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EU Foreign Energy Policy – The Vulnerable Part of Energy Union Strategy

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Abstract: Despite the liberalization and harmonization of energy laws started by the European Commission in the midst of 1990s, EU energy policy has remained traditionally a national problem rather than a common one. European energy sector remains fragmented, not only because of the technical complexity of energy markets and geography of Europe, but also due to lack of political initiative at national level to remove obstacles in the way of integration of national markets into a single market. Despite the technical difficulties associated with the creation and management of large energy markets, industry experts believe that one can find further integration solutions for regional convergence and overall price. Lack of premises in this area made that major decisions of some countries facing the same challenge in this field lead to a further fragmentation of the market, which lead to the national supremacy over the Community level, at least for this stage. One of the most vulnerable part of Energy union strategy is the absence of a common external energy policy; being directetly related to the concept of security of supply, in order to reach its main objectives of diversification of energy sources and security of transport routes it requires a better system response to the crisis determined by the unstable international market for fossil energy and a collective energy security approach at EU level.

Key words: *European energy union, energy security, external energy policy, source diversification, integrated energy market.*

JEL classification: Q40, Q42, Q43, Q48,Q4,Q01

1. Introduction

The Energy Union strategy has been conceived as an opportunity and a tool to accelerate the transition to a low carbon energy system in Europe. The project of the Energy Union is based on an original idea of Jacques Delors[1] and Jerzy Buzek[2] from 2010, and later has been developed upon a political proposal of Jacques Delors Institute, "Notre Europe".

According to Aleksandra Gawlikowska-Fyk, head of the energy division at the Polish Institute of International Affairs (PISM), the idea of the Energy Union was the result of a brainstorming session between Donald Tusk, former Polish prime-minister and his then-European Affairs Minister, Piotr Serafin, after the European Council meeting in March 2014. She says that the Tusk proposal was "the voice of Central and Eastern Europe on security of supply". It was not meant "to substitute EU policy, but to supplement it with the long-underestimated energy security issue". (Beckman, 2015)

So, EU Energy union project emerged as a consequence of an objective reality: a long period of time, the concept of energy security could not acquire a real strategic and sustainable dimension because of the different interests of Member States, both internally and in their relations with third-party suppliers. The European Union cannot fully integrate its economy unless energy was part of that integration. Both the 2007

[1] Jacques Delors, three times president of the European Commission
[2] Jerzy Buzek, President of the European Parliament (2009-2012).

Lisbon Treaty and the Energy Union strategy emphasize that solidarity among EU member states is essential for the European Union to build a common, integrated, and internal energy market.

Energy Union has been designed as a strategy to guide EU energy and climate policy, not as a specific policy itself. In March 2015, the EU Council endorsed the European Commission's "Energy Union" strategy for a comprehensive climate and energy policy as the third of ten overall Commission priorities.(COM (2015)80)

After the Greek bailout strained the concept of a monetary union, the ongoing migration crisis weakened the concept of open internal borders, and the Brexit vote now shows that EU membership itself is fungible, the need for EU solidarity in the energy sector become more important than ever.

The idea is to tear down the physical and regulatory barriers to the free flow of electricity, oil and gas across the EU countries. Something that in the U.S., but not in the EU, has already been achieved. "Energy is the missing piece not only of the EU's internal market but also of the whole European integration," said Jerzy Buzek, former Polish prime minister, now an MEP who chairs the European Parliament's industry and energy committee.

Getting these objectives isn't going to be easy. As the broad and relatively uncontroversial idea of an energy union become more concrete, rising frictions between countries and interest groups have developed.

2. The key dimensions of Energy Union

The EU Energy Union project is based on five pillars (COM (2015)80):

a. Ensuring the **security of supply** sources for every EU country, because European Union imports 53% of its energy (all sectors combined), leaving it with a high bill despite current low oil prices. „Until the Ukraine crisis, the EU treated superficially the common European energy security issue – with the purpose to protect and take on challenges - even if formally multiple binding documents were developed in this regard. The failure of the common foreign policy, especially in the neighborhood of EU Eastern border, which has radicalized the conflict with Russia until it resorted to annexations, is not likely to support a common energy policy at least in the medium term, simply because of the energy dependence of many EU countries on third-party suppliers outside the EU –an issue involving important security concerns".(Papatulica,2015)

b. Achieving a **fully integrated internal market**, by improving the flow of electricity and natural gas throughout Europe and promoting healthy competition among energy suppliers and empowering consumers to choose their provider freely;

c.Assuring an **improved energy efficiency**: a lower energy consumption will not only reduce pollution, but also the EU demand for energy imports.

d. **Decarbonising the economy** by meeting the target of **emissions reduction** by 40% until 2030, compared to levels from 1990. To reach this level, the EU aims to reform the system of emissions trading, the main tool to combat global climate. The aim is to raise the price of carbon permits that societies should hold to pollute.

e. Putting a growing accent on **research and technological innovation** to support advances in low-carbon technologies and renewing energy infrastructure.

