchange) or Rasdaq for Rasdaq in Romania, or international, such as: EAFE and MSCI-World. The portfolio administrator buys the portfolio shares and, respecting the portfolio structure or the weight which every share has in that index. The argument that is most evoked by index fund administrators takes into account market efficiency and low costs that this strategy implies.

Given the fact that markets are efficient and that strategies, which aim at surpassing indcies, are not confronted with real data, why should one pay higher costs if success is not guaranteed?

Buying and selling securities on different markets, transaction costs (including the ones related to the conversion of currencies) are multiplied with the same frequency with which portfolio structure is modified. Usually, the difference between expenses paid by those who adopt a passive strategy and the one that adopt an active strategy varies between 0.30% and 1.5% of the fund value for the fomer ones. For example, at the beginning of the 1990's the average cost implied by the management of an international index share portfolio, who value is of 40 million $, was 270,000 $, while the average cost of a fund which was actively managed amounted at 770,000 $. This has made index management more and more popular in the whole world. In England, a quarter of the pension funds are today index funds.

B. The active strategy

Active management is meant to identify profit sources that can offer a higher profitability than the market profitability. The supporters of the active strategy do not believe in the total efficiency of the market. According to them, there are opportunities which allow for a good business thanks to the difference between

[38]L. Bachelier, "Theorie de la speculation", Paris, Gauthier-Villars (1900), repris dans Cootner, 1964

[39]E.F. Fama, "The Behaviour of stock market prices", Journal of Business, 38 (1965); "Efficient Capital Markets: a review of theory and empirical work", Journal of Finance, 25 (1970); "Efficient Capital Markets II", Journal of Finance, 46 (1991);

[40]P.A. Samuelson, "Proof that property anticipated price fluctuate randomly", Industrial Management Review, 6 (1995)

[41]B. Mandelbrot, "Forecast of future prices, unbased markets and martingales models", "Security prices: a supplement", Journal of Finance, 39 (1966)

the market price of shares and the inner value thereof (the inner value of a share illustrates the present situation of an enterprise and the future benefits that it expects to obtain). This conviction is based on several empirical studies that have revealed the existence of inconsistent functionalities and enigmas in the domain of financial markets. By using sophisticated quantitative methods (APT model, CAPM model, etc.) and by making specialized analyses of economic sectors for every country, active management can identify this disfunctionality and can ensure higher performance through passive management.

The main disfunctionalities are: the seasonal nature of stock exchange profitability and the effects that are specifit to enterprises.

Studies show that the analysis of the information can ensure interesting benefits. This analysis is made within a top-down or bottom-up process. Each of them is based on a strategy:

- asset allocation;
- stock selection;
- market timing.

Asset allocation means choosing the countries and different quantities alloted to every country to every asset category (shares, bonds, the monetary market), prefered sectors or industries, companies with higher or lower capitalization, etc.

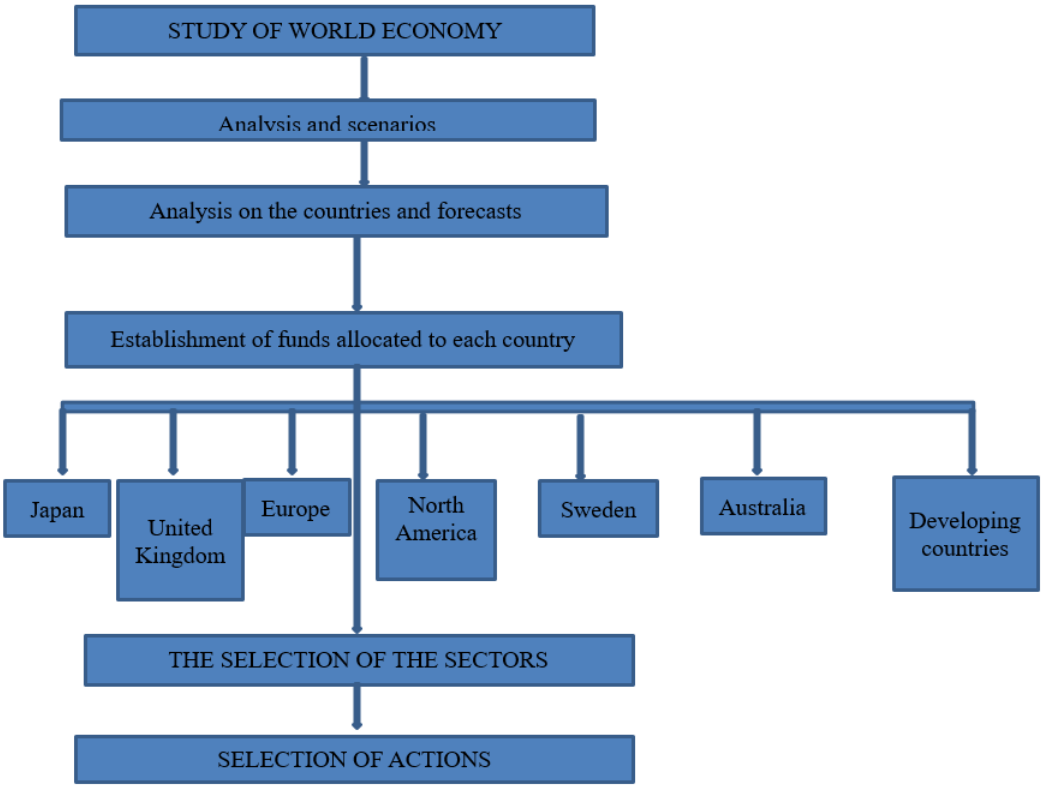
However, it is well known that stock exchange selection relies on the different criteria that are established by the portfolio administrator. Depending on the risk level and the previously established period of time, the administrator tries to select the undervalued stock on the market or the stock that poses an interesting growing potential or any other potential growing index.

Market timing refers to the moment chosen by an administrator to increase or decrease the funds invested in stocks for a certain market (sector, industry, etc).

The top-down process

Portfolio administrators that use the top-down process prefer the asset allocation strategy rather than stock selection. Firstly, they esatblish the weight alloted to each country, each sector, each industry, and then they choose the stock, thus, considering fixed criteria. For example, an administrator who anticipates a decrease of a national currency can prefer enterprises whose benefits come from a strongly internationl decentralization. This administrator would choose the stock that corresponds to this criterion depending on the limits of the funds alloted to that country.

The following scheme illustrates the top-down process applied in managing the international share portfolios:



The bottom-up process

The supporters of this process prefer to use stock selection, which seems to ensure important potential gains, no matter the country, sector or the industry that they belong to. The market corellation study has shown that the benefits of international diversity ensure a better currency and country choice in comparison with the stock choice. This has also been confirmed by some analyses regarding investment fund performance. The "performance" obtained in 1997 by the actively managed English pension funds has been explained through a wrong choice of the market, i.e. South-East Asia to the detriment of the USA. The other choice would have ensured good results thanks to the good performance of the US market.

Consequently, the top-down process, based on asset allocation and the specialized analyses made in relation to the chosen country rather than the selection of securities, seems to be better thatn the bottom-up one.

5 Conclusions

One of the main conclusions drawn after analysing the CAPM model is that there are two types of risks. The former refers to the capital market and the latter to each company. If an investor has a sufficiently high number of shares, he/she can disseminate through diersification the risk associated to companies. But even if the investor had all stocks (no matter the category of stocks) available on a market, he is still exposed to the market risk (i.e. the systematic risk). According to APT theory, these two types of risks are insufficient; thus, there are other categories of risk that can influence asset profitability. These risks are comprised in the APT model through a set of β indices. Each β index comprises the asset sensitivity to a certain market factor.

As to the higher and higher popularity of the passive portfolio management, despite of the number of funds which follow the index structure, most of the local and international funds remain actively managed. Many institutional investors, such as those who administrate pension funds and the ones who administrate mutual funds and insurance companies, similarly use the active and the passive management because neither of the two strategies completely or systematically dominates the other one.

As to the active strategy, many studies made for different markets and periods have revealed the seasonal nature of stock exchange profitability. This seasonal nature is noticed in several months of the year (the effect of January) or weekdays (the effect of Monday), as well as at different day times (the opening and closing effects).

As to the effects that are specific to enterprises, some studies (E.Fama and K.R.French, 1993)[42] illustrated that the securities of small companies (i.e. companies 99with a low capitalization), whose value market and securities value rates are low and whose level of dividend distribution is high or whose price/benefit rate is low, tend, for example, to accomplish unusual profits that are higher to the ones foreseen through the CAPM model.

References:

[1] L. Bachelier, "Theorie de la speculation", Paris, Gauthier-Villars (1900), repris dans Cootner, 1964

[2] E.Fama, K.R. French, "Common risk factors in the returns of stocks and bonds", Journal of Economics, 33 (1993)

[3] E.F. Fama, "The Behaviour of stock market prices", Journal of Business, 38 (1965); "Efficient Capital Markets: a review of theory and empirical work", Journal of Finance, 25 (1970); "Efficient Capital Markets II", Journal of Finance, 46 (1991);

[4] Mandelbrot, "Forecast of future prices, unbased markets and martingales models", "Security prices: a supplement", Journal of Finance, 39 (1966)

[5] H.Markowitz, "Portfolio selection", Journal of Finance, March 1952

[6] H. Markowitz, op. cit., pct.1

[7] Alexandru Olteanu, Florin Manuel Olteanu, "Managementul portofoliului si al riscului pe piata titlurilor financiare", Editura Fundatia Andrei Saguna, Constanta, 2010

[8] Richard Roll, "A critique of the asset pricing theory's", part I. On past and potential testability of the theory", Journal of Financial Economics, March 1977

[9] S.A.Ross, "The Arbitrage theory of capital asset pricing", Journal of Economic Theory, December 1976

[10] Sharpe, W. (1964) – "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk", *The Journal of Finance*, September 1964

[11] W. Sharpe, "Mutual Fund Performance", Journal of Business, January 1966

[12] P.A. Samuelson, "Proof that property anticipated price fluctuate randomly", Industrial Management Review, 6 (1995)

[42] E.Fama, K.R. French, "Common risk factors in the returns of stocks and bonds", Journal of Economics, 33 (1993)

Economic and Banking Environment in Romania and E.U.

NICOLETA GEORGETA PANAIT
Economic Sciences Department
Faculty of Economic Sciences
185 Calea Văcărești, 4th District, Bucharest code: 040051
"Nicolae Titulescu" University, Bucharest, Romania
nico.panait@gmail.com

Abstract: - The study presents the overall picture of Europe's economic prospects, strained relations within the European area. Also presents the evolution of the banking system in Romania in the context of situations in Europe, which returned to profit and record high levels of solvency and liquidity, while the NPL ratio continued to decline. Due to the difficulty of forecasting medium business, and to the macroeconomic context, banks avoid risk taking associated finance investment projects in the long term, preferring financing in the medium term, so that more than half of home loans granted in Romania are for term funding short and medium.

Keywords: - world economy, lending, banking risks, financial corporations.

1 European economic outlook

A high degree of uncertainty is hanging over the whole of Europe. Risks related to the global economic outlook have increased. A lower growth of emerging markets, especially more accurate adjustment interfering in China, and the effects of normalization of expected monetary policy of the US on emerging markets could have a greater negative impact on investment and economic activity in Europe than currently expected.

Uncertainty related to geopolitical tensions remains ample and its negative impact on European economies may be less marked than currently expected. Sudden changes in oil prices and turmoil in the financial market could also affect European growth. Moreover, risks remain considerable internal developments in the EU, for example in terms of the pace of implementation of structural reforms and uncertainty linked to the outcome of the referendum in the UK on remaining in the EU.

According to the forecasts of the European Commission, Euro zone GDP will reach 1.6% in 2016 and 1.8% in 2017, according to the amount of 1.7% reached in 2015. It is estimated that GDP growth in the EU will slow down from 2.0% last year to 1.8% in 2016 to reach 1.9% in 2017 (winter forecast: 1.9% in 2015 1.9% in 2016 and 2.0% in 2017).

Monetary policy which is very accommodative paved the way for increased investment by facilitating and cheaper access to finance. The market expects fiscal policy to support growth in the region this year. However, although oil prices fell again in early 2016 and had a positive effect on real disposable income is expected to reduce the intensity of that support gradually with increasing oil prices. Similarly, although exports from the Euro zone advantage still, to some extent, from the past depreciation of the euro, the recent appreciation of the currency could make the euro zone more sensitive to the effects of slower external growth.

Russian geopolitical tensions and falling oil prices also contributed to the deterioration of expectations for growth internationally. Russia has entered a recession in 2015, forecast negative growth being maintained for 2016 in the context of geopolitical risks conflict with Ukraine, which could lead to new sanctions. Romania has not been affected by the economic and geopolitical situation in Russia due to commercial and financial relations bilateral relatively low. In recent years, Romania has diminished progressively and significantly dependence on natural gas imports, from 15.3 percent in 2013 to 4.3 percent in November, 2015.

However, severe deterioration of economic and political environment in this region can have a significant impact on Romania, including through the prism exposures to regional countries of European banking groups with a notable presence in Romania. Geopolitical situation in the Middle East is another systemic risk at a moderate level, which could have consequences for the European single market and consequently on the domestic economy.

Refugee crisis has negative implications in the short term on the economies of the countries of transit and destination of flows of refugees as a result of increased public spending (receiving and their accommodation, social, security costs), and the medium and long term, structural changes in the labor market.

This crisis can generate significant effects on other countries in the European Union by increasing competition in the labor market between different categories of migrants and the return of some of them, rising unemployment and public spending on social assistance, reduced remittances from abroad. It is possible that the influx of immigrants also have long-term benefits to the country of destination in the European Union, as potential GDP growth, disinflationary pressures due to lower labor costs. For all countries, the costs are in fact highlighted opportunity costs in terms of hard budget constraints and high levels of public debt.

Other risk factors to the economic situation in our country could come from a possible deterioration of economic and financial situation in some European countries such as Greece. In Romania are present four credit institutions with Greek capital, with moderate role within the system. They own about 10.7 percent of total assets of the banking sector at the end of 2015. Prudential situation of these institutions is at an appropriate level, and most indicators continued to improve in the last year. According to the analyses of stress testing banks with Greek capital have the means to face the shock withdrawal of funding from foreign financial institutions.

A possible Brexit from the EU can bring significant economic and social consequences rather on Member States and indirectly on Romania. Direct effects on the domestic economy are reduced in the Romanian banking system are not present credit institutions with capital coming from the United Kingdom; British-owned companies play a small role in the economy in terms of contribution to value added, number of employees or total assets; the British market are targeted only 4.6 percent of total exports of goods and services, and UK had 2.5 percent of the total stock of foreign direct investment (FDI) at the end of 2014.

The drop in oil prices was mainly positive effects on economic growth in Romania, through the channel to reduce production costs and transportation, as well as increasing disposable income for consumption channel. On the other hand, falling commodity prices on international financial markets has affected the extractive industry sector by reducing revenues, increased expenses with value adjustments for impairment and prices fall when the stock market listed companies

2 The evolution of the banking sector in Romania

The banking sector in Romania recorded a slight strengthening in early 2016. In 2015, it returned to profit has registered high rates of solvency and liquidity, while the NPL ratio continued to decline. The risk of contagion has also continued to decline, by reducing dependence on banks in Romania funding from parent banks. In Romania, banks provide about 90% of financing the economy. At European level, the banks represent about 75-80% of the entire financial system of the EU. In the US, companies are financed through a bank loan at a rate of only 15%.

An objective of the prudential banks would be to identify the risks associated with various banking products and solutions to find the time needed to counter these risks, thus avoiding possible major problems.

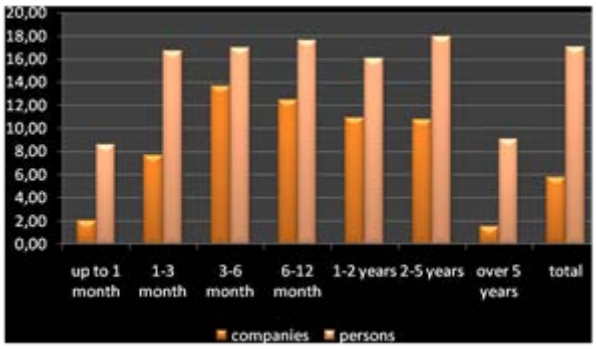
Due to the difficulty of forecasting the evolution of business for seeking loans, banks avoid risk taking associated finance investment projects in the long term, preferring financing in the medium term, so that more than half of home loans are for financing the short and medium term. Banks prefer this type of lending on the one hand due to the risks low, and because of the advantage of maintaining a higher level of liquidity.

Macroeconomic instability is hindering long-term evaluations of the results that will be generated by investments that are required credits, so reducing the possibility of granting loans for investment in safer and encourage lending to medium term.

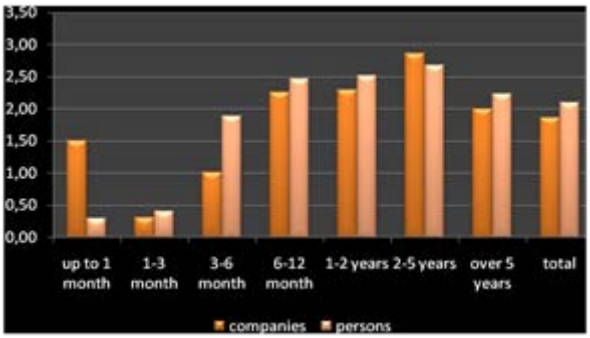
Investment portfolio structure by economic sectors reflects the trend spread risk by focusing on all areas of activity, the predominant lending for investment projects in the industry with over 50% and services 30%.

Loans in lei prevail in outstanding credit risk, currency risk, interest rate is replaced, because the interest rate risk to be kept under control in the coming period, it is essential to ensure an appropriate mix of macroeconomic policies; fiscal policy should not limit the options of monetary policy.

Graphic no.1 Interest rates on deposits in national currency



Graphic no.2 Interest rates on deposits in foreign currency



Credit standards remained constant in 2015 for loans and consumer loans to households, while in the case of housing loans they were moderately relaxed. For 2016, credit institutions estimate unchanged keeping credit conditions for companies and consumer loans to households, while for housing loans is expected tightening to some extent standards. It is estimated an increase in loan demand from companies and reduce it if consumer credit to households.

3 Lending to non-financial private sector

Corporate and household borrowing volume from financial institutions increased from December 2014 to December 2015 to € 72.4 billion. For the next period of credit market conditions indicate a revival in demand for loans from non-financial companies, along with a stabilization of credit standards for this sector. An analysis of economic, financial performance and management firm indicates potential for significant sustainable lending of non-financial corporation's sector. Corporate and household borrowing structure has undergone some significant structural developments. First, lending to non-resident financial institutions was low, with favorable effects on reducing dependence on funding from non-residents and the reduction in private external debt of the country. Secondly, borrowing in local currency continued to rise, so the vulnerability caused by the high share of foreign currency loans continued to decrease.

Non-financial private sector external debt stock financing attracted from foreign financial institutions shrank during the period December 2014 - December 2015 10.7 percent (or 2 billion), but continues to be at a significant level (23 percent of total indebtedness). Reducing of external indebtedness is the result of balance sheet adjustments of the diversion of domestic banks and non-financial companies by not lending domestically. Thus, on the one hand, some banks have decided to restore the balance of significant loans previously sold by foreign financial institutions, members of the group to which they belong. Purchases of credit by banks during 2015 totaled 1.6 billion Euros, representing mostly loans to the population (about 80 percent). On the other hand, banks have continued cleaning the balance, developments in 2015 were marked by the sale of large portfolios of loans (1.7 billion Euros during January-December 2015), mostly bad, more than a quarter by foreign financial institutions.

This process of assignment of claims is widely practiced internationally, to manage prudential constraints, cleaning of balance sheets of bad loans to restart lending etc. The evolution of lending, considered

in the broader perspective of economic positioning relative to the credit cycle, not borrowing highlights the urgent pressure to justify activating the private sector damper countercyclical capital.

The evolution of lending, considered in the broader perspective of economic positioning relative to the credit cycle, not borrowing highlights the urgent pressure to justify activating the private sector damper countercyclical capital.

Total indebtedness of the population and non-financial corporations to GDP ratio remains below the long-term. On the other hand, history reduced data (period March 2000 - December 2015) and structural changes recorded in the late 1990s shows, in Romania's case, the constraints of an evaluation based strictly on the indicator deviation loan (broadly) in GDP the long-term trend (as recommended by the ESRB Chart 1.8). In this regard, the central bank continuously developed and improved analyzes on the evolution of risks from lending and lending to companies and households to financial stability.

In the period January to December 2015, new loans related to non-financial companies were awarded at a rate of about 67 percent in local currency and the level of households, the share of new loans denominated in the total financing granted by banks was 90 percent. Orientation to lending to credit institutions in local currency (is based on structural factors: reducing the cost of financing in lei at a level below that currency due to lower monetary policy rate to 1,75 percent from 2,75 percent in 2015; macro prudential measures on restricting foreign currency lending and credit of the "First Home" only in national currency from 2013; Banks conversion programs (into lei) previously granted credits in foreign currency, and maintaining the upward trend in deposits in lei at the expense of external financing and adjustment of correlating currency assets and liabilities of credit institutions.

The share of bank loans in foreign currency to non-financial corporations decreased from 52.5 percent in December 2014 to 48.2 percent in December 2015, while for the population was one more significant adjustment (from 60 7 percent to 51.3 percent the same period). The trend of credit growth is driven by both supply-side factors and demand. The main changes are: the resumption of demand for loans from non-financial companies since the second half of 2015 amid the stabilization of credit standards and the estimate by the banks of the difficulty of credit standards for house purchase due to fears caused by unpredictability framework legislative loans to households.

Amid these uncertainties legislative, banks continued to finance a significant proportion of the low income population categories. Borrowers with a monthly income below the minimum wage received in 2015 approximately 30% of new lending flows, followed by those with income between minimum wage and minimum wage (23% of new loans).

4 Evolution of non-financial companies sector

A more robust resumption of sustainable lending to non-financial corporate sector remains a challenge to domestic banks. In this regard, it is necessary and the companies with potential debt conviction that partnership with a bank may have beneficial effects on their business.

The trend of improvement in the economic performance of firms continued. Structural analysis reveals, however, that asymmetries in the distribution of firm-level performance and their polarization remain among the main features of the domestic economy. In June 2015, the total sector non-financial companies recorded profitability indicators, liquidity and solvency increase compared to the same period of 2014.

Developments regarding corporate financing by domestic banks have been largely favorable. Sectors that can contribute to economic growth geared more towards innovation and high added value growth have received funding from banks. Credit to companies in industries with high-tech (high-tech and medium high-tech) increased in 2015 by 12.7 percent (compared to 3.9 percent for credit to low-tech industries). Also, loans to companies that provide services based on intensive use of knowledge (knowledge intensive services) increased by 2.8 percent in 2015 (compared to 0.35 percent for credit to companies that provide services based on the use less intensive use of knowledge (less knowledge intensive services).

Newly established companies (start-up) received funding increase (by 43.8 percent in 2015, from 0.98 billion lei to 1.38 billion lei). On the other hand, most newly granted loans were directed towards larger companies (about 31 per cent of these loans were to midsize companies and 27 percent by corporations).This orientation will contribute to further improving the quality of loan portfolio companies (NPL for the two categories of companies is lower than average.

These are arguments in favor of the resumption of lending on a sustainable basis by non-financial corporations sector, noting that at the individual level and on different types of companies to maintain a high degree of heterogeneity of economic and financial performance. After size, health corporations is significantly

more robust than SMEs, companies in the second category is characterized, however, by a dynamism higher (increase of gross value added and turnover for SMEs was more alert than companies large period June 2014 - June 2015, for the second consecutive year). The heterogeneity and concentration, however, remain important characteristics of non-financial corporations sector.

5 Conclusion

Solvency indicators remain at adequate levels significantly above the thresholds covered. The capital of banks reserves remains consistent: ensure a high capacity to absorb any unexpected losses; can easily accommodate existing demand for credit in the real economy and dampers allow the implementation of capital since 2016 without requiring additional contributions from shareholders.

The liquidity of the banking sector is consistent. Banks in Romania is in a favorable position regarding the fulfillment of international standards related to adequacy and liquidity indicators to ensure stable financing. Bank asset quality has improved in 2015: non-performance rate was declining, the net provisioning costs and the volume was significantly reduced. These developments have had a significant and positive impact on the profitability of the Romanian banking sector. Resumption of lending was done dominant in national currency. In the context of the favorable macroeconomic activity nonbank financial system was maintained an upward trend, the highest increases were observed in the segment of pension funds and investment funds.

Given the structure of prudent portfolio, focused primarily on holdings of government securities and bank deposits, persistence environment characterized by low interest rates represent a vulnerability to the return on investment activity in this sector and can generate a change in behavior in order to orient towards riskier assets.

References:

[1]. Barbara Casu, *Introduction to banking*, Pearson Higher Education, 2015

[2]. BNR, *Financial Stability Report*, 2015

[3]. Carmen E. Costea, Andreea S. Saseanu , *Economy of domestic and international trade* second edition- Editura Uranus, 2009

[4]. Francis Diebold, Kamil Vilmaz, *Financial and macroeconomic connectedness*, Oxford University Press Academ, 2015

[5]. Robert W. Kolb, *The financial crisis of our time*, Oxford University Press Academ, 2015

Acknowledgement

This paper has been developed with period of sustainability of the project entitled "Horizon 2020 - Doctoral and Postdoctoral Studies: Promoting the National Interest through Excellence, Competitiveness and Responsibility in the Field of Romanian Fundamental and Applied Scientific Research" contract number POSDRU/159/1.5/S/140106. This project is cofinanced by European Social Fund through Sectoral Operational Programme for Human Resources Development 2007-2013. Invest in people!

The Increasing Influence of Muslims in the EU

Ph.D. GEORGE CORNEL DUMITRESCU
Structural Changes in the World Economy
The Institute for World Economy
13 Calea 13 Septembrie, Bucharest
ROMANIA
george.dumitrescu@iem.ro
http://www.iem.ro

Ph.D.(c) ION ALEXANDRU TĂNASE
International organizations and bodies
The Institute for World Economy
13 Calea 13 Septembrie, Bucharest
ROMANIA
ialexandru.tanase@gmail.com
http://www.iem.ro

Abstract: - In the past two millennia, Europe and more recent the European Union had significant interferences with the Muslim world. The first major contact date back to the 8th century, when the Muslim rulers subdued a part of the South-Western Europe, bringing on our continent their cultural, social, economic and technological values. Since then, the contact between the two civilisations has continued, being characterised by conflicts, temporary alliances, peaceful years, culminating recently with the highest wave of Islamic migration towards Europe in history.
Our paper aims at unveiling the main features of the current relations between the two civilisations from three perspectives: historical, demographical and economic. We base our research on the literature, recent developments as presented in relevant journals and the available statistical data.

Keywords: - economy, influence, Islam, Middle East, the European Union, trade

1 History

The Muslim influence in Europe has been constant in the past two millennia. If we look back in history, we see that the western part of Europe was under heavy Muslim influence beginning with the 8th century A.D. Between A.D. 711-715 the Muslim forces subdued most of the Iberian Peninsula. Cuder-Dominguez (2002) argues that the North African Muslims were invited in Spain as allies of the Witizan faction (the sons of King Witiza, who died in 710) in the war against Roderick, Earl of Betica, who was elected as successor of the King Witiza. “In July 711 [Culder-Dominguez] the Muslim leader Tariq, landing with his troops near Gibraltar, defeated and killed Roderick in Gaudalete. Four months later, the North Africans had occupied Toledo, the capital, in central Spain, and then continued to advance northward.” The conquered had the choice to convert to Islam; pay taxes and continue practising their religion; to become slaves or be executed. Thus, a civil war for succession between the noblemen of Spain facilitated the first Muslim invasion of our continent. Then the Spanish leaders couldn’t reach an agreement and ended up being subdued by the Moors; now Europe doesn`t speak with one voice, and invite Muslim migrants again, the consequences, in the long run, being predictable. Southern Spain, also known as Andalusia (a name that derives from the term Al Andalus used by the Arabs) became the heartland of the new Muslim conquest. The time the Andalusian Umayyad dynasty ruled (from 756 A.D. to 1031 A.D) is considered the golden age of Muslim presence in Spain. It was the period when the Emirate of Cordoba was founded, a time that was characterised by stability, prosperity, and evolution, for the Muslim culture. Cordoba was at that point one of the most cultural cities in Europe, with hundreds of Mosques, libraries, schools and other facilities for almost half a million inhabitants.

The advance of the Moors into the heart of Europe was stopped in October A.D. 732 when the army of Abd-ar-Raḥmān, the Muslim governor of Córdoba was defeated at Tours[43] by Charles Martel, the king of Frankia, named after the battle, the saviour of the western civilisation.

The decline and fall of Muslim rule in Spain started in the 11th century when the first important Muslim Centre, Toledo, was recaptured by the Christians. Throughout the 12 century, internal rebellions have further shattered the unity of Islamic dominance. In 1492, the Islamic rule lost all of its power in Spain, and by 1502, the rulers of Christianity ordered that all Muslims convert to Christianity.

The Islam resumed its influence in Europe at the beginning of the 14th century through the expansion of the Ottoman Empire in Eastern and Central Europe on one hand, and the migration flows from the colonies of the European powers on the other hand, and as the statistics show, it is here to stay. As Sugar (1993) emphasised "in 1345 the first warriors serving the House of Osman crossed the Dardanelles and a new chapter began in the history of Southern Europe" all with the blessing of John VI Cantacuzene, who was fighting for the Byzantine throne against John V Paleologos and needed their military support. Who says history doesn't repeat itself?

On the 29th of May 1453, Constantinople fell under the Ottoman siege and again, the Christian Europe had to face the Muslim expansion plans. At its peak, the European possessions or vassal countries of the Ottoman Empire included: Greece, Bulgaria Albania, Serbia, Hungary, Transylvania, Wallachia, Moldavia. This East-West expansion ended on the 12th of September 1683 under the walls of Vienna, the capital of the Holy Roman Empire when the Ottoman army was defeated by the Polish, German and Austrian forces led by King John III Sobieski of Poland and Lithuania. After the battle of Vienna, the Ottoman Empire started to lose its power gradually, ending up as "the sick man of Europe" at the beginning of the Great War.

The trend reversed in 1798 when Napoleon Bonaparte conquered Egypt marking the beginning of the European imperialism in the Muslim World.

Table 1: The Colonial Powers in the Islamic World

Colonial Power	Muslim Countries
United Kingdom	Egypt, Sudan, Northern Somalia, Kuwait, Bahrain, Qatar, the United Arab Emirates, Oman, South Yemen, Palestine, Jordan, Iraq, India, Pakistan and Bangladesh, Malaysia, Brunei
France	Morocco, Algeria, Tunisia, Mauritania, Mali, Senegal, Guinea, Syria, Lebanon, Djibouti
Italy	Libya, Eritrea, Eastern Somalia
the Netherlands	Indonesia
Russia	Azerbaijan, Chechnya, Dagestan, Turkmenistan, Uzbekistan, Kazakhstan, Tajikistan, Kyrgyzstan
Spain	Northern Morocco, Western Sahara

Source: Oxford Bibliographies, 2016

The massive immigration of Muslims in Europe of our times is a consequence of the guest-worker programmes in the wake of the World War II, the wars in Iraq, Afghanistan and Syria, and the Arab Spring. As Leiken (2005) argues that "backed by friendly politicians and sympathetic judges, foreign workers, who were supposed to stay temporarily, benefitted from family reunification programmes and became permanent."

2 Demographics

The Muslims haven`t always come to Europe as conquerors. After the World War II, many migrants, most of them from Turkey, Middle East were recruited by governments and companies to work in Europe. Germany, for example, accepted workers from Turkey, France and Belgium from Morocco and Algeria, the United Kingdom from India and Pakistan. That is why, over the last decades, the Muslim population presence in Europe, mostly Germany and France, has seen significant growth, its dynamic representing a matter of concern for the Christian heritage of our continent. At present, many Europeans "see Islam as incompatible

[43] Also known as the Battle of Poitiers

with the West" (The Economist, 2016), especially in light of the terrorist attacks attributed to Muslim radical organisations in the last decades that increased the animosity between the two sides.

Table 2: Selected Islamist terror attacks in Europe

Date	Location	Dead	Injured
Mar 11th, 2004	Madrid, Spain	192	2000
Jul 7th, 2005	London	52	770
Mar 2nd, 2011	Frankfurt, Germany	2	2
Mar 11th, 2012	Toulouse and Mountauban, France	7	5
Jul 18th, 2012	Burgas, Bulgaria	7	30
May 22nd, 2013	Woolwich, Britain	1	0
May 25th, 2013	Paris, France	0	1
May 24th, 2014	Brussels, Belgium	4	0
Dec 20th, 2014	Joue-les-Tours, France	0	3
Dec 22nd, 2014	Dijon, France	0	11
Jan 7-9th, 2015	Paris, France	17	11
Nov 13th, 2015	Paris, France	130	368
Mar 22nd, 2016	Brussels, Belgium	30	200

Source: The Economist (2016), International Business Time (2016).

The impact of these terrorist attacks on the psychology of Europeans has been reflected in an article in The Economist (2016) stating that "European publics wildly overestimate the proportion of their populations that is Muslim: an Ipsos-Mori poll in 2014 found that on average Belgian respondents thought 29% of their compatriots were Muslim. The actual figure is closer to 6%". Kettani (2010) suggests that "while the total European population increased from 281 million in 1870 to 547 million in 1950 to 742 million by 2020, the related Muslim population rose from 2% in 1870 and 1950 to 6% by 2020. Also, the fraction of World Muslims living in Europe has been between 2% and 3% since 1950. The total population of Europe increased from 548 million in 1950 to 744 million by 2020. The related Muslim population rose from 2% in 1950 to 6% by 2020." Still, the perception of the Muslims in the EU varies from one country to another as shown in the next table.

Table 3: How Europe views Muslims
(% of each country who have views on Muslims)

Unfavourable	Muslims in	Favourable
19	United Kingdom	72
24	France	76
24	Germany	69
61	Italy	31
56	Poland	30
42	Spain	52

Source: Spring 2015 Global Attitude Survey, Pew Research Centre.

The European 'No-Go' Zones give another negative influence on the perception of Muslim communities. Leiken (2005) pointed out that "unlike the American Muslims, who are geographically diffuse, ethnically fragmented, and generally well off, Europe`s Muslims, who gather in bleak enclaves with their compatriots: Algerians in France, Moroccans in Spain, Turks in Germany, and Pakistanis in the United Kingdom."

According to Kern (2015), "the No-go zones are Muslim-dominated neighbourhoods (especially in the suburbs) that are largely off limits to non-Muslims due to a variety of factors, including the lawlessness and insecurity that pervades a great number of these areas. Host-country authorities have effectively lost control over many no-go zones and are often unable or unwilling to provide even basic public aid, such as police, fire fighting, and ambulance services, out of fear of being attacked by Muslim youth". In his article, Kern underlines there are over 750 areas of lawlessness where the French law no longer applies.

Table 4: Few of the No-Go Zones in France, country that has the largest Muslim community in the EU

City	Suburb
Paris	Évry
	Grigny
	Trappes
	Barbès
	Clos Saint-Lazare
	Seine-Saint-Denis (Aubervilliers)
Amiens	Fafet-Brossolette
Toulouse	Les Izards
Avignon, Béziers, Bordeaux, Clermont-Ferrand, Grenoble, Lille, Lyon, Marseilles, Montpellier, Mulhouse, Nantes, Nice, Paris, Perpignan, Strasbourg, Toulouse and many others.	

Source: Kern, 2015.

Millière (2015) suggests that according to some polls, a majority of Muslims living in Europe want the application of sharia law and clearly reject any idea of assimilation. He also underlines that the sense of guilt among the Europeans for oppressing the Muslims during the colonial days favoured the lack of criticism and tolerance to Muslim enclavisation in the heart of the EU.

Table 5: Muslim population in selected urban areas

Urban area	Country	% of total	Muslim Population	% of Muslim Population in the country (2010)
Amsterdam	Netherlands	24.0	180,000	5.80
Bradford	United Kingdom	16.0	75,000	4.0
Birmingham	United Kingdom	14,3	143,000	4.0
Brussels region	Belgium	17.0	160,000	6.0
Île de France	France	10-15	Up to 1,7 m	10.0
Greater London	United Kingdom	8.5	625.000	4.0
Marseille	France	20.0	350.000	10.0
Rotterdam	Netherlands	13.0	80,000	5.80
Vienna	Austria	8.0	120,000	4.22

Source: The Economist, 2008, Kettani, 2010

Analysts of The Economist (2008) argue that in some of these urban areas the tensions between ”Muslims, non-Muslims and authorities are creating political opportunities for the far right,” as happens in France and other European countries. Table 5 reveals that in the great urban areas of the EU the percentage of Muslim population exceeds the state average (four-fold in Amsterdam and Bradford, over three-fold in Birmingham and Brussels region, and two fold in Greater London, Marseille, Rotterdam, and Vienna).

Table 6: Estimate of the Muslim population in Europe from 1950 to 2010

Rank by (%) of total population	Country	1950	1970	1990	2010	% of Muslim population in 2010 according to Pew Research Centre	% increase of Muslim population in 40 years (1970-2010)
1	**Russian Federation**	6,131,337	9,205,661	12,067,315	14,233,169	-	54.61
	%	5.97	7.06	8.15	10.14		
2	**France**	230,075	1,980,067	3,978,941	6,263,258	7.5	216.31
	%	0.55	3.90	7.00	10.00		

Rank by (%) of total population	Country	1950	1970	1990	2010	% of Muslim population in 2010 according to Pew Research Centre	% increase of Muslim population in 40 years (1970-2010)
3	**Belgium**	8,628	125,222	446,987	641,855	5.9	412.57
	%	0.10	1.30	4.50	6.00		
4	**Netherlands**	5,057	143,424	613,062	965,894	6.0	573.45
	%	0.05	1.10	4.10	5.80		
5	**Sweden**	701	16,086	102,706	499,965	4.6	3,008.07
	%	0.01	0.20	1.20	5.38		
6	**Germany**	20,513	1,172,539	2,462,424	4,283,364	5.8	265.30
	%	0.03	1.5	3.10	5.22		
7	**Switzerland**	2,346	16,071	148,393	323,528	-	1,913.11
	%	0.05	0.26	2.21	4.26		
8	**Austria**	8,324	8,959	156,478	353,952	5.4	3,850.79
	%	0.12	0.12	2.04	4.22		
9	**United Kingdom**	101,232	667,958	1,488,175	2,475,971	4.8	270.67
	%	0.20	1.20	2.60	4.00		
	Romania	29,360	42,530	58,017	65,689	0.3	54.45
	%	0.20	0.22	0.25	0.31		
	Europe	10.765.329	19,918,426	31,939.389	42,052,753	6.0	290.63
	%	1.97	3.04	4.43	5.74		

Source: Kettani, 2010, Hackett, 2015 and our calculations.

Table 6 reveals that in 2010, the highest percentage of Muslims in the EU was recorded in France (10.00%), followed by Belgium (6.00%), the Netherlands (5.80%), Sweden (5.38%) and Germany (5.22%).

In just forty years, during 1970-2010, the Muslim population of Europe increased by 290.63%. Austria and Sweden registered the highest growth (3,850.79, respectively 3,008.07). According to a Pew Research Centre analysis, by 2030, the Muslims are projected to make up 8% of Europe's population.

Millière (2015) emphasizes that people less than thirty years old account for only 16% in the EU, while in the Arab countries plus Iran and Turkey for 70% of the population. Hackett (2015) argues that "the median age of Muslims throughout Europe was 32, eight years younger than the median for all Europeans (40)."

Analyzing the fertility rates of the seven major religious groups in the world, Hackett, and Lipka (2015) found out that each Muslim woman has an average of 3.1 children while each non-Muslim woman has an average of 2.3 children.

An Eurostat report on demographic projections suggests that the high fertility rate of the Muslim population (above four children) could reflect that most of them are recent migrants in the EU. "Many of these migrants come for marriage reasons (which can inflate fertility), and many come from countries with relatively high fertility. Over time, with a longer duration of stay and increased integration, the fertility of this groups is likely to at least partially converge to the levels of the rest of the population, which would be in line with empirical findings from Germany, the UK, and Canada" (Eurostat, 2010).

Table 7: Muslim and Non-Muslim Fertility Rates by Region, 2010-2015

Region	Non-Muslim	Muslim	Difference
Sub-Saharan Africa	4.5	5.6	1.1
Middle East –North Africa	2.6	3.0	0.4
Asia-Pacific	2.0	2.7	0.7
North America	2.0	2.6	0.6
Europe	1.5	2.1	0.6

World	2.3	3.1	0.1

Source: PEW Research Centre, 2015.

The migration issue got back on the European Community agenda after the Arab Spring, referring to the Arab revolutions that started in Tunisia in late 2010. The movements that took place during the past years in the Middle East led to the expansion of existing terrorist groups, the establishment of groups such as the Islamic State, and to an increase of failed states, all of these contributing to the alarming increase in the number of refugees.

International experts consider the Syrian conflict as the most important determinant of the current wave of migrants. The Civil war in Syria, having its origins in anti-government protests in March 2011 led to the deaths of more than 250,000 Syrians so far while more than 11 million Syrians have lost their homes. Of these, 4.5 million have left Syria, most finding refuge in Turkey (2.5 million people), Lebanon (over 1 million people) and Jordan (about 635,000 persons), and almost 500.000 in EU (Oehler-Şincai, 2016).

3 Economics

The European Union has always had good commercial ties with Muslim countries, especially in the last decade. Although the trade is based mostly on two industries (mineral fuels and machinery and transport equipment), there is a lot of scope for developing it further. In 2015, the total trade flows in goods between the ***EU and the Kingdom of Saudi Arabia (KSA)*** reached €61.8 billion, down from €63.8 billion in 2014, mostly due to the decrease in international oil price. Nevertheless, the economic relations between the two partners have been prosperous over the past ten years. In 2005, bilateral trade in goods reached €38.8 billion, almost half of the current value. In 2015, the EU imported from KSA mineral fuels of €21.5 billion and exported to the Arab country mostly manufactured goods (€40.3 billion), thus registering a positive trade balance (€18.7 billion). By comparison, the trade in goods of the U.S. with KSA reached €37 billion in 2015, the American trade balance being negative (€2 billion) according to the European Commission – DGT (2016).

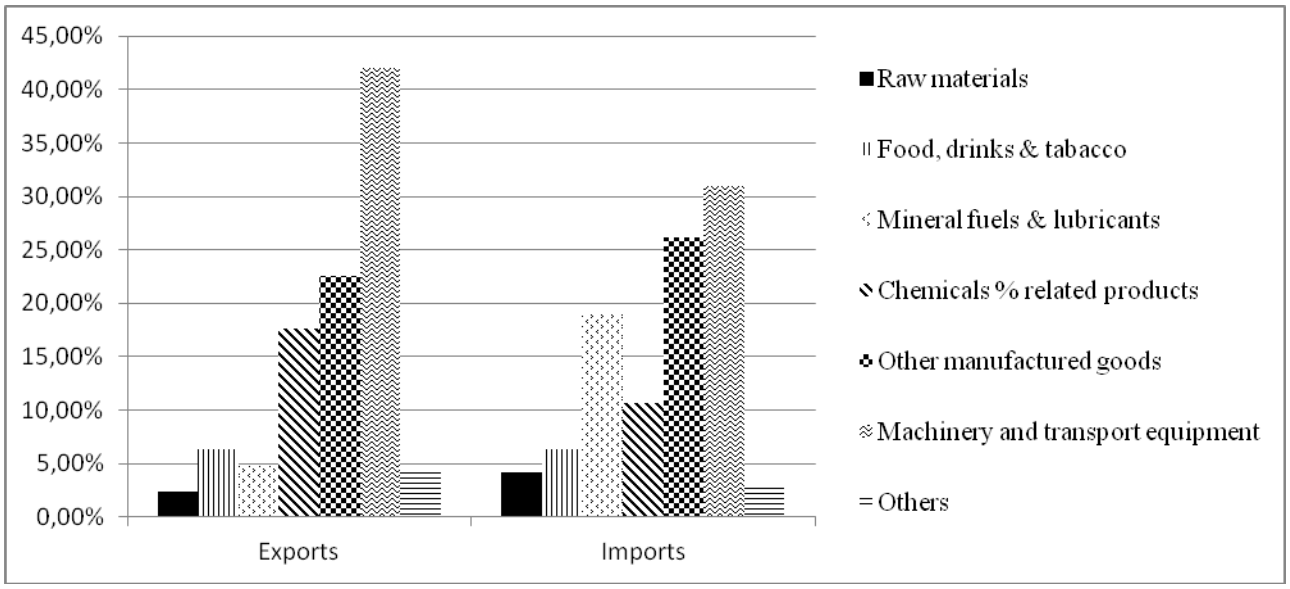
The EU also has good economic ties with ***United Arab Emirates*** (UAE) and **Qatar**. In 2015, the total trade in goods between EU and the UAE reached €57.8 billion, up from €50.8 billion in 2014. The trade balance (in goods) with UAE is impressive (€39.6 billion), resulting from the EU exports of manufactured goods (machinery and transport equipment). In 2015, the total trade in goods between the EU and Qatar reached €17.9 billion, up from €15.9 billion in 2014 and €4.5 billion in 2005. The EU imports fuels and mining products of €6.5 billion and exports to Qatar manufactured goods of €9.3 billion. The numbers show that the European Union imports from the Middle East, mostly fuels and mining products, exports mostly manufactured goods.

'The Gulf Cooperation Council[44] is the EU's fifth largest export market (€97 billion of exports in 2014), and the EU is the grouping's biggest trading partner, with trade flows totalling €152 billion, or 13% of the GCC's global trade (European Union External Action, 2016)

In 2014, the EU imported goods and services of €5,632 billion; the imports of energy represented almost 20% of the total imports (European Economic Forecast Winter, 2016). "The EU imports 90% of its crude oil and 66% of its natural gas. **Egypt** is the sixth largest supplier of gas to the EU. The EU and Egypt share a mutual interest in developing a comprehensive joint initiative aiming at increasing the security of gas supplies through, inter alia, the promotion of utilization of renewable energies in Egypt" (EU, 2008).
In 2015, mineral fuels and lubricants stood for 19% out of total imports in the EU.

Chart 1: Main exports and imports, EU-28, 2015 (% share of extra EU-28 exports imports)

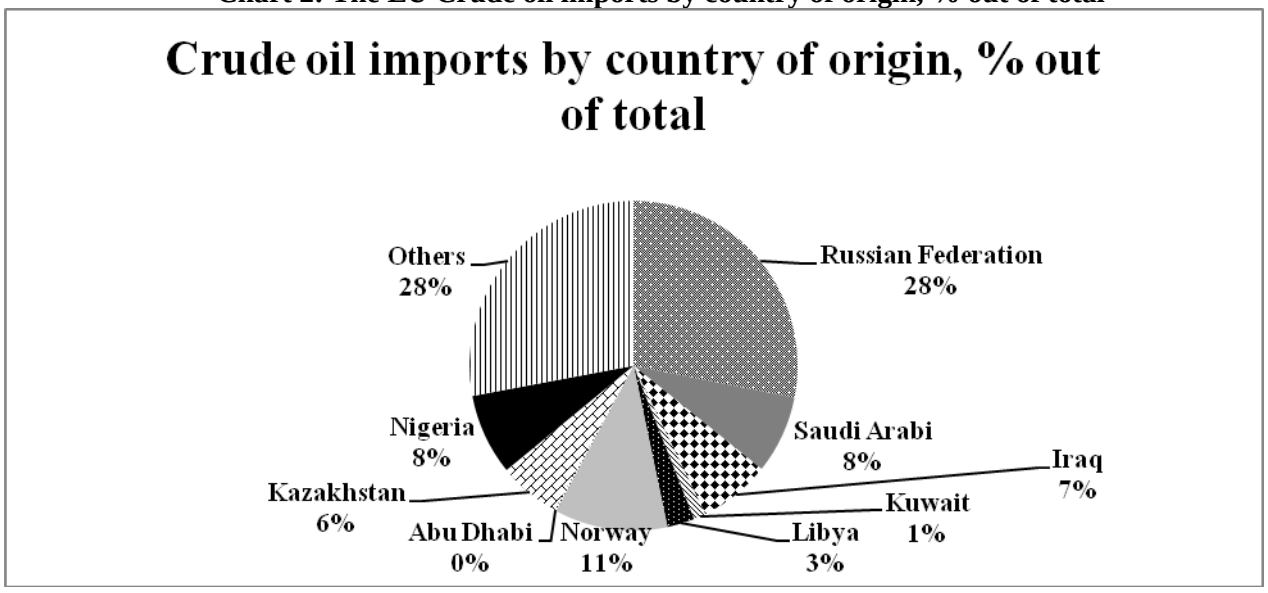
[44] Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates



Source: Eurostat, 2016.

According to the European Commission – Directorate-General for Energy (DGE) the EU imports of crude oil from the following countries: 7.02 % from Iraq, 7.69% from Saudi Arabia, 1.2% from Kuwait, 2.68% from Libya, and 0.18% from Abu Dhabi. The major oil supplier remains the Russian Federation (28.11%), followed by Norway 11.13%, Nigeria 7.98%, and Kazakhstan 6.06%. The Middle East countries provide almost a quarter of crude oil imported by the EU, less than the Russian Federation alone.

Chart 2: The EU Crude oil imports by country of origin, % out of total



Source: European Commission, DGE, 2016.

The most important crude oil imports are: Germany with 14.95% of the total crude oil imported by the EU (5.95% from the Russian Federation), Italy 11.98% (2.19% from Azerbaijan, 1.51% from the Russian Federation, 1.11% from Kazakhstan, and 1,05 from Saudi Arabia, Kingdom of), Spain 11.82% (1.84% from Nigeria, 1.51% from the Russian Federation) and France 10.86% (1.85% from KSA, 1.62% from Kazakhstan and 1.25% from Nigeria). The top two importing countries from KSA are France and Belgium (countries with high percentages of Muslim population), with 1.85% and, respectively, 1.63%, out of total crude oil imports in the EU28. The top two crude oil importing countries from the Russian Federation are Germany with (5.95%) and Poland (4.41%) out of the total (European Commission – DGE, 2016)

Table 8: Imports of crude oil by country destination into EU28 in 2015, % of total

Country	Imports of crude oil (% of total)
Austria	1.66%
Belgium	5.81%
Bulgaria	1.14%
Croatia	0.41%
Denmark	0.78%
Finland	2.09%
France	10.86%
Germany	14.95%
Greece	4.23%
Hungary	1.18%
Ireland	0.57%
Italy	11.98%
Lithuania	1.60%
Netherlands	10.17%
Poland	5.00%
Portugal	2.63%
Romania	1.19%
Slovakia	1.12%
Spain	11.82%
Sweden	3.30%
United Kingdom	7.51%

Source: European Commission, DGE, 2016.

As shown in Table 9, the value of extra-EU exports, by leading partners (20), was in 2015, €1.382 bn. In 2015, the USA remains the main partner with a share of over 20.6% in EU total exports. In the Top 20 of the EU most important export partners, there are only four Muslim countries: Turkey, €79 billion (4.4% of total exports); UAE, €48 billion, Saudi Arabia, 40 billion (2.2%) and Algeria, 22 billion (1.2%). Out of the total of the first 20 export partners of the EU (€1,382), the Muslim countries represent only (€189 billion).

Table 9: Extra-EU27 trade, by main partners, total product. Exports in 2015

Country	Million of Euro	Share in %, out of total
USA	370,601	20.6
China	170,323	9.5
Switzerland	150,691	8.4
Turkey	78,969	4.4
Russia	73,688	4.1
United Arab Emirates	48,473	2.7
Saudi Arabia	40,197	2.2
Algeria	22,264	1.2
Top 20 Countries	1,382,689	76.9

Source: Eurostat, 2016.

In 2015, the EU registered a positive trade balance, a surplus of €76 billion with all the Muslim countries in the Top 20 (Table 10). This surplus, though, represents about 63% of the trade surplus the EU has with the USA. On the negative side, the EU registered deficits with the Russian Federation and China (of €61.5 billion and €179.5 billion respectively).

Table 10: Extra-EU27 trade, by main partners, total product. Trade balance 2015

Country	Million of Euro
USA	122,618
United Arab Emirates	39,106

Country	Million of Euro
Saudi Arabia	18,754
Turkey	17,581
Algeria	1,382
Russia	-61,596
China	-179,510

Source: Eurostat, 2016.

In 2015, the EU registered deficits in the trade with mineral fuels with most of the Muslim countries. The total value of these deficits reached €61 billion, down from €84 billion in 2014.

Table 11: The Extra-EU27 trade of mineral fuel, by main partners. Trade balance 2015 and 2014, in Million of Euro

Country	2015	2014
Algeria	-18,454	-27,248
Saudi Arabia	-14,695	-22,211
Iraq	-12,023	-11,454
Azerbaijan	-10,125	-12,747
Libya	-5,958	-10,665

Source: Eurostat, 2016.

The stock of FDI attracted by the EU increased over the last ten years (Table 12). The Gulf countries increased their FDI in the EU over 436% from 2001 to 2012, a similar trend (453%) being recorded in the countries of Western Asia (including Iran), Northern Africa (303%) and in Turkey (313%). Egypt, by far, registered the largest increase in direct investments in the EU from 2001 to 2012, with an impressive 1,552%.

Of course, the FDIs in the EU of each Muslim country are not as large the ones of the U.S. or Switzerland, but, together, Western Asia (including Iran), Gulf Arabian Countries, Turkey, Northern Africa and Egypt, make up to €164 billion which exceeds the US FDI in the EU (€154 billion), giving them a synergic leverage. Therefore, the Muslim countries play an important role in the economy of Europe.

Table 12: EU direct investment inward stocks by extra-EU investing country, Million Euro

Country	2001	2012
USA	704,815	1,543,635
Switzerland	144,700	500,187
Western Asia (including Iran)	16,197	89,621
Gulf Arabian Countries	10,035	53,797
Russia	3,969	75,190
Turkey	2,295	9,496
Northern Africa	1,624	7,562
Egypt	230	3,801

Source: Eurostat, 2016.

In the world GDP ranking (Table 13), the first Muslim country is Turkey, ranked the 18th country with a GDP at current prices of $734 billion (almost 5% of the EU GDP). The first sixty states, ranked by their GDP in 2015, include only six Muslim countries: Turkey, Saudi Arabia, Iran, UAE, Egypt, Qatar, Iraq and Kuwait. Their combined GDP reaches €2,921 billion, which would place them among the first five entities in the World.

Table 13: World GDP Ranking 2005 and 2015, current prices, billion USD.

Country	2015	2005
1. USA	17,947	13,094
2. EU	16,220	14,312
3. China	10,983	2,291
4. Japan	4,123	4,572

Country	2015	2005
5. India	2,091	834
6. Brazil	1,773	892
18. Turkey	734	483
20. Kingdom of Saudi Arabia	653	328
29. Iran	388	218
31. UAE	345	181
32. Egypt	331	94
51. Qatar	181	44
52. Romania	177	99
57. Iraq	169	50
58. Kuwait	120	80

Source: IMF database, 2016 and IndexMundi (EU, 2005).

The economic relations between the EU and the Muslim countries are nevertheless improving year by year, Turkey being one of the 5th most important trading partners of the European Block. Even though more than 15% of the total EU imports of mineral fuels come from the Muslim countries of the Middle East, the European block has succeeded to register a positive trade balance with these countries by exporting impressive value-added machinery and other transport equipment. Nevertheless, if we take into consideration the economic value of the relations with these countries, in total, they are less important than the ones with the USA or China and even in regards of mineral fuels trading the relations are not very notable by comparison with the Russian Federation or Norway. Overall, the statistics present a surplus in EU's trade balance, year over year, therefore, the EU could try to sustain and develop this trend through a bigger presence in the Muslim countries of the Middle East.

4 Conclusion

As we emphasized, along millennia, the relations between Christianity and Islam have registered ups and downs, each party registering victories and defeats. The armies of Islam were stopped in their march to Europe, and during the colonial times, the European powers, especially The United Kingdom and France controlled most of the Muslim regions of the world. The World War II had an undesired consequence, namely the beginning of large-scale Muslim migration in Europe, through the guest-worker and family reunification programs. Thus, what they could not get by force, they could get in a quieter manner, with the help of demographics and enclavisation. "The old get old, and the young gets stronger. May take a week, and it may take longer. They got the guns, but we got the numbers" (Jim Morrison, Five to One). Step by step the Muslims can get political leverage as happened already in some European cities (Rotterdam, London) and a voice in the decision-making process.

If we analyse the Muslim countries, individually, we might tend to say that they do not have such a significant role in EU`s economy, but if we combine the major Muslim countries we observe that their role as an economic partner for the EU has increased. The Muslim interests in EU are based on economic, social and demographic factors. These economic relations present many advantages, but also disadvantages. The outward investments from Gulf Cooperation Council (GCC) member states have historically been directed towards North America and Europe. Also, since 2006 the EU has benefitted from substantial amounts of investments from the GCC, which have provided liquidity to European markets, especially after the financial crisis in 2007/2008. Nevertheless, threats are present such as the sharp decline in oil prices to pre-financial crisis levels, growing of the share of the Muslim population, and more important the fear of Islamic fundamentalism in the EU countries.

References:

[1]. Conard Hackett (2015), *5 facts about the Muslim population in Europe*. Available at http://www.pewresearch.org/fact-tank/2015/11/17/5-facts-about-the-muslim-population-in-europe/.

[2]. Cuder-Dominguez, Pilar (2002), The *Islamization of Spain in William Rowley and Mary Pix: The Politics of Nation and Gender*. *Comparative Drama*, 321-336.

[3]. European Commission (2016), *Imports and secure supplies*. Available at https://ec.europa.eu/energy/en/topics/imports-and-secure-supplies.
[4]. European Commission (2016), *European Economic Forecast Winter 2016.*
[5]. European Commission, *Directorate-General for Energy (2016), Registration of Crude Oil Imports and Deliveries in the European Union (EU28) (1) (EXTRA EU)*
[6]. European Commission, *Directorate-General for Energy (2016), Registration of Crude Oil Imports and Deliveries in the European Union (EU28) (1) (INTRA + EXTRA EU)*
[7]. Eurostat Statiscts Explained (2016), *International trade in goods*. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/International_trade_in_goods.
[8]. Eurostat (2010), Work session on demographic projections Lisbon, 28-30 April 2010. Theme: *Population and social conditions Collection: Methodologies and working papers* © European Union
[9]. EU (2008), *MEMORANDUM OF UNDERSTANDING ON STRATEGIC PARTNERSHIP ON ENERGY BETWEEN THE EUROPEAN UNION AND THE ARAB REPUBLIC OF EGYPT*, Available at eeas.europa.eu/egypt/docs/mou_energy_eu-egypt_en.pdf
[10]. European Union External Action (2016), *Relations between the Gulf Cooperation Council (GCC) and the EU*. Available at http://eeas.europa.eu/gulf_cooperation/index_en.htm
[11]. Joulan Abdul Khalek (2015), *Arab Sovereign investments in Europe: A strong past and an uncertain future*. Aspenia online. Available at https://www.aspeninstitute.it/aspenia-online/article/arab-sovereign-investments-europe-strong-past-and-uncertain-future.
[12]. Kern, Soeren (2015), *European `No-Go` Zones: Fact or Fiction? Part 1: France*. Gatestone Institute. International Policy Council. Available at http://www.gatestoneinstitute.org/5128/france-no-go-zones
[13]. Kettani, Houssain (2010), *2010 World Muslim Population*. Proceedings of the 8th Hawaii international conference on arts and humanities.
[14]. Kettani, Houssain. *Muslim population in europe: 1950-2020*. International Journal of Environmental Science and Development 1.2 (2010): 154.
[15]. Leiken, Robert, S. (2005), *Europe`s Angry Muslims*, Council on Foreign Relations, Foreign Affairs, July/August.
[16]. Michael Lipka, Conrad Hackett (2015), *Why Muslims are the world`s fastest-growing religious group*. Available at http://www.pewresearch.org/fact-tank/2015/04/23/why-muslims-are-the-worlds-fastest-growing-religious-group/
[17]. Millière, Guy (2015), *Muslim Invasion of Europe, Gatestone Institute*. International Policy Council. Available at http://www.gatestoneinstitute.org/6721/muslim-invasion-europe.
[18]. Monica Oehler-Şincai (2016), *Migrația, una dintre principalele teme ale agendei globale*, Euroinfo nr. 2
[19]. Sugar, Peter F. (1993). *Southeastern Europe under Ottoman Rule, 1354-1804*. Vol. 5. University of Washington Press.
[20]. The Economist (2016), *Islam in Europe: perception and Reality*. Mar 23rd. Available at http://www.economist.com/blogs/graphicdetail/2016/03/daily-chart-15

Nuclear Power Plants and Uranium Prices

SERGHEI MĂRGULESCU
Economic Sciences Department
"Nicolae Titulescu" University of Bucharest
Calea Vacaresti, No. 185
margulescu@univnt.ro

ELENA MĂRGULESCU
Economic Sciences Department
"Nicolae Titulescu" University of Bucharest
Calea Vacaresti, No. 185
elena.margulescu@univnt.ro

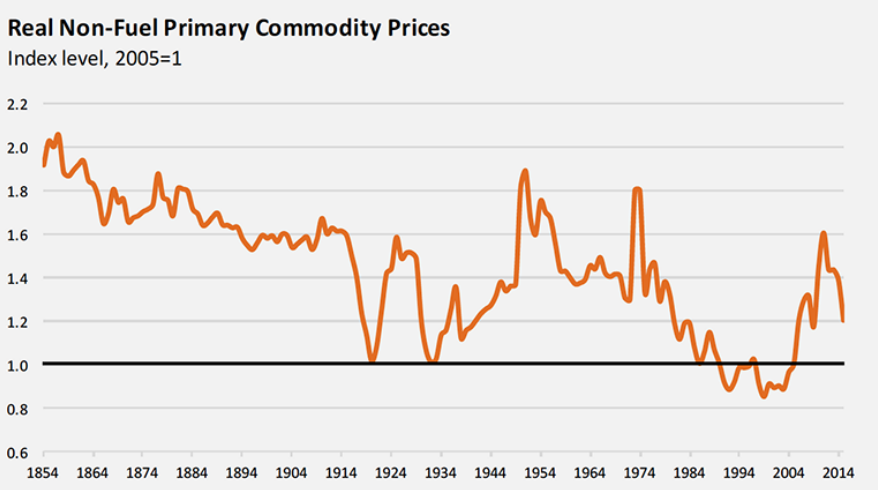
Abstract: - The recent UN Climate Talks in Paris have put forward the goal of limiting the global temperature rise to two degrees Celsius by the end of the century. This is providing a strong political base for expanding the nuclear power capacity because of the critical role that nuclear power plants play in the production of electricity without emissions of greenhouse gases. In all, more than a dozen countries get over 25% of their energy from nuclear power, with 437 nuclear reactors operating around the world. On top of that, there are another 71 reactors under construction, 165 planned, and 315 proposed. Global uranium demand is expected to rise 40% by 2025 and 81% by 2035. Mined supply of uranium will struggle to keep pace amid rising demand and falling secondary supplies. A cumulative supply deficit is expected to emerge by 2021 while 2016 marks a huge inflection point for the industry, beeing the first year that demand will actually exceed supplies, creating a 60,000-tonne shortfall by 2018. Over the next 10 years, we're going to see uranium prices more than double while the bull run will begin in earnest in 2016.

Keywords: - nuclear power, uranium supply, uranium demand, uranium prices.

1 Introduction

In 2015 the dynamics of supply and demand for industrial and precious metals were out of favor. The worst performer, with a decline in prices of about 40% is rhodium. The next two are nickel and iron ore, each down more than 30%. Tin, zinc, palladium, platinum and copper aren't far behind, each down more than 20%. Gold and silver were down about 5%. Uranium is one of the few commodities that hasn't gotten trounced. It's traded roughly flat over the past year. That's because, here, the supply-demand fundamentals have already begun to turn.

But here's the secret about commodities: They're elastic. As they get cheaper, demand increases and supplies shrink. It happens every time.



This chart shows how commodities have performed over the last 160 years.

As you can see, every sharp decline is followed by an equally dynamic rebound. Each boom and bust cycle lasts about seven or eight years. The down-cycle we're witnessing right now began back in 2010. So if the pattern holds we'll see another boom begin around 2017. That's not a given, of course. These cycles can be extended by overarching circumstances.

For instance, the boom cycle that began in 1933 was exacerbated by World War II. As a result, it lasted almost two decades. Similarly, the commodity price collapse that occurred from 1974 to the late 90s was exacerbated first by Fed Chairman Paul Volcker's war on inflation, and then the collapse of the Soviet Union.

These kinds of watershed events are atypical but they do happen. Still, it doesn't change the fact that the trend always reverses.

For instance, platinum and palladium are set for an annual deficit this year — 20.3 million tonnes for platinum and 13.3 million tonnes for palladium. Yet, these metals are at their lowest level in seven years. Copper and nickel will eventually come back into fashion, but not for a while. Silver is expected to double its present value of around 15$ per ounce in the next two years, but after a possible fall to 10$ per ounce.

There have only been two true eras of energy so far — the chemical and mechanical. Only recently have we started the transition to the third — the elemental.

The first two eras are marked by two tracts of knowledge. The first is chemistry, and the development and exploitation of fuel sources. The second is engineering, and harnessing potential through efficiency and transmission. In many regards, we haven't changed our ways since we started using wood fires for heat and light.

What we do to coal, natural gas, gasoline, and jet fuel is the same. We exploit the chemical structure of a fuel to break down molecules in an exothermic reaction.Then we use the heat however we can. The problem, to date, has been how much heat we end up losing in the process, or building something robust enough to contain the reaction.

If you have a fireplace, you aren't too far off from where we started when our ancestors learned how to burn wood. Only 10% of the heat released actually heats your house. The rest goes right up the chimney. With so much energy being lost, increasing the fuel supply is a terrible idea. The scaling at 10% efficiency is horrendous. A constant stream of incremental improvements resulted.

Using the same principles of mechanical force used for wind and water mills, engineers drove up efficiency by using turbines, coupled with closed steam pipe systems. The discovery of ideal fuel-to-air ratios led to efficient pistons that, when paired with camshafts, opened up even smaller engine designs that could be mounted on vehicles. Coolants and lubrication reduced friction and excess heat, allowing more efficient, higher RPM designs. Weight reductions from material changes drove down weight.

The dynamo transformed mechanical energy into a stream of electrons. Wires were thrown up worldwide to blanket the world in an electrical grid carrying power from chemical reactions. Even state-of-the-art batteries simply exploit unbalanced chemical reactions to generate a constant flow of electrons. So much has changed in recent history, but it has all been through incremental improvements upon tried and true chemical and mechanical laws of nature, often rapidly adopted whenever a new scientist's discovery or engineer's design is revealed.

It wasn't until the middle of the last century that the third era started to emerge, marking fundamental breaks from both the chemical and mechanical eras.

2 The Elemental Era

The new era of energy dives into our relatively new understanding of our universe. We are going beyond molecular reactions to exploit the fundamental properties of atomic forces and physics. Power generation from basic nuclear physics is becoming the norm. In regard to the nature of the fuel, nuclear and solar power, so different in public perception, must be lumped together.

Nuclear power, as we know it, approaches elemental power via ultra-heavy atoms that can be forged by nothing less than the crucible of the catastrophic explosion of ancient stars. No burning, no chemical reactions, no carbon pollutants. The fundamental, unstable nature of the radioactive isotopes we refine are enough to create constant heat to turn steam turbines.

The energy potential is unfathomably greater as well. By weight, uranium packs about 17,000 times the energy potential of modern fossil fuels.

Solar energy exploits the other end of the nuclear spectrum. Hydrogen and helium fuel the 10 billion year-long thermonuclear explosion, barely contained by gravity, commonly known as the Sun. We capture the

tiniest hint of a fraction of the energy that rains down on us as solar radiation, with maybe 15-20% efficiency. Yet it is still enough to be economically feasible and capture over half of the total world energy market by 2050.

This third era is going to change so much that we cannot possibly imagine the full implications today. The latest designs for both power sources have shed their early limitations, and the world is rapidly moving to exploit element-based power sources as quickly as possible to reap unprecedented benefits. New generation designs for nuclear power, such as molten salt reactors, cannot melt down and can reprocess old fuel.

...there are several things that are making it more likely that we are going to see some real progress on the nuclear front. Certainly at the top of the list is the emergence of global concern over climate change issues. It's hard — even for the people who've long opposed nuclear power — to fight nuclear energy and global warming at the same time. People now recognize the critical role that nuclear power plants play in the production of electricity without emissions of greenhouse gases.

3 How long will our supplies of uranium and thorium last?

Ask a geologist how much uranium we have and he won't give you an easy answer. Or maybe he will, but then the answer is not of much use. The simple answer is: the earth's crust contains 2,8 parts per million (ppm). That's enough uranium to serve us until the time the sun turns into a red giant, more than a billion years from now. But it would mean ploughing over the planet and most people would want to avoid that – so let's get practical.

Uranium is literally everywhere, in rocks and in oceans. How much of it we can use, depends on how hard we look for it and on what we are willing to pay for it. Let's start with a moderate estimate of available resources of uranium. On world-nuclear, we see the known supplies of the world: 5.327.000 tonnes. In our extreme scenario, using 70.000 tonnes per year, this would last us 76 years. Not really a an impressive number. Even if we add the known supplies of thorium (3.385.000 tonnes worldwide), we would only roughly double this number to, say, 150 years. (To make things appear even worse, the number of tonnes per year in our extreme scenario is almost the same as the amount our present nuclear power plants use: 68.000 tonnes annually. That's mainly because conventional nuclear reactors use only about 0,5% of the energy content of the uranium)

But the quantity of thorium quoted above (5.327.000 tonnes) is the thorium that can be sold for the market price of 80$ per kg (and hence, must be produced cheaper). What if we are willing to pay more? How much more uranium and/or thorium does that make available? For instance for Thorium, the Atomic Energy Commission has studied the available resources in 1969. Of this thorium, we've hardly used anything since those days. The report raises the question how much thorium is recoverable at a price of 500$/kg in 1969 dollars, perhaps 3000$/kg today. The answer is 3 billion short tonnes or 2.700.0000.000 metric tonnes, enough to last us 40.000 years in our extreme scenario. For uranium, the figures will be not much different. (And no, 3000$/kg is not a ridiculous price. At this price, we'd need to pay $3.000.000 for the fuel to produce 1GWe-yr. And 1 GWe-yr equals 8.760.000.000 kWh, which means a fuel cost of $0,0004 per kWh.) This means that even in our extreme scenario, the combined uranium and thorium of the United States would be enough to power the world for about 100.000 years.