3. Contradictions between Community and National interests

As I have already mentioned, the contradictions between Community interests and the national ones are feeded by the emergence of inevitable disagreements betrween Member States, as regards the objectives of a common energy policy. A lot of questions and reasons arise in this view:

-Many are asking why it is necessary to invest in new LNG terminals given that the world market is now flooded with a surplus of gas and Russian gas is cheaper than liquefied gas supplied to EU from more remote countries? (Gurzu,2015)

-What sense does for EU to seek to conclude contracts for gas import from Turkmenistan, Azerbaijan, etc., in a period when it should act to reduce the share of fossil fuels in primary energy mix?

- Spain is well equipped with terminals that can receive large quantities of LNG, but does not have sufficient interconnections with France to deliver gas (after being re-gasified) to other countries. Therefore French and Spanish companies have to be involved in the construction of a gas pipeline in order to allow LNG to cross the rest of Europe.

- Would European Commission be allowed to check out long term gas import contracts of each member country before concluding them? Central Europe countries, mainly Poland, sustain such a measure while

Germany does not want that trade secrets of its companies with Russian partner, Gazprom, to be disclosed. In fact, Germany intends to preserve a preferential relationship with Russia;

- Eastern Europeans do not agree with the EU's desire to boost renewable energies. Green energy does not create many local jobs as they are found primarily in countries such as Germany or Denmark, who are owning also the most important companies in this field and the most advanced technologies; (Gurzu, 2015)

- Market integration seems to be politically agreed by some governments, particularly in those countries with relatively cheap energy sources. But in a market where prices are determined by marginal technology, integration of local energy markets could lead to a price rise in countries with the lowest marginal costs of technology;

-Even if the result of the Energy Union is more and better energy supply, the unequal distribution of gains may deter governments to consider further integration process. This could be the case in France, where full integration with neighboring countries could lead to an increase in electricity prices, because all technologies for electricity production have incremental costs higher than those based on nuclear power, which is prevalent in France.

- Some of the current measures to combat climate change, such as implementation of policies to support renewable energies have a national character and could contribute to a deeper fragmentation of energy markets. For example, subsidies for more renewable energy in a given country could increase electricity costs and could lead to different prices from one country to another, with negative implications for competitiveness and competition.

- Investment decisions are distorted by the existence of different mechanisms to support renewable energies and different systems for emission permits allocation within the European permits trading.

All considerations described before are causing numerous doubts as to whether the Energy Union could eliminate differences between the approach at Community level and national options. This question is also emphasized by David Buchan, a researcher at the Institute of Energy Studies at Oxford who says "*everything depends on the governance and implementation of energy policy objectives in the Member States*" (an issue on which the Commission document does not provide any detail).(Buchan, 2015)

To assign more space for national policy areas, a mechanism for evaluating and monitoring national policy developments at EU level will be necessary. This could be further strengthened when assessments "inter pares" among Member States should be part of the process. In this view it is useful to take "lessons" from other EU policy areas, e.g. Economic and Monetary Union "European Semester" (Papatulica, Pop, 2015).

4. Key challenges and barriers to the development of an EU common energy policy

The fulfillment of Energy Union project is hampered by a series of barries/obstacles of legal, techical, economic and political nature (Dutton, 2015).

4.1 Legal barrier

The struggle for a “real European energy policy” has been going on for years, without real success. **One of the major obstacles** has been of legal nature: it is about the famous energy paragraph (article 194) in the **European Treaty**.(Lisbon Treaty, 2007) This stipulates that Union policy on energy “shall aim, in a spirit of solidarity between Member States, to ensure the functioning of the energy market, the security of energy supply in the Union, to promote energy efficiency and renewable energy, and the interconnection of energy networks”, but at the same time preserve the right of each Member State “to determine the conditions for exploiting and choose the mix of its energy resources and supply”. This last point has made it impossible so far to come to a truly European energy policy.

“This obstacle, beyond the importance of the objective of a common energy policy reveals, among other things, a limited conceptualization of the theme because of the inadequate approach at the current level of knowledge, especially with regard to technical aspects that must make functional an energy union . The pros and cons in this field contribute either to hide the difficulties of the road map for economic reasons, or are aiming at giving stronger motivations in the final decision over the community - national report in the energy policy. If we add the essential connotation of energy in the global economic model and its security dimension, then we should expect either to a very long journey, or to a paradigm shift. The second variant remained without purpose until now, and energy security is still a constant national concern and attribution” (Papatulica, Pop, 2015).

4.2 Political barriers

1.The energy mix -very different across the member countries- is determined by political decisions that give the energy security policy guidance of each country. Political decisions are based primarily on geographic factors, the availability of energy resources in their territory (for instance, coal in Germany and Poland, hydro energy in Nordic countries and Austria, biomass in Sweden and Finland, nuclear energy in France), access to third parties deliveries, often "forced" by geographical and technological constraints, and determined by geopolitical and geostrategic issues (Papatulica, Pop, 2015).