If that is not enough to be called 'sustainable', consider yet another option: seawater. Uranium forms soluble salts and the seas contain 0.003 ppm Uranium. Again, that doesn't sound like much, but according to Masao Tamada of the Japanese Atomic Energy Agency it adds up to about 4.5 billion tons, adding another 64.000 years of sustaining our extreme scenario. The technique of winning this sea-uranium is still in its infancy, but Japanese researchers have succeeded in winning it at a cost of $240/kg. And here's an article that describes the technique of extractring the uranium. The production speed is still very low and not nearly enough for the yearly refill of a single molten salt reactor, but we have all the time in the world to improve our technique… Still not satisfied on the sustainability? The concentration of the uranium in the sea is an equilibrium. Meaning: if we take some out, nature will refill the store through rivers and rock-weathering – it already does: rivers carry uranium to the sea all the time.

Charles Barton – a respected blogger on the subject of molten salt reactors estimates that dissolved natural uranium from terrestrial sources, that rivers continually carry to the seas, amounts to about 32,000 tons per year*. Finally, uranium in seawater is in equilibrium solution. 'Added dissolved uranium causes other dissolved uranium to precipitate out of sea water. The uranium precipitation is deposited on the sea bottom, but may re-dissolve at some future time.' In short: even in our extreme use scenario, we won't run out of uranium.

And remember, our extreme scenario was pretty extreme: energy produced by solar and wind, and saved by energy conservation, were all discarded. While in reality, these will fill in a substantial part of our energy demands. These sources combined will provide us with all the energy we need.
Uranium production

Uranium production figures, 2004-2014 *(July 2015)*

Country or area	Production (tU)											% change
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2013-14
Australia	8982	9516	7593	8611	8430	7982	5900	5983	6991	6350	5001	-21
Brazil	300	110	190	299	330	345	148	265	231	198	231	+16
Canada	11,597	11,628	9862	9476	9000	10,173	9873	9145	8998	9332	9134	-2
China ^	750	750	750	712	769	750	827	885	1500	1450	1500	+3
Czech Rep	412	408	359	306	263	258	254	229	228	225	193	-14
France	7	7	0	4	5	8	7	6	3	0	3	-
Germany	77*	94*	65*	41*	0	0	0	52	50	27	33	+22
India^	230	230	230	270	271	290	400	400	385	400	385	-4
Kazakhstan	3719	4357	5279	6637	8521	14,020	17,803	19,451	21,317	22,567	23,127	+2
Malawi	0	0	0	0	0	104	670	846	1101	1132	369	-67
Namibia	3038	3147	3077	2879	4366	4626	4496	3258	4495	4315	3255	-25
Niger	3282	3093	3434	3135	3032	3243	4198	4351	4667	4528	4057	-10
Pakistan^	45	45	45	45	45	50	45	45	45	41	45	+10
Romania^	90	90	90	77	77	75	77	77	90	80	77	-4
Russia^	3200	3431	3430	3413	3521	3564	3562	2993	2872	3135	2990	-5
South Africa	755	674	534	539	655	563	583	582	465	540	573	+6
Ukraine^	800	800	800	846	800	840	850	890	960	1075	962	-11
USA	878	1039	1692	1654	1430	1453	1660	1537	1596	1835	1919	+5
Uzbekistan	2016	2300	2270	2320	2338	2429	2400	3000	2400	2400	2400	0
Total	40,178	41,179	39,670	41,282	43,853	50,772	53,663	53,494	58,344	59,673	56,252	-6

World Nuclear Power Reactors & Uranium Requirements (*1 January 2016)*

This table includes only those future reactors envisaged in specific plans and proposals and expected to be operating by 2030.

The WNA country profiles linked to this table cover both areas: near-term developments and the prospective long-term role for nuclear power in national energy policies. They also provide more detail of what is tabulated here.

COUNTRY (Click name for Country Profile)	NUCLEAR ELECTRICITY GENERATION 2014		REACTORS OPERABLE 1 Jan 2016		REACTORS UNDER CONSTRUCTION 1 Jan 2016		REACTORS PLANNED Jan 2016		REACTORS PROPOSED Jan 2016		URANIUM REQUIRED 2015
	billion kWh	% e	No.	MWe net	No.	MWe gross	No.	MWe gross	No.	MWe gross	tonnes U
Argentina	5.3	4.0	3	1627	1	27	2	1950	2	1300	215
Armenia	2.3	30.7	1	376	0	0	1	1060			88
Bangladesh	0	0	0	0	0	0	2	2400	0	0	0

Belarus	0	0	0	0	2	2388	0	0	2	2400	0
Belgium	32.1	47.5	7	5943	0	0	0	0	0	0	1017
Brazil	14.5	2.9	2	1901	1	1405	0	0	4	4000	326
Bulgaria	15.0	31.8	2	1926	0	0	1	950	0	0	324
Canada	98.6	16.8	19	13553	0	0	2	1500	3	3800	1784
Chile	0	0	0	0	0	0	0	0	4	4400	0
China	123.8	2.4	30	26849	24	26885	40	46590	136	153000	8161
Czech Republic	28.6	35.8	6	3904	0	0	2	2400	1	1200	566
Egypt	0	0	0	0	0	0	2	2400	2	2400	0
Finland	22.6	34.6	4	2741	1	1700	1	1200	1	1500	751
France	418.0	76.9	58	63130	1	1750	0	0	1	1750	9230
Germany	91.8	15.8	8	10728	0	0	0	0	0	0	1889
Hungary	14.8	53.6	4	1889	0	0	2	2400	0	0	357
India	33.2	3.5	21	5302	6	4300	24	23900	36	41600	1579
Indonesia	0	0	0	0	0	0	1	30	4	4000	0
Iran	3.7	1.5	1	915	0	0	2	2000	7	6300	176
Israel	0	0	0	0	0	0	0	0	1	1200	0
Italy	0	0	0	0	0	0	0	0	0	0	0
Japan	0	0	43	40480	3	3036	9	12947	3	4145	2549
Jordan	0	0	0	0	0	0	2	2000			0
Kazakhstan	0	0	0	0	0	0	2	600	2	600	0
Korea DPR (North)	0	0	0	0	0	0	0	0	1	950	0
Korea RO (South)	149.2	30.4	24	21677	4	5600	8	11600	0	0	5022
Lithuania	0	0	0	0	0	0	1	1350	0	0	0
Malaysia	0	0	0	0	0	0	0	0	2	2000	0
Mexico	9.3	5.6	2	1600	0	0	0	0	2	2000	270
Netherlands	3.9	4.0	1	485	0	0	0	0	1	1000	103
Pakistan	4.6	4.3	3	725	2	680	2	2300	0	0	101
Poland	0	0	0	0	0	0	6	6000	0	0	0
Romania	10.8	18.5	2	1310	0	0	2	1440	1	655	179
Russia	169.1	18.6	35	26053	8	7104	25	27755	23	22800	4206
Saudi Arabia	0	0	0	0	0	0	0	0	16	17000	0
Slovakia	14.4	56.8	4	1816	2	942	0	0	1	1200	466
Slovenia	6.1	37.2	1	696	0	0	0	0	1	1000	137
South Africa	14.8	6.2	2	1830	0	0	0	0	8	9600	305
Spain	54.9	20.4	7	7002	0	0	0	0	0	0	1274
Sweden	62.3	41.5	9	8849	0	0	0	0	0	0	1516
Switzerland	26.5	37.9	5	3333	0	0	0	0	3	4000	521
Thailand	0	0	0	0	0	0	0	0	5	5000	0

Turkey	0	0	0	0	0	0	4	4800	4	4500	0
Ukraine	83.1	49.4	15	13107	0	0	2	1900	11	12000	2366
UAE	0	0	0	0	4	5600	0	0	10	14400	0
United Kingdom	57.9	17.2	15	8883	0	0	4	6680	9	11220	1738
USA	798.6	19.5	99	98990	5	6218	5	6263	17	26000	18692
Vietnam	0	0	0	0	0	0	4	4800	6	6700	0
WORLD**	2,411	c 11.5	439	382,547	66	70,335	158	179,215	330	375,620	66,883
	billion kWh	% e	No.	MWe	No.	MWe	No.	MWe	No.	MWe	tonnes U
	NUCLEAR ELECTRICITY GENERATION		REACTORS OPERABLE		REACTORS UNDER CONSTRUCTION		ON ORDER or PLANNED		PROPOSED		URANIUM REQUIRED

Sources:
Reactor data: WNA to 1/1/16 (excluding nine shut-down German units)
IAEA for nuclear electricity production & percentage of electricity (% e) April 2015.
WNA: Global Nuclear Fuel report Sept 2013 (reference scenario 2015) – for U. 66,883 tU = 78,875 t U_3O_8
Operable = Connected to the grid.
Under Construction = first concrete for reactor poured, or major refurbishment under way.
Planned = Approvals, funding or major commitment in place, mostly expected in operation within 8-10 years.
Proposed = Specific programme or site proposals, expected operation mostly within 15 years.
New plants coming on line are largely balanced by old plants being retired. Over 1996-2013, 66 reactors were retired as 71 started operation. There are no firm projections for retirements over the period covered by this Table, but WNA estimates that at least 60 of those now operating will close by 2030, most being small plants. The 2015 WNA Nuclear Fuel Report reference scenario (Table 2.4) has 132 reactors closing by 2035, and 287 new ones coming on line (figures include 28 Japanese reactors on line by 2035).
TWh = Terawatt-hours (billion kilowatt-hours), MWe = Megawatt (electrical as distinct from thermal), kWh = kilowatt-hour.
** The world total includes six reactors operating on Taiwan with a combined capacity of 4927 MWe, which generated a total of 40.8 billion kWh in 2014 (accounting for 18.9% of Taiwan's total electricity generation). Taiwan has two reactors under construction with a combined capacity of 2700 MWe. It was expected to require 972 tU in 2015.

4 The Economics of Nuclear Power

Nuclear power is cost competitive with other forms of electricity generation, except where there is direct access to low-cost fossil fuels.

Fuel costs for nuclear plants are a minor proportion of total generating costs, though capital costs are greater than those for coal-fired plants and much greater than those for gas-fired plants.

Providing incentives for long-term, high-capital investment in deregulated markets driven by short-term price signals presents a challenge in securing a diversified and reliable electricity supply system.

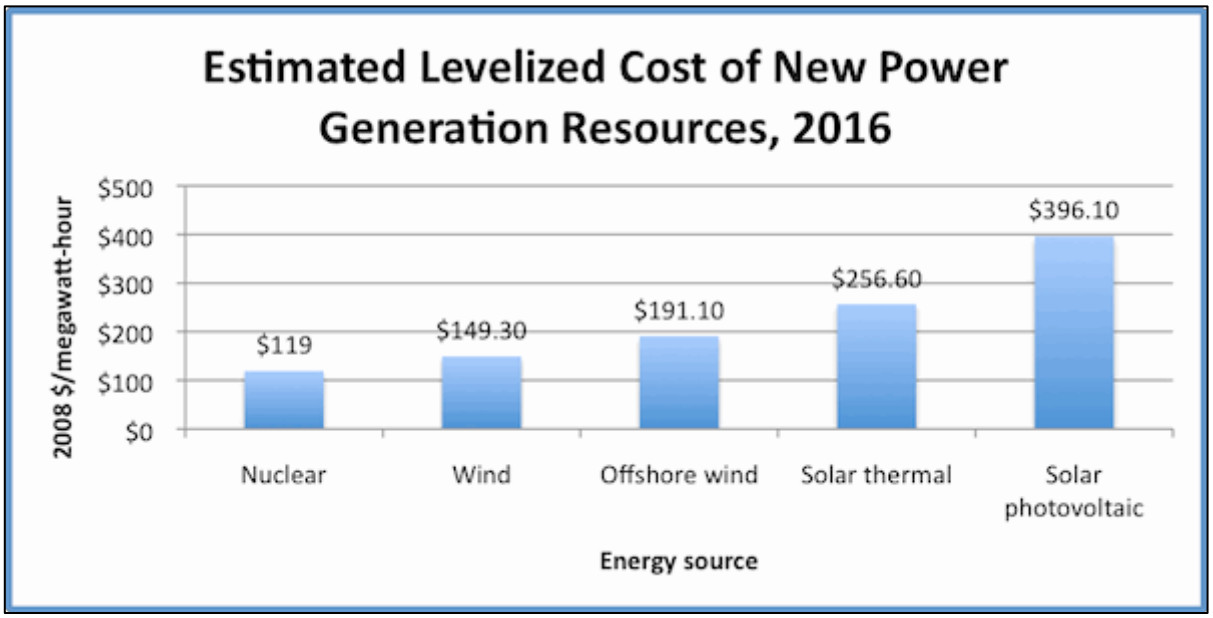
In assessing the economics of nuclear power, decommissioning and waste disposal costs are fully taken into account.

Nuclear power plant construction is typical of large infrastructure projects around the world, whose costs and delivery challenges tend to be under-estimated.

Assessing the relative costs of new generating plants utilising different technologies is a complex matter and the results depend crucially on location. Coal is, and will probably remain, economically attractive in countries such as China, the USA and Australia with abundant and accessible domestic coal resources as long as carbon emissions are cost-free. Gas is also competitive for base-load power in many places, particularly using combined-cycle plants, though rising gas prices have removed much of the advantage.

Nuclear power plants are expensive to build but relatively cheap to run. In many places, nuclear energy is competitive with fossil fuels as a means of electricity generation. Waste disposal and decommissioning costs

are included in the operating costs. If the social, health and environmental costs of fossil fuels are also taken into account, the economics of nuclear power are outstanding.



It's far more efficient than solar, wind, and even coal in terms of levelized cost.

OECD electricity generating cost projections for year 2010 on – 5% discount rate, c/kWh

Country	Nuclear	Coal	Coal with Ccs	Gas CCGT	Onshore wind
Belgium	6.1	8.2	-	9.0	9.6
Czech R	7.0	8.5-9.4	8.8-9.3	9.2	14.6
France	5.6	-	-	-	9.0
Germany	5.0	7.0-7.9	6.8-8.5	8.5	10.6
Hungary	8.2	-	-	-	-
Japan	5.0	8.8	-	10.5	-
Korea	2.9-3.3	6.6-6.8	-	9.1	-
Netherlands	6.3	8.2	-	7.8	8.6
Slovakia	6.3	12.0	-	-	-
Switzerland	5.5-7.8	-	-	9.4	16.3
USA	4.9	7.2-7.5	6.8	7.7	4.8
China*	3.0-3.6	5.5	-	4.9	5.1-8.9
Russia*	4.3	7.5	8.7	7.1	6.3
EPRI (USA)	4.8	7.2	-	7.9	6.2
Eurelectric	6.0	6.3-7.4	7.5	8.6	11.3

* For China and Russia: 2.5c is added to coal and 1.3c to gas as carbon emission cost to enable sensible comparison with other data in those fuel/technology categories, though within those countries coal and gas will in fact be cheaper than the Table above suggests.
Source: OECD/IEA NEA 2010, table 4.1.
At 5% discount rate comparative costs are as shown above. Nuclear is comfortably cheaper than coal and gas in all countries.
Uranium Will Be 2016's Best-Performing Commodity

In a bad year for metals and commodities in general, uranium has been the lone bright spot. The glowing green stuff surged almost 40% since bottoming out at $28.25 per pound in 2014. It's currently trading around $37.

Uranium was drastically oversold in the wake of the 2011 Fukushima disaster. World energy demand is set to rise 37% by 2040, according to the IEA.

Not every country is blessed with massive reserves of natural gas and coal. And the ones that are are rethinking that model in light of climate change. Carbon emissions are no longer en vogue. They pose a serious risk to our health and our environment.

Of course, green energy sources — such as solar, wind, and hydropower — aren't capable of carrying the load on their own. They're too expensive, and they simply don't have enough juice to power the planet.

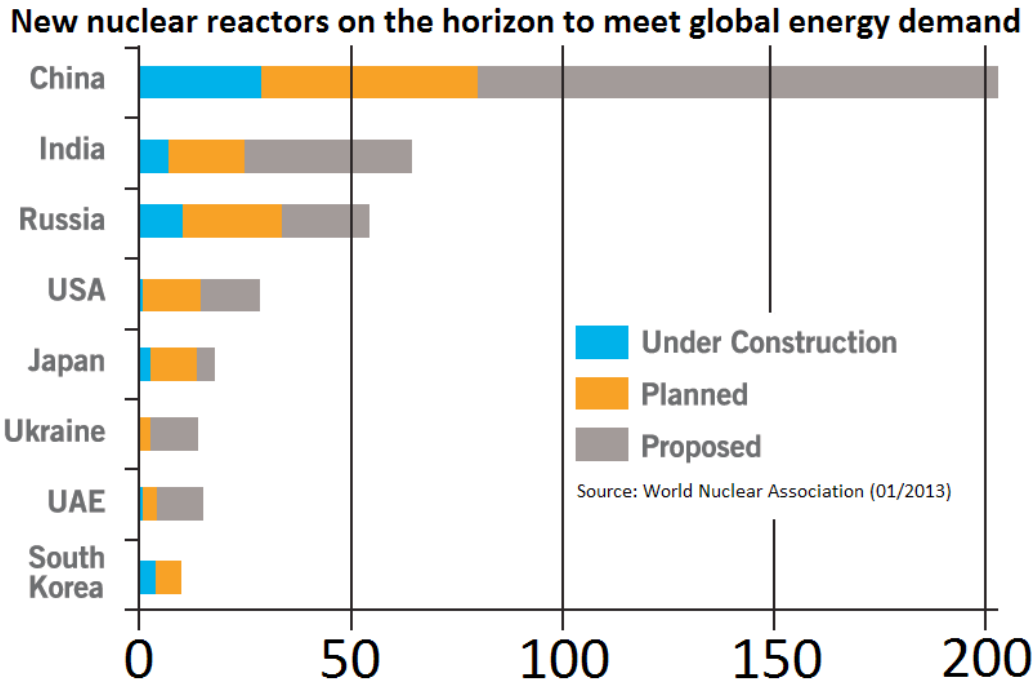
Nuclear power is necessary. It's cheaper than alternative fuel sources, and it emits no carbon. In that capacity, nuclear energy is actually good for the environment. Nuclear power has avoided the release of an estimated 56 gigatonnes of CO2 since 1971. That's almost two years of total global emissions at current rates.

In all, more than a dozen countries get over 25% of their energy from nuclear power, with 437 nuclear reactors operating around the world. On top of that, there are another 71 reactors under construction, 165 planned, and 315 proposed.

China is the biggest driver by far. The country currently has 17 reactors in operation, another 28 under construction, and more than 100 planned. Beijing is spending a whopping $2.4 trillion to expand its nuclear power generation by 6,600%.

India is in a similar situation. It's pledged to grow its nuclear power capacity from 5,000 megawatts to 63,000 megawatts by 2030.

And Russia aims to boost the share of electricity it gets from nuclear power to 25% in that time, up from 16% now.



Even Japan is restarting reactors. In all, 15 Japanese nuclear plants housing 25 reactors have applied for permission to resume operations. Five reactors have already been cleared. This, predictably, has led to a sharp rise in uranium demand.

Industry consulting group UXC Consulting believes uranium demand will grow 61% by 2035 to 238 million pounds, up from 173 million pounds in 2014. And that may even be lowballing it.

An early 2015 *Morningstar* report declared: We expect global uranium demand to rise 40% by 2025. Annual growth of 2.8% might not sound like a lot, but is massive for a commodity that has seen precious little demand growth since the 1980s. Consider that average annual copper demand growth of less than 3% from 2002 to 2012 was enough to drive a 336% price increase.

Mined supply of uranium will struggle to keep pace amid rising demand and falling secondary supplies. Low uranium prices since Fukushima have left the project cupboard bare. We expect a cumulative supply deficit to emerge by 2021.

These shortfalls should begin to have an impact on price negotiations in 2017 because utilities tend to secure supplies three to four years prior to actual use. We estimate prices must rise from $50 a pound to $75 a pound to encourage enough new supply

No doubt, the five-year bear market in uranium prices was devastating for producers. Prices slid from $52 per pound to just $28.25 in June 2014. Mining the metal quickly became unprofitable, leading to mine closures and even bankruptcies. Several years ago, there were 500 companies mining uranium. Today, there are just 20. The uranium crash removed 96% of suppliers from the market. Now, 80% of the world's primary uranium supply comes from just 10 mines. And future global supply is dependent on just five newly proposed projects.

That hasn't been a problem up until this point, because the world had adequate reserves to cover for declining production. But 2016 marks a huge inflection point for the industry. This is the first year that demand will actually exceed supplies, creating a 60,000-tonne shortfall by 2018.

Over the next 10 years, we're going to see uranium prices more than double, surging from less than $40 per pound today to more than $80 per pound in just a few short years. That bull run will begin in earnest in 2016. You can expect the metal to rise to at least $50 per pound next year. That alone would be a 35% jump from current levels. After that, it's likely to hit $60 in 2017 and $70 or even $80 in 2018.

5 Conclusions

The recent UN Climate Talks in Paris have put forward the goal of limiting the global temperature rise to two degrees Celsius by the end of the century. This is providing a strong political base for expanding the nuclear power capacity because of the critical role that nuclear power plants play in the production of electricity without emissions of greenhouse gases. Nuclear power is also cost competitive with other forms of electricity generation, except where there is direct access to low-cost fossil fuels.

Green energy sources — such as solar, wind, and hydropower — aren't capable of carrying the load on their own. In all, more than a dozen countries get over 25% of their energy from nuclear power, with 437 nuclear reactors operating around the world. On top of that, there are another 71 reactors under construction, 165 planned, and 315 proposed.

In this context, a cumulative supply deficit is expected to emerge by 2021 while 2016 marks a huge inflection point for the industry, beeing the first year that demand will actually exceed supplies, creating a 60,000-tonne shortfall by 2018. Over the next 10 years, we're going to see uranium prices more than double, while the bull run will begin in earnest in 2016.

References:

[1] OECD/IEA OECD Nuclear Energy Agency Report 2010
[2] US Energy Information Administration Reports
[3] The IEA-NEA Nuclear Energy Roadmap 2015
[4] The US Nuclear Energy Institute Reports
[5] OECD study on *Projected Costs of Generating Electricity* 2015
[6] Ecofys report for the European Commission on *Subsidies and Costs of EU Energy* 2014
[7] Institute for Energy Research (IER) 2015 report on *The Levelized Cost of Electricity from Existing Generation Resources*
[8] WNA *Global Nuclear Fuel Market Reports*.
[9] Outsider Club 2016.

Biogas to Energy in Rural Romania. Scenarios of Sustainable Development

CRISTIAN-MARIUS MOISOIU
The Institute for World Economy
Romanian Academy
13 Calea 13 Septembrie, sector 5, Bucharest
ROMANIA
cmoisoiu@iem.ro, www.iem.ro

Abstract: - This paper presents four exploratory scenarios of sustainable development using the biogas to energy in animal farms in Romania. This research was part of the doctoral thesis of the author, entitled "The Economic Impacts of Climate Change". The biomass sector is one of the most promising, but less developed fields of the Romanian energy sector. Based on a sectoral analysis of the biomass in Romania, with regards to the transition process towards the low-carbon economy, few scenarios were drafted, in order to provide the decision makers with eventual prospects and drivers in the field, in order to overcome with relevant policies. The study responds to the European Union's climate action, resource efficiency and raw materials priority and climate change mitigation effort, together with fostering renewable energy technologies.

Keywords: sustainable development, rural development, biogas to energy, waste to energy, low carbon economy

JEL Classification: Q16, Q42, Q56, R11.

1 General aspects

Previous studies and policy papers at national level have proven the strong dimension of the biomass sector in Romania. (ENERO, 2009) Although there is limited recent data provided, the biomass potential is ranking Romania on the 6th position among the EU Member States in this sector. The national policy documents refer to an energy potential of biomass of 7.6 mln. Tonnes oil equivalent (toe) (Ministry of Economy, 2010), which could cover 65% of targeted renewable energy sources by 2020. Regarding the use of biomass in the primary energy production, Romania is in the EU28 average, indicating 0.173 toe per capita. (European Commission, 2013). By all means, the actual production of energy from biomass is less than 5% of potential, with respect to its economic value, meaning that 85% of the primary energy consumption of biomass (3.8 mln. toe) is actually fired in traditional stoves, with purpose of heating in winter and cooking, in rural and peri-urban areas. (Ministry of Environment and Climate Change, 2012). The average yield of traditional stoves is less than 20% and most of the biomass, derived from wooden sources, is eventually wasted.

Which are the economic arguments in favour of biomass to energy?

- The Asset: the biomass stock is a local by-product, leveraging in rural areas, therefore giving an impulse to local development. The vegetal mass, the harvester wastes, the wooden wastes in sawmills, forests, parks and gardens' sanitations, the wood industry wastes, the animal manure and organic wastes of households are included in the biomass assets. Some other assets are the dedicated energy plants, like rapeseeds, sorghum, maize, which are already cultivated on large land surfaces in Romania;
- The Leverage: rural population in Romania ponders around 46% of total population (National Institute of Statistics, 2011), the employment rate is low, only 40% were legally employed in 2014. (National Institute of Statistics, 2014) Self-employment and agriculture workers are predominant in the structure of labour force and the available jobs are very low. The income gap and low economic development make inequalities deeper, between rural and urban population. Biomass to energy would foster the economic growth for rural and less developed towns, generating jobs, for less qualified and qualified workers;
- The Financing: national and European policies try to encourage the green economy, to provide economic stimulus for green growth. The dedicated programmes for rural development, agriculture,

energy policy, regional development, farmer start-ups, SME's, European funds, which could motivate investors and local entrepreneurs;

- The Innovation: the biomass sector gives an impulse to innovation. In order to make this activity efficient and profitable, new technologies are required. Romanian farmers already have significant knowledge dealing with biomass and biomass related technologies. The biogas sector has more than 30 years of experience in Romania, there is relevant expertize of engineers and farmers, which could become a competitive advantage. Eco innovation is one of the priorities of the national strategy for innovation (Ministry of Education and Research, 2014). This could intersect the interests of investors, local government and general government in order to provide additional tools for technology transfer and improvement of the knowledge base.

2 The method

A recent paper, which was adopted as a programming document by the Ministry of Economy (Ministry of Economy, NL Agency Olanda, Enero, 2010), identified a couple of relevant technologies for biomass which could be efficiently implemented in Romania: a) local fired-biomass plants in cogeneration or boilers in centralized system for residential heating and b) local biogas plants in cogeneration in centralized system for residential heating, based on organic municipal waste or animal manure in animal farms.

Following the results of this previous research, the present paper presents a scenario building exercise for implementing biogas plants in the animal farms in Romania. The scope of this exercise is to provide several possible paths of sustainable development by fostering the biogas to energy, at the horizon 2030, respectively three scenarios of sustainable development and an opposite scenario of sustained economic growth based on intensive exploitation of farms and biogas. The scenario building was based on identifying relevant drivers of change in the biogas sector, evaluating their impact and uncertainty, build up the impact/uncertainty matrix, wrap up scenarios narratives and providing a base scenario with policy recommendations.

The build-up scenario method is a frequently used instrument of strategic planning (Moriarty P., 2005) the method is based on systematic analysis of possible future trends, starting with present signals identified as trends or drivers. Exploratory scenarios or descriptive scenarios have a starting point in present and explore the future trends (EEA, 2011). In the environmental studies, scenarios are defined as"images of the future or possible futures, which are not either predictions or prognosis, but alternative images about how future might look like" (Alcamo, 2001). Scenarios are not necessarily the most probable or desirable future directions. Other theories entitle scenario building method with the role of formulating the adequate questions and stimulating the scientific debate and less the role to supply with the plausible answers about the future (Zurek, 2007). The normative scenarios, as compared with the exploratory ones, describe a desirable future and establish a set of objectives to reach a certain scope.

In order to identify the drivers of change, an exhaustive number of trends, statements and data were collected and analysed from relevant sources for the topic. The drivers were previously selected and grouped into categories of relevance: wide relevance group of factors, which included the drivers with more general importance, like the EU's energy sector, EU's legislation and policies related to biogas, the millennium objectives of sustainable development, global accords and environmental constraints. A second group of drivers included the drivers from the national and local level, national legislation, national energy system, public policies and incentives related to energy and biogas, market development, labour market, agriculture and technology transfer.

Using the STEEPV method, the drivers were afterwards regrouped, in order to have a more comprehensive image of their direct impact to the researched area. Based on this regrouping, the drivers were evaluated with marks from 1 up to 5, meaning 1 low impact/high probability and 5 high impact/high uncertainty. Drawing up the impact/uncertainty matrix has provided with the key drivers, which led to the four scenarios. The rest of the factors were used in compelling the narrative for each scenario. The four scenarios were defined based on the selected key drivers, indicating with a medium level of trust which one is the pessimistic scenario, the optimistic and the base scenario. The fourth one was considered as the negative scenario, with regards to the sustainable development vision, although it could be a possible future path, diverted of the reference objective.

3 Scenario building

In Table 1, the identified drivers were grouped after the level of relevance criterion and discussed separately about their actual relevance and future possible developments.

Table 3. Drivers of change, on impact level

Drivers	Status 2015	Trends 2030
EU energy sector		
– Energy Union	Baseline discussion	?
– Dependence on imports from Russia	Diversification sources	↘
– EU funds for farmers	Common agriculture policy	→
– Smart grids	Demonstration technologies	?
– EU climate policy	Europe 2020 Agenda, energy and climate change 2030,	↗
EU biogas sector		
– Biotech readiness	KET's	↗
– Small size biogas plants in cogeneration	Prototype and demonstration	↗
– Improvements in drying devices, desulfuration and chemical absorption of CO_2	Lower RDI expenditures than US	↗
– Fuel cells	KET's	↗
– Gas micro turbines	Prototype and demonstration	?
– High technology costs		↘
– Energy plants subsidies	Incentives for biofuels	↘
Romania's energy sector		
– national gas distribution network	Low interconnectivity, rubbished network, large gas deposits	↗
– energy mix	Balanced mix of energy sources, increase of renewable production, social pressure of the coal sector, old thermal plants, new energy strategy	?
– green energy subsidies	Green certificates scheme for generation of wind, solar, biomass, geothermal, up until 2017	↘
– social aids for heating	Social allowances for low income families, local authorities, for winter heating, including wood-fire in traditional stoves	→
Romania's biogas sector		
– Smart specialization in biotech	National RDI priority	↗
– Associations of farmers	Small sized farms, increased fragmentation	?
– Sustainable agriculture		?
– Highly qualified labour force shortage	Labour force migration, internal and external, professional conversion programmes, demographic decline	↗
– Illegal deforestation	Strengthening legislation, largely cut off deforestation	↘
– Ecological agriculture	Subsistence agriculture, organic products market in formation	↗
– Sustainability awareness	Traditional habits of consumption, low ecological values	↗
– Modernizing of village	Demographic decline, lack of utilities and infrastructure, asymmetrical reconfiguration	?
Global		
– global accord on climate change	New climate approaches, Paris COP 21 accord attained, increasing green economy, large emergent countries do not commit for emission targets	↗
– New Silk Road, export opportunities	Working concept, US – China – EU	?
- TTIP, TTP	Technology transfer opportunities, FDI, market integration	?

Source: author's concept

Further on, the drivers of change are presented and regrouped based on STEEPV method, as presented in Table 2.

Social factors:

- Entrepreneurial education of farmers: this factor is related to the education level in rural areas and the education system. The biogas to energy requires specialized education: engineering, energetics, economics, management, biochemistry and agronomy. These all are limited qualifications in rural areas, the farmers lack business management skills and qualified staff. It is possible though that with the education reform and university specialization, the sector to become attractive for undergraduates, but with a low level of confidence.
- Farmers associations: excessive fragmentation of parcels and lack of communitarian values represent the biggest barriers of the agriculture sector. Romania has now the smallest average farm surface in EU, fact which affects productivity and implies barriers of investments. The framers' association could determine more resources to get engaged, new technologies and biogas solutions, financing, increased productivity and scale up.

Technology factors:

- Biotechnology readiness: biotech is one of the most growing and innovating industries with incidence in animal breed and food industry, which could determine enhances of quality of products, cost cuts, new biological resources and it an impact on biogas production.
- Smart grids are a systemic innovation which could increase energy efficiency. It includes new technologies of measurement, command&control, system balance, smart metering, which determine reduced losses in transport&distribution of electricity. Smart grids require long and consistent effort to modernize and replace the network, to extend the infrastructure, interconnectivity of the national grids, with large social and economic implications. Therefore, uncertainty is increased. The impact on biogas sector could be high, due to supply opportunities, grid balance, which is vital in case of floating renewable energy production.
- Small residential boilers refer at specific models which could be feasible for biogas. Residential boilers have developed a lot and are successfully implemented in Romania, especially in the areas which are not supplied with any thermal energy, but as an alternative to more and more costly centralized system of heating. Residential boilers with biogas could impact the biogas sale and distribution to rural areas. These devices are still hard to be acquired by low income families, due to higher costs of installation and maintenance, but the costs are predicted to decrease.
- Automatization of agriculture: this is a process which didn't start yesterday, but technologies and innovation accelerate. Therefore, new solutions, machines, applications are experimented. The agriculture by drones, software management of agriculture processes lead to cost drop and higher yields, without the effort of agriculture workers. For biogas, automatization of agriculture could determine fluctuations of supply with raw materials and the quality of raw materials.
- The national gas network could influence the biogas development. If the network expands, due to efficiency of transport and distribution and new discoveries of sites, the biogas can be supplied to the final consumer. Uncertainty is high, due to high investment costs to expand network and unsafety of sources.
- Improvements of drying devices, desulfuration and chemical absorption of CO2 could lead to quality improvements of biogas, higher yields and reduced impact on the environment. This innovative process is feasible, the trend is signalled by specialized magazines of producers.
- Fuel cells are a new generation technology, to produce clean and cheap energy. This trend could influence the energy efficiency of renewable energy production.
- Microturbines using gas are a new technology, not yet developed, which assumes biogas utilization on a small scales

Economic drivers

- High technology costs: the biogas related technologies are in cost reducing trend, determined by technology readiness, economy of scale, China's growth in innovation in this sector, lower productions costs. China is the biggest producer of biogas facilities in the world, in competition with Germany and the Scandinavian countries. The initial investment is still at the high levels, as compared to other competitive technologies, including those in renewable sector, but depreciation period is longer. Therefore, without state aid and subsidies, the biogas sector could not develop

with imported technologies. On a long term, there are premises that the sector becomes self-reliant. Due to EU subsidies, the impact of the cost is lower in biogas development.

- Smart specialization of biotechnologies is knowledge based economic model of regional development, which is designed by the European Commission. The EU regions are induced to specialize on the internal market, based on their own strengths of high-tech, excellence and market driven industries, to put in value innovation partnerships between regions, universities and business. Following a consultation process and panel of experts, Romania has decided that one of the smart specialization priorities are biotechnologies. This specialization could give an impulse for technology development, which determines competitive advantages for the biogas sector.
- European funds for the farmers are a committed driver for agriculture in Romania. With more than 10 years' experience and an important leverage for business development in rural areas. Due to agriculture dimension and its growth potential, including the rate of absorption of EU funds, it is assumed that the trend will accelerate on a long term, which becomes a positive factor for biogas facilities and biogas to energy.
- The shortage of highly qualified labour force is still a deep social and economic impediment of rural area development. This driver can be assimilated with the social one, entrepreneurial education of farmers. This trend is not strictly social, but also a demographic fact, due to massive migration to EU countries and depopulation of villages. This can be counter-balanced only by increasing the wellbeing, incomes and creating jobs.
- The energy mix is specific to the Romanian energy system, which relies on varied and balanced sources of production. The energy mix is encouraged by energy security prerogatives, an important element of EU energy strategy. Therefore, the biogas could be a valuable alternative of diversification.

Ecological drivers

- Illegal deforestation is a large scale phenomenon in Romania. Illegal deforestation at local level, carried out by individuals and firms produces great damage to the environment, causing floods, landslides, but also the affects the forests and the exploitable and safe economic activity related to woods. Large amounts of wooden material are used for winter heating. Although the heating costs are lower with illegal cuts, the social costs are actually higher, due to environmental troubles they generate and the opportunity cost of the biogas boilers could efficiently solve the problem of heating.
- The global accord of climate change is a negotiating process under the aegis of UNFCCC. Although difficult, the negotiation will finally lead to ratification of this accord between the developed and emerging world, which could become a tipping point for low-carbon economy. This accord would give an impulse for clean technologies, including biogas related, establishing a price on carbon, which could balance the costs in favour of green economy.

Policy drivers

- EU policies of climate change: the EU targets of emission reduction, increase renewable energy production and energy efficiency will encourage technology transfer, including biogas related. The EU policies comprise a set of climate and energy actions, which lead the business and society towards committing to low carbon economy.
- Green energy incentives: this driver refers to European and national energy policies of feed in tariff and green certificates. Romania has had a generous programme to encourage solar, wind and biomass energy, guaranteeing as well priority to supply to the grid.
- Incentives for energy plants production. This type of incentive was common in EU policies. The trend is to cut them down, proving they were not really efficient and the economic crisis has pushed a drop in this type of allocation.
- Social aid for heating: very common policy of government and local authorities in Romania. Social aid for winter heating are granted for low income families, in a fiduciary form, supporting them purchase the fired-wood in rural areas and as a discount of the thermal agent bill, for most of the residents in urban areas. This driver is discouraging the biogas option, maintaining a lower cost for alternative solutions. On a long term, the uncertainty of granting social aids is high.
- The New Silk Road, as a geopolitical concept open several opportunities for Romania, which could improve trade and business on the East – West route. As an immediate impact, new trade zone would start up, which could foster new products and services, would lower the transport costs,

technology costs and raw materials. Therefore, this factor could determine an impact for the biogas sector, as well.

Value drivers

- The ecologic agriculture: a relatively recent trend it is influenced by the change of consumption patterns of average to high income population. The ecologic or organic agriculture does not have a large impact on biogas, except the fact that it concentrates production in specialized crops and the fertiliser should be organic. The fertiliser is a by-product of the anaerobic digestion, thus determines an increase of demand in agriculture.
- Sustainability: changing lifestyle, for a more quality driven consumption, could reduce waste, which is a significant objective of sustainable development. This trend is still slow motion and localized, much more in the developed world, where the preoccupation for environment and future generations is mainstream. Sustainability is anyway a societal value in rural communities, as well. The biogas sector could be encouraged by social choice, if communities enure new energy production solutions, sustainability values, care for nature and environment protection.
- Modernization of village: development gaps and lack of basic resources are the main constraints of inhabitants in the rural areas. The trend to shorten the gap will accelerate, under EU and national policies, as well as the labour force mobility and movement of capital. The investments in biogas could determine transformations of rural communities, economic leverage, new opportunities for development, new jobs and enterprises.

Based on the analysis above, each driver was marked from 1 to 5, thus the impact on the biogas sector marked 1 means reduced impact and marked 5, major impact. Consequently, uncertainty marked 1 means low uncertainty, marked 5 equals considerable uncertainty. The drivers were regrouped by STEEPV criteria, merged if redundant, thereafter marking each, based on qualitative and objective criteria.

Table 4. STEEPV drivers of change

Group	Drivers of change	impact	uncertainty
Social	Entrepreneurial education of farmers	5	4
	Farmers associations	4	5
Technologic	Biotechnology readiness	3	3
	Smart grids	5	5
	Small residential boilers	3	2
	Automatized agriculture	3	3
	National network of natural gas	3	4
	Improvements of drying devices, desulfuration and chemical absorption of CO2	4	4
	Fuel cells	2	4
	Microturbines on gas	3	4
Economic	High technology costs	2	5
	Smart specialization in biotech	4	4
	European funds for farmers	5	2
	Deficit of highly qualified labour force	4	2
	Energy mix	5	3
Ecologic	Illegal deforestation	1	4
	The global accord on climate change	4	5
Policy	EU climate change policies	5	2
	Green energy incentives	5	2
	Incentives for energy plants	5	2
	Social aids for winter heating	4	3
	The New Silk Road	4	5
Values	Organic agriculture	2	4
	Sustainability	4	4
	Modernization of village	4	3

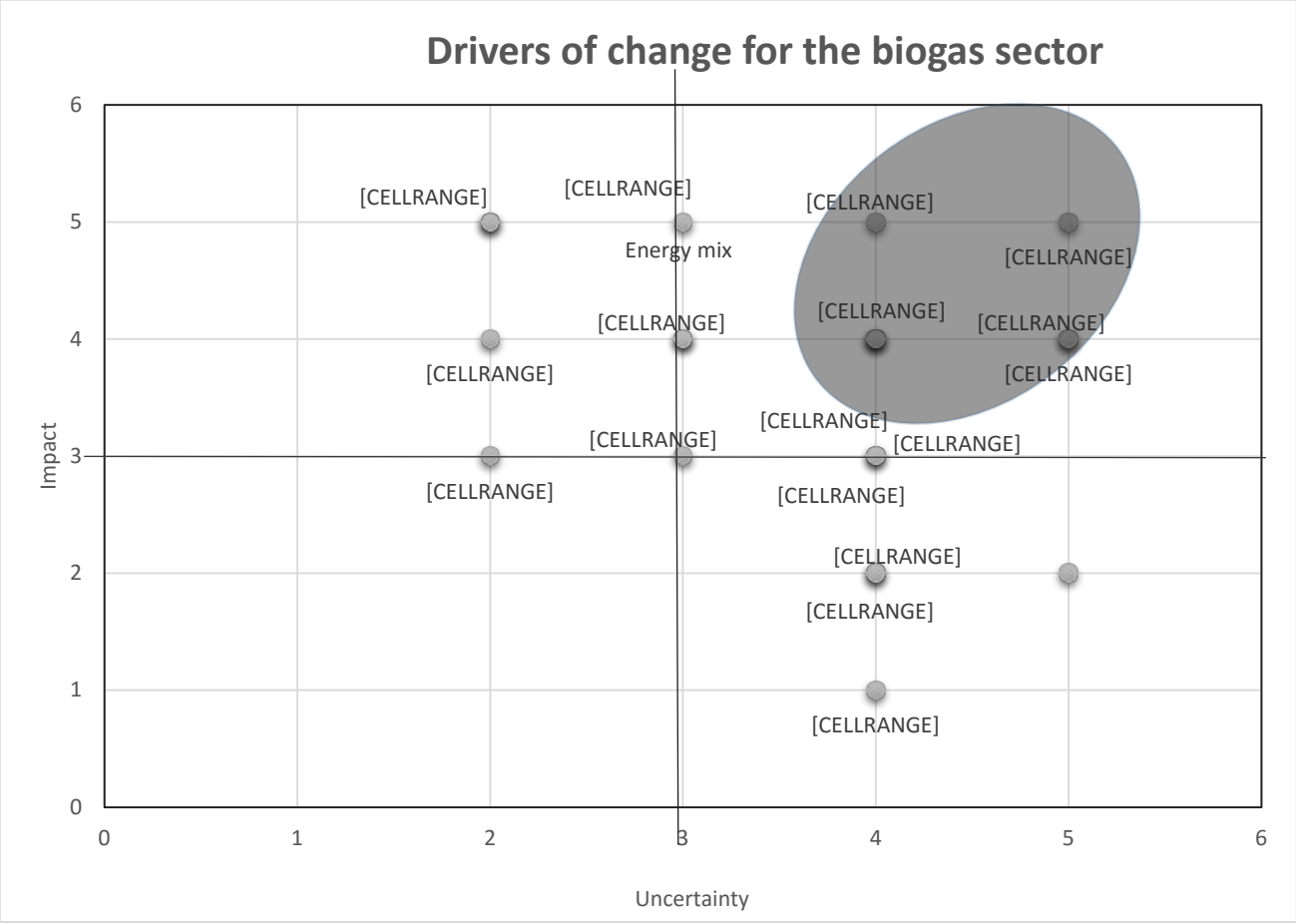
Source: author's concept

The driver of change chart of impact/uncertainty is presented in the Figure 1. In the second quadrant, there are the drivers with high impact and high uncertainty, which particularly define scenarios. Besides the drivers presented in quadrant 2, there were three other drivers which were excluded in order to compile the four scenarios. They were used together with the rest of drivers to write down the narratives of each of the four scenarios, which are defined as following:

– Waste to energy
– Farmers on the "Silk Road",
– United for biogas,
– Smart wastes.

Three of the resulted scenarios correspond to sustainable development target and the other scenario envisages an accelerated growth of agriculture. All four scenarios are provocative in the stance of the animal farming and indicative for biogas to energy in the national energy system. The four scenarios are obviously distinctive regarding the regional and global geopolitical trends and implicitly describe differently the policy priorities which might influence the biogas sector. A synthetic description of the four scenarios is presented in the Table 3.

Figure 7. Impact/uncertainty matrix



Source: author's concept

Scenario 1. *WASTE TO ENERGY* is conditioned by further European integration until 2030. The Energy Union fulfils and the European grid expands, based on wide and connected smart grid. In this case, the European policies are targeting the small producers of energy from renewable sources and off-grid solutions. The system balance and compensation of the peak consumption are solved by smart grid and interconnectivity. This scenario can be described as a reference scenario. As compared to the European Commission reference scenario on energy trends, this scenario is more optimistic and promotes new biogas facilities and integration. (European Commission, 2014), having an impact on transition to low-carbon economy. This scenario is also taking account of the global accord on climate change, which could determine a great impulse for EU targeting the 40% emission reduction in 2030, as compared to 2005.

Table 5. Scenarios of biogas to energy in rural areas in Romania

Scenario 1. ***Waste to energy*** - New smart grids develop widely, - Interconnectivity and grid balancing increases within the Energy Union, - European policies encourage grid expanding and newcomers, - There is a functional legally binding climate change accord, - Transition to low-carbon economy accelerates, - Romania faces an engineering shortage and labour force shortage in rural areas - Major investments take place in cogeneration based on biogas, in medium to large farms countrywide.	**Scenario 2.** ***Farmers on "The Silk Road"*** - Romania is a net exporter of livestock and agriculture products, - The renewable energy production of biomass increases and it is mostly used for internal demand, - There is no legally binding climate change accord, - National and European policies encourage renewable energy production, - Large scale introduction of very efficient small sized residential boilers, - Reduced illegal deforestation, - Wood-fired stoves are discouraged and social aids conditioned by installing residential boilers on biomass, - The growth of agriculture and transport has a negative impact on GHG emission.
Scenario 3. ***United for biogas*** - The national policies encourage farmers association and the small producers of energy, - The largest part of biogas output is transferred in the national natural gas network, - the European energy policies stagnate, but there is a functional accord on climate change, - The thermal energy plants are modernized by shifting the main resource in natural gas, - Most biogas technology is imported, - Romania has a shortage of engineers, - Significant progress towards low-carbon economy and renewable energy sources.	**Scenario 4.** ***Smart wastes*** - Romania becomes a producer of biogas technologies and biotechnologies, the costs drop, - Significant progress in biotech, anaerobic digestion of organic waste, which increase the quality of biogas and productivity, - Most farms, small to large, are self-sustainable, - Utilities development leads to modernization of rural area, - The national energy system is unbundling, off grid solutions are often preferred and small plants are encouraged.

Source: author's concept

On the opposite, Scenario 2. *Farmers on "The Silk Road"* is not focused on further European integration and climate action. In this case, the accent is on the geopolitics and geoeconomics of Romania on the world map. Therefore, increased cooperation on East – West direction is rather envisaged with political, commercial and economic view. The concept of "New Silk Road" could bring a different optic for the agriculture development of Romania and for the energy sector, as well. In this case, accelerated growth of agriculture would assume further capitalization of wastes in animal farms, biogas, for internal consumption of farms and villages, creating the opportunity of rural development. Intensive land use and animal breeding for export would lead to increased GHG emissions in agriculture and transport. This scenario could have a positive impact on growth and rural development, but negative impact in which regards sustainability and low-carbon economy.

Scenario 3. *United for biogas* is an average scenario, a little bit more protectionist in which regards the national energy policies. In this case, there won't be significant steps towards further integration of an Energy Union, but a global accord on climate change will bring stronger environmental standards for energy companies and industry, which will significantly change the energy mix and energy system. The old thermal energy plants will be modernized, meeting technology shift on more sustainable resources, like natural gas. The biogas would be a base resource for large scale plants in process of transformation and modernization. Small and medium farms should associate in order to develop new biogas facilities of larger capacity, which require a higher

investment with higher returns. In this scenario, the national network of natural gas is also upgraded and used to stock and transfer biogas. This scenario is making the steps towards low-carbon economy more slowly and with higher costs.

Scenario 4. *Smart wastes* is reportedly focused on smart specialization in biotech. This very optimistic scenario would have significant economic impact, with high value added and increased competitiveness. Romania would become a real player in the field of biogas technologies, with important expenditures in research-development and innovation and great competitive advantage, which would lead to lower technological costs. In this case, the low-carbon economy transition would be cheaper to realize. The lower cost of technology would permit farmers higher returns of biogas facilities. The impulse for growth would leverage new jobs and rural development, expanding the utility networks and increased incomes for villagers. In turn, it would have a large impact on the energy system, with further unbundling and off-grid facilities, which would lead to a wave of debranching from the centralized system of heating and additional arrears for the large state owned companies in the energy sector. If the trend of smart grid confirms, this scenario would lead Romania on a real convergence trend with European Union with a reasonable period of time.

4 Conclusions

Romania has assets to become a winner of the inevitable process of transformation of the economy towards a low-carbon economy. This research paper is presenting few exploratory scenarios to capitalize the biomass assets in Romania, a relevant sector with high growth potential for renewable energy production. On a long term, the biomass could substitute a significant weight of the fossil fuels.

Based on official estimates, the biomass could cover 65% of the required amount of renewable energy in 2020, although the present weight is only 5% of renewable energy production. Most of the biomass is used for heating in traditional stoves. More than this, only a small percentage of the organic waste is actually used, most of the registered biomass for heating is wood and wooden material.

Through fostering the biomass use for energy, the energy mix would restructure in a more sustainable way, to reduce GHG emissions and replace a large amount of fossil fuels in energy production. Some other studies have proven that in Romania case, the biogas technologies could be implemented with positive economic and environmental impact. (ENERO, 2009)

This scenario building exercise intends to present several possible directions for the future in the biogas sector in Romania. In that sense, there were identified trends and drivers that could decisively determine an impulse for the biogas sector. Four scenarios were drafted, as following: *Waste to energy*, *Farmers on the "Silk Road"*, *United for biogas* and *Smart wastes*. Three of these scenarios correspond to the sustainable development vision and one is opposed to sustainability.

The three scenarios of sustainable development are more or less influenced by the European Union and Romania's position, the evolution of the Energy Union, the climate change policies, farmers association in Romania and the agriculture policies. The reference scenario, entitled *Waste to energy*, promotes new biogas facilities in rural area in Romania and envisage further European integration with fulfilment of the Energy Union requirences and implementation of smart grids. Among the other scenarios, this has better chances to become a normative scenario. For further research new inputs would be required in order to enhance the exercise, based on a consultative process with stakeholder participation. A normative scenario build up on the current premises would provide the decision makers with relevant recommendations in order to comply with sustainable development objectives.

References:

[1]. Alcamo, J. (2001), *Scenarios as tools for international environmental assessments.* Luxembourg: Office for Official Publications of the European Communities.

[2]. EEA (2011), *Knowledge base for Forward-Looking Information and Services. Catalogue of scenario studies.* Copenhagen: EEA Technical report No 1/2011 . Retrieved from http://glossary.eea.europa.eu/

[3]. ENERO (2009), *Study on Scenarios Biomass Romania.* Bucharest.

[4]. European Commission (2013), Solid Biomass Barometer. *Eur'Observer*. December

[5]. European Commission (2014). *EU energy, transport and GHG emissions. Trends to 2050. Reference scenario 2013.* Brussels: European Commission.

[6]. Ministerul Economiei (2010), *Planul Naţional de Acţiune în domeniul Energiei Regenerabile.* Bucureşti.
[7]. Ministerul Economiei, NL Agency Olanda, Enero (2010), *Masterplan de biomasă, versiunea 2.* Bucureşti.
[8]. Ministerul Educatiei şi Cercetarii. (2014), *Strategia Naţională pentru CDI 2014 – 2020.* Bucureşti.
[9]. Ministerul Mediului şi Schimbărilor Climatice (2012), *Inventarul National al GES Romania 1989-2010.* Bucuresti: vizualizare electronica aprilie 2015.
[10]. Moriarty P., B. C. (2005), *Using Visions, Scenarios and Strategies within the EMPOWERS Planning Cycle* for *IWRM. EMPOWERS Working Paper No. 4.* Retrieved from http://www.empowers.info/page/1070
[11]. National Institute of Statistics (2011), *Population Census.* Bucharest: National Institute of Statistics. Retrieved 2014, from http://colectaredate.insse.ro/phc/aggregatedData.htm
[12]. National Institute of Statistics (2014), *Employed population and employees on age group and residential type.* Bucharest. Retrieved 2016, from http://statistici.insse.ro/shop/
[13]. Zurek, M. (2007), *Linking scenarios across geographical scales in international environmental assessments*. Technological Forecasting and Social Change 74(8), pp. 1282–1295.

Will Low Crude Oil Prices Cause a Global Recession?

MARIANA PAPATULICĂ
Centre of European Studies
Institute for World Economy
13 September Street No.13, District 5, Bucharest
ROMANIA
m.papatulica@yahoo.com

Ph.D. PETRE PRISECARU
Centre of European Studies
Institute for World Economy
13 September Street, No. 13, District 5, Bucharest
ROMANIA
petreprisecaru@yahoo.com

Abstract: - International crude oil market faces almost 2 years of sharp fall in benchmark crude oil prices (mainly Brent) from $ 105.7 / barrel in June 2014 to $ 36 / barrel in December 2015 and a minimum of $ 27-28 / barrel (for the last 13 years), in January 2016. Several economists are raising the question whether low crude oil prices are a "growth factor or a curse" for the world economy, and whether they could even cause a recession. Opinions about the effects of the sharp decline, in world oil prices are divided. Some analysts say that such evolution is good for consumers, while others consider it is bad for the global economy. Low oil prices could create disadvantages by causing deflation. The risk is that deflationary expectations determine consumers to refrain from additional purchases in anticipation of even lower prices. This would lead to an excess of production capacity and to ample inventories that will force down the prices even further. When buyers' suspicions are confirmed, they delay further consumption resulting in a vicious circle. Historically, plummeting crude oil prices have been perceived as a growth factor, especially in the net importing countries. But this has not yet been translated into tangible positive economic effects worldwide.

Keywords: - crude oil price, crude oil supply, fundamental factors, macroeconomic effects, deflation

JEL Classification: Q43, Q41, E31, E32, D43

1 Introduction - Reduction of crude oil prices during 2014-2016 period and its economic effects

A big decrease of oil prices (not to be confused with deflation, though apparently has the same results - falling prices) plays the role of a positive external shock in the case of net oil importing economies: the economy's capacity to produce goods and services increases, because the price of imports decreases. Falling prices of oil derivatives in an economy is not necessarily a negative phenomenon but a form of redistribution of benefits to consumers. Revenues do not decrease, consumers may invest or consume the excess revenues and the impact on real GDP is positive. When prices fall due to cheaper raw material in terms of not changing the demand curve, sales grow or production increases the economic agents using raw material employ more people. At the same time disposable income in the economy increases, and revenues of raw material manufacturer decrease. Deflation, as an economic phenomenon, is related to internal shocks on the demand side.

The steep decline of oil prices during 2014-2016 had **winners** and **losers.** In the category of **winners,** who have benefited from lower crude oil prices, enter in general *all net importer countries – mainly the US, Japan and the Euro zone, China and, India*. This has positively influenced those kinds of business that massively depend on transport or on the industrial production of these countries. China has been for almost a decade one of the largest net oil importers worldwide. Even if the Chinese economy registered a slowdown of economic growth in the last years the decline in oil prices has helped this country to increase its foreign exchange reserves. However, only a drop in oil prices is not sufficient to support the Chinese economy. In this respect it should be noted that many analysts don't question whether the growth of Chinese economy will be

slow in 2016, but rather how great will be the contraction. Opinions about the state of the second largest economy in the world vary, but most of them support the idea that the government has the economy under full control.

US are both the largest producer and consumer of oil in the world. Oil price boom of the latest decade and the improvement of hydraulic fracturing technology have led to an increase in the production of shale oil. Some of the extracting oil companies have taken large loans to expand production but under the circumstances of the recent price fall, these loans are likely to become unusable or cannot be returned. Unemployment in this sector is growing, and wages are either stagnant or declining. New investment projects have been postponed. Because the US economy is much diversified, the overall impact is not alarming. The advantages are important for end users, as well as for auto and airline industries. Not all consumers have felt the drop in oil prices with the same intensity as those from US, as in the EU high taxes on auto fuels blur some of the beneficial effect of cheaper oil. However, cheaper fuel left more money for shopping in the pockets of the population and for saving in accounts, which caused a certain increase in the market value of shares of companies producing consumer goods in the importing countries, in parallel with the decline in stock prices of oil companies. As low crude oil prices led to a higher aggregate demand in the US, this in itself may stimulate economic growth. According to a monthly report from December 2015 of the International Energy Agency on the international crude oil market, last year the global demand for crude oil recorded the highest annual growth level in this century, from 1.7 mil. barrel/day to a total of 94.5 mil. barrel/day (IEA, 2015).

In the category of **losers** one may include *major producers and exporters of crude oil and oil services companies*. Capital market analysts warn that although the US dollar seems to have benefited from lower prices of crude oil, some independent companies that extract oil from shale rocks are on the verge of bankruptcy. Producers of shale oil in the US have already received a blow, but stubbornly refuse to leave their businesses. One reason is that due to technological advances they have managed to cut the cost of well drilling and to increase the extraction efficiency. The borrowing cost for the emerging countries is likely to increase because pretty much of them are oil producing and bankers have already penalized with higher interest rates the possible decrease of revenues from oil exports.

Russia sought to offset the revenue losses following the collapse of oil prices by maximizing the oil production. The Russian budget, heavily dependent on oil exports, fell without recording a dramatic collapse as in the parallel the Rouble devaluation offset the revenue loss. With no other significant source of foreign exchange, Russia will continue to produce and export oil and gas, even if prices will remain at low levels.

Effects of low crude oil prices have been felt even at the level of OPEC countries. OPEC is made up of twelve countries accounting for 40% of world oil demand. Saudi Arabia was the leader of OPEC nations and the changes in its production policy, in the sense of supporting the market share to the detriment of the oil price had a strong negative impact on oil prices. For the first time in the last years, Saudi Arabia is on the verge to lose its status as the decisive factor influencing oil prices on the international market. Smaller nations such as Algeria, Venezuela and Ecuador are the most affected by low oil prices. Although Saudi Arabia has huge foreign exchange reserves that may well support its economy it also began to feel the pressure of low prices, resulting in a high budget deficit of 16% of GDP in 2015.

2 The impact of the decline in crude oil prices on different policies.

2.1. Fiscal Policy

A number of developing countries have provided large subsidies to petroleum fuels, in some cases, over 5% of GDP (IEA, 2014). Subsidies tend to benefit middle-income households and to produce undesirable effects in the sense of directing consumption and production to energy-intensive activities (World Bank, 2014). Falling of oil prices reduce the need for subsidies for fuels and provides an opportunity to reform this funding system, with limited impact on prices paid by consumers. Egypt, India, Indonesia, Iran, Malaysia have implemented such reforms in 2013 and 2014 by removing some distortions and inefficiencies associated with subsidies. Tax resources released by lower fuel subsidies could be saved to rebuild fiscal space eroded by the global financial crisis or can be reallocated to more targeted programs to assist poor households, as well the critical infrastructures and investments in human capital.

2.2. Financial and monetary policies

Financial markets were also affected by the low price of crude oil. Falling of prices may affect the financial performance of energy companies, as the effect of reducing the amount of proved reserves that these oil companies may count as marketable assets/reserves (after freezing or cancellation of projects for

exploration/exploitation) which are one of the main drivers of the market value of these companies. As crude oil prices fall, increasing production costs of some fields make these reserves commercially unviable. These deposits will become "stranded assets", a term used to define the fossil fuels that will no longer be used because the fears about climate change have prompted governments to stimulate the use of alternative energy sources and to make more expensive hydrocarbon consumption.

The problem of many countries is that the steep fall in interest rates would increase the risk of accelerating the depreciation of national currencies. John Bulford and Gabriel Sterne, economists at Oxford Economics Ltd., a research group in Great Britain, have noted in a market report from June 2015: *"Expansionary impact of the oil price shock is slowed down, to some extent, by the limited ability of central banks to ease monetary policy."*

The recent sharp decline in oil prices has significantly reduced the overall inflation during last year (2015) and increased the number of countries with low or even negative inflation. In most cases, central banks could react by further adjustment policies, by relaxing monetary policy. In fact, monetary policy should react to all factors and shocks that could lead to a deviation of expected inflation from medium term monetary policy objectives (De Gregorio, 2012). This puts a particular emphasis on the probability of a second round of effects on other prices and of the expected impact of the oil shock on aggregate demand.

2.3. Structural policies

If they become sustainable on the medium term, lower oil prices could encourage the revival of energy intensive industries. This runs counter to the broader objectives of environmental protection in many countries. To compensate incentives on medium-term for increasing the oil consumption, while ensuring a more appropriate fiscal framework, policymakers could alter tax policies on energy, especially in countries where fuel taxes are low.

For oil exporters, the sharp decline in oil prices is also a *memento* about the inherent vulnerabilities of their economies, which are too dependent on oil exports, and an opportunity to step up efforts to diversify the economy. These efforts should focus on proactive measures to transfer the incentives from this sector to non-commercial activities from other sectors and to employment in the public sector, including activities to encourage high added value sectors, exports from non-resource intensive sectors, and developing skills which are important for employment in the private sector (Cherif and Hasanof, 2014a). Saudi Arabia is already aware of these issues and is considering launching a national plan of reforms designed to diversify the country's economy.

3 Comparison between the current episode of falling prices and previous similar episodes

Steep decline of oil prices during 2014-2016 has put a strong imprint on the global economy and petroleum markets, but it has not been translated into tangible positive economic effects worldwide. Examples of similar episodes from the past show that the sudden decrease of oil prices has generally been followed by quite different results in terms of global economic growth worldwide, pointing to other important forces, as attenuators or amplifiers for the impact of price fall on economic activity. Supply, namely oversupply, seemed to have played a major role in the recent collapse of oil prices. However, the uncertainties remain, and positive effects could be mitigated by the crisis reminiscences or by the reduction of long-term growth prospects in some oil importing countries.

Conversely, signals that the tensions build in global markets and in the world economy are increasingly visible: Chinese exports have slowed their growth rate, as well as international trade; with some exceptions, including gold and uranium, the prices of industrial metals, crude oil and other commodity prices are on a downward path; US economy has not grown as strong as it was expected, after years of huge liquidity injections; in the EU, the recovery has been slower, and the ECB is doing now that the US Fed did many years ago, respectively adopts quantitative easing measures; oil-exporting countries have experienced intensified social and geopolitical turmoil; divergent monetary policies have led to increased volatility in exchange rates.

"Drivers" responsible for the recent decline in oil prices compared to previous episodes indicate a predominance of *factors related to the supply side, with important similarities with the 1985-1986 episodes.* Both episodes have followed after periods of high oil prices, the first being related to the effects of the rapid expansion of non-OPEC oil production in Alaska, North Sea and Mexico, the second to the spectacular growth of shale oil production in the US and renewable energies in the US and EU. Also in the both

periods of price crash, OPEC changed its strategic objectives, moving from a policy of supporting the oil price (by restricting supply) to a policy supporting market share (by maximizing supply).

Prices decline during 2014-2016 was considered, at least theoretically, a factor with positive potential impact on the global economy. Baffes et al. (2015) have calculated that a 45% drop in oil prices could generate a growth of 0.7-0.8% of global GDP on the medium term. However, under a confluence of structural and cyclical forces acting in the global economy, the positive effects in terms of economic growth, due to the decline in oil prices, delay to occur. These mitigating factors include: current financial vulnerabilities, high indebtedness oil companies, especially those in the oil shale field, the limited application of stimulative monetary policies in the major economies, high unemployment and slowing growth prospects on long term in big oil importing economies.

The above mentioned factors may encourage attitudes of prudential type, especially in countries facing yet the effects of the crisis and with deficits in balance of payments. Secondly, the involvement of market fundamentals - supply and demand – in the recent collapse in oil prices remains uncertain, subject to further debate. According to Baffes et al. (2015), supply shocks have mattered about twice more than the demand shocks from mid-2014, especially after OPEC decision to abandon price control. In an analysis of International Monetary Fund (IMF, 2015) it is indicated that the relatively weak demand played a more important role in the initial phase of decline (July to mid-October 2014), while factors related to supply dominated thereafter. Other studies, such as those of Baumeister and Kilian (2015) or of Badel and McGillicuddy (2015) have indicated different effects of the global economic slowdown on oil prices in the years 2014-2015.

4 Could low oil price trigger a recession in 2016? Pros and cons

Lately, in certain economic circles circulates more frequently the idea that low oil prices during 2014-2016 could trigger a global recession. Energy is the engine for much of the global economy. In the periods when oil prices were high, it was alleged that they caused economic recession. Now, when prices go down, it appears paradoxically the same fear, though conditions are different. If it occurs, it would be the most unusual recession - the first ever caused by lower oil prices. Economic history has recorded a series of recessions caused by increasing oil prices: 1973-1975, 1980-1981 and 1990-1991. Due to these situations, the decline in oil prices was caused by falling demand. But in the years 2014-2016, the oil price fell by 70%, while demand increased substantially, reaching in 2015 the highest level in this century worldwide. The crude oil price decline of the last 2 years was due, for the most part, to the effects of spectacular fracturing horizontal technology introduced by the US, which generated an abundance of shale oil on the market, that ultimately led to the price collapse, causing progressively higher losses to important companies/institutions that previously benefited from high oil prices, the amount of damages being estimated at about $3,000 billion. Hydraulic fracturing is what some experts have called as a “disturbing” innovation, with positive effects for consumers, who enjoy a sudden abundance of cheap oil, but with negative ones for much of the operators already engaged in extraction activity and whose business models were built on the exploitation of oil scarcity.

Therefore, why cheap oil creates so much anxiety? Because such phenomena has as main negative effect a low inflation and even deflation in some countries. In the Euro area, inflation is below anticipated expectations. As a consequence the European Central Bank decided to hasten the program of its monetary stimulus, so that in March, 10, 2016 has reduced the reference interest rate and increased asset purchases to halt the spread of very low inflation in the overall economy. In parallel, the European Central Bank has diminished its estimates for economic growth and inflation in the Euro area, both for 2016 and for 2017, while the low price of energy will affect the prices of other goods and services (ECB, 2016).

Peter Cardillo, Chief economist at Rockwell Global Capital, said in January 2015 to International Business Times: "*Deflation - not to be confused with disinflation, or a slowing rate of inflation - is dangerous because it reduces the supply of money and credit and may reduce demand for durable goods. In the worst case, the reduced demand can lead to economic depression worldwide. Now that Europe is on the verge of a relapse into recession, it is feared that oil falling prices could lead to deflation and this would propagate into the global economy* "(Cardillo, 2015).

So far, the decline in oil prices has been mainly positive for the importing and consuming oil countries such as the US, as commodity prices fall, as those for gasoline and other products, so this provides savings in the budgets of consumers.

However, Karl Snyder, chief strategist at Garden State Securities (US), believes that *the global economy is moving on a fine line between disinflation and deflation. There is some evidence that the global*

economy is heading towards deflation, he said (Snyder, 2015). Some investors and institutions have already begun to insure against these risks through massive purchases of US government bonds. If prices remain low for a considerable period of time, this may lead to another crisis, based on deflation.

4.1 Pros

(1) M. Turner, former chairman of the UK Financial Authority believes that *"slowdown in investments and construction in China transmit deflationary pressures worldwide, causing the fall of oil prices."* Oil producers cannot afford to cut production in anticipation of higher prices of crude oil, since most of them have made massive investments in exploration and exploitation of new deposits for the bank loans.

(2) *The global economy is based to a much larger proportion on the oil-rich nations* for economic growth than it did 15 or 25 years ago - when it was registered the last period of very low oil prices- and these economies are currently facing great financial difficulties. In the past, the damage caused to exporters was more than offset by the gains of importers (Blas and Kennedy, 2016).

Except for China and India, the most important developing countries are rich in oil and basic raw materials. Emerging economies now provides about 40% of the world's GDP, almost double the share held in 1990 (IMF, 2016). In Russia, Saudi Arabia, Nigeria and Brazil, economic growth slowed and in many cases, turned negative. *Many oil exporters are facing difficult circumstances*, said Gian Maria Milesi-Ferretti, IMF deputy director, from research department. *So now they have to cut costs significantly and this will impact on growth* (IMF, 2016).

Countries that have based their economy on the oil production and export are going through a critical period. Many are in danger of bankruptcy as a result of their dependence on revenues from oil and IMF experts see no chance that oil prices would come back soon to a high value (CNN, 2016). Even Saudi Arabia has resorted to an austerity policy to reduce the impact the oil price on its budget and other producing countries of the Persian Gulf are facing even more severe challenges. Meanwhile, Russia is preparing for a second year of recession and other countries (Nigeria, Azerbaijan,Venezuela) with a greatly reduced income, are on the verge of economic collapse. The latter are the most critical cases that international financial institutions need to manage.

(3) Larry Elliot, editor-in-chief at The Guardian expressed a different point of view that seeks to motivate why the low oil price will not be able to lead to an economic boom (Elliot, 2016).Although theory and practice have shown that after a sharp decline in oil prices follows an economic boom, Elliot says that, this time, the situation could be different. The explanation offered is that *markets fear that the lower oil price is more a symptom of weak demand, than of an oversupply.* Oil producers record losses and the global growth is slowing down rather than accelerating. Support for this new thesis is provided by the following factors: modest growth rate of international trade; decline in US shipping; decrease of Baltic Dry Index- an imperfect guide, but representative for maritime freight transport, and the abrupt decline in prices for industrial metals. Prices of copper, iron ore and aluminium plummeted, making it difficult to argue that the collapse in oil prices is just simply a reaction to the oil saturation of the market and the inability of OPEC to act in consensus to control the supply. That said, a sharp decline in the oil price should, finally, be a stimulus to the economy because accumulating more money in the hands of consumers and businesses have an effect similar to a tax cut. The oil price is lower, so that economic momentum should be higher - with two important reserves:

• The first is that some of the large oil producers and other raw materials are already facing with a "toxic cocktail" of large trade deficits, weak currencies and high debts that must be refund in dollars.