2. Market integration is not politically agreed by all governments, especially in countries that have relatively cheap energy sources.

3. The external energy policy is the most vulnerable point of EU energy policy. European Commission has practically delayed an initial proposal to establish a common system for gas import, as some countries in EU regards it as anticompetitive.

4. Another factor is the position of political parties and environmental ecologist associations who are concerned about the emphasis put on fossil fuels, despite the rhetoric on "decarburizing" the economy and promoting clean energy at EU and global level.(Papatulica, 2015)

4.3 Economic and technical barriers

1. Political barriers imply also economic connotations under the impact of lobbying actors from national markets, often transnational companies with greater financial potential. Protection of indigenous cheap energy, promotion of national "champions" (i.e. national companies), bilateral inter-governmental agreements to ensure the security of domestic supply and national particularities of the implementation of some of the policies on climate change are only some factors that will keep the fragmentation of the European energy market (Andoura,Vinois, 2015).

2. The lack of convergence of energy prices across the member countries is another important barrier to a common market for energy. Only a common price for energy would indicate the existence of a common energy market. Moreover there are no significant signs of convergence of prices, showing limited arbitrage opportunities between different markets due to lack of interconnections.

3. The technical complexity of the operation and management of energy networks had limited market development. This explains some trends inherent in the energy markets - mainly in the markets for electricity and gas - towards a regional fragmentation that has become increasingly inflexible under the influence of technology, different culture of transmission system operators, reliability of technical and economic interconnections, infrastructure development on large distances etc. Technically, there is not a single European grid and there are few interconnectors to bring power or gas from where it is generated to where it is needed.

4. The structure of energy supply (energy mix), national or the EU average, comes to reinforce the rigidity of approach towards a common energy policy, considerations of technical options and especially economics of conversion needs and interconnection being also serious obstacles in this transitional stage, presumably successful towards an Energy Union. At EU level, energy supply consists of 60% oil and gas, 20% coal, 14% nuclear and 6% hydro, and other renewable energies. Energy mix, however, varies substantially between EU countries. For example, 40% of France's energy is provided by nuclear power, while the gas is holding only 15% of primary energy consumption (Andoura, Vinois, 2015).

5. External energy policy- the vulnerable part of the Energy Union

We arrived now at the most vulnerable part of the Energy Union project, extremely important and also very controversial - the **common external energy policy.** The problem of "external energy policy" includes diversification of energy sources and security of transport routes and requires a better system response to the crisis determined by the unstable international market for fossil energy.

Energy policy is a central point of EU foreign policy. Energy is a supranational archetypal challenge for Europe, characterized by the power of international market forces, divergent interests and priorities between Member States, with sometimes contradictory and conflicting objectives of energy policy and physical infrastructure constraints. Energy is at the same time the source of many disputes that have hampered the EU attempts to build up strategic relations with its neighbors and strategic energy suppliers - notably Russia. Moreover, concern over Russia's actions in Ukraine was the catalyst of Energy Union project, which started with the aim to reduce dependence on Russia and undermine its pressures on Europe. Not only Russian revisionism was a direct threat to many countries in Eastern and Central Europe, but also the effects of social and political instability in Syria, Iraq or Libya, which continues to be felt throughout Europe, through

successive waves of refugees and immigrants, associated also with terrorist activities and political and social uncertainty. (Andoura, Vinois, 2015),

The Community energy security policy is still the source of frictions between Member States because some of them are unwilling to transfer the management of energy security to EU level and often prefer to engage themselves in independent energy agreements. Faced with these restrictions, the European Commission tried to promote the idea of a coherent position in relation to non-EU countries exporting energy to Europe. According to the Commission's view, such an approach would enhance the collective ability of Member States to address the risks of disruption of energy supplies from key suppliers. However, many times the energy diplomacy at EU level was fragmented and did not give satisfaction to all Member States.

The most controversial issue is linked to the very "key" this new project that of ensuring a common mechanism by which the Commission can establish control over gas import contracts from Gazprom, Russia."Europe should confront Russia's monopolistic position with a single European body charged with buying its gas"(Sefcovic, 2015).

But EU Member Countries have not yet reached a consensus on the establishment of a unified import system for natural gas, because of important differences between the Western and the Eastern European countries, the last ones being disadvantaged in concluding fair gas import contracts with Russia. Eastern Europe countries still depends largely on Russian gas: some pay more, others less, but overall their negotiating position in relation to Russia is quite poor. In Western Europe, free market principles are much better represented, these countries enjoying greater flexibility in terms of gas purchases. The aim of the EU is to merge the interests of all Member States in a unique bargaining, which could provide more favorable contracts with Russia, set mainly by indexation to the spot prices in the international trading centers, not by indexation to the crude oil prices.

Such a solution carries some drawbacks, the states of Western Europe being concerned that a unified acquisition "policy" constitutes an infringement of European competition law. On the other hand, hubs in Eastern Europe don't have sufficient liquidity for new investments in reception and storage infrastructure.