• The perception (which proved to be wrong) that a period of prolonged deflation could have been avoided. When oil prices fell strongly to the end of 2014, the central banks impression was that the impact will be transitory. Fed's decision to raise interest rates of monetary policy in the last month of 2015, was governed by the belief that a drop in unemployment rate would allow more generous salary payments and would eventually lead to inflation raise, which has not happened. Falling oil prices mean lower inflation for longer time with an increased risk of deflation through the secondary effect on wages.

(4) Other specialists (Kawa L, 2016) warn that the world should not expect that steep decline of commodity prices will contribute too soon to improving global economic situation.

Sylvain Broyer, chief economist for Euro Area at the investment bank Natixis (France), claims that *"turmoil resulting from lower oil prices will counteract the positive effects this year"* (Naxitis, 2016*). "I call pure hell the situation in the oil market"* said Jim Teague, head of Enterprise Products Partners at IHS CERA Week conference (Houston) in the last week of February (Financial Times, 2016). The oil market has become increasingly concerned about the vast surplus of crude oil stocks in storage worldwide. Oil price influences

inflation level and lately seems to have an effect on capital markets. Stanley Fischer, vice chairman of the Fed, told at the conference that the *"oil price has become a macroeconomic problem"*.

This analysis adds to complex growing comments, claiming that "*this time the situation is different from previous situations"*, lower oil prices appear to be a brake for the world economy. In 2016, opposed to the previous year, the fall in oil prices will start to encumber the global economy due to three main reasons:

- slowing demand growth in oil-importing countries;
- severe reduction in revenues for oil exporting states, which will affect their imports from developed countries;
- increasing inability of oil companies to pay off their debts, which will worsen the financial conditions.

So far, the factor that contributed mostly to the oil market saturation came from the supply side. Low prices have contributed to an increased demand in 2015, but this trend has started to moderate later that year and a further acceleration of growth in consumer spending is unlikely. According to Natixis, the problem is that the increase in profits has not accelerated the capital spending in Member States of the OECD: "*The recent decline in oil prices boosted household consumption of OECD countries, but has not spurred corporate investments, despite improved profitability*," explained the analyst Broyer of Natixis bank. The influence of relatively moderate demand on oil prices also does not bode well for investments. However, US example serves as a counterpoint to this overall evaluation. The immediate coup that low prices have given to economic growth has resulted in the reduction of capital expenditures in the oil sector, offering a partial explanation for the fact that the expected increase of productive investments in OECD countries failed to be more substantial. Natixis expects also that the insolvency rate for debts payment in the US to rise to almost 23% by the end of the year. The deterioration of financial markets at the beginning of 2016 has dimmed the growth prospects for the world's largest economy, said the decision makers in monetary policy from the Fed, USA.

For emerging oil-producing market economies, low prices of oil presents a set of more serious risks, because the possibility of a debt crisis in developing countries exporting raw materials cannot be completely excluded, and foreign exchange reserves of these countries are insufficient. In Argentina, Venezuela, Turkey, oil companies are making efforts to repay debts in foreign currencies (mainly in dollars), and the level of their public debt is on a unsustainable curve (Brazil).

(5) In normal times, between short term variations of commodity prices and the stock evolution on capital markets there was an inverse correlation. Recently, however, the evolution of the stock prices was very much synchronized with the dynamics of oil prices, and many experts have noted undeniable and perhaps inexplicable link in recent months, between the direction of the evolution of oil prices and the evolution of capital market, especially of Dow Jones index, an unusual evolution that highlights the fears regarding the evolution of world economy. In fact, the correlation coefficient between the oil price and the stock value on the capital markets was 0.5, over the past four months, the highest level for more than two years. But 2016 started even more worrying. Wall Street Journal has noted in January 2016, that the ratio attained 0.97, which means an unusual correlation, usually associated with recessions (Wall Street Journal, 2016).

4.2 Cons

(1) Cheaper crude oil, at least in theory, acts as *an injection of adrenaline* for the global economic growth .American typical car-driver who in 2013 spent an average of $ 3,000 for fuel at petrol stations has saved a minimum of $ 800 per year in 2014 and 2015.

Importing countries such as those from Euro Zone, India, Japan and Turkey have made significant profits. Since there is the probability that this money may be spent rather than stuck in a sovereign fund, global GDP should increase. Low oil price will further reduce the already low inflation and thus encourages central banks to adopt a looser monetary policy, which will stimulate economic activity. European Central Bank has already acted recently with more courage for removing deflation by buying sovereign bonds (QE).

(2) The idea that oil prices in sharp decline could be a negative problem for the economy is *a priori* wrong. Since the early 1970s it worked a simple equation: a sharp rise in oil prices is equal to a global recession, which took place, as we mentioned, during 1973-1974, 1979-1980, 1990 and 2008. At the same time the periods in which oil prices were in decline - the mid-1980s and the second half of the 1990s - were associated with economic growth.

(3) China's oil demand rose in 2015 at an annual rate of around 8%. The pace of growth is expected to slow in 2016, but at the projected growth rate of 6.8 %, China consumes more oil, currently, than 5 years ago, when economic growth was 10%/year. Likewise, in 2015, demand for gasoline in China rose at a rate of 10%, while there was a decline in demand for diesel and fuel oil - which strengthens the argument that the economy

of this country suffered some structural changes (International Energy Agency, 2015). Data for the first 10 months of 2015, provided by China Association of Automobile Manufacturers (CAAM), indicate sales of 16.5 million cars and for the full-year 2015 of 20 million units, which is equivalent to an increase of almost 20% of the car fleet of China (IEA, 2015).

(4) World economy, in general, has stalled in recent years and prospects for a return to growth levels before the financial crisis are minimal. However, in the updated report of January 2016, of the International Monetary Fund, (IMF, 2016), the rate of global economic growth for 2016 was revised down to an estimated rate of 3.4% and for the year 2017 to a rate of 3.6%. The rate for developed economies is expected to record a modest improvement, of 0.2% in 2016, to 2.1%/year, and will remain constant in 2017. Economic activity will be sustainable in the USA, while in Euro Area, a stronger private consumption, supported by low oil prices and the slight easing of financial conditions may counteract the decline in net exports. In Japan it is expected an improvement in economic growth in 2016, with the support of fiscal incentives, cheap oil, the prospect of improving financial conditions and income growth.

(5)US oil consumption was rising in 2015, while sales of motor vehicles stood at very high levels.

(6) In Asia, demand was relatively strong and Middle East countries have also recorded increases on consumption.

(7)The situation of emerging and developing is characterized by substantial differences, but the slowing growth and restructuring of the Chinese economy, low prices of raw materials, the tensions within some large emerging economies will continue to affect the growth prospects in 2016-17.

However, India, a large emergent economy has produced good results that give some hope for higher growth rates in 2016. According to the IMF, India recorded the fastest growth in the world. GDP growth was 7.3% in 2015 and is estimated at 7.5% in 2016 (IMF, 2016). Although India's oil demand is only a third of China, this growth should be more carefully assessed by analysts. India is on track to become the most populous nation in the world with a middle class that is likely to double in the next 15 years. The number of cars per 1,000 people is currently 40, but has a tendency of rapid growth. And this is not something that will occur sometime in the future. In 2015, oil consumption increased in India by 300,000 barrels/day.

(8) The number of oil companies that went bankrupt was lower than anticipated. Currently one talks about a risk of bankruptcy for 1/3 of US oil companies.

(9) Although China has commonly been noted as the engine of global oil demand growth, currently it attracts attention upon its declining role of oil major producer. China production is in a process of relative strong decline, which means that demand for imported oil should remain firm and prices will be stimulated to increase. The impact of the likely slowdown in China's domestic production will be that demand for oil imports will increase, certainly not enough to rebalance the global market for crude oil , and the country's dependence on oil from foreign sources will reach a new record level of 62 % this year (Wall Street Journal, 2016).The marginal cost of production for some of the most expensive crude oil fields in China makes unprofitable oil domestic production for Chinese companies, which could enter a period of *structural decline*, said Nelson Wang, oil analyst at brokerage firm CLSA from Hong Kong, adding that this decline will help to reduce oversupply on the international market (Wall Street Journal, 2016).

(10) Although one of the indicators defining the recession, more broadly, based on experience of the recession from 2008-2009 refers to the process of slowing or even shrinking the investments, it was determined that *the current relationship between crude oil prices, investments and oil future supply is not so smoothly and clear, as feared*. It is true that lower crude oil prices discourage investment expenditures, resulting in the delay or cancellation of projects and reducing the future potential for consumption. But other factors can come into play, distorting the relationship. Studies of correlation between investments and prices have not found conclusive causal relationship between these indicators (GIS Report, 2016)

According to the International Energy Agency, capital investments in the oil and gas extractive sector fell by 20% in 2015 (IEA, 2016). The trend is expected to continue during 2016. If this happens, it will be the first time in 30 years when the industry will experience two consecutive years of declining investment. Fatih Birol, the IEA's executive director, warned: "*Now is not the time to relax. On the contrary: a period of low oil prices is the right time to strengthen our ability to cope with the future threats for energy security"*(IEA, 2015). However, the steep decrease of investments is not a surprise, given the capital investments that preceded it. The annual investments in oil and gas industry increased by 50 % between 2009 and 2014 , up to $ 890 billion, according to a study made by consulting company Deloitte (Deloitte University Press, 2015).

Traditionally, a sharp drop in oil prices leads to a contraction of investments made by oil companies. *But their reduction should not be considered only the result of falling oil prices*. Some large oil companies had started to reduce their investments before oil prices began to fall. Since July 2013, the transnational company Total has announced it will cut capital spending in 2014. In March 2014, ExxonMobil has announced a reduction in investment spending from $ 42.5 billion to $ 37 billion for the period 2015 -2017. It is possible that a number of companies have intuited the future of price developments, given the exponential growth of US oil production. But a lot fewer have guessed OPEC reaction. Usually the perception is that higher prices translate into higher profitability for oil companies. In reality, international oil companies have faced underperformed stocks on the capital market, even during the period when prices were high. According to energy consulting firm Douglas-Westwood, combined yield of invested capital of large transnational oil companies - ExxonMobil, Royal Dutch Shell and BP - reached at the end of 2013 its lowest level in over 40 years.

A factor frequently overlooked concerns *sensitivity/reaction of upstream costs at the oil prices.* The upstream costs (extraction) increase when oil prices rise, usually with a lag of six to nine months. If crude oil prices rise faster than costs, as happened before 2011, spending increase may be compensated. However, between 2011 and the summer of 2014, costs continued to rise enough, while oil prices remained relatively stationary. Net income of oil industry shrank. No effect of government policies can be neglected, especially in terms of taxation.

A traditional approach of the correlation between prices, investments and supply must take into consideration the long lag time between initial investment and launching the first production flow**.** For conventional oil, this lag time is of the order of years and in some cases for over a decade. Current production of conventional crude oil is the result of exploration conducted more than a decade ago and investment decisions taken behind more than five years. In the case of shale oil investment this cycle is much shorter and the waiting time dropped to a few months. This is due in part to the technology involved in these operations and partly to the nature of companies operating in this sector, generally small sized, highly indebted, but much more adaptable to the changing conditions of the market, compared with multinational giants that dominate conventional crude oil businesses. This suggests that declining investment will have a relatively low impact on existing production from conventional oil fields.

(11) Federal Reserve Bank of Dallas has calculated that the fall in oil prices should boost global economic growth by up to 0.4 percentage points (Federal Reserve Bank of Dallas, 2016). Indeed, the market focuses on short-term adjustments and is ignoring the potential gains and losses on long-term, according to Laurence D. Fink, CEO of the BlackRock Inc. bank, the largest investor worldwide. *The reality is that 4 billion people will have access to cheap energy, cheaper heating and higher incomes*, said recently Laurence Fink. *And, finally, these will re-accelerate global economy. It may take six months or a year, but in the end it is a positive fact* (Bloomberg, 2016).

Joe Weisenthal (Bloomberg, 2016) quotes a statement of Francisco Blanch, analyst in the Bank of America Merrill Lynch, saying that *a sustained oil price decline will operate a reverse transfer of income amounting to $ 3,000 billion per year from oil producers to oil consumers, one of the largest transfers of wealth in human history*. So far, however, in developed countries consumers have not acted as it should: spending the relative unexpected gain from cheaper energy. Recovery of oil consumption in importing countries has so far been relatively weak compared with past episodes of declining oil prices - said an IMF official in January 2016. The reason: consumers use their savings to repay their debts.

Now, the most investors have come to see in the continued weakness of oil price a negative thing and a sign that global demand (for oil) is low. Analysts in marketing strategies of the Credit Suisse bank do not share this view. They believe that low oil prices are the result of excess supply, not lack of demand. In addition, remember that the IEA has stated that in 2015 the demand reached a maximum level of the last 15 years, and oil prices have disconnected from ISM Manufacturing Production Index, a key indicator of industrial activity. In the case that the evolution of oil prices would be a pure reflection of the global demand, the two would have moved in tandem.

Although dramatic reductions in capital expenditures of energy companies over the past 18 months have decreased by 1.4 pp the economic growth rate worldwide and by 1 pp the economic growth rate in the US, analysts of the Credit Suisse bank believe that the poisonous phase has passed, anticipating that US oil demand will increase by 1.6%, and finally, low oil prices would stimulate the increase of global economic growth by 0.8%-1.4%.

(12) Is there another perspective? Based on previous examples the answer is affirmative.

Most of the world's greatest economists have pointed out that a global crisis begins when consumers reduce their consumption. In 2008, just the drop in consumption has proven to be the most painful and the most dangerous wound. Now consumption increases in all areas which use energy resources: population, public establishments and manufacturing companies, large or small, public or private. This is relevant because the consumption area set in motion the engine of economy and great neo-keynesian thinkers, like Krugman and Stiglitz, think that policies meant to stimulate consumption are the key to economic recovery.

The phrase uttered by Christine Lagarde in an interview published by the Handelsblatt picked by Agerpres, (a Romanian news agency) that *advance of the global economy will be disappointing and unevenly in 2016*, it is far to be interpreted as meaning that 2016 will bring a new global crisis, as there were quick to assert numerous media sources worldwide and in Romania. Even if the managing director of IMF notes that *in many countries, the financial sector is still weak and on the emerging markets financial risks are growing*" or *the perspective of raising interest rates by the Federal Reserve (Central Bank) of the US and the slowing Chinese economy increase the high risk of economic vulnerability globally*, these are serious, severe warnings, but far from being lethal sentences (Lagarde, 2016). The conclusion of IMF managing director includes a potential, although anemic, optimism: *the beginning of normalization of monetary policy in the US and transformation of China in an economy based on domestic consumption is necessary and beneficial changes, but they should be achieved in an effective way*. In other words, the US, moving to normalize its monetary policy, gives the signal out of the crisis; and China, moving to a new economic model is preparing for a new paradigm of growth.

Romanian National Bank's position in this context is that the fear of deflation in 2016 remains equally unjustified as in 2015: *Deflation with significant increases in consumption and stores full of goods is nonsense. Furthermore, in 2016 we will see prices moving towards what the European Central Bank wants: inflation close to 2%, without reaching this percentage* (RNB, 2016).

5 Conclusions

1. As there was never been a recession caused by the low prices of crude oil, there are not clear indications to foresee such a development: everything depends on the dynamics of global consumption. Furthermore, the low oil prices increase resilience and elasticity of consumption, which may mitigate the severity and duration of a possible recession. The best news is that thanks to hydraulic fracturing, recessions caused by high oil prices are a thing of the past.

2. We consider that it is unlikely that a global recession to be caused by the low price of crude oil. The current decline in oil prices is due to increased supply and not to sluggish demand – a characteristic of traditional recessions.

3. The price drop is good news for all countries except for the oil producers. Lower energy costs act like a tax reduction in oil-consuming economies. Lower oil prices will spur global economic growth. High oil prices acted as an economic toll, not as an economic added value. The spectrum of bankruptcies and the speed and magnitude of price decline have scared financial markets, but the overall economic effect of cheaper oil will certainly be a positive one.

4. However, if it occurs, the recession will not be triggered only by the factors of tension on the oil market, but by a complex of factors, most of them quite independent of oil prices.

References:

[1].Badel&McGillicuddy (2015), *Oil Prices: Is Supply or Demand behind the Slump?*, Federal Reserve Bank of St Louis

[2].Baffes, J. et al. (2015), *The Great plunge in oil prices: causes, consequences, and policy responses*, Policy Research Note, World Bank Group

[3].Balaban, C. (2016), Mario *Draghi: deciziile BCE au fost determinate de temerile privind efectele secundare ale inflației*, Agerpres

[4].Baumeister, Ch., Kilian, L. (2015), *Understanding the Decline in the Price of Oil Since June 2014*, Center for Financial Studies, CFS Working Paper Series, no 501, Goethe Iniversity, Frankfurt am Main, Germany

[5]. Bernanke, B. (2016), *The relationship between stocks and oil prices*, Wall Street Journal

[6]. Birol, F. (2015), *World Energy Outlook*, International Energy Agency *(IEA)*.

[7]. Blas, J, Kennedy, S. (2016), *For Once, Low Oil Prices May Be a Problem for World's Economy*, Bloomberg Economics
[8]. Bulford, J., Sterne, G. (2015), *Central Banks at Zero Failing to Turbocharge Effect of Cheap Oil*, Oxford Report, Oxford Economics Ltd.
[9]. Cardillo, P, Menton,J. (2015), *Oil Prices 2015: Why Economists Fear „Nightmare" Deflation*, International Business Times (USA)
[10]. Cherif, R, Hasanov, F. (2014a), *Oil Exporters at the Cross Roads: It is High Time to Diversify, IMF Working Bulletin*
[11].Doyle, D. (2016), *60 Reasons Why Oil Investors Should Hang On, oilprice.com*.
[12].De Gregorio, J. (2012), *Commodity Prices. Monetary Policy and Inflation*, Working Paper no 359, University of Chile, Department of Economics
[13]. Elliott, L. (2016), *Why the falling oil price may not lead to boom*, The Guardian, *UK*.
[14]. England, J, Bean, G. (2015), *Following the capital trail in oil and gas*, Deloitte University Press, Deloitte Center for energy solutions
[15]. Hamilton, J.(2016), *Could Low Oil Prices Cause A Global Recession?*, oilprice.com.
[16]. Kawa, L.(2016), *Natixis: Lower Oil Prices Will Start to Hurt the Global Economy This Year*, Bloomberg Economics
[17]. Lagarde, Ch. (2015), *Avansul economiei mondiale în 2016 va fi dezamăgitor şi inegal*, Agerpres
[18]. Meyer, G. (2016), *Oil industry tormented by latest price slump*, Financial Times
[19].Mohaddes, K., Raissi, M. (2016), *The U.S. Oil Supply Revolution and the Global Economy*, Working Paper No. 263, Federal Reserve Bank of Dallas, Globalization and Monetary Policy Institute,
[20]. Nackhle, C. (2016). *Global trends: low oil prices today may not mean low investment tomorrow*, GIS Report, Geopolitical Information Service, Lichtenstein
[21]. Snyder, C. (2015), *Oil Prices 2015: Why Economists Fear 'Nightmare' Deflation*, International Business Times
[22]. Teague, J. (2016), *Oil industry tormented by latest price slump*, Financial Times
[23]. The Economist (2016),*Who's afraid of cheap oil?*, From the print edition
[24].Vermeulen, Ch.(2015), *The Gold And Oil Guy* , Stock Newsletter Reviews
[25]. Wang, N, Spegele B. (2016),*Why declining Chinese oil production is good for oil prices*, The Wall Street Journal
[26]. Weisenthal, J.(2016), *BofA: The Oil Crash Is Kicking Off One of the Largest Wealth Transfers in Human History*, Bloomberg Economics
[27].Young, E, Stein C, (2016), *BlackRock's Laurence Fink says 400 energy firms may not survive cheap oil*, Bloomberg Economics
[28]. International Monetary Fund (2016), *World Economic Outlook*
[29].International Energy Agency (2015), *Monthly oil market report*, December
[30]. International Energy Agency (2015), *Medium-Term Oil Market Report*

Do Specific Growth Drivers Exist for Firms? A Regional Analysis of Start-ups and Industrial Growth

Ph.D. PAUL I. OJEAGA
Department of Entrepreneurial Studies
Federal University of Agriculture Abeokuta
NIGERIA

Abstract: - The study of start-ups, have remained largely a micro economic issue. Firms are the key drivers of industrial sector GDP (or enterprise growth) in countries across regions. Few studies have tried to examine the consequence of start-ups in the broad macroeconomics terms on enterprise growth in general with special emphasis on industrial sector output. This study provides a macroeconomic study of the effect of start- ups on industrial sector growth for countries in some specific geographical regions of the world. Panel data is utilized due to it obvious advantages such its ability to utilize a panel of short time frames and its suitability for controlling for omitted variable bias and unobservable heterogeneity across regions. The results show that start-ups remain an intrinsic variable for enterprise growth and industrial sector output discussion in general.

Keywords: Political Economy, Quantitative Economics, Start-Ups, Entrepreneurship, Industrial Economics

JEL Classification: C23, O31

1 Background of Study

-Angel investors- and -Venture capitalist- are often what –entrepreneurs- venturing to -start new firms- -need-, in their quest for -start-up funds-. -Validated business models- are also not likely to break new grounds as much as those that are un-validated with un-validated business model having higher innovation probability and unique success. There is also the question of floating highly scalable business models with high throughput for success. A scalable business model is one in which revenue will exceed cost of operation in no distant time from start-up. Business registration and economic growth are also likely to be connected. Till date little studies have tried to link the effect of start-ups and industrial growth in a quantitative manner as done in this study. Some channels through which start-ups can affect industrial growth include through new product introduction, payment of taxes by registered new firms thereby increasing the revenue base of the economy (through new revenue) as well as the job creation process. The attempt adopted in this study, is to explore if regional specific differences are responsible for the extent to which start-ups affect growth or if they do not count in the relationship between new business registrations the measure of start-up in this study and economic growth. In conducting this study panel data is utilized which allows for the control of unobservable effects as well omitted variable bias in the econometric panel regression carried out in the study. The study utilizes data from six regional divide of the World which include the European Union, Latin American, East Asia Pacific, the United States to represent North America, Middle East and North Africa and finally Sub- Saharan Africa. The estimation techniques used in the study are the quantile regression and the generalized method of moment estimation techniques. Their choice stems from the attractive superior arguments, of overcoming the issues of choosing a suitable functional form as well as providing heteroscedastic robust standard errors. The rest of the paper is divided into the empirical analysis and data sections, the results, the relationship between start-ups and enterprise growth and the concluding sections.

2 The Scope and Objectives of the Study

In this section the scope and objective of the study is stated. The study investigates the effect of start-ups on regional industrial growth (or aggregate enterprise growth proxied, using industrial GDP growth) in six regions mentioned earlier in the study. The extent to which new business registration affect economic growth is becoming a source of concern for many policy makers as well as investigators of new business registration and their effect on business growth particularly for the private sector, since new market entry increases competition across in markets. The specific objectives that the study attempts to answer include:

Are start-ups driving industrial growth (aggregate enterprise growth) across regions?

And secondly do regional specific differences influence the effect of start-ups on driving industrial growth (aggregate enterprise growth) across regions?

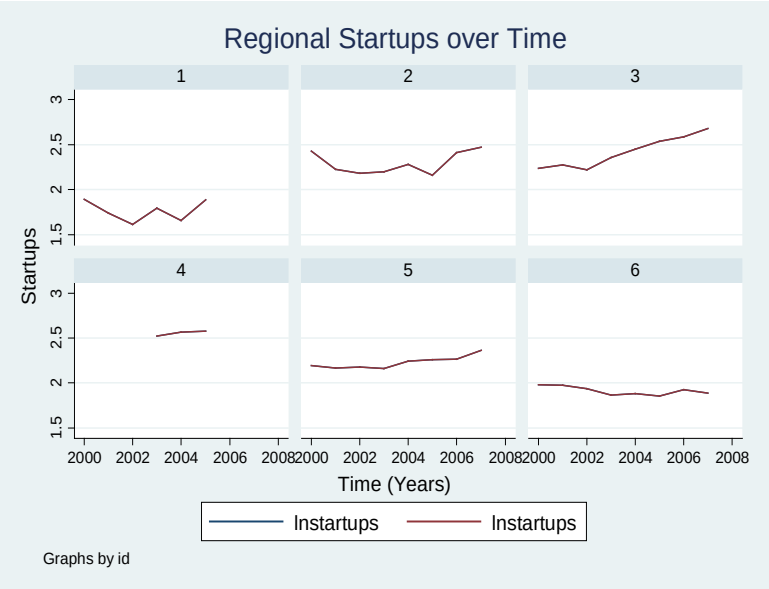
3 Empirical Analysis and Data

In this section the empirical arguments and the data utilized in the study is presented. The first intuitive question the study asks is if start-ups can drive industrial growth (specifically enterprise growth) across regions? Secondly does the measure of new business registration capture the amount of new start-ups across regions and if regional difference count in industrial growth? While many start-ups might not be scalable business ventures, it will be important to know if new business registration has any impetus for private sector growth. New business registration seems to be a suitable measure for start-ups in the absence of any other quantitative data, since it captures new start-ups and firms who wish to set up new divisions that have some level of autonomy in their larger organization. Viable start-ups can attract venture funding. Venture capitalists are investors with huge clot of capital wishing to invest in a business model that are risky and have the likelihood to be scalable. Such investors have strong capabilities to drive growth in new firms with bright future prospects which are scalable. The question of what exactly is scalable is left for the investor and the start-up manager to decide, while investors might find it suitable to invest in risky ventures, where the probability of success slightly outweighs the probability of failure, Angel investors on the other hand are those investors that are willing to invest in a start-up firm because they share the vision of the start-up firm. Therefore the scalability of the venture is not often one of paramount concern at the initial stage of the business life cycle as they may wish to move or change the method of achieving their goals on the long run.

3.1 What Are the Trends in Start-ups Across Regions?

In this subsection we study the trends in new business registration (start-ups) across the regions involved in the study. Fig.1 below depicts the trends in new business registrations across regions represented in panel line plots. The regions in order of representation in the graph below are Sub Saharan Africa (SSA), Middle East and North Africa (MENA), East Asia Pacific (EAPC), the United States to represent North America region (NA), the European Union (EU) and Latin America (LA) respectively. The trends reveal that new business registrations are on the increase in all regions except in Latin America (see id 6 Fig. 1).

Fig.1



Note: The figure above show trends in new business registration for the six regions considered in the study. The regions in order of representation in the graph below are Sub Saharan Africa (SSA), Middle East and North Africa (MENA), East Asia Pacific (EAPC), the United States to represent North America region (NA), the European Union (EU) and Latin America (LA) respectively. The trends reveal that new business registrations are on the increase in all regions.

This depicts that start-up numbers are on the rise. However the limitation of the study is that the data used do not depict how many of such businesses make it through the full business cycle (that is to maturity

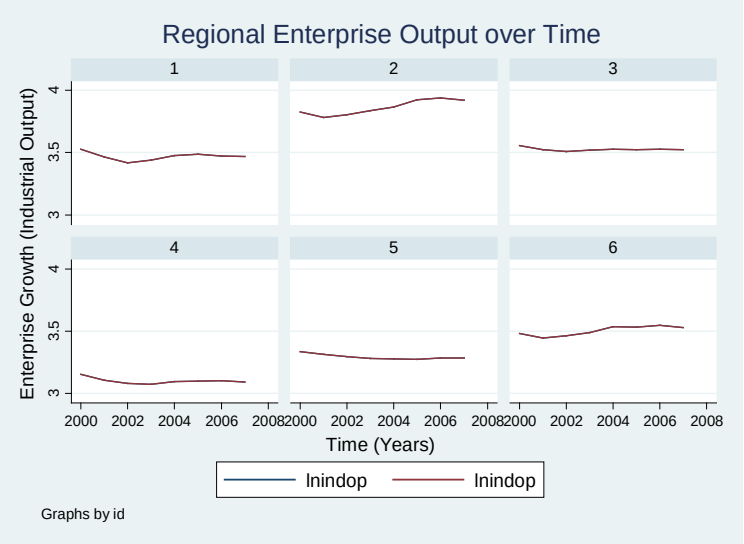
stage). There are also noticeable higher trends for the United States (see id 4) and the East Asia pacific region (see id 3). This depicts the business friendliness of the region in the East Asia Pacific region (some countries in this area include Mainland China, Japan, Malaysia, Singapore etc.).

Africa and Latin America continue to witness the lowest number of startups among the regions utilized in the study. Some of the reasons for this include a.) The riskiness of the immediate business environment. b.) Uncertainty in the country specific economic policies in the two regions in question, this is attributable to poor stability of their political systems leading to sudden and unforeseeable change in government accompanied by drastic economic policies shifts. Inclusive is the current poor level of innovation and adaptation of technology, poverty and disease and the particularly high unemployed young population composition in many of the countries in these two regions e.g., Haiti, Burundi and Sudan for example (World Bank Statistics 2013) .c.) Poor flow of knowledge and investment in research and development also limits new business start-ups. There is suggestive evidence that poor countries are likely to utilize a sizeable amount of their GDP on consumption and welfare needs as against capacity building particularly to boost trade and technology Ojeaga (2015). The implication of the trends in regional startups is that regions with poor startups trends are likely to lag behind both economically and technological due to un-favourable climate for business activities. There will also be cases where industrial output for these regions will be poor compared to other regions of the world. Investing in innovating capacities such as new technology acquisition, manpower training as well as improving access to starting capital are likely paths, through which countries in Africa and Latin America can boost business growth.

3.2 What Are The Trends in Enterprise Output Across Regions?

In this subsection trends in regional enterprise output (using firm industrial output in constant United States Dollars) are explained. The measure (or proxy) of enterprise output utilized in the study is industrial output from regions.

Fig.2



Note: The above graph represent industrial output from regions. The regions in order of representation in the graph below are Sub Saharan Africa (SSA), Middle East and North Africa (MENA), East Asia Pacific (EAPC), the United States to represent North America region (NA), the European Union (EU) and Latin America (LA) respectively.

Regional industrial growth attributable to enterprise output could have meaningful implications for global growth. Regions have also been experiencing average growth over the years of 3 to 3.5 % as at 2010 to 2013 (World Bank Statistics 2013). Growths in many developed countries have peaked with countries in the European Union experiencing average growth of 1.4% (IMF statistics 2013). However growth still appear to be high for regions with higher concentration of developing countries see id 1,2 and 4 for Sub Saharan Africa, Middle East and North Africa and Latin America respectively. Sectorial composition in countries across regions is also a major contributive effect to overall growth from countries across regions. Diversification of

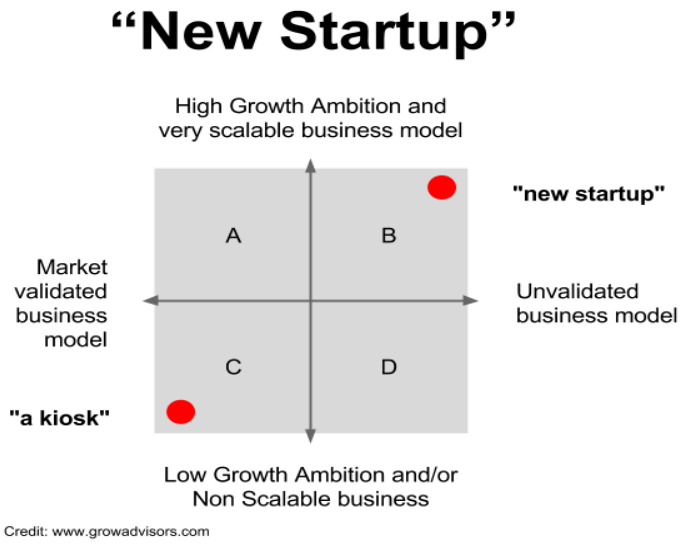
country specific economies across regions could improve individual country output which could affect overall regional output particularly for many mineral dependent developing counties like Nigeria and Saudi Arabia.

The level sectorial economic diversification for many developed countries is already quite high, yielding strong results for those regions and insulating countries in such regions from global shocks. Therefore the growth is many developed regions are likely to be more sustainable than those from developing regions like Sub Saharan Africa, and North Africa and the Middle East. Innovation and technical ability to drive growth is also missing in many developing countries in Latin America, Sub Saharan Africa and Middle East and North African countries. This can be largely responsible for instability in growth for these regions due to dependence on global commodities export. The sectors that drive growth for regions are also different while for the developing countries of Latin America, Sub Saharan Africa and Middle East and North Africa these include firms and enterprises in the primary and the secondary sectors with the primary playing a more significant role. Growth from developed countries will be mainly from the tertiary and the services sector (World Bank Statistics 2013).

3.3 Un-validated Models and Scalable Start-ups, do High Ambition Count?

In this subsection we discuss un-validated business models, scalable start-ups and investor and business manager's high ambition. Validated models are less risky ventures that have been embarked upon by firms in the past. They are validated because other firms or small businesses have adopted them and have pulled through, meaning they are scalable and less risky. The problems with such models are that they are typically conventional business ventures that are common, and many are already scalable. Another problem is that there will exist, many competitors and return on investment will likely be low due to dwindling demand over an area.

Fig.3 Scalable and Non Scalable Business Models



Source: Obtained from "Credit" Available on www.growadvisors.com.

Note: The above depicts that ambitious growth desires is the key driver of new start-ups. This is fueled by the desire for high profit (making such models to be highly scalable). With high profit levels also comes a high risk.

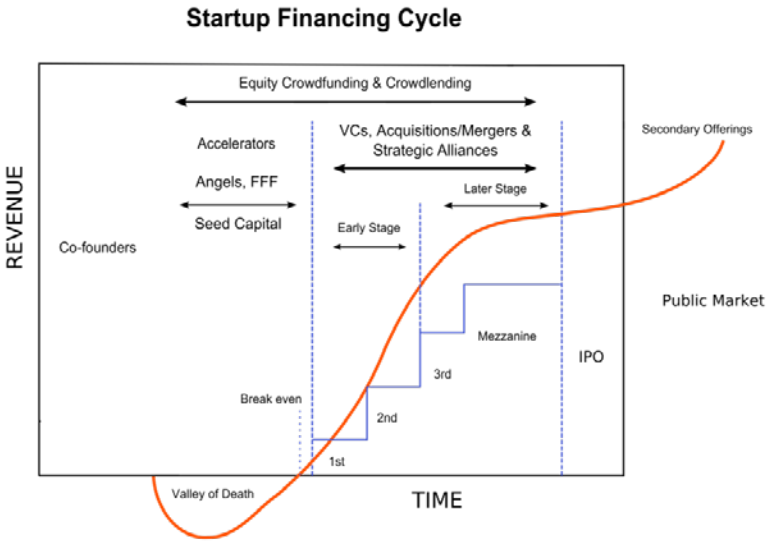
Fig. 3 depicts a new startup model and differentiates two new firms into those with validated business models (termed a kiosk in the figure below) and a new startup (termed as those with an un-validated business model). It depicts that validated business models are usually characterized by low growth, low ambition and therefore can be characterized as a quite low scalable business. On the other hand un-validated business models have high growth ambition and are very scalable models although the scalability has not been proven.