The issues of Energy Union and energy security were recently addressed in the strategic review -carried out by the European External Action Service- of the "Global Strategy of the EU Common Foreign and Security" that the High Representative, Federica Mogherini presented at the European Council of June 2016.(Mogherini, 2016). In this document, the Energy Union is considered a key framework "to address energy fragmented markets by coordinating energy policies and new investment in critical infrastructure." The Action Plan proposes extended cooperation in the field of energy, particularly in the gas field, with Central Asia, Ukraine and other European countries from EU neighborhood, as well as with countries exporting liquefied natural gas (LNG) to EU.

It also takes into consideration new ways to ensure coherence between EU energy policy and the objectives of climate and trade policy, namely promoting business opportunities for energy-efficient low-carbon technologies. In addition, the Action Plan sets a target to improve global energy architecture and multilateral initiatives, including the G7, G20 and the International Energy Agency (IEA) objectives of sustainable development. The Foreign Affairs Council of the EU called for specific proposals for EU common messages on energy diplomacy. This would involve enhanced coordination with the European Investment Bank (EIB) and European Bank for Reconstruction and Development (EBRD) on financing energy infrastructure in the Member States and European countries from the neighborhood, as well as through other funds at EU level.

Maroš Šefčovič, Commission Vice-President, responsible for Energy Union admitted that a system of collective acquisition of gas should be voluntary. (Sefcovic, 2015) Instead, a lot of governments in the EU encourage the development of new gas routes (including North routes, such as North Stream 2 and Southern routes through the Mediterranean Sea). They are intended to facilitate the flows of Russian gas bypassing transit countries such as Ukraine and finally to establish new connections between producing countries of Central Asia and Europe. Although new pipeline routes could reduce exposure to risks from EU transit countries, they would not immediately change European dependence on Russia. On the contrary they will increase it. (Gotev, 2016)

They could eventually connect Europe to new supply countries like Iran or Algeria (Italy plans a new pipeline to bring natural gas from Algeria to Sardinia), but this will take time.

There is also a risk that diversification strategies will create additional challenges in energy security, given the risk of significant political instability in the new supplier countries. For example, in 2015 there were more attacks on gas pipelines in Turkey. In Algeria, the decrease in reserves, increasing domestic consumption of gas and demonstrations against hydraulic fracturing could discourage future investment. Tunisia has some

investment in clean energy from the EU. However, with increasing terrorist activity in the country, the EU is now focusing on instability in Tunisia rather than on the country's potential as an energy supplier.

Changes in the global oil market could mean that Saudi Arabia no longer plays the role of swing producer for balancing the supply-demand ratio as in previous years. This pushes the oil to a more conventional cycle, similar to that of an usual merchandise, implying greater volatility. The crude oil price fall in more than 2 years was very important, prompting oil companies to reduce investment plans and seek opportunities for consolidation (e.g. the merger between Royal Dutch Shell and BG Group).

An issue that also affects the oil market outlook is that oil shale production in the United States can be adjusted relatively quickly in response to changes in demand due to investment-production cycle much shorter than that for conventional crude oil.

On medium and long term, new technologies such as electric vehicles could lead to a structural change in energy demand by reducing hydrocarbons share. This could have major implications for oil producers.

There is also a risk that the focus on increasing the security of gas supply would marginalize other options for managing energy security. It should be noted that within the EU there are limits of politically and physically available capital and current policy that emphasizes on "gas as a fuel of first choice" - especially in terms of support from funding sources at EU level - make legitimate concern that this could undermine alternative opportunities. It is therefore important that the debate on the future of Energy Union considers all energy options. Policymakers will need to prioritize each option based on its contribution to the objectives of security, competitiveness and climate. (Simón, 2016).

Increasing US energy independence could reshape its foreign policy in the Middle East. The new US president will have to confront a region where US interests are changing. This could lead to changes in relationships with its key allies such as Saudi Arabia, a perspective that would be complicated even further by Iran's return on the world oil market.

So far, EU has largely been willing to let to the US to assume the responsibility for the security of crude oil supply in the Middle East and beyond, a reason why it didn't developed its own distinct strategy. But given the fact that US foreign policy may change, it will become increasingly a priority for the EU to consider developing its own strategy for oil security.

6. Conditions for achieving the main goals of Energy Union

Union Energy will provide a viable European project, with two conditions (Sefcovic, 2016):

a) To be tangible (speeches and statements not followed by any further action will not be sufficient to address the concerns of citizens and achieving a common political project in energy);

b) To be inclusive and interactive (the energy transition will only be successful if it is based on all stakeholders working together. In addition to the players already well established in the European system, citizens and consumers, cities and rural areas, networks, regions, innovators, multipliers, new coalitions and civil society as a whole must be involved in the future European governance of the Energy Union in a modern and intelligent manner).

In order to achieve the Energy Union, the European energy policy and legislation must be reviewed and completed within a relatively short time. Formulating a common EU energy policy is a pressing challenge in terms of perceiving it as a threat to national sovereignty. Indeed, the formulation is considered by EU Member States as a loss of national competence in favor of supranational level. Therefore, and for the time being the energy integration seems to remain rather an intergovernmental matter in the absence of a collective EU position on a common external energy policy that would transcend national interests.

European energy policy review is a unique opportunity to build a new European energy regulatory space, stronger and more coherent, governed by common institutions capable of providing effective solutions based on democratic legitimacy. The next European institutional cycle should enable the adoption and implementation of binding instruments to reflect new realities and needs of EU energy policy. In this respect, one man will be decisive in how the Energy Union will be developed in the coming months. That's not Maros Šefčovič, but Frans Timmermans, the First Vice-President of the new Commission, in charge of "better regulation". "*His attitude will decide whether the Energy Union will have any substance to it or not*."

Šefcovic, despite the challenges his Energy Union plans face, is confident about the progress being made: " *A the end of this year we will have all the legislative pieces of the puzzle on the table*." According to Sefcovic, the key themes of the package "*will include an increased stimulus for energy efficiency, review of legislation to achieve a fully integrated energy market, revision of renewable energy directive to increase the share of renewable energy consumed to at least 27 per cent by 2030, review of governance structures,*

facilitating the harmonisation and a comprehensive strategy for research, innovation and competitiveness."(Sefcovic, 2016).

In January 2014, the Commission first proposed the need for a new energy governance framework, as part of a compromise between Member States on the binding nature of the 2030 renewable energy target. Despite nearly two years of discussion some the key questions remain unanswered related to the structure of governance and who is involved in it: a) Member States and European institutions to operate on a terrain defined by hierarchy, in variable dynamics akin to flexible integration, or as stakeholders, upon a level-playing field?;b) who are the key actors (key DGs, Council and Parliamentary Committees, Member States, private sector players, and regulatory actors); c) what is the precise methodology of energy governance?

7. What's new in the Energy Union after almost two years of existence?

The positive issue is that there seems to be a stronger "political will" behind the project.

"The energy union has great potential – it could be a grand Marshall Plan for the EU," declared Sandrine Dixson-Declève, director of the Prince of Wales's Corporate Leaders Group, which brings together businesses urging action on climate change. "It could unlock investment across Europe, and could bring lower emissions and greater efficiency."(Andoura,Vinois 2015)

Practically, Energy Union prospects are promising potential beneficies (Beckman, 2015), such as:

- Creating an efficient EU in terms of energy. The link between economic growth and increasing energy consumption must be stopped;

- Ensuring the free movement of energy. Creating a more integrated single market, interconnected and competitive, which can be achieved through the full implementation of existing and reviewed EU legislation and developing a plan to allow energy to flow freely from one country to another;

- Increasing security and affordability of energy supply to households and business sector. Many users are unaware of the opportunities that can be provided by a liberalized energy market, based on the benefits brought by competition;

- Strengthening Europe's leadership in energy technology and innovation. Without a major technological shift, the EU will fail to fulfill the great ambitions set for 2050, to renounce to the use of fossil fuels for electricity and transport. Strategic Energy Technology Plan and the six European Industrial Initiatives (wind, solar, bio-energy, smart grids, nuclear fission and carbon dioxide capture and storage) are aiming at boosting the necessary innovation.

-Ensuring stronger international partnerships. Many of the challenges facing the EU - climate change, access to oil and gas, technology development, energy efficiency - are common to other countries. Working together with a strong EU contribution will make easier finding the correct answers.

In fact, it was considered that the political instability surrounding the EU - given that most of the EU's energy imports come from this area- is the determining factor which led to the Energy Union project. This involves a risk of excessive securitization of the project and the objectives of environment and climate could be marginalized in favor of prioritizing the exploitation of fossil fuels. Limited funds and lack of ambition of the EU targets on renewable energy and energy efficiency also raises other obstacles. Moreover, the lack of coordination between national energy mix and energy policies could hinder the integration of national energy markets.

8. Conclusions

1. There will be no single answer to the challenges and objectives of competitiveness, sustainability, security of supply and energy efficiency in the EU. In this context, the future engines of Energy Union for the energy transition towards a "cleaner" economy should be: sustainable economic development; solidarity and inclusion; a strategic, global and adaptive capacity.

2. In the current year the Commission will come forward with most of its legislative proposals, which then will be submitted to the European Parliament and national countries. It will take about two years for legislators and government officials to decide on the final shape of the laws. It will be a review of the laws overseeing the security of electricity and gas supplies, the strategy for liquefied natural gas, legislative proposals for a new electricity market design, a revised renewable energy directive for 2030, a review of the energy efficiency directive and a new energy governance.

3.The different degrees of import dependency and the diversity of imports origin, not without political overtones, far from being harmonized, make difficult identifying common interests among EU countries for their external energy policies that could be brought into "one common basket ".