The depiction shows that ambitious growth desires is the key driver of new start-ups. This is fueled by the desire for high profit (making such startup models to be highly scalable). With high profit levels also comes a high risk. Therefore it is not expected that investors will easily invest in new startups driven by ambition with the likelihood of great success without some sufficient conviction.

3.4 Seed Capital, Angel Funding, Venture Capital and the Valley of Death. Reviewing the Start-up Funding Debate

In this section we present the startup lifecycle. Few startup firms are likely to avoid slipping into the valley of death i.e. not eventually breaking even. This can lead to serious consequences for their founders, who could go bankrupt, lose their reputation and lose their seed funds. In stating the startup financial cycle debate we define seed funds. Seed funds are initial working capital that managers of new startup firms often have at their disposal to fund the new firm. Angel investors are investors who believe in the vision of a new firm (startup). Seed funds being initial funding capital, as depicted below in fig.4 and angel investment, are probably the only two types of funding a new startup company is likely to find until it breaks even and begins to make profit. Venture capitalists are also risk takers seeking to maximize profit in the face of intense risks. They are often attracted to the startup company in the early stages (first stage) after the company just breaks even. They are typically investors with enormous capital to directly acquire part or the entire firm or merge with the existing firm to cut cost in some factors of production in their own existing firms. Firms are also qualified for IPO's fund raising to expand their business at this stage see Fig 4 at the break even stage.

Fig.4 Start- Up Financing Cycle



Source: Obtained from "Credit" Growth Advisors online
Note: The above depicts that startup financing cycle. The figure above show that before the break even stage in the early life of a firm it receives just seed capital and angel funds and as soon as the firm breaks even it receives venture funds and later stages receives funds through IPO and other secondary offerings.

In the later periods of the break even stage the firms are likely to seek investment in the public market through secondary offerings. At this stage the firm is considered to be viable and profitable and can access public money for further expansion. The debate in the startup funding cycle is at what point is the startup firm termed profitable? It is at the point at which its revenue just exceeds it total cost. Other pundits also specify that a firm is successful when the firm has established itself as a formidable competitor in the market through having a sizeable amount of market share.

Finally a firm that avoids the valley of death will experience two types of funding they include: a.) Crowd funding and b.) Crowd lending. Crowd funding will come from venture capitalist while crowd lending will come from IPO's and other secondary offerings.

3.5 Data and Sources

In this subsection the data used in the study and their sources are defined clearly. All data were obtained from WDI data of the World Bank through the data market of Iceland, for the period of 2000 to 2008 (Nine Years). The study utilized six regions namely the European Union, Latin American, East Asia Pacific, the United States to represent North America, Middle East and North Africa and finally Sub- Saharan Africa. Panel data is utilized due to the short time span for the six regions. The advantages of panel data are that it allows for the elongation of the number of observation and control for unobservable effects (e.g. omitted variable bias) in the model specification. The dependent variable used in the study is enterprise growth which is

the proxy used to capture industrial output from regions. Other explanatory variables include new business registration (the measure of startup) even though we recognize that some of these firms are not likely to be scalable, technology (measured using the total number of phone lines both fixed and wireless), innovation (measured using the total number of phone lines both fixed and wireless X population) gross capital formation (total capital available in banks and the real sector in constant United States Dollars), inflation rate which depicts the riskiness of the business environment across regions (annual variation in percentages in prices of goods and services) institutional quality measured using length of paved roads across regions in kilometers.

3.6 Theory and Methodology

In this section the theory and methodology used in the study is presented. The theoretical section reviews some previous theories in the area while the methodological sections reviews some past methodologies used in the area of study.

Theory

In this sub-section the theory is introduced. Past studies have identified labour inputs as having strong consequences for private sector growth in the United States Griliches (1960). Labour indexes have also been developed using labour compensation hour weights Griliches (1963) to study the effects of labour cost of firm productivity finding a relationship between the two. Other studies have also studied the effect of input substitution of labour and capital on firm productivity Solow (1957). Jorgenson, Ho, and Stiroh (2005, Chapter 6, pp. 201-290) also study the implicative effect of capital price on firm productivity utilizing different types of capital mix, they find a relation between capital mix and firm growth. Jorgenson (1966) also introduced the production possibility frontier allowing for the replacement of the traditional production function with the production possibility frontier in the embodiment hypothesis allowing for the joint production of consumption and investment goods from capital and labour services.

Jopvanovic (1982), first stated the two start-ups model, stating that firms start and end with zero employees and the number of employees that firms retain at their peak of production and growth is often the maximum they employ in their history. Firms also have the capability of hiring and laying-off staff during periods of decline and growth respectively meeting their specific organizational needs. The theory relied on in the study is that of Jovanovic (1982) where firms rely on innovative human capital for growth which is extended for the purpose of this study.

Methodology

In this section we present the methodology and model specification utilized in the studies. Past studies Haltiwanger, John, Ron S. Jarmin, and Javier Miranda, (2008) have studied the relationship between firm and job creation for US firms using time series data, finding that firm age matter for job creation. This study employs time series data and studies the relationship between new business registration and enterprise output using industrial GDP as measure of overall output from the private sector which represents private enterprise growth in this study. This study utilizes a combination of estimation techniques which include the median regression and the dynamic panel estimation techniques, both which produce heteroscedastic robust standard errors. The dynamic panel method includes the lag of the dependent variable (industrial production) in the model specification. Past studies that have use time series and studied the innovation related subjects include the study by Aghion P. and Howitt P. (2004) which studied the effect of quality innovation with growth enhancing capabilities on economic growth, OjeagaP., Odejimi D., George O. and Azuh D. (2014) also argue that innovative and modern utilization of renewable energy production plants can drive economic growth using panel data and generalized method of moment estimation technique, Ojeaga P., Odejimi D. O., Okhiku J. and Ojeaga D. (2013) also study the effect of commercial lending on growth utilization time series data and non-parametric estimation techniques (with special emphasis on quantile regression by Silva et al 2013) finding strong relationship between lending and economic growth which is negative for Nigeria etc. Other studies OjeagaP., Odejimi D. and Ikpefan O. (2014) have also utilized quantile regression and time series data to study the relationship between deposit and fraud finding strong relationship between the two variables. The study, by Ojeaga P. (2014), also finds that foreign inflow also affects exporting capabilities utilizing panel data. Institutional factors utilized in the study will capture firm ability to hire and fire, while technology and level of innovation will affect the firm level of transformation of inputs business riskiness and the macroeconomic factor that affect enterprise activity will be included in the model (using inflation rate) and finally access to capital for production will also be included. In this study aggregate growth for firms (the measure of enterprise growth) in general is utilized. Specific drivers of firm growth identified to affect growth in the study include: gross capital formation, inflation, technology, innovation and new business registration. Therefore Firm Growth will be a function of the above variables expressed below as *Firm Growth f (gcf, inf, techuse, inno, nbr).* Gross

capital captures access to capital for firms, while inflation will depict the riskiness of the business environment for trade, technology will measure the access to technology and innovation will gauge the quality of labour and the ability of firms to utilize advance technology. Firms output will also be a function of past and current entry of other firms which will measure the level of completion across sectors. The above allow for the inclusion of all basic variables in the endogenous growth theory, which are technology, human capital, labour quality and access to capital. The model to be estimated now becomes

$indop_{it} = \alpha_0 + nbr_{it} + innov_{it} + techuse_{it} + gcf_{it} + inf_{it} + \varepsilon_{it}$……*Eqn. 1*

Where indop_{it}, is industrial ouput for firms, α_0 is a constant, nbr_{it} represents business registration, $innov_{it}$ represents innovation, $techuse_{it}$ represents technology use, represents gcf_{it} gross capital formation capturing capital access, and inf_{it} represents inflation. The use of panel data is to overcome model miss-specification issues such as omitted variable bias and to control for unobservable heterogeneity across regions and time that will affect the regression results.

3.7 Arguments

The argument put forward in this study include: 1.) The number of startups, across countries will have significant effect on enterprise growth. 2.) Innovation use will have significant effect on industrial Output. 3.) Gross capital formation will have significant effect on industrial growth (and hence private firm growth). 4.) The nature of the business environment (the riskiness of investment) will have significant on enterprise growth depending on the nature of the immediate business environment on businesses. 5.) And finally regional specific characteristics will matter for regional industrial growth and development. Therefore startups will have positive effects on enterprise growth in general stimulating competition and bringing on board new methods and ideas in conducting business in general. Innovation will be a prominent factor that will affect enterprise growth in general. Also access to capital will also either limit or increase business development depending on its availability. Country specific business environment and regional specific characteristics such as institutional conditions, trade policies, macroeconomic factors etc., will affect enterprise growth in general.

3.8. Results

In this section the results of the study are presented below in Tables 1 and 2. The results show that institutional factors, business environment conduciveness and access to capital appears to be having positive significant effect on industrial growth (specifically enterprise driven growth) for regions included in the study see also Appendix 1 and 11 for the STATA 13 result output. It was also found that new business registration (startups) and innovation (Ininnv) have negative significant effect on enterprise growth (indop) using both the median regression (quantile estimation) and dynamic panel estimation techniques. In both cases the year controls are included by including the year dummies in the regression which appeared to be largely significant, showing that regional differences in policies and characteristics over time, do not affect the effect of new business registration (the measure of startups) on enterprise growth. The results where regions controls are included are shown in the Appendix (III and IV).

Table 1. Regression of Startups on Enterprise Output Using Median Regression

```
Median regression
R-squared = .84409839
Number of obs = 36
Objective function = 1.0244994

                    Heteroskedasticity robust standard errors
```

indop	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnstib	56.83319	23.31341	2.44	0.023	8.716677	104.9497
startups	-6.660215	3.361413	-1.98	0.059	-13.59783	.2774008
lninnv	-62.50004	23.62484	-2.65	0.014	-111.2593	-13.74078
inf	.8721812	.4183414	2.08	0.048	.0087669	1.735595
gcf	1.531094	.5403611	2.83	0.009	.4158439	2.646345
_Iyear_2002	3.071045	1.72327	1.78	0.087	-.4856087	6.627699
_Iyear_2003	2.367355	1.954605	1.21	0.238	-1.666752	6.401462
_Iyear_2004	3.107331	2.920322	1.06	0.298	-2.919917	9.13458
_Iyear_2005	5.726212	3.156237	1.81	0.082	-.7879401	12.24036
_Iyear_2006	7.839444	3.274875	2.39	0.025	1.080435	14.59845
_Iyear_2007	6.404045	2.528095	2.53	0.018	1.186313	11.62178
_cons	37.41104	27.70976	1.35	0.190	-19.77909	94.60117

```
Machado-Santos Silva test for heteroskedasticity
        Ho: Constant variance
        Variables: Fitted values of indop and its squares

        chi2(2)      =   0.075
        Prob > chi2  =   0.963

.
end of do-file
```

Note: The results show that institutional factors, business environment conduciveness and access to capital appears to be having positive significant effect on enterprise growth for regions included in the study.

Table 2. Regression of Startups on Enterprise Growth Using Dynamic Panel Estimation

```
System dynamic panel-data estimation        Number of obs        =        36
Group variable: id                          Number of groups     =         6
Time variable: year
                                            Obs per group:    min =         3
                                                              avg =         6
                                                              max =         7

Number of instruments =     34              Wald chi2(5)         =    224.31
                                            Prob > chi2          =    0.0000
One-step results
```

indop	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
indop						
L1.	.8762781	.0376284	23.29	0.000	.8025279	.9500283
lnstib	5.961762	1.8796	3.17	0.002	2.277813	9.645711
startups	-.5092653	.2453336	-2.08	0.038	-.9901102	-.0284203
lninnv	-7.026758	1.94234	-3.62	0.000	-10.83367	-3.219842
inf	.3106704	.0234662	13.24	0.000	.2646775	.3566632
gcf	.3235939	.1153629	2.81	0.005	.0974867	.5497012
_Iyear_2002	1.540379	.3332424	4.62	0.000	.8872358	2.193522
_Iyear_2003	1.809302	.3054801	5.92	0.000	1.210572	2.408032
_Iyear_2004	1.917777	.4981927	3.85	0.000	.9413375	2.894217
_Iyear_2005	1.850719	.3555491	5.21	0.000	1.153856	2.547583
_Iyear_2006	1.932004	.2597226	7.44	0.000	1.422957	2.441051
_Iyear_2007	1.091124	.1656148	6.59	0.000	.7665246	1.415723
_cons	6.137799	2.569099	2.39	0.017	1.102458	11.17314

```
Instruments for differenced equation
        GMM-type: L(2/.).indop
        Standard: D.lnstib D.startups D.lninnv D.inf D.gcf D._Iyear_2002 D._Iyear_2003 D._Iyear_2004 D._Iyear_2005 D._Iyear_2006
                  D._Iyear_2007
Instruments for level equation
        GMM-type: LD.indop
        Standard: _cons
```

Note: The results show that institutional factors, business environment conduciveness and access to capital appears to be having positive significant effect on enterprise growth for regions included in the study.

The specific objectives of the study are revisited in this section they included:
If start-ups is driving industrial growth (specifically enterprise driven growth) across regions
And if regional specific differences influence the effect of start-ups on industrial growth (specifically enterprise driven growth)?
It was found that startups were not driving regional industrial growth was probably not stimulating enough competition to lead to enterprise growth. It was also found that regional specific differences do not influence the effect of startup on enterprise growth in the regression estimation utilized in the study since on the inclusion of the regional variables startups do not have a positive significant effect on enterprise growth and the sign of the coefficient do not change (see appendix III and IV respectively).

3.9 Relationship Between Start-Ups and Enterprise Output

Increases in the number of startups can have meaningful implications for growth in many countries if these businesses make it through to the startup middle life cycle as depicted in the startup life cycle previously explained in the study. The above results for regions show that few do firms make it through to the middle life stage, making new business registration to have a negative significant effect on overall industrial output and enterprise output. The implication of this is that most startup firms do not have viable scalable business models. Many of these firms will therefore likely lose their seeds and angel funds before reaching the startup middle life cycle. However many startup firms who have crossed this threshold, will be expected to contribute to overall industrial GDP. The implications of the results are that many startups do not pull through and that there exist specific growth drivers for firms they include institutional environment, capital access and stable macroeconomic factors. Special policies to promote new business growth such as access to low interest loans

and improvement of knowledge sharing platforms and access to such platform are some key factors that countries across regions need to address to make new businesses drive growth on the long-run.

4 Conclusion and Recommendations

In this section the study is concluded. The study investigates the effect of startups (in this case new business registration) on industrial growth (in this case industrial sector GDP or strictly referred to as enterprise growth) in some selected regions which include the European Union, Latin American, East Asia Pacific, the United States to represent North America, Middle East and North Africa and finally Sub- Saharan Africa. The specific question the study seeks to answer is if there exist some specific drivers for firm growth. It was found that innovation use was also having negative effect on industrial growth depicting that innovation was probably not at optimal levels in firms across regions. This was because many new firms hardly make it through to the middle stages of the startup life cycle and many regions still lack viable and cheap knowledge sharing platforms making innovation not to positively drive industrial and aggregate enterprise growth in general. It was also found that startups do not have a positive significant effect on industrial output for regions. However other factors such as capital access and macroeconomic factors seem to have positive significant effect on industrial growth for firms. Therefore many new businesses do not have a viable scalable model.

It is recommended that since many startups are less likely to make it through to their middle life cycle, government should promote special policies to help cushion the problems many startup firms can have in the initial stage of their development, some policy solutions include access to special low interest loans, tax holidays during firm incubation period and finally maintain consistent macroeconomic policy that can reduce the riskiness of the business environment by for instance controlling interest rates in general. Innovative capacity should be boosted across regions by increasing capacity for knowledge sharing platforms as this could increase the use of cutting edge technologies in firms and reduce cost of accessing such knowledge platforms for firms in their nascent stages.

References:

[1]. Benjamin Zycher (2013) “Startup Businesses and the Growth of Real State Gross Product” Working Paper Pacific Research Institute Available at http://www.pacificresearch.org/fileadmin/documents/Studies/PDFs/2013-2015/StartUp_Zycher_r2.pdf

[2]. Jovanovic, Boyan, 1982, “Selection and the Evolution of Industry,” Econometrica, Vol. 50, No. 3

[3]. Jorgenson D.W., Ho M., and Samuels J. (2010) “information technology and U.S. productivity growth: evidence from a prototype industry production account”. Available at http://scholar.harvard.edu/files/jorgenson/files/02_jorgenson_ho_samuels19nov20101_2.pdf

[4]. Martin A. Carree and A. Roy Thurik (2010)”The Impact of Entrepreneurship on Economic Growth” Z.J. Acs, D.B. Audretsch (eds.), Handbook of Entrepreneurship Research> Available at http://people.few.eur.nl/thurik/Research/Articles/The%20impact%20of%20entrepreneurship%20on%20economic%20growth%20-%20thurik%20chapter.pdf

[5]. OjeagaP., Odejimi D., George O. and Azuh D. (2014) “Energy and Economic Growth, Is There a Connection? Energy Supply Threats Revisited” Open Journal of Energy Efficiency. Available at https://www.researchgate.net/publication/266140158_Energy_and_Economic_Growth_Is_There_a_Connection_Energy_Supply_Threats_Revisited?ev=prf_pub

[6]. OjeagaP., Odejimi D. and Ikpefan O. (2014) “Do High Customer Bank Deposits Incite Management Fraud? Examining Causes of Management Fraud in the Nigerian Banking Sector” Journal of Education and Social Research Vol4 No 6. Available at https://www.researchgate.net/publication/266387783_Do_High_Customer_Bank_Deposits_Incite_Management_Fraud_Examining_Causes_of_Management_Fraud_in_the_Nigerian_Banking_Sector

[7]. Ojeaga P. and Odejimi D. (2014) “The Impact of Interest Rate on Bank Deposit: Evidence from the Nigerian Banking Sector” Mediterranean Journal OF Social Sciences Vol 5(No 16):232-238 · July available at https://www.researchgate.net/publication/263660144_the_impact_of_interest_rate_on_bank_deposit_evidence_from_the_nigerian_banking_sector

[8]. Ojeaga P., Odejimi D. O., Okhiku J. and Ojeaga D. (2013) “Does Commercial Bank Lending Incite Growth? The Impact of Commercial Lending on Real Sector Growth in n\Nigeria” Available at

https://www.researchgate.net/publication/263495096_Does_Commercial_Bank_Lending_Incite_Growth_The_Impact_OF_Commercial_Lending_On_Real_Sector_Growth_In_Nigeria
[9]. Ojeaga P. (2014) "Foreign Aid and African Exporters: Help or Harm?" Developing Country Studies Vol 4. No 12. Available at https://www.researchgate.net/publication/263512050_Foreign_Aid_and_African_Exporters_Help_or_Harm
[10]. Ojeaga P. (2015) "Can Africa's Young Drive Innovation? Investigating the Effect of Entrepreneurial Innovation on Economic Growth in Africa".

Appendix

Appendix I

VARIABLES	(1) (Dynamic Panel Regression) Industrial Output	(2) (Median Regression) Industrial Output
Lag of Industrial Output	0.876***	
	(0.0376)	
Institutional quality	5.962***	63.70***
	(1.880)	(15.24)
Start-ups	-0.509**	-7.971***
	(0.245)	(1.695)
Level of Innovation	-7.027***	-69.32***
	(1.942)	(15.50)
Inflation rate	0.311***	1.157***
	(0.0235)	(0.324)
Gross Capital Formation	0.324***	1.898***
	(0.115)	(0.308)
Year Controls	Yes	Yes
Constant	6.138**	33.45*
	(2.569)	(18.53)
Observations	36	36
Number of id	6	6

Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Appendix II

Variables	(1) (Dynamic Panel Regression) Industrial Output	(2) (Dynamic Panel Regression) Industrial Output	(3) (Median Regression) Industrial Output
One period lag of Industrial Output	0.464**	0.876***	0.876***
	(0.214)	(0.0502)	(0.0376)
Two period lag of Industrial Output	-0.0850		
	(0.175)		
Institutional Quality	-3.734	5.962	5.962***
	(5.951)	(5.633)	(1.880)

Firm Start-ups	0.408	-0.509	-0.509**
	(0.612)	(0.592)	(0.245)
Level of Innovation	5.707	-7.027	-7.027***
	(6.878)	(5.790)	(1.942)
Inflation Rate	0.253***	0.311***	0.311***
	(0.0847)	(0.0784)	(0.0235)
Gross Capital Formation	0.154	0.324	0.324***
	(0.225)	(0.201)	(0.115)
Year Controls	No	Yes	Yes
Constant	-17.38	6.138	6.138**
	(17.22)	(7.973)	(2.569)
Observations	25	36	36
Number of id	6	6	6

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Appendix III

Variables	(1) (Dynamic Panel Regression) Industrial Output	(2) (Dynamic Panel Regression) Industrial Output
Institutional Quality		-2.940
		(5.394)
Firm Start-ups	-0.288*	-0.0753
	(0.159)	(0.429)
Level of Innovation	0.999	4.157
	(1.229)	(6.260)
Inflation Rate	0.394**	0.366**
	(0.151)	(0.161)
Gross Capital Formation	0.222	0.186
	(0.402)	(0.382)
Region Controls	Yes	Yes
Constant	9.349	10.76
	(19.52)	(15.04)
Observations	36	36
R-squared	0.991	0.991

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Appendix IV

VARIABLES	(1) (Dynamic Panel Regression) Industrial Output	(2) (Dynamic Panel Regression) Industrial Output	(3) (Median Regression) Industrial Output
One period lag of Industrial Output	0.753***	0.445***	0.445***
	(0.261)	(0.0970)	(0.0594)

Two period lag of Industrial Output	-0.194		
	(0.189)		
Institutional Quality	2.536	1.258	1.258
	(5.971)	(4.901)	(1.860)
Firm Start-ups	-0.353	-0.289	-0.289*
	(0.552)	(0.487)	(0.149)
Level of Innovation	-2.422	-0.262	-0.262
	(6.405)	(4.933)	(2.335)
Inflation Rate	0.226**	0.264***	0.264***
	(0.105)	(0.0734)	(0.0791)
Gross Capital Formation	0.0894	-0.0412	-0.0412
	(0.250)	(0.167)	(0.168)
Region Controls		Yes	Yes
Constant	7.496	0.753	0.753
	(11.35)	(7.972)	(8.128)
Observations	25	36	36
Number of id	6	6	6

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Acknowledgement
I acknowledge members of my family and Isabel in particular.

About the Author

Dr. Paul Ojeaga is currently a community developer and a youth coach. He is also a member of faculty of Federal University of Agriculture Abeokuta where he teaches in the department of Entrepreneurial Studies. He is also currently the interim college representative of the Book and Publications Committee.

Short Presentation of a Futuristic Concept: „The CUNEITALE Judgment”

VIORICA MIRELA STEFAN-DUICU
Assistant Lecturer, Economic Sciences Department
„Nicolae Titulescu” University
185 Calea Văcărești, 4th District, Bucharest
ROMÂNIA
chirita.mirela@gmail.com

ADRIAN STEFAN-DUICU
Ph.D. candidate, Valahia University of Targoviste
35 Lt. Stancu Ion Street, Târgoviște, Dâmbovița
ROMÂNIA
stefanduicu.adrian@gmail.com

Abstract: - The professional judgments assemble a plentitude of elements that slide in a conceptual manner towards creating a framework of approaches with a pronounced decisional character.
The purpose of this paper is to present a highly original point of view over the multidisciplinary super positioning of knowledge particularities when taken into consideration the professional activities of both the financial analysts and the other professionals.
This paper brings to front the conceptual build-ups methodically framed for types of economic effects widespread in accordance to the existing paradigms areas, paradigms generated by the mutations emerged at the level of current phenomenon.
In the paper content, a comprising mechanism is presented structural, from fraction to whole, a mechanism created based on the professional judgment.

Keywords: - professional judgment, futuristic concept, financial analysis, strategic, CUNEITALE judgment, research activity

1 Introduction

"Research is formalized curiosity. It is poking and prying with a purpose. It is a seeking that he who wishes may know the cosmic secrets of the world and they that dwell therein" (Hurston, 1942).

"During the development of a commercial society, an important role is played by financing, respectively the used financing sources. Enterprises can choose from a wide range of financing sources, more or less diversified, depending on the development level of the financial system" (Sudacevschi, 2009, p. 324). If one of the purposes of the companies in worldwide would be focused on education, the research activity matter could be a great expanding phenomenon.

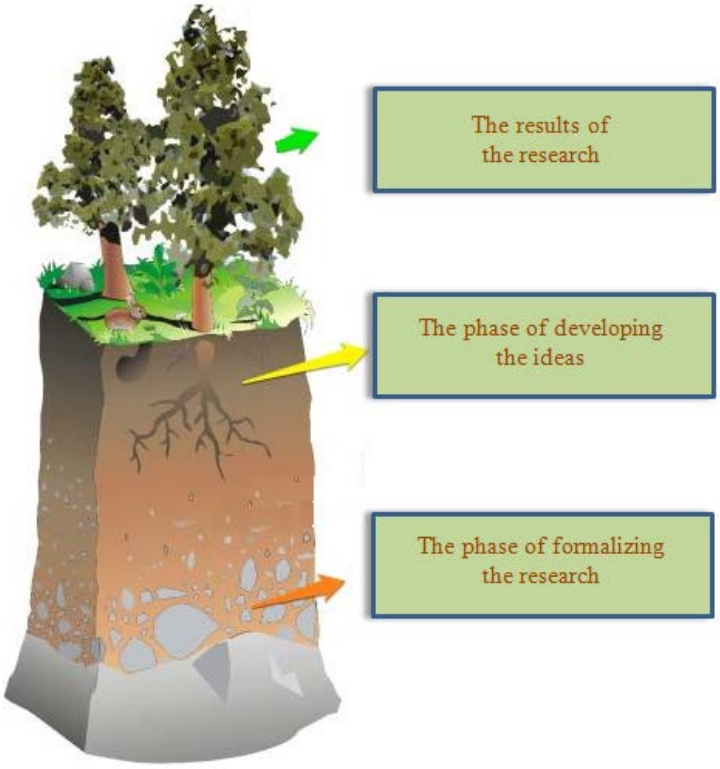
"Investing in education represents a manner of quality signalization towards employers. In this perspective, the role of education is not of training individuals for being more productive, though to select them for allowing intrinsic quality signalization" (Grigore, 2009, p. 357).

Therefore, the link between research and education represents a "process in a continuous modelling and alignment to the requirements imposed by economic space" (Stefan-Duicu & Stefan-Duicu, 2015, p. 1).

2 The research activity in our own vision

The research activity positions the researcher in the privileged role as a seeker of directions for ways to ameliorate the contextual reality in which he is situated. He benefits of freedom to contribute at the construction of knowledge that enriches the scientific status of the academic culture. The creativity of the researcher comes in aiding the exposure of the message that is wished to be transmitted through the undertaken research.

Fig .1 The regeneration of academic knowledge

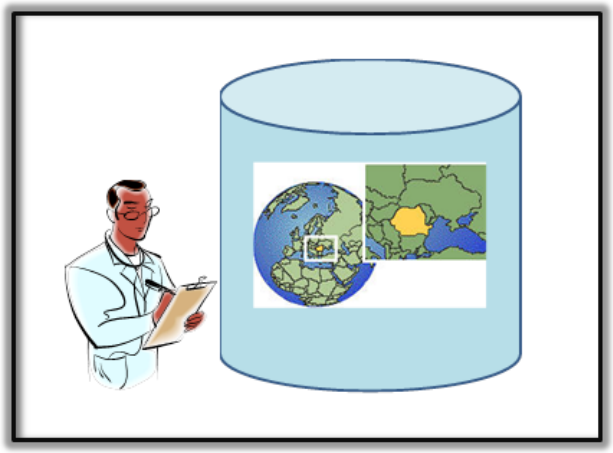


Source: working of an ilustration by José Alberto Bermúdez

Our research uses lines that were defined by the positive current that connects the factual positioning of the established points of interest with the dimension of the given reality, imposing the logical ordering of the given representation and going to the systematization of the information within the "theoretical science", concept used by the Romanian scientist Nicholas Georgescu Roegen (Georgescu-Roegen, 1996, p. 37).

The purpose of the researcher within the positive current is an external, passive one, of observer, having as instruments actions like: "observation of the objective data, measurement of different phenomenon, search of causality relationships, the intuition and the conscience of the researcher having a secondary role in the scientific practice" (Niculescu, Vasile, 2011, p. 73), fact illustrated also in Fig. 2.

Fig. 2. The representation of the positive current – the passive role of the researcher



Source: created by authors

The ongoing research goes also in directions covered by the constructivist current that positions the researcher as an active person, directly involved in the universe of the studied phenomenon, leaving the

imagination and the senses to interconnect within a cumulus of innovating ideas that reached a common denominator because at the bottom of their construction, these ideas serve to an indissoluble purpose to the one that shapes it in accordance with the "phenomenological hypothesis" proposed by Jean-Louis Le Moigne in his reference paper "Theories of modeling", hypothesis to which we add the "teleological hypothesis" in which background's the motivation of the researcher's demarche is situated, transposed directly to the involved subject (Le Moigne, 2006, p.8).

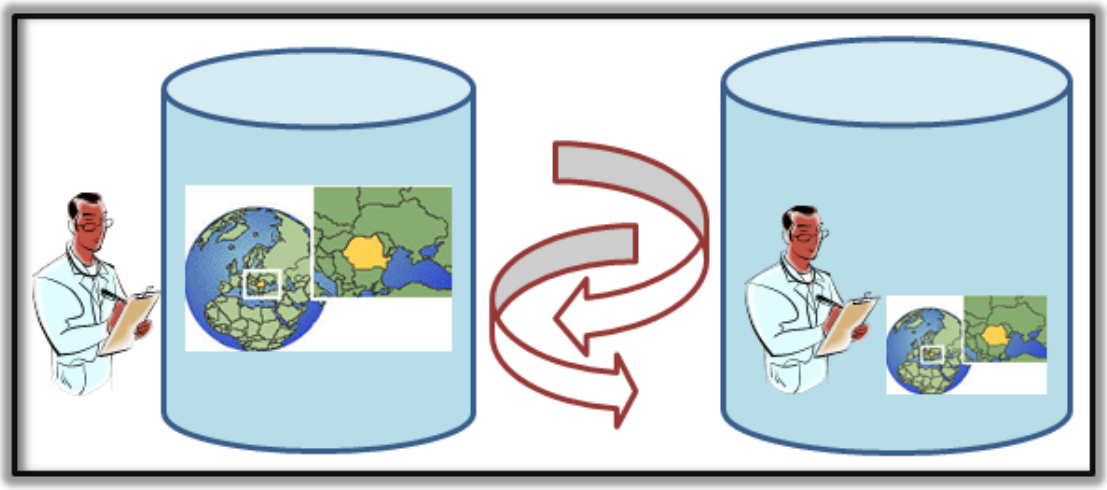
The constructivist specter is found within the management sciences according to Professor Albert David on 3 levels: the level comprising of management sciences from specific domains that have recently presented transformations, the level comprising of management sciences regarding these domains' and the level that comprises the so called practice and the preliminary research. This research imposes a complex research in which the researcher is "an actor of the realized research that tries to understand the meaning given by people to their experience, gives sense to reality in relationship with a vision, with a level of requirements and expectations, its interaction with the "field" becoming the instrument for the production of knowledge" (David, 1999, p. 14), demarche illustrated in Fig.3.

Fig. 3. The representation of the constructivist current – the active role of the researcher

Source: created by authors

The construction of our research study has led to the progressive location on multiple epistemological axis that enables the supply of an eloquent informational corpus for the validation of the research ideas within a concatenated vision according to Fig.4., using methods and elements located within the mentioned scientific representations by taking into consideration that "any significant thematic opening of epistemology needs both a consistent reformulation of the whole domain of philosophical issues of science and a new representation of the nature and objectives of the epistemological reflection" (Pârvu, 1984, p. 141).

Fig. 4. The layout of the research's demarche within a concatenated vision



Source: created by authors

The objective of this paper is focused on the impact of research over the professional judgment and also on the identification and representation of professional judgments of the financial analysts in correlation with the types of analysis starting from the notion of “professional judgment” to which we give the extensive epithet in the professional domain due to its known quality of being a structural and organizational mastodon.

The financial analyst reflects the decisional posture of a whole managerial machine and it is considered a professional in terms of usage of the financial statements and the instruments given by the plurality of interdisciplinary instruments.

Closely related with the base construction of the description of “financial analyst”, the accounting and the financial analysis come to aid the judgment of these types of users of financial and accounting information through operational confirmations as a result of applying an “assembly of concepts, techniques and instruments that ensure the treatment of internal and external information in order to formulate pertinent affirmations regarding the status of an economic agent, the level and quality of its performances, the risk level within an extreme and dynamic competitive environment.

According to Professor Hubert de la Bruslerie, “the first reaction of the financial analyst is to rebuild his vision over the economic reality of the company by correcting the accounting recordings, namely through revision/retreatment of the accounting information presents in the synthesis documents” (de la Bruslerie 2010, p. 14) .

3 The introduction of a futuristic concept within the research field

The professional judgment represents a transversal element for all the activities carried by people within a work agreement. “Professional judgment is a concept that completes the activity of all practitioners. This type of judgment appears at helping element of high importance in the decision-making process. The intervention of this type of judgment represents an extension of decision taking power of the practitioner, the practitioner having the possibility to highlight his main native skills or practice accumulated skills“ (Stefan-Duicu, 2015, p. 713).

Being a complex joint of characteristics highlighted by a large pluridisciplinary pallet, the professional judgment comprises elements related to the human psychological structure, to conduct, elements that are nuanced by the abilities of each person such as memory, acumen, organizational spirit but also regulated elements that impose limitations in exercising the duties of the job as a result of filtering the decisional mechanisms issued for the formation of a correct professional judgment.

In order to assist the research study regarding the formation of the professional judgments of the financial analysts, we have built the sketching of a proposal for a concept we have named "the CUNEITALE JUDGMENT of the financial analysts”.

The term “CUNEITALE” comprises of three elements:

The first component that incorporates the construction of “CUNEI” is tied to the importance of the cuneiform writing, as origin point in the progressive starting of ideas concretization in the emergent demarches of the professional activity.