4. To overcome the accumulated energy security dilemma of choosing between the consumer interests and supplier interests, Member States must adopt a unified philosophy, a collective approach of the external energy policy -that is to treat suspending or interrupting the energy supply of a State as a matter of collective solidarity. It requires therefore a collective energy security agreement. A new European security strategy of energy supply will be most effective if it is based on a solid relationship not only between Member States but also between EU and third countries involved, with the best geostrategic positions.

5. EU and its Member States have decided to support measures for a more coherent energy foreign policy, taking into account geopolitical developments. In July 2015, the EU Council adopted conclusions on energy diplomacy and an action plan in the field. They indicate the need to strengthen bilateral and multilateral dialogues and to increase the use of external policy instruments to diversify and promote energy markets based on transparent and sustainable rules.

6. The Commission took act of the plans of companies to build new pipelines connecting Russia and Germany via the Baltic Sea. If these plans will be implemented, pipelines North Stream 3 and 4 would not provide access to a new source of supply, on the contrary will enhance the dependency on Russia These pipes will fully comply with EU legislation and EU Energy Security Strategy (COM (2014)330;

7. In his paper "European Strategy in the context of geopolitical interdependences", Luis Simón (Simón,2016), Director of the Brussels' Office of Institute Royal Elcano believes that EU should be careful to avoid giving priority to neighboring states at the expense of others, offering two underlying reasons for this. The first is geographical contiguity with the rest of Europe and the great Eurasian bloc. The second relates to the fact that economic globalization and advances in military technology have led to greater geopolitical and strategic interconnectivity worldwide. This suggests that Asian powers may have a significant impact on the geostrategic balance in the Persian Gulf and, by extension, to areas in the immediate European neighborhood, such as the Levant and even Eastern Mediterranean Sea area;

8. Geopolitical challenges will not disappear after 2016 and will require implementation of an effective EU "energy diplomacy" and a better communication with third countries. It will be particularly important to strengthen regional cooperation between Member States to prevent and mitigate the shocks of supply and to ensure solidarity in case of emergencies. Reactivation, in 2015, of "East-West conflict" became evident. (Tomlinson, Raines, 2016). The project "South Stream" was canceled due to EU pressure on states that have signed bilateral agreements with Russia in violation of European law. The project of an hypothetical corridor called "Eastern Ring", international blackmail on loans to Greece and reactivation of other EU-US projects of the '90s (TAP/TANAP) seem to dissuade Gazprom and the Russian government to start new major projects.

9. For European Commission, increasing transparency and ensuring that intergovernmental energy agreements are in accordance to relevant EU legislation and policies represent essential objectives in drawing a new proposal for revising the existing Decisions on intergovernmental agreements.

References

[1] Andoura,S, Vinois, J.A, (2015), *Foreign Policy An external energy Strategy for the EU* , Series New Decision makers-New Challenges, Notre Europe Institute Jacques Delors, January 2015

[2] Beckman, K, (2015), *The Energy Union it's now or never for a European energy policy,* Energypost.eu, February 2015;

[3] Dickel, R., E. Hassanzadeh, J. Henderson, A. Honoré, L. El-Katiri, S. Pirani, H. Rogers, J. Stern, and K. Yafimava.(2014) *Reducing European Dependence on Russian Gas: Distinguishing Natural Gas Security from Geopolitics*, OIES Paper 92. Oxford: Oxford Institute for Energy Studies;

[4] Dutton, Joseph,2015, *There are still serious obstacles to overcome before the benefits of an EU Energy Union can be realised*, London School of Economics and Political Science, 11 aprilie 2015

[5] Gotev, G, (2016). *Sefcovic:Nord Stream is not in conformity with EU's goals,* 11 febr.2016, EurActiv;

[6] Gurzu, A (2015), *Europe's energy (dis)union* , 12 dec.2015, Politico;

[7] Harvey, F, 2015, *EU's energy union must overcome serious obstacles,* The Guardian, 25 febr.2015;

[8] Mogherini, F, (2016), *Strategia globală a UE privind politica externă și de securitate",* Consiliul European, iunie 2016.

[9] Papatulica, M, (2015), *Consideraţii privind proiectul de uniune energetică a Uniunii Europene şi modalităţile de implementare a acestuia,* Colectia Sinteze IEM, mai 2015;
[10]Papatulică,M, Pop,N, (2015),*Uniune energetică pentru securitate energetică europeană,* Economistul, nr.31-32, partea a II-a, 14-20 septembrie 2015;
[11]Simón, L, (2016), *European Strategy in times of geopolitical interdependence*,Real Instituto Elcano, 20 September 2016, Strategic and International Studies, iniţial apărut în „Europe Defence Matters, nr.11/2016;
[12]Šefčovič, M, (2014), *Šefčovič tells MEPs he has a vision for EU's Energy Union,* 20 oct.2014 Euractiv.com, actualizat 26 febr.2015;
[13]Sefcovic, M,(2016) Vice-President ŠSefčovič: Energy Union's 2016 Year of delivery Speech by Vice-President Šefčovič in charge of Energy Union, *at the Plenary session of the Conference of Parliamentary Committees for Union Affairs of Parliaments of the EU (COSAC), in Bratislava, 15 november 2016*
[14]Tomlinson, S, Raines, T, (2016), *Europe's Energy Union Foreign Policy Implications for Energy Security, Climate and Competitiveness*, Europe Programme/Energy, Environment and Resources , Research Paper, March 2016
[15]The Energy Union Communication (2016),"A Framework Strategy for a Resilient Energy *Union* adopted Council Conclusions on EU *Energy Diplomacy*, which included an EU *Energy Diplomacy Action* Plan, 03/05/2016

The Top Priorities of the EU Employment Policies[3]

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Abstract: The article examines the development prospects of the labour market taking into consideration the top three priorities of the EU employment policies. The study is based on a multidisciplinary methodology which involves the empirical analysis of economic phenomena together with the study of public policy. After being analyzed the main priorities, one by one, the conclusions were formulated. The main finding of our research relates to the fact that, in order to cope with the impact of the crisis on employment and to improve prospects for the labour community in the long term, it is essential that all Member States develop monitoring, evaluation and anticipation of qualifications and compatibility between supply and demand on the labour market.

Key-Words: supply, demand, labour market, employment.

JEL Classifications: D6, I38, P51.

1. Introduction

The integrated guidelines for the economic and employment policies of the member states reflect the current economic policy priorities of the Junker Plan[4], which are based on investment, structural reform and fiscal responsibility while focusing on four key areas:

- *The stimulation of the labour demand* especially by creating new jobs, by providing incentives for labour taxation and subsidy for wages payment ;
- *The growth of the labour supply and skills diversification* by eliminating structural weaknesses in education and training, and combating youth unemployment and long-term unemployment;
- *A better functioning labour market*, with a particular emphasis on reducing the segmentation of the labour market through flexicurity policies by both flexibility and security.
- *Combating poverty* by facilitating access to the labour market and promoting equality among disadvantaged groups.

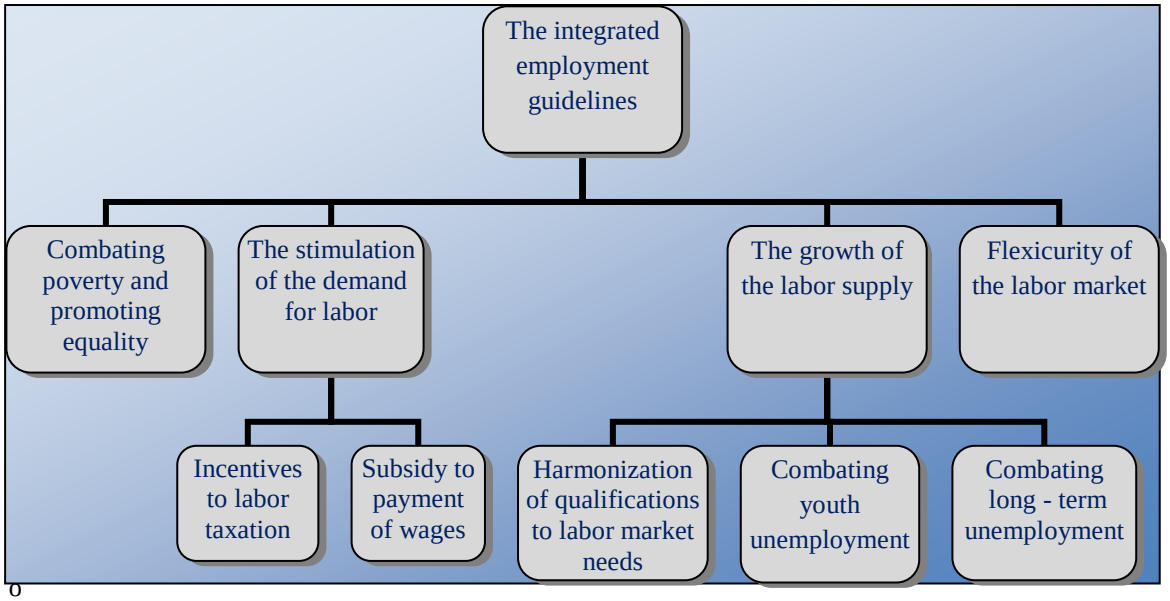
The employment rate in the EU is now above the 2008 level (in 2015 the employment rate in the EU reached 70.1%), however, the employment rate is still below the 2020 target (75% of the 20-64 year-olds to be employed) and there are major differences between the Member States.

Currently the European Union is facing a number of economic and social problems, which are caused primarily by imbalances in the labour market, namely: increasing long-term unemployment, high unemployment among young people and not the least the mismatches between skills and available jobs. Therefore, solving these complex issues by promoting and implementing active employment policy is a current EU priority.

[3] The article is based on author research for the IWE's programe with the theme: "A proposal for a strategic vision of the European Union" coordinated by PhD. Napoleon Pop, and PhD.Petre Prisecaru; developed under the strategic areas and directions included in the "Strategy of scientific research of the Romanian Academy, between 2014-2020".

[4] COM(2016) 581 final. Strengthening European Investments for jobs and growth: Towards a second phase of the European Fund for Strategic Investments and a new European External Investment Plan, http://eur-lex.europa.eu/legal-content/RO/TXT/HTML/?uri=CELEX:52016DC0581&from=EN

Figure 1: The new integrated employment guidelines



Source: Author based on EU data.

2. The active employment policies for reducing the long-term unemployment

The European Commission (2016) showed that long-term unemployment is a major concern of the governments of the Member States, because of the its negative influences on the financial and social aspects of private life, on the social cohesion and, ultimately, on the economic growth.

In the EU, the average long-term unemployment was approximately 4.0% from 2002 to 2016, reaching a peak of 5.3% in the first quarter of 2014, compared with a record low of 2.4% in the third quarter of 2008. According to the latest data provided by Eurostat, in the EU area, the long-term unemployment fell to 4.2% in the first quarter of 2016, from 4.3% in the fourth quarter of 2015.

The prevalence of this alarming phenomenon is the best evidenced by the high percentage of long-term unemployed to total unemployed people. According to the latest Eurostat data, the long-term unemployment as a percentage of total unemployment was 46.4% across the EU-28 and 49.4% in the Eurozone-18, in the first quarter of 2016. The highest level of long-term unemployment as a percentage of total unemployment was recorded namely in Greece, 72.2%, while the opposite was Sweden, with 18% in the same period.

Duell, Thuram, and Vetter (2016) propose a series of *active measures* to reduce long-term unemployment, which is adapted to the specific characteristics of the labour market in each Member State. Among these are the following four main categories:

1. *The development of active, coherent and comprehensive employment policies*
   - ❖ It is necessary to develop strategies for active employment for those who are not looking for any job, but want to work in conditions ensuring adequate jobs according to their level of training. In this respect, it is required to organize efficient employment services through early identification of the barriers to employment, which are faced by the people looking for a job. The profiling and the classification of long-term unemployed people are the first steps in establishing the services and programs required to find suitable jobs.
2. *The integration of the active employment policies in a mix of economic and social policies*
   - ❖ In order to combat the long-term unemployment and its negative effects on society must be involved different policies, namely: the social policies of inclusion and combating discrimination, the structural policies, the regional policies and, not the least, the education policies.
   - ❖ The countries from Southern and Eastern Europe should focus on promoting industries with high added value, in order to create more employment opportunities and better-paid jobs.
3. *Investing in continuing education programs*

- ❖ At all levels (local, national and EU) should be a joint commitment to reduce inequalities in the labour market and to stimulate investment in training programs.
- ❖ By re-qualification programs, the job applicants must be supported to adapt their professional skills to the labour market demand, namely to the employers requirements. These policies can play an important role in adapting the skills supply to the demand, particularly in countries, which are in the process of sectoral restructuring. Although the continuing education programs are expensive, these measures may lead to social cost savings on the long-term. Strengthening the links between measures of training and experience may increase the effectiveness of active employment policies.

4. *Providing a wide range of measures and services targeted to vulnerable groups*

- ❖ In the context of high unemployment, the financial incentives (tax breaks or wage subsidies) can promote the employment of those who have been unemployed for 12 months or those from disadvantaged groups, especially youth, and may have a positive impact on employment growth and unemployment diminuation. However, once the unemployment rate fell enough, the use of these facilities should be targeted and limited to the most disadvantaged and vulnerable groups.

Stiglitz (2013), which has quoted the former IMF Managing Director Dominique Strauss-Kann, has stressed that "ultimately employment and equity are the building blocks of economic stability and properity, of political stability and peace." According to Stiglitz (2013), "the most important influencing welfare policy, with important consequences for the distribution is to maintain full level of employment".

3. The social policies for the youth employment growth

The strategy "Europe 2020" is based on a *smart growth* by improving the performance of the education system, promoting innovation and use of digital technology, but also on an *inclusive growth* by generating more better paid jobs and by integrating the excluded people. By dint of increasing employment among young people, the Member States can ensure the smart and the inclusive growth in the same time.

The EU-28 unemployment rate for persons with ages between 15 to 24 years old felt significantly in the 2005-2007 period, reaching a low of 15.2% in the first quarter of 2008. Since the second quarter of 2008, this indicator showed an upward trend, reaching a maximum of 23.8% in the first quarter of 2013, and then went down to 21.2% at end 2014 and to 19.8% in December 2015.

In August 2016, a total of 4.199 million young persons (under 25) were unemployed in the EU-28, of which 2.927 milioane people were in the Eurozone. In the same month, the youth unemployment rate was 18.6% in the EU-28 and 20.7% in the Eurozone, compared with 20.1% and respectively 22.3% in August 2015. In terms of unemployment between people aged under 25, there were recorded significant differences between the Member States: the lowest rate was observed in Germany