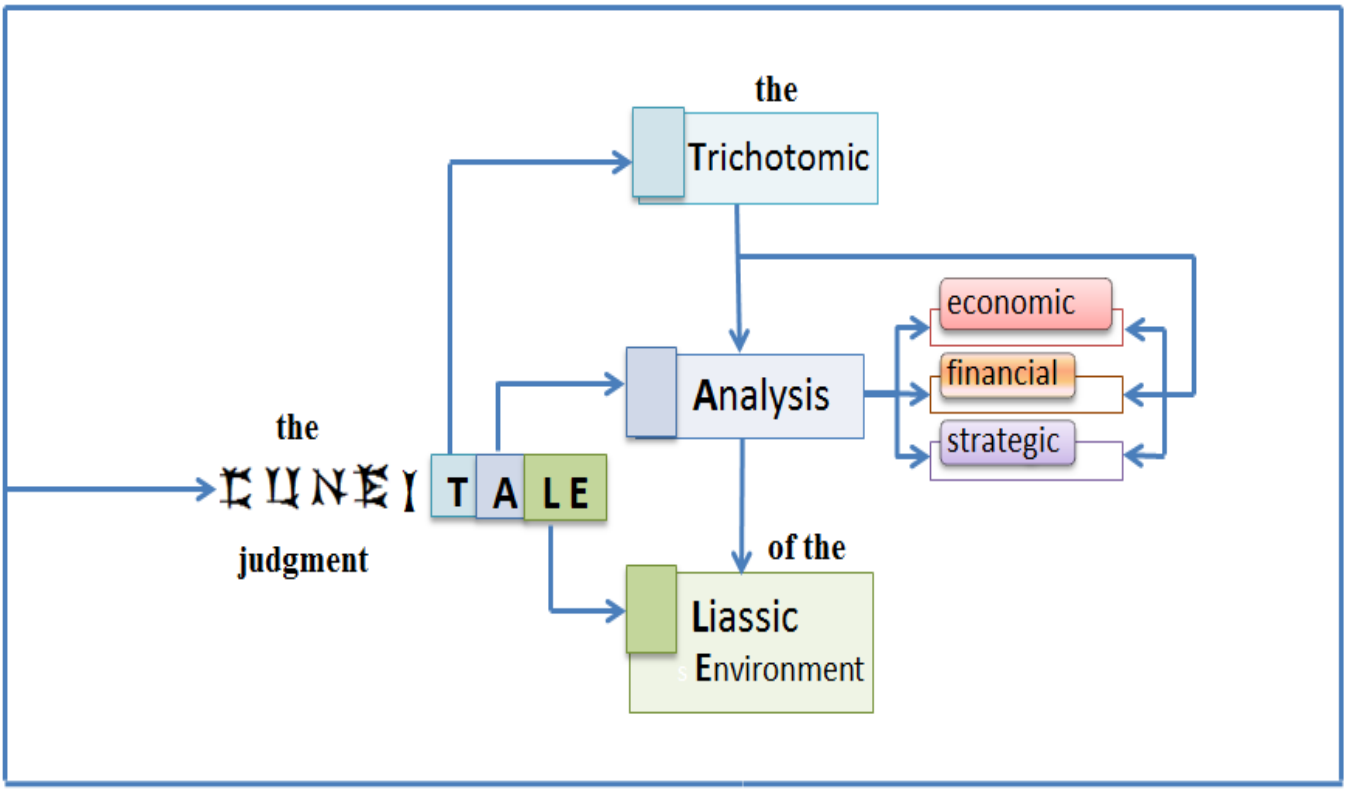
The “CUNEI” construction refers to the use of descriptive forms as an activation feature of the capacity of interpretation and presentation of the memorized and revised information within a given context.

The second component of the term “CUNEITALE”, namely “TALE” represents an acronym: the Trichotomic Analysis of the Liassic Environment. The trichotomy refers to the division in three parts of a concept, therefore structuring the analysis into financial analysis, economic analysis and strategic analysis.

The word “Liassic”, in the context of proposing “THE CUNEITALE JUDGMENT” positions this type of judgment within the current context and refers to it as being an element that belongs to the contemporary environment.

Marking the correlations of each term, the concept of “CUNEITALE JUDGMENT of the financial analysts” incorporates the judgment based on a systematic mechanism, rigorous and consistent, built gradually, starting from the trichotomic footprint of the economic, financial and strategic analysis and using cases, elements and specific indicators of these types of analysis taking into consideration the current dominant theories.

Fig. 5 The representation of the CUNEITALE JUDGMENT



Source: created by authors

In the practice of the financial analysts we can apply the label of "CUNEITALE JUDGMENT" to those structures of decisions that have implication at economic, financial and strategic level, within a company.

In exemplifying the proposed type of judgment we brought the planning and carrying out an investment.

This case provides a part of economic analysis focused exemplary of the expenses analyzed by the identification of tendencies and significations within the decisional process; a financial part through the use of risk certification indicators that could appear in the case of this investment of the indicators related to its profitability; and a strategic part concretized by the identification of activities and strategies to maintain the position in the competitive market after the application of the development plans of the realized investment.

This concept comes as a creative addition of the presented and explained notions of the current paper and are currently situated in an incipient stage of development and will come to aid other researchers that could see this concept as a future research.

4 Conclusion

The issued working addresses a subject with a high content of originality by highlighting the professional judgment from the perspective of conceptual buildups situated in the economic and social space of accounting and financial analysis through the correlation of new elements with the paradigms and fundamental scientific theories.

The efforts put are concretizing in result that take an innovative form, in paradigms adjusted by the multidisciplinary economical processes, and in concepts of logical build meant to bring an added value to the proposed research by showing a theoretical framework ordered by the quality of writings in the field by the specialty literature.

The research undertaken falls in the actual posture of an environment shaped by the contemporary demands and implies a whole process of radiography of the current stage in which the formation process of the professional judgment is situated in general, and in particular explains the modality of substantiation of the professional judgment of the financial analysts, starting from the theoretical support and then continuing with

the practical support of the information provided by accounting, financial analysis, the company's financial management etc., the information provided having a procedural purpose bot catalytic and flexible.

This paper has prepared the introduction of a vanguardist concept with an incipient explanatory character, followed that authors will develop their ideas under the auspices of these new visions contoured in their research activity.

References:

[1]. De la Bruslerie, H., Analyse financière. Information Financière, Diagnostic et Evaluation", 4e edition, *Dunod*, Paris, 2010.

[2]. Grigore, M. Z., Information Economics, Instrument of Analysis in New Microeconomics, *Lex ET Scientia International Journal (LESIJ)*, Vol. XVI, No. 2, 2009, p. 354-364.

[3]. Georgescu-Roegen, N., Legea Entopiei si Procesul Economic, *Editura Expert*, 1996.

[4]. Hurston, N. Z., *Dust tracks on a road: An autobiography*, J. B. Lippincott, 1942.

[5]. Le Moigne, J-L., La Theorie du Systeme General. Theorie de la Modelisation", Publication de l'édition 1994, Nouvelle présentation, 2006.

[6]. Stefan-Duicu, A., Explaining Power over the Investee-The Rights that Give the Possibility to Direct the Investees Relevant Activities. *Challenges of the Knowledge Society Conference (CKS)*, 2015, p. 718-723.

[7]. Niculescu, M., Diagnostic Global Strategic, *Editura Economica*, 1997

[8]. Niculescu, M., Vasile, N., Epistemologie. Perspectivă Interdisciplinară, *Editura Bibliotheca*, Târgoviște, 2011.

[9]. Stefan-Duicu, V., The Accountant Professional as a Current User of Professional Judgment. *Challenges of the Knowledge Society Conference (CKS)*, 2015, p. 713-717.

[10]. Stefan-Duicu, V. & Stefan-Duicu, A., Development and Regulatory Factor of Professional Bodies in the Audit Activity, *Procedia Economics and Finance*, Vol 26, 2015, p. 268-271.

[11]. Sudacevschi, M., Financing Sources for Companies and the Implications on Their Image, *Lex ET Scientia International Journal (LESIJ)*, Vol. XVI, No. 1, 2009, p. 324-331.

Employment of Questionnaire as Tool for Effective Business Research Outcome: Problems and Challenges

ADENIYI AKINGBADE WAIDI
Department of Business Administration,
Lagos State University, Ojo; Lagos,
NIGERIA
P.O. BOX 10149, LASU, Post Office, Ojo, Lagos State, Nigeria
Tel: +234-80-3050-0622.
akinwaidi@yahoo.com

Abstract: - Questionnaire has to do with questions designed to gather information or data for analysis. Questionnaire has to be adequate, simple, focused and related to the subject which the research is set to achieve and to test the hypotheses and questions that are formulated for the study. But many questionnaires are constructed and administered without following proper guideline which hinders there end result. This paper assesses some of the guides for constructing questionnaire as well as it uses and the extent to which it enhanced manager's access to reliable data and information. Descriptive method is employed for the study. Findings revealed that poor or badly prepared questionnaire produce questionnaire that does not provide effective results. Managers and researchers that use such questionnaire hardly achieve their organisational and research objectives. The need for good, well prepared and adequate questionnaire is exemplified by its being the primary tool for analytical research. The study recommends that questionnaire be properly prepared for effective research outcome.

Keywords: Questionnaire, Research, Business Research.

1 Introduction

Research is a systematic and organized effort to investigate specific problem that needs a solution. Research is also any organized enquiry that aims at providing information for identified problems (Sekaran, 2003). Business research is a research conducted, or a systematic and objective method of finding solutions to problems relating to the business environment (Osuagwu, 2002). It is any organized enquiry that aims at providing data and information for solving identified business problems. This information allows for the identification and definition of business driven opportunities and problems. The information also allow for the generation, refinement and evaluation of business actions. It allows for the monitoring of business performance and improved understanding of marketing as a business process. Edward (2010) stated that one of the major instruments of collecting data in business research is with the aid of questionnaire. He stated further that business research methods depend on the use of a questionnaire.

The real benefit of questionnaire in business research information is determined by how much it improves the manager's ability to make decisions. Good quality information will enable decisions to be made that satisfy the needs of the target market and also help the organization to achieve its goals. The use of questionnaire in business research represents a change from problem solving by intuition to decision making based on scientific gathering and the analysis of information. The great advantage is that questionnaire provides information systematically upon which managers may base product decisions. Questionnaire analysis may therefore, be used to identify the following.

Changes in the markets for different products and businesses, the size and potential of any business must be constantly monitored for change. Analysis of sales trends as well as the size and potential of any market must be considered important. Adeoti (2013) argued that if the total size of the market is known, an organization can work out what percentage of the market it has (market share) and then develop a strategy that helps it increase its proportion of the market. Questionnaire analysis may also be used to predict changes in the potential of the market, both in the short and the long term. Few markets are static and, as changes take place, it is important to understand about potential buyers as well as existing buyers (Needham & Drasfield, 2004). As product go through their product life cycle the profitability of different product changes. Questionnaire analysis helps to direct an organization towards those activities where profitability and other business objectives can

best be satisfied (Oyedijo, 2013). The product mix comprises all the products an organization provides for its customers. Research will help managers to understand the sort of decisions they have to make about the product mix (Hair et al, 2000).

Changes in consumer behaviour, the process of buying a good or service is not as simple as it might appear. A customer does not usually make a purchase without thinking carefully about his or her requirements. Wherever there is choice, decisions are made and these are influenced by complex motives. Needham & Drasfield (2004) posits that questionnaire will help an organization to understand why customers make particular decisions, especially through the analysis of buying patterns, what they buy, how they develop preferences and how they buy. Analysing these changes will help an organization cater more closely to customers' needs.

Changes in the activities of competitors, an organization must at all times be aware of its competitors and the nature of what they are doing. Competition exists when two or more organizations act independently to sell their products to the same group of consumers. In some business there may be a great deal of competition, signified by an abundance of products and services so that consumers have a massive choice (Akingbade, 2014). These businesses are characterized by promotional activities and price competition. In other business competition is limited, and consumers are able to choose from only a limited range of products and services. In these circumstances consumers may feel that prices are too high and they are not getting value for money.

Survey research methods tend to be the mainstay of business research in general and are normally associated with descriptive and causal research situations. Managers need information in order to introduce products and services that create value in the mind of the customer (Edward, 2010). But the perception of value is a subjective one and what customers values next year. As such, the attributes that create value cannot simply be deduced from common knowledge, rather questionnaire must be distributed to customers to collect data and analysed it. The goal of business research is to provide the fact and direction that managers need to make more important business decisions.

However, many organizational managers have not make proper use of questionnaire to obtain necessary information on their products performance in the markets in order to know customer complain, comments, problems and criticism of their products. Therefore, this paper examines uses and problems of questionnaire in business research. The extent to which managers understood and apply questionnaire in business research were analysed and the resultant effect on organizational performance were also considered.

2 Conceptual Framework

2.1 Questionnaire

A questionnaire is a systematic list of questions designed to obtain information from people about: specific events, their attitudes, their values, their beliefs (Needham & Dransfield, 2004). Beiske (2002) stated that questionnaire is by far the most frequently used instrument in research. He further noted that a questionnaire is essentially a structured technique for collecting primary data. It is generally a series of written questions for which the respondents has to provide the answers.

A questionnaire contains a set of specific questions that are constructed and used by the researcher in obtaining information from the respondents (Asika, 2004). He stated further that questionnaire is also an instrument for conducting a research. Indeed, it is a measuring instrument when it is looked at as a part of research designs. But when it is considered that each question in a questionnaire is designed to elicit a particular response that can be analysed independently of other questions and used in solving an aspect of the research, then it will become obvious that a questionnaire is a group of scales put together in order to generate responses to questions pertaining to every aspect of the entire research problem (Beiske, 2002). According to Hair, Bush & Ortinau (2000) questionnaire is one of the distinguishing factors of survey research methods being used to collect raw data is more correctly designing and administering a survey instrument.

2.2 Business Research Process

Business research is a systematic and objective collection, analysis, interpretation and reporting of data and information for business decision making (Osuagwu, 2002). The main aim of research is to identify, clarify and solve problems through a generally agreed process. According to Cozby, (2007) & Osuagwu, (2002), business research process entails the following.

Systematic; in any research, there must be a procedure or method to follow. In business research, the method employed is the scientific method. Science is an activity involving gathering and use of data and

information. In business research, the scientific method lies in enunciating the problem, collecting facts or data, analysing the Facts critically and reaching conclusions based on them.

Objective; for any research to be scientific that is for any research to use the scientific method of research such a research must be objective for a research to be objective; it must be free from bias. Facts should be recorded or reported the way they are.

Collection; this is an important step in business research. This involves how the data needed for research is collected. That is, choosing the scientific method of data that are to be used in the study. Data can be defined as piece of fact. Most of the research in business is data based. Data may be gotten from secondary sources or may be collected by the researcher that is (primary sources). Before a researcher starts to collect data on his own, he should that data which he needs had not been collected.

Analysis; data analysis tries to make meaning out of the data collected. The data is categorised in terms of other variables. Data can be defined as quantitative and qualitative facts. Analysis may be defined as the breaking down and ordering of the quantitative and qualitative data gathered through research. Analysis can also defined as a way of seeing the data on the light of hypothesis and theories and drawing conclusion that are amenable to theory formation as possible.

Interpretation; this is the explanation a research gives on the association and relationships found among the data or groups of data. Meaning is given to research findings or collected data. Interpretations also include inferences and conclusions drawn from these relationships discovered among data or group of data. The researcher interprets, explains or gives meaning to the analysed data.

Reporting; the last stage of a research is to communicate to relevant audience what has been done. The basic purpose or research report is to communicate to others the nature of the problem studied, the designed and methodology used, and the results and the conclusions which have been arrived at. It is important that the collected, analysed and interpreted data be communicated to relevant audience in an acceptable form.

Data and information; information is processed data, and data is a piece of fact. A fact is synonymous with reality. Research is needed to generate data and information for decision –making in business.

2.3 Qualities of Good Questionnaire

Nworgu (2006) argued that a good questionnaire should be characterised by the following features:

- Relevance; it should be relevant to the purpose of the research. In other words, it should be such that it will elicit all the information necessary for answering the research questions and testing the hypotheses. Furthermore, the items or questions asked should take into consideration the background and experiences of the respondents (Nworgu, 2006).
- Consistency; the questionnaire should yield consistent responses. If a group of people responded to the questionnaire on two different occasions their responses on these occasions should be as close as possible (Hassan, 1995).
- Usability; a good questionnaire should be such that it is usable. It should not be too bulky. The conditions for its administration and the method for scoring and interpreting the data from it should be fairly simple and easy (Nworgu, 2006).
- Clarity; the instructions accompanying the questionnaire as well as the items should be clear enough to avoid possible misinterpretations. A good questionnaire should not contain ambiguous items or instructions (Asika, 1991).
- Quantifiability; the questionnaire should be such that responses from it are easily quantifiable. It should be easy to assign numerical values to responses from a good questionnaire in a manner that is systematic (Kerlinger, 1983). Quantification is necessary element in any scientific enterprise and to the extent that business research is a scientific enterprise, any good business research instrument should possess this quality.
- Legibility; a good questionnaire should be legible. The questionnaire should not be printed in tiny characters. The words should be properly spaced with some margin on both ends. Spots of duplicating ink here and there on the questionnaire reduce its legibility and should therefore be avoided (Nworgu, 2006).

2.4 Constructing the Questionnaire

There is need to pay renewed effort to the construction of questionnaire as one of the most widely used instruments in business research (Hassan, 1995). Selltiz, Wrightsman & Cook (1976) argued that the following principles may serve as good guides for construction of questionnaires. It should be pointed out that most of the guidelines specified under the construction of interview schedules are equally relevant here.

Specifying the variables to measured; the step should follow the specification of the research objectives. The questions to be asked on a questionnaire should be those that can contribute to the testing of the research hypotheses or answer the research question.

Deciding on appropriate questions format; appropriate decisions have to be taken concerning the question content, and the question wording, and format.

2.5 A Guide for Questionnaire Construction

Selltiz, Wrightsman & Cook (1976) put up the following guide for questionnaire construction.

Decisions about questions content

Is the question necessary? Just how will it be useful?

Are several questions needed on the subject matter of this question?

Do respondents have the information necessary to answer the question?

Does the question need to be more concrete, specific and closely related to the respondent's personal experience?

Is the question content sufficiently general and free from spurious concreteness and specificity?

Do the replies express general attitudes and only seem to be as specific as they sound?

Is the question content biased or loaded in one direction, without accompanying questions to balance the emphasis?

Will the respondents give the information that is asked for?

Decisions about question wording

Can the question be misunderstood? Does it contain difficult or unclear phraseology?

Does the question adequately express the alternative with respect to the point?

Is the question misleading because of unstated assumptions or unseen implications?

Is the wording biased? Is it emotionally loaded or slanted towards a particular kind of answer?

Is the question wording likely to be objectionable to the respondent in anyway?

Would a more personalized wording of the question produce better results?

Can the question be better asked in a more direct or a more indirect from?

Decisions about form of response to the question

Can the question best be asked in a form calling for check answer (or short answer of a word or two, or a number), free answer or check answer with follow-up answer?

If a check answer is used, which is the best type for this question – dichotomous, multiple-choice ('cafeteria' question), or scale?

If a checklist is used, does it cover adequately all the significant alternatives without overlapping and in a defensible order? Is it of reasonable length? Is the wording of items impartial and balanced?

Is the form of response easy, definite, uniform and adequate for the purpose?

Decisions about the place of the question in the sequence

Is the answer to the question likely to be influenced by the content of preceding question?

Is the question led to in a natural way? Is it correct psychological order?

Does the question come too early or too late from the point of view of arousing interest and receiving sufficient attention, avoiding resistance, and so on?

Hassan (1995) noted that answers to the questions raised above will not only enable a researcher to construct good question, they will enable him to determine appropriate response mode to the questions and good structure for the questionnaire in general. In addition, it is important to note that open-end questions are not appropriate for self-completion questionnaires.

Choose appropriate response mode; the kind of information you are seeking will determine the most suitable response mode. But usually the response mode should be such that objectivity is guaranteed. The decision of which response mode to employ would depend on the manner in which the data will be processed (Kerlinger, 1983). It is therefore, desirable that data analysis decisions be made alongside with the decision on response mode. This will enable the researcher to collect data that will permit appropriate analysis. Arrangement of items on the questionnaire should facilitate cooperation. Initial question should therefore, be simple, have high interest value, and encourage participation. The middle section of questionnaire should contain the more difficult question; and the last few questions should be of high interest in order to encourage the respondents to return the completed questionnaire.

Instructions should be simple and clear. Clear instructions should guide the respondent – 'Mark an X in the box in front of the statement most applicable to you, is clear and inviting. Avoid complicated and ambiguous instructions.

Repeating instruction as often as necessary is good practice in mailed questionnaire. Since the validity and reliability of the questionnaire depends, in part on the respondent knowing exactly what is required of him, boldly and attractively displayed instructions are essential (Asika, 2004).

Grouping questions that deal with specific issues together is good. It introduces theme into the response processes thus enhancing understanding and reliability of the responses.

The layout and structure of the questionnaire should be easy and attractive. The printing should be neat, clear and readable. The layout should be inviting; a questionnaire with plenty of space to separate items is more attractive and encouraging to respondents.

Pre-test the questionnaire. This is a very crucial step in questionnaire construction. In pretesting the questionnaire, Isaac & Michael (1971) provided the following guidelines.

Select a sample of individuals who are respective of the population toward which the questionnaire is eventually intended.

Provide space on the trial questionnaire for the respondent to make reactions and suggested changes.

Administer the pre-test under conditions comparable to those anticipated in the final study.

Check the per cent of responses as an estimate of what will occur in the final run, then, examine the returned trial questionnaire for trouble signs. Items left blank or yielding no useful information, misinterpretation, and ambiguity should be modified or replaced.

Analyse the results to assess the effectiveness of the trial questionnaire to yield the information desired.

Make appropriate addition, deletions, and modification to the questionnaire.

Take care of the overall reaction of respondents to the questionnaire what did they like, dislike or want modified?

Finally researcher may include a brief note at the very end of the questionnaire to:

Ask the respondent to check that no answer has been inadvertently missed out, solicit an early return of the completed questionnaire; thank the respondent for his participation; and offer to send a short abstract of the major findings where the study is completed.

2.6 Relevance of Questionnaire in Business Research

A questionnaire consists of a set of questions designed to gather information or data for analysis, the results of which are used to answer the research questions or used for the test of relevant hypothesis (Asika, 1991).

According to Milne (2010) questionnaire responses are gathered in a standardized way, so questionnaire are more objective, certainly more so than interviews also it is relatively quick to collect information. However, Milne (2010) further noted that in some situations they can take a long time not only to design but also to apply and analyse. Potentially, information can be collected from a large portion of a group. This potential is not often realized, as returns from questionnaires are usually low. Meanwhile, Beiske (2002) argued that return rates can be dramatically improved if the questionnaire is delivered and responded to immediately. Needham & Dransfield, (2004) noted that it is inexpensive as you do not interview respondent, you save time, human and financial resources. The use of a questionnaire therefore is comparatively convenient and inexpensive compare to interview, particularly when it is administered collectively to a study population; it is an extremely inexpensive method of data collection.

It offers greater anonymity – as there is no face to face interaction between respondents and interviewer. In some situations when sensitive question are asked, it helps to increase the likelihood of obtaining accurate information (Singleton, Jr; Straits & Straits, 2003). Questionnaire helps researcher to obtain data fairly easily and information from questionnaire are easily coded (Azika, 1991) It benefits the scientific community if the measures are well validated and are reliable often is a catharsis for respondents (Kerlinger, 1983).

Another advantage of questionnaires according to Hair, et al, (2000) is their ability to accommodate large sample sizes at relatively low costs. Using a large sample increases the geographic flexibility of the research. When implemented correctly, the data structures created from questionnaire methods can increase the researcher ability to make generalized inferences about the defined target population as a whole. Singleton, Jr; Straits & Straits, (2003) noted that the raw data from questionnaire can be analysed in many different ways according to the diversity of the variables. For example the data can be analysed according to gender, income, occupational classifications, or any other variable incorporated into the questionnaire. The analysis can also be based on multiple variables. For example, an analysis of product purchasing behaviours among households headed by female single parents in Lagos can be compared to purchasing behaviours among households headed

by female single parents in Abuja to reveal small difference in regional properness that may not be apparent in more aggregated data analysis.

Hair, et al (2000) further argued that another major argument for questionnaires is their ease of administration. Most questionnaires are fairly easy to implement because there is no need for sophisticated devices to record actions and reactions, as with observations or experiments. Even personal interviews can be routinized. As an offshoot of the ease of implementation, surveys allow for the collection of standardized common data. All respondents give answers to the same questions and have the same set of responses available to them. This allows for direct comparisons between respondents. Another factor in favour of questionnaire is that they collect quantitative data ripe of advanced statistical analysis patterns and trend switching the data can be determined by using mathematical analysis to identify large and small differences within the data structures (Sekaran, 2003).

Another merit of questionnaires is their ability to tap into factors or concepts that are not directly observable (e.g, attitude feelings, preferences, personality traits). Through both direct and indirect questioning techniques, people can be asked why they prefer one package over another predetermined questions can concern what though process a consumer used to select a particular brand or how many brands he considered (Hassan, 1995 and Otokiti, 2008).

2.7 Types of Response Structures in Questionnaire

Asika (1991) and Hassan (1995) identify many types of response structures for questions in any questionnaire, which include the following: (1) Two way, (2) Scale question, (3) Multiple-choice question, (4) Open-end question, (5) Sentence Completion, (6) Counter check question. Types 1-3 are structured questions but differ in their degrees of structuredness.

Asika, (2004) noted that two-way questions are otherwise known as Yes or No questions and may be stated in other forms such as 'Agree', 'Disagree'. They are dichotomous in nature and restrict the respondent to either one answer or the other and no more. Two-way questions have many advantages. One of the most important advantages is that they make coding and analysis of response very easy to handle. They do not require formal training for interviewers before they can be used. Their greatest disadvantage is that they measure two extremes of the respondent's opinions, feelings and perceptions and they do not cater for opinions, feelings or perceptions that fall in-between.

According to Asika (1991) scale Questions used in questionnaires are designed to recognise the degrees of intensity in the respondent's feelings about and perceptions of certain phenomena which cannot ordinarily be gathered from two-way or even multi choice questions. The respondent's anticipated feelings and perceptions are represented in scales and his choice of a particular point on the scale is assumed to represent this feeling or perception and it is, thus, used for analysis along with other similar responses. Example: I consider my job boring. Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree (Nwogwu, 2002).

Multi-Choice Questions are similar to scale questions in as much as they represent gradations of feelings, interests, perceptions, preferences, etc. They are suitable for questions where responses to a particular question are multi-faceted, (Sekaran, 2002). While in scale questions, all the possible responses to one question are related, in multiple-choice questions the responses could be diverse and the choice of response may not be restricted to only one alternative. However, circumstances may suggest that the respondent choose only one alternative, (Cozby, 2007).

Open-end Questions allow the respondent to offer his response with no restrictions as to the extent of the response. They give the respondent an opportunity to include all that he considers necessary in his answer to the question (Beiske, 2002). Open-end questions are usually helpful in preliminary studies before the major study is carried out. If the researcher successfully analyses the responses to open-end questions he will be in a position to his subsequent studies more effectively and state more relevant hypotheses also. The disadvantages of open-end question is that they are usually difficult to analyse because there can be as many different responses to one question as there are respondents. The problem which the researcher is usually confronted is with how to find some useful trends and relationships among the different responses (Edward, 2010).

Needham & Dransfield, (2004) agreed that sentence completion type of structure of questions is similar to open-end questions except that it guides the respondent on how to structure his answer or response. It is not commonly used in questionnaire construction.

Asika, (1991) posits that counter-check question is more of the sequencing of questions in the questionnaire than of the structuring of the question itself. A counter-check question is a question included in order to counter-check the reply given on another question in the questionnaire. It checks for consistency in the answers given by a respondent.

2.8 Problems Associated with the use of Questionnaire in Business Research

Questionnaires, like many evaluation methods occur after the event has taken place so participants may forget important issues (Edward, 2010). Questionnaires are standardized so it is not possible to explain any points in the questions that participants might misinterpret. This could be partially solved by piloting the questions on a small group of respondents or at least friends and colleagues (Sekaran, 2003).

Asika, (2004) stated that open – ended questions can generate large amounts of data that can take a long time to process and analyze. One way of limiting this would be to limit the space available to respondents so their responses are concise or to sample the respondents and survey only a portion of them. Respondents may answer superficially, especially if the questionnaire takes a long time to complete. The common mistake of asking too many questions should be avoided. Also respondents may not be willing to answer the questions. Needham and Dransfield, (2004) noted that they might not wish to reveal the information. Beiske (2002) argued that its application is limited to a study population that can read and write. It cannot be used on a population that is illiterate, very young, very old and handicapped. A low response rate questionnaire are notorious for their low response rate i.e. people fail to return them (Hassan, 1995).

Needham & Dransfield, (2004) asserts that developing the appropriate questionnaire can be very difficult. To ensure precision, the research must contend with a variety of issues associated with construct development scale measurements, and questionnaire designs. Inappropriate treatment of the issues will create inaccuracies in construct development and measurement, opening the floodgates to systematic errors. As the possibility of systematic error increase, so does the likelihood of collecting irrelevant or poor-quality data. A potential disadvantage of questionnaires designs relate to their limited use of probing questions. In general, questionnaire designs limit the use of extensive probing by the interviewer and rarely use unstructured or open ended questions. Consequently the data might easily lack the detail or depth that the researcher desires for addressing the initial research problems (Hair,et al 2000).

Sekaran, (2003) posits that another argument against questionnaire is the lack of control researchers have over their timeliness. Depending on the administration techniques, questionnaire can take significantly longer to complete than other methods. In direct mail questionnaire, for example, the researcher must carefully develop a questionnaire packet, disseminate the packets, and wait for them to be returned via the postal service. The researcher can only estimate how long it will take the postal service to actually get the questionnaire packet to each selected respondent, how long the respondents will take to complete the questionnaire, and how long it will take the postal services to return the packets. In reality, the researcher loses control of the process as soon as the questionnaire packets are given to the postal services. Associated with the problem of response time is the problem of guaranteeing a light response rate or return rate of completed questionnaire.

Otokiti, (2008) noted that another limitation of some questionnaires is that it can be difficult to know whether the selected respondents are being truthful. For example, in self-administered questionnaire like direct mail or fully automatic computer assisted questionnaire truthfulness become a greater concern. Beiske, (2002) argued that although questionnaires are designed to collect raw data, the statistical techniques selected may introduce very subtle and insidious levels of subjectivity to the derivation or interpretation of data structures. Such subjectivity or bias may not be as apparent in survey research as it is in qualitative research.

The effectiveness of questionnaire to business research could be hindered by the respondent insufficient knowledge or understanding of the questions that were posed to them. The respondents may see the questionnaire as a tool by the manufacturer of goods or services to understand and manipulate customer responses for their own benefit. Customers on many occasions tend to interpret manufacturers or producers questions as a way of making the market to work for them. Therefore, sophisticated customers tend to be wary of responding to organisation request to fill questionnaire for business research purposes. Sometimes goods of the same qualities may be repackaged to increase price. Organisation may also at times increase aesthetic appearance of a certain goods and make it elegant, reduce real quality and increase price. These may be derived from business research that is based on questionnaire submitted by customers that tend to place value on aesthetic make up than quality. This explains why some goods may be beautiful or fanciful but not necessarily of good quality.

The development of information and communication technology has also influenced the uses of questionnaire on business research. Goods and services are advertised, purchased, and paid for through the uses of the web sites and internets. Goods are also supplied or delivered to customers through the same methods. Therefore, organisation no longer have direct link or personal contact with their customers and prospective buyers are contacted or connected through the web site or internet and business research questionnaire are also applied on them through the same method. It is possible for researcher to get in touch with large numbers of

customers for his research but in most cases customers or respondents are always apathetic to researcher's questionnaire. The number of respondents may not be sufficient for proper analysis and findings.

The digital divide or lack of access of large number of people to computer most especially in the developing countries do not give them access to pull of information on available goods and services on the internet which denied them sufficient information or knowledge to respond to researchers questions. Respondents may not also have enough time to answer reasonably the question to enable the researchers have enough or sufficient information to base his assessment and to have reasonable understanding of customers responses.

2.9 Result and Findings

Business research is not an exact science though its uses the techniques of science. Thus, the results and conclusions drawn upon by using Questionnaire in business research are not very accurate. The results of Questionnaire in business research are very vague as business research is carried out on consumers, suppliers, intermediaries, etc, who are humans. Humans have a tendency to behave artificially when they know that they are being observed. Thus, they aware that their attitudes, belief, views etc are being observed.

Questionnaire in business research is not free from bias because research conclusions cannot be verified. The reproduction of the same project on the same class of respondents gives different research results. Inappropriate training of researchers can lead to misapprehension of questions to be asked during data collection. Many business executives and researchers have ambiguity about the research problems and its objectives. They have limited experience of the notion of the decision – making process. This leads to carelessness in research and researchers are not able to do anything logical. There is less interaction between the business research department and the main research executives. The research department is in segregation and this all makes research ineffective.

Questionnaire in business research faces time constraint. The firms are required to maintain a balance between the requirement for having a broader perspective of customer needs and the need for quick decision making so as to have competitive advantage. Questionnaire in business research involved huge cost as collection and processing of data can be costly. Many firms do not have the proficiency to carry wide surveys for collecting primary data and might not also able to hire specialized business experts and research agencies to collect primary data. Thus, in that case, they go for obtaining secondary data that is cheaper to obtain. Business research conducted in open marketplace where numerous variables act on research settings.

3 Conclusion and Recommendations

Questionnaire is essentially structured techniques for collecting primary data. Meanwhile, Business Manager that want to be more profitable and gain more market share should make proper use of questionnaire to obtain necessary information on their products performance in the markets in order to know customer complain, comments, problems and criticism of their products. Therefore, it is recommended that researcher should dedicate enough time and set aside huge amount of money for the administration of questionnaire, assist the illiterate in filling the questionnaire and explain the purpose of the research to them. Research and development department of an organization should follow appropriate guide lines in the construction and administration of questionnaire to have accurate information and data at the end of the day.

References:

[1]. Adeoti, O.O. (2013). *Business policy and strategic management for corporate managers.* Lagos: Pumark Educational Publisher.

[2]. Akingbade, W.A. (2014). Competitive strategies and improved performance in selected Nigeria telecommunication companies, *Journal of Entrepreneurship Management and Innovation,* Nowy Sacz Business School, National-Louis University, Poland.10,(4), 143-167.

[3]. Asika, N. (1991). *Research methodology in the behavioural sciences.* Lagos: Longman Publisher.

[4]. Asika, N. (2004). *Research methodology: A process approach,* Lagos: Mukugamu and Brothers Enterprises.

[5]. Beiske, B. (2002). *Research methods: Uses and limitations of questionnaires, interview, and case studies.* London: Manchester School of Management.

[6]. Cozby, P.C. (2007). *Methods in behavioural research,* 9th edition. New York: Mc Graw Hill.

[7]. Edward, M.F. (2010). *The marketing research toolbox: A concise guide for beginners,* USA: Center for Management and Business Administration Inc.
[8]. Hair, Jr, J.F; R.P. Bush & D.J. Ortinau (2000). *Marketing research: A practical approach for the new millennium.* New York: McGraw –Hill
[9]. Hassan, T. (1995). *Understanding research in education,* Lagos: Merrifield Publishing Company.
[10]. Isaac, S & Michael, W.B (1971). *Handbook of research and evaluation.* San Diego Califonia: Edits Publisher.
[11]. Kerlinger, F.N. (1983). *Foundations of behavioural research, second edition.* New York: Holt-Saunders International Editions.
[12]. Needham, D & R. Dransfield (2004). *Advanced business*. London: Heinemann.
[13]. Nworgu, B.G. (2006). *Educational research: Basic issues and methodology.* Ibadan: Wisdom Publishers Ltd.
[14]. Osuagwu, L. (2002). *Business research methods: Principles & practice.* Second edition. Lagos: Grey resources Ltd.
[15]. Otokiti, S.O. (2008). *Contemporary issues and controversy in research methodology,* Second edition. Lagos: Management Review Ltd.
[16]. Oyedijo, A.I. (2013). *Business policy and strategic management: An introductory text with cases.* Lagos: Strategic International Press ltd.
[17]. Sekaran, U. (2003). *Research methods for business: A skill-building approach*, Fourth edition. New York: John Wiley & Sons, Inc.
[18]. Selltyiz, C, Wrightman, L.S & Cook, S.W. (1976). *Research methods in social relations.* New York: Holt, Renehart and Winston.
[19]. Singleton, Jr, R.A; Straits, B.C; and Straits, M.M. (2003). *Approaches to social research;* 2nd edition, New York: Oxford University Press.

BOOK REVIEW

FOR JOSEPH STIGLITZ THE GREAT SOCIAL DIVISION IN USA IS A VITAL ISSUE TO BE URGENTLY RESOLVED

(Joseph Stiglitz: The Great Divide: Unequal Societies and What We Can Do About Them, Publica, Bucharest, 2015)

Part IV, V, VI, VII, VIII

PETRE PRISECARU
Ph.D., Senior researcher economist
Institute for World Economy
Romanian Academy
petreprisecaru@yahoo.com

2. The causes and consequences of social inequality

Why has social inequality increased so much in the last 35 years? One explanation lies in the actions of hunters for economic rent: bankers, corporate managers, brokers and other market actors, like companies with a dominant market position. Social inequality is transmitted from one generation to the other, it is a cause and also a consequence of income inequality. America has increasingly become economically segregated and has done almost nothing compared to other developed countries to improve the situation. Stiglitz has focused on two issues: the protection granted to corporations by the state and US tax system. Saving banks from bankruptcy with public money is called socialism for the rich Americans. The tax system is unfair, distorting the economy and leading to high levels of inequality. Stiglitz talks about a tax system calibrated against 99% of population as 1% (the very rich) does not pay enough taxes. It was Warren Buffett who said it's unfair that he paid less taxes than his secretary, certainly relative to his revenues, consisting primarily of capital gains. Usually, uncollected capital gains, some simply fabulous, are not charged at all.

As regards big companies, avoiding paying taxes, as does General Electric (GE), heavily incriminated by Bernie Sanders recently, it seems to become a widespread sport in U.S and in the EU. Many large corporations have transferred their profits from developed and emerging countries to offshore tax heavens. Fortunately, a very responsible organization enlisting the brightest analysts in the world took the initiative to combat this awful evasion, and this is the OECD. Stiglitz makes reference to Mitt Romney, who, while saying that 47% of Americans do not pay their taxes and are parasites, kept his money in the Cayman Islands.

Very rich bankers were protected by the state through bail out system and the Obama Administration has introduced a new concept favoring large corporations: *too big to be financially restructured,* apparently to not panic the markets. A part of public bail out money was used for paying huge bonuses and dividends for bank managers. Instead of restructuring big banks and reforming their shareholding and management system the state allowed them to continue to do what they wanted with the public money. This new form of capitalism in which the losses are nationalized and the profits are privatized is doomed to failure. This form of oligarchic capitalism can be met not only in the US but also in many other countries, including Romania, and some scholars called it *socialism with American characteristics or socialism for the rich people,* but obviously it amounts to welfare granted to corporations to the detriment of citizens. For instance, in Romania, the interests of the corporations are the only ones that count, while those of ordinary citizens do not matter at all.

If the taxes are the price for a civilized society it is hard to understand why many rich people and many corporations not pay enough taxes according to their level of income and profit. To the lack of real progressive taxation one may also add the proliferation of tax havens that have multiplied rapidly as the amounts deposited there for tax avoidance or tax evasion increased dramatically. Over the last 30 years, fiscal equity has

significantly worsened in U.S, with the 1% top group paying only 20% of all taxes in 2010, while earning about as much. This 1% group owns 40% of the nation's wealth. In U.S. the maximum rate of income tax (39.6%) only applies to an income level above $ 400,000 per year. As income and social inequality have considerably increased over the last decades, any state or country may use the fiscal code for income and wealth distribution.

Multinational corporations with many branches abroad and with many accounts opened in tax heavens excel at tax avoidance with the help of public authorities, and are able to transfer a lot of their profits from a country to another and finally to a fiscal heaven. General Electric is considered by Stiglitz a symbol of large corporation tax avoidance of, as GE paid less than 2% profit tax between 2002 and 2012. In the U.S.~~A~~ tax legislation does not require the declaration of all types of income and many rich people hide their assets and incomes in tax heavens. The tax code is full of exceptions, gifts, voids, the special fiscal provisions amount to $ 123 billion–and the legislative void enables tax heaven activities due to tax avoidance at an equivalent scale. Tax Justice Network estimated the capital held in tax heavens in 2012 at somewhere between ~~$~~ 21 trillion and ~~$~~ 32 trillion, while the OECD made much lower estimations, below ~~$~~ USD 10 trillion The European Union alone is estimated to lose about one trillion euro each year due to a combination of tax avoidance, evasion and arrears and much of this money goes to fiscal heavens.

Those working in the capital markets have become a kind of privileged beneficiaries of the tax system without having outstanding merits in the progress of the economy/society, being rather the main culprits for the onset of the financial crisis and of its devastating effects. It is obvious that there is an unjust, unfair fiscal system and economists are beginning to realize its harmful effects. Excessive inequality is not good for economic growth and stability, and this was noticed even by IMF economists. Stiglitz believes that poor economic performance was caused by the distortions of the economy produced by the tax system that encouraged financial speculations instead of work, innovation, entrepreneurship and production of goods and services. Tax cuts at the top did not stimulate savings and work but only increased the profitability of rent hunting. Only the rich people have benefited from this, while middle class incomes have decreased in real terms. The unfair levels of taxation have encouraged rent hunting to the detriment of wealth creation. The tax system must encourage work, innovation and saving, not bad and harmful activities. Any democratic society should be based on national solidarity and cohesion and on a governing system for all the people and not just for 1% of the population.

Large corporations, like Google and Apple, have employed graduates of state-funded universities and make better use of the Internet created by the state with taxpayers' money but they do not pay enough taxes and are practicing tax avoidance on a large scale. The tax tricks of corporations are practiced on a global scale, that is why Stiglitz believes the global tax system to be unfair, distorting and unmanageable, leading to the deepening of social inequality in developed and emerging countries. Globalization led to high profits for transnational corporations based not only on the exploitation of resources and of employees all over the world, but also on the exploitation of the regulatory gaps that allow a perverse system of transfer prices. An international agreement on the taxation of corporate profits is needed, as is an approach of the issue of tax havens that hold a large part of corporate profits and many funds resulting from the theft of public money in emerging economies. Extensive corporations lobby is backed by an army of lawyers and political accomplices, which is why they often succeed in obtaining tax amnesties and are generally a bad example of tax fairness.

It makes sense to pay taxes as a citizen and as a company because you depend on others in many ways. The state needs your money for public services and for social protection for the unemployed, the retired and poor people and the persons with disabilities. Many protected people have paid for their social benefits, by means of social insurance, unemployment insurance, and health insurance payments. Those who praise the social benefits of the private sector in excess forget what their costs and profits are. In the U.S.~~A,~~ the state failed to support its citizens in many respects: private high education has become very expensive, private health care is also very expensive, finding a full time job is very difficult, managing a decent standard of living is a difficult task, the society is deeply divided and community spirit is not a dominant one.

Giving as the example of the bankruptcy of the city of Detroit, Stiglitz shows the negative consequences of the deindustrialization process deployed in certain areas of the U.S. In 1950 the population of Detroit was 1.85 million, with 296 thousand jobs in industrial facilities. In 2011, its population was 700

thousand with 27 thousand in industry. Detroit is maybe the best example for the effects of economic segregation which meant the retreat of the wealthy elites, mostly comprising members of the white population into suburban enclaves. Social segregation and inequality were supported by the segregation of education, as fuel for both processes. Even worse, the Detroit metropolitan area is divided into separate political jurisdictions, creating a political ghettoization. The difficult situation faced by Detroit area and other former industrial zones was caused by the deindustrialization, racial discrimination, geographic isolation and inadequate public policies. Instead of counteracting the effects of deindustrialization in the Midwest by means of public policies encouraging the development of other relevant sectors, the U.S. government left all progress in the hands of the markets and of the financial sector. Pittsburg, located not far from Detroit, is a good example of the quick shift from the steel and coal economy towards education, health, legal advice and financial services. Carnegie Mellon University represents the scientific center and also the engine of this community's economic development. In Stiglitz opinion, the burden of the Detroit bankruptcy should fall on the shoulders of creditors, in particular of banks, which used toxic financial derivatives when lending funds to the municipality. Public policies and investments are needed in order to foster a smoother transition from industrial jobs to other fields but, in my opinion, what is mostly needed is an intelligent reindustrialization process in the U.S. and in the EU, taking into account the content of the presentations delivered in Davos this year on the fourth industrial revolution.

Stiglitz raises the issue of trust: how much trust can we have in bankers, in politicians, and in the democratic system. Unfortunately, the depreciation of trust has deep roots in economic traditions, Adam Smith himself advocated in the favor of the need for trust in the pursuit of self-interest, an attractive idea for those without moral inclinations for whom selfishness is the ultimate form of altruism. Relying only on the self-interest seems meaningless in a modern society where there should be a minimum level of trust. Trusting bank and bankers has always been essential for the viability of the banking sector, but abusive credit practices, market manipulation, and toxic derivatives led to a speculative bubble and to a crisis of serious proportions that have shaken public confidence. After 1990, the banks used their influence to undermine the regulations adopted after the Great Depression and were supported in this endeavor by officials and economists who believed in the need for liberalization and deregulation in the financial/banking sector. Stiglitz criticizes the right-wing politicians and scholars with liberal views who argue that only incentives matter in the economy, while trust does not. However, it is very interesting to note that incentives must be given only to corporate managers, in particular those in the financial sector, while people working in the social services, like education, apparently do not need such incentives. When a small layer of the population has undeserved privileges we may talk about an oligarchic regime, but is such a feudal regime normal in a capitalist democracy?

Bankers' greed, their malpractices and the public policies influenced by the right-wing ideology led to a high degree of public distrust. When 1% of population collects 22% of the total income and 95% of the income increase after the crisis, it is obvious there is an absurd distribution of income. Financial and legal systems are designed by and for the rich. The persistence of the trust deficit leads to a change of attitudes and norms, to a striking lack of morals. Economic inequality, political inequality and a legal system that boosts the inequality consolidate each other. The poor suffer most, as proven by wretched borrowers deceived by the banks, who lost their mortgaged homes because of miserable scams used by bankers. These dirty tricks show that there is an inequality before the court of law. All this mess would require strict regulations and high standards regarding corporate behavior, and, based on these, the restauration of trust in the business environment and in politics.

According to Stiglitz's opinion, public policies should not focus only on economic efficiency but mainly on combating social inequality. By supporting Janet Yellen as Fed president Stiglitz wanted to underline the relationship between monetary policy and social inequality. Under the presidency of Ben Bernanke, the Fed saved the big banks and AIG but not regional and local banks or the homeowners with mortgages. Stiglitz supported the nomination of Janet Yellen to the detriment of Larry Summers favored by Obama as Fed president and managed to convince the U.S. Senate. While Larry Summers was an ardent supporter of financial deregulation, financial derivatives, and liberalization of capital markets with catastrophic effects in Eastern and Southeastern Asia (he was Secretary of Treasury for a year and half and the 8th Director of the National

Economic Council), Janet Yellen was preoccupied by social inequality and by linking interest rate policy to the situation on the labor market and is right when she points out the limits of the monetary policy which cannot by itself achieve full employment in the economy. Low interest rates were not able to contribute to the creation of new jobs. There is an explanation that refers to the existence of a liquidity trap, when low demand is discouraging investment and lending activities and therefore not enough new jobs can be created to drastically curb unemployment, despite very low interest rates meant to stimulate lending.

Stiglitz points to the rhetoric of free markets in a period when state aid is generously granted to various business sectors while food aid programs for the poor are drastically reduced. Badly managed globalization may amplify social inequality, while free trade agreements concluded by U.S with other countries do not generate jobs, but, on the contrary they may affect the existing jobs. Importing labor-intensive products and exporting high tech products actually means a loss of jobs for the U.S. The impact of free international trade on salaries and social inequality may be significant. The free movement of capital and other factors also meant moving production to countries with lower costs, especially in terms of wages, and exerted tremendous pressure on workers' salaries in the developed countries. Obviously the benefits of globalization went not to the employees but to the corporations. The new trade agreements are designed to strengthen the protection of intellectual property rights which raises the prices of medicines, to destabilize environmental, labor, consumer protection and other regulations, to impose special clauses on investments. For Stiglitz, these new trade agreements are an expression of the petty interests of corporations who want to impose commercial regimes that are favorable only to them. Provisions on intellectual property protection are not aimed at promoting scientific progress but at maximizing the profits of pharmaceutical manufactures and entertainment services. In the health sector, no excessive patent protection for high profits at the expense of people’s money should be accepted or tolerated.

Joseph Stiglitz worked with Michael Doyle on eliminating extreme inequality and introducing a specific indicator for sustainable development goals, aimed at diminishing it considerably. Instead of concentrating on inequality reduction which expanded in the last 30 years and worsened after the recent crisis, the Fed and the U.S. Administration focused on helping banks and stimulating the stock exchange but did almost nothing for the housing market. Policies, laws and regulations in the fiscal field and income distribution may reduce social inequality, improve common prosperity and support economic growth. Stiglitz blames public policies that contributed to increasing inequality, such as austerity measures or income tax cuts for the rich. The speculative bubble and the abuses perpetrated by the banks backed by the Fed policy targeting inflation and total market freedom led to overconsumption and excessive indebtedness of population. After the crisis, the policy ~~of~~ encouraging very low interest rates discouraged savings and stimulated investments in technologies that reduce the labor use. The austerity policy led to a higher unemployment which lowered wages due to increased competition for jobs. Middle class was mostly affected, its average incomes, inflation-adjusted, are now lower than in 1968. The middle class, the unemployed people and homeowners should be helped by the government because this would lead to increased economic recovery with certain positive effects.

The European Union provided a bad example with the austerity policy that delayed economic recovery and increased social inequality. In Romania, we had a good monetary policy but a very bad fiscal policy which widely allowed tax avoidance and evasion, affecting the salaries of employees in the public sector and public investments, as well as economic performances. Driven by the popular riots all over Europe following disclosures in the Panama scandal, and sensing the major risk of a rise of populist movements, European finance ministers have recently shown a united front in the fight against tax evasion and will adopt a new law targeting fiscal havens and fiscal transparency. A better collection of budget revenues would support a more robust economic recovery in a period in which the EU is facing serious problems/challenges relating to its borders, security, sovereignty, culture, and democracy. The serious danger or risk of an overlapping of these challenges is to overwhelm European and national policymakers.

Stiglitz returns to the issue of Fed leadership and its policies and finds four policy reasons related to inequality. The first would be the management of crises which is a factor that generates poverty and inequality. The second would be the fact that deregulation contributed to the financialization of the economy and to its distortion. The third would be that deregulation has been associated to the abusive practices of financial sector.

The fourth would be that financial sector did not do the right thing, namely lend massively the productive sector, especially SMEs. Good Fed policies require fair forecasts and correct evaluation of risks, as well as a balance between the inflation target and the unemployment level. Fed is a large organization that must be managed by someone with a long expertise but mistakes made before, during and after the crisis have undermined the trust in the effectiveness of Fed policy. Stiglitz is right in a very important matter: *when choosing a leader or a manager, brilliant intellect is not the only performance factor that counts, values, judgment, personality of the individual count too.*

The absurdity of food policies in U.S. is revealed by the reduction of the food aid granted to the poor as vouchers amounting to $ 40 billion for a 10-year period, while maintaining farmer subsidies at ~~$~~ 14.9 billion per year, with a shift of subsidies towards the payment of insurance premiums. Small but powerful interest groups direct public policies in their favor, distorting the markets and creating high and unjustified rents for them. Between 1995 and 2012, 1% of farmers received around $ 1.5 million each, a quarter of the total subsidies, while 10% of farmers received almost three quarters or around $ 30,000 per year, meaning over 20 times the food aid for poor people. In 2011, a number of 45 million Americans participated in the SNAP and the number has increased since then. This means that a large number of people do not have a sufficient income for providing the basic food in a country where there is plenty of food. In time, time food aid program and farmer subsidies program have been correlated and this makes sense as supply and demand are both very important. Sometimes hunger is not caused by the lack of supply, but by the fact that this supply does not find enough demand or cannot meet the existing demand. Although the U.S is the biggest food producer and exporter in the world millions of American suffer ~~of~~ from hunger and tens of million need food assistance granted by the state. Food overproduction is at the expense of its quality, many food products being cheap but not healthy, which is why many people are obese and suffer from diabetes. The fact that one in seven Americans is affected by food insecurity was due to poverty, as 15% of adults and 22% of children live in poverty. One of the human rights is the right to adequate food but very few countries fully respect it, in any case the U.S. does not. Stiglitz blames the Republican Party because instead of expanding food aid programs wanted to cut them, and this may lead to a reduction of domestic consumption, the increase of exports and decrease of food prices, affecting poor farmers from all over the world. Consumer demand, the main component of aggregate demand, will also be negatively affected in the U.S., and social inequality will enhance. However, the absence of equal opportunities, in particular in the case of poor children, will also increase. The impact of these phenomena on economic growth and social development can only be a negative one and the cynicism of right wing politicians is even more reprehensible.

Stiglitz questions whether ambitious, comprehensive, and high-standard trade agreements under the form of partnerships, like the Trans-Pacific Partnership (TPP) or Trans-Atlantic Trade and Investment Partnership (TTIP), negotiated in secret by the U.S. Administration and its partners do not bring benefits only for the rich people at the expense of other categories. These partnerships draw attention to the inadequate manner in which globalization is managed. In the absence of customs duties, corporations focus their attention on removing or diluting regulations that protect workers, consumers, and the environment, in order to gain higher profits. The negotiations conducted in secret may lead to the negotiators involved being captured by the corporatist and financial interest groups. The idea that the free trade winners may compensate the free trade losers is fake, and high labor mobility which combats unemployment caused by structural changes in the economy is only a chimera. Instead of making financial speculations it would be much better for the banks to finance SMEs to ensure new jobs and additional income for a higher consumer demand. Economic policies in US have encouraged job outsourcing and cheap imports of goods at the expense of domestic jobs. A full time employed man is paid now less than 40 years ago and only 45% of employees have a full time job in US. For Stiglitz one thing is clear: free trade agreements enrich the corporations and deepen social inequality.

While asking others (the EU) to reduce and eliminate agricultural subsidies, the U.S. refused to remove its subsidies, undermining trade negotiations within the WTO Doha Round. Stiglitz is against a managed trade regime established by major trading powers led by the U.S., which only serves interest groups. Any trade agreement must be symmetrical, national interests should not be neglected, public interest must prevail instead of the interest of corporations, financial liberalization and the protection of intellectual property may be

included but they should not be favorable to emerging countries, there should be enough transparency, and high standards should be set, while commercial interests must not prevail over other values.

The protection of intellectual property is secured by the TRIPS Agreement, an international agreement negotiated at the end of the Uruguay Round and administered by the World Trade Organization, setting down minimum standards for many forms of intellectual property regulation applied to WTO members. However, in the U.S. this protection tends to become an absurd question as some companies, like Myriad Genetics, try to impose a kind of monopoly on scientific findings based on patents obtained with the obvious aim of maximizing their profits at the expense of their clients. Patents hinder innovation in the pharmaceutical industry instead of encouraging it. One might ask the question why the protection of competition would not be valid in the field of innovation like it is in the sale of products and services. Competitive markets that drive innovation instead of blocking it are needed. U.S. used the WTO in order to impose an advantageous regime in relation to the protection of intellectual property for American companies. For Stiglitz the case of Myriad Genetics is an illustration of his messages from the book *Price of Inequality*: social inequality is not only a result of economic laws but also of the way we are shaping economic system, politically, legally, regulatory, institutionally; rent hunting is immoral and means a perverse distribution of income; many innovations are based on the society's contribution through public support granted for scientific research, for education, for health insurance, for Internet, etc.; excessive protection of property rights has material and human costs, it can impede access to health only to increase shameless profits of companies.

Stiglitz praises India where the Supreme Court of Justice refused the recognition of Novartis's Gleevec drug patent based on social grounds. The intellectual rights regime stifles innovation and reduces the access of the population to the essential drugs. The law protecting drug patents was revoked in 1972, leading to the development of a globally competitive pharmaceutical industry in India and to a considerable reduction of the cost of treatment of incurable diseases. The TRIPS Agreement imposes a revision of patent legislation in favor of manufacturing companies but in India the rules regarding the unobvious character and novelty required for obtaining a patent are stricter. The U.S. is using free trade agreements and partnerships for a greater protection of patents/intellectual rights. But this protection must be reasonable and should not come into collision with the right to an easy access to medicines and the right to live a healthy life anywhere around the globe.

In an article published in 2014 together with Michael Doyle, Stiglitz refers to Millennium Development Goals. The UN Millennium Declaration was adopted at the Millennium Summit of world leaders in September 2000, with the aim of establishing a new global partnership in order to reduce extreme poverty and setting out eight important objectives, with the deadline in 2015, that have become known as the Millennium Development Goals. These goals are: Goal 1- Eradicate Extreme Hunger and Poverty; Goal 2 - Achieve Universal Primary Education; Goal 3 - Promote Gender Equality and Empower Women; Goal 4 - Reduce Child Mortality; Goal 5 - Improve Maternal Health; Goal 6 - Combat HIV/AIDS, Malaria and other diseases; Goal 7 - Ensure Environmental Sustainability; Goal 8 - Develop a Global Partnership for Development. After 15 years although the number of people living in extreme poverty has halved, the other objectives have been achieved only to a limited extent. Stiglitz believes that the goal of eliminating extreme forms of inequality should be added. Large differences existing between the various countries in terms of inequality show that it is not determined only by economic forces but also by political forces and by the policies implemented. Extreme inequality affects economic development and disparages political equality and social stability.

Income inequality diminishes aggregate demand and slows down the rate of economic growth. Credit bubble can also occur, leading to economic instability. Inequality is usually associated with the hunt for economic rent, lack of equal opportunities, appropriate education and health services, the amplification of violence in society. Reducing inequality has benefic economic and social effects, improving human potential, cohesion and mobility, strengthening support for growth initiatives. Public policies may contribute to social inequality, in particular the tax policy, the minimum wage in the economy, investments in education and health sectors. Decision makers are usually more influenced by the rich than by the poor. In the developing countries, economic and social inequality leads to violence, ethnic conflicts, and civil wars. Inequality has many dimensions: assets, income, equal opportunities, education, health, discriminations. Stiglitz and Doyle proposed for the ninth goal (eliminating extreme forms of inequality at national level) the following targets: a) until year

2030 the net income of the 10% top group not to exceed the net income of the 40% bottom group b) until year 2020 a public commission should be established in each country to assess and report the effects of inequality nationwide. For inequality evaluation and attaining the proposed targets the best indicator seems to be the Palma indicator. Many economists, professors, and experts expressed their support for this proposal – eliminating extreme forms of inequality - and for using Palma Report (indicator).

After the financial and economic crisis, we are now faced with other crises, the worst of which being global warming. In December 2015, at the Paris climate conference (COP21), 195 countries adopted the first-ever universal, legally binding global climate deal which sets out a global action plan for avoiding dangerous climate change by limiting global warming to well below 2°C. The agreement signed by 175 countries at the United Nations Headquarters on 22 April 2016 is due to enter into force in 2020. Before and during the Paris conference, countries submitted comprehensive national climate action plans (INDCs) that are not enough to keep global warming below 2°C, but the agreement paves the way to achieving this target. The transition from goods manufacturing to services involves new types of companies and new forms of providing finance, and the world inequality crisis spreads poverty everywhere and slows down economic growth. Although the gaps between the developed and emerging economies shrank pretty much, there are still hundreds of millions of people who are poor and unemployment is very high in many countries. While the international trade regime is not conducive to the economic development, the actions and initiatives of the G20 and other international forums have not produced the expected results.

For long time during the 20th century, the U.S. was considered a model of economic success and social prosperity, which was not far from the truth. However, after 2000 and in particular after the Great Recession the myth of prosperity began to fall apart and it became clear that it is the developed country with the highest degree of inequality. Thomas Piketty's book *Capital in the Twenty-First Century* was used to support the perfidious idea that violent extremes of wealth and income are inherent in capitalism, and therefore the 50's, the 60's, and the70's when the inequality level decreased rapidly would be an aberration. Stiglitz says that the current model of capitalism is a surrogate, official reaction to the crisis meant the socialization of losses and the privatization of gains, competition is seriously distorted by monopolies and oligopolies, managers of large companies have huge revenues not fully justified by their economic performance. Public policies and the political system have led to great divide in America, while in Scandinavian countries income per capita increased more in strikingly similar conditions. After the end of Cold War, the ideology and private interests made a fatal combination, with bankers supporting *laissez faire* and receiving hundreds of billions of dollars while political system is controlled by money and allows the rich to be taxed preferentially. As the financial assistance given to corporations increased, –assistance offered to the poor decreased, creditors (banks) responsible for the crisis received considerable aids while debtors received symbolic aids. Those who are criticizing the rich and their privileges are considered to be fascists or socialists, but the reality shows that while the rich people with a bigger and bigger slice in income are transferring their money in tax havens, in the U.S. a quarter of children are living in poverty, the middle class becomes less and less strong, the country is full of detainees, and access to justice and to good health has become a luxury for many people. Stiglitz believes there is a need for a war against poverty, for protecting the middle class, for counteracting rent hunting, for removing the privileges for the rich and corporations, for better tax and other public policies, for a democratic system which is not mercantile and corrupt.

In this book, Stiglitz analyzed the situation of social inequality in other countries. Countries that followed the U.S. model and have excessively developed finance sector, like the UK, have high levels of social inequality. A small country (island) like Mauritius, is able to provide free health services and free higher education for its citizens, free public transport for young and old people. The model of East-Asian countries is one based on managed markets, high investments in education and research, an active industrial policy. Singapore, a poor country in 1969 with 25% unemployment rate, is now a rich country, a powerful industrial, trade and financial center of Asia, with an income per capita of $ 55,000. Japan is a country with a fantastically rapid development after the war, but since 1990 it entered a period of economic stagnation (with low unemployment yet), probably due to the changes in the growth model from foreign demand to the domestic demand, from controlled markets to free markets, from egalitarianism to social inequality. The new policies called *Abe-economics* were not based only on monetary policy (a remarkable success) but also on fiscal policy

and pro-growth structural policies. China is good example of a success transition from a communist economy to a market economy and it managed to pull out of poverty 500 million people but the inequality level measured by Gini coefficient reached the U.S. level in only 30 years. The strong development of the private sector in China brought prosperity but also much inequality and pollution, hence the need for public policies to combat these shortcomings. Visiting Medellin city, in Columbia, famous for its drug lords, Stiglitz noticed a huge transformation for the better due to the special efforts made by local community. Stiglitz, a leftist thinker of the socio-liberal type, was caught in the fight between the followers of a more egalitarian society and those of exacerbated liberalism and social inequality. In Australia, where social policies have met with outstanding success, the new Prime Minister Tony Abbott wanted to follow the American model, an example of blind ideology with adverse results. Stiglitz was in the camp of those who wanted Scotland's independence and a kind of Scandinavian social model. The political and territorial disintegration of Europe after 1989 was a process encouraged by the U.S. and Germany, but in total contradiction with the European integration process. People and politicians from Scotland and Catalonia would like to achieve their independence more on the historical grounds than on economic ones, which seems to be a complete –non-sense. Moreover, these new states would have to pass through the procedure of accession into EU. Spain is a bad example for Stiglitz, as it succeeded to reduce significantly the inequality level before the Great Recession but this progress was lost during the recession when the unemployment rate reached 50% among young people and people income decreased dramatically. The same happened in Romania where the income of public servants was cut by almost 50% and the income of private employees by 20-30% (the unemployment level was a happy exception due to high emigration).

2. Several brief comments related to Stiglitz's ideas

Some time ago, when I visited the U.S. I frequently heard the slogan: *Each person manages his life as he can. The state does not need to take care of everyone.* Quite strangely the same slogan was uttered at the beginning of the 90's by the first post-communist Romanian president, so that the conclusion may be that capitalist state is not a social one. But it could be a false conclusion as I am a European citizen living in a Member State of the European Union, where the concept of European social model has been used for a long time and where countries, like the Scandinavian ones, provide a high social protection. Even in a communist regime there were powerful social sectors, like education, health, culture, supported financially by the state which exerted a strong control both ideologically and regulatory.

The European social model is no doubt related to the welfare state, inspired by Keynes' ideas and rejected now by the free market advocates under the false pretext of its unsustainability. In the EU, the social model involves a high standard of living and good working conditions while the welfare state involves ensuring full employment, social protection for all citizens, social inclusion, economic growth, prosperity and democracy. This is why social policy is so important at EU level and at national level and its requirements may be found in all EU policies and strategies. But is distribution of income a major problem for a social state? How important is the redistribution of income through the state budget, by using income tax and other instruments? If the share of budget incomes exceeds 50% of the GDP and income tax is quite high, like in Denmark and Finland, we may speak of a redistribution mechanism in a high income society. If the share of budget revenues is under 40% of the GDP due to tax avoidance and tax evasion, like in Romania, income redistribution becomes an extremely difficult task.

Stiglitz does not present a rosy picture of the U.S, a very developed state where social inequality has deepened and where general prosperity is a myth. He rejects the theory of propagation of economic benefits from top to bottom and shows that the true creators of jobs are consumers, so that stagnating incomes and consumer demand do not lead to economic growth and to creation of new jobs. Liberal reforms which started in the 80's and aimed mainly at cutting taxes for the rich and at liberalizing the financial markets led to the extreme inequality of today, with a negative impact on economic development. A high price has been paid for this inequality and it will be even greater in the future if public policies will not change. Even worse today's political scene looks horrible in a presidential election year with two potential candidates who enjoy a very low level of trust from the American citizens.

Anyway, for the Wall Street bankers the future does not seem very bright as they face tighter restrictions on how they will be paid under new rules proposed by U.S. regulators in response to the financial crisis. These new rules represent an effort of regulators to curb the excessive risk-taking in the country's biggest financial firms and to better correlate the wage bonuses with the real performance of firms. The rules will require the biggest financial firms to defer payment of at least half of executives' bonuses for four years and also will set a minimum period of seven years for the biggest firms for recovering these bonuses if the actions of these executives hurt the institution or if a firm has to restate financial results.

For Joseph Stiglitz, the economic recovery seen after the crisis does not mean a better life for the bottom 99 percent of the American population but only for the top 1 percent who got 91 percent of all gains in the first three years. Quantitative Easing created a boom of stock market but the share of the average American in stock market gains is very low. The statistics of the Federal Reserve and US Administration have very few in common with the lives of ordinary Americans who are not doing very well and whose wealth was badly affected by the crisis. The unemployment rate decreased from 10% to almost 5% but many people who lost their jobs in 2008 didn't get new jobs or got part time jobs paid quite badly. Many young people, graduated or not, and many older people who lost their jobs at 50 or 55 years of age were not able to find new jobs and these represent marginalized groups with rather uncertain future.

As regards the Fed policy under the leadership of Janet Yellen, supported by Stiglitz for her appointment as president, Stiglitz points to the need of improving the credit channel to make sure that money was going to small and medium-sized enterprises, as well as to the requirement for banks not to finance land speculation, real-estate speculation, not to go abroad, not to give money to hedge funds. Janet Yellen has followed the standard macroeconomics view and used the one set of classic instruments, lowering or raising interest rates, but Stiglitz thinks *this is not the right issue, the real issue is making sure credit is available to expand the economy.* Cutting interest from 5 percent to 0 percent and even under 0 may introduce some distortions into the economy, it may lead to less lending activity and to less saving activity on behalf of the population and of companies.

For Stiglitz most of the models used by economists ignored inequality and Conservative Republicans, like Cruz, are considered to be the biggest enemies of the welfare state. The Obama Administration handled economic policy in a disappointing way for Stiglitz, as it didn't offer enough help to small and medium sized banks and enterprises and to homeowners, while the trade agreements it concluded it proved to be a disaster. On the other hand, Obama's Affordable Care Act was a right move, as was the increase of the minimum wage and his involvement in in the fight against climate change (global warming). Obama Administration was too much influenced by the big banks, big business and campaign contributors and was not supported by a Congress dominated by the Republican Party.

The prevalent ideology in economics says that markets were basically efficient and stable. This ideology was influenced by important people like Greenspan and Bernanke who were convinced that markets do not generate speculative bubbles. Econometric models used to predict market evolution proved to be a failure, but they gave decision makers confidence in liberal theories that led to wrong policies responsible for the outbreak of crisis and also responsible for the growth of inequality. Widely respected economists supported the cutting of taxes at the top, increasing inequality in the society and most of the models used by economists ignored this inequality and pretended that macroeconomy was unaffected by inequality, which is totally wrong in Stiglitz's opinion. It is obvious that over the last 35 years there were two strands in economic thinking: one strongly focusing on the limitations of the market (neokeynesism) and another insisting on the supremacy of markets (neoliberalism) and Stiglitz thinks that too much attention has been being paid to that second strand. In Romania too there are young and fanatical followers of the concept of completely free markets (liberals or libertarians) who advocate for market freedom and non-involvement of the government in its regulation. Fortunately, in the US many young people (students or not) who support Bernie Sanders were able to see how important inequality is and how ineffective and manipulated markets are.

Stiglitz thinks that the US is a victim of its own success as factor productivity in the industrial sector exceeded the demand growth rate and reduced the employment rate in this sector, also changes in comparative advantages and globalization process both promoted and supported by U.S. returned like a boomerang in the

heart of US economy. The state has disengaged from the fast growing social sectors, like education and health, under the influence of liberal ideas. Although the U.S. has a strong high-tech sector, a high-performance scientific research and the best higher education, it is confronted with economic stagnation after the crisis, which shows that public policies are weak. The obsession with diminishing deficits (fiscal mainly) at any cost, including that of reducing employment and demand, does not stimulate investments and growth and the austerity policy imposed by the IMF to many countries led to recessions.

Due to its nature and size social inequality in the US represents a serious threat to the country's future and economic development, even *The Economist* seems to be convinced of this matter. There are four reasons identified by Stiglitz that cause inequality to obstruct growth: first, the anemic consumer spending of the middle class, second, the numeric decimation of the middle class, third, the weakening of the middle class affected the budget revenues obtained from its taxes, fourth, inequality is associated with more frequent and abrupt cycles of expansion-contraction that make the US economy more volatile and more vulnerable. The ideals of meritocracy, equal opportunities and egalitarianism are now dust in the wind and the most precious resource, youth, is wasted in an irresponsible way. Student debts cannot be erased and they are heavily burdening the budget of many families, while there is no guarantee that expensive university education is useful to those who paid very much for it.

For Stiglitz, it is quite evident that bad public policies implemented in the U.S. after 2000 have created great problems and difficulties and new growth strategies are required focusing on sustainable development, inclusive growth, social solidarity, state involvement (in education, infrastructures, technological development), normal functioning of markets but with limitations related to their failures. Markets cannot correct themselves, and financial deregulation led to a loss of $ 1,500 billion in the U.S. GDP. The political right wing claims to be the intellectual heir of Adam Smith, the father of political economy, who acknowledged market strength but also its limits. The U.S. needs a sustainable and high economic growth but also social justice and less income inequality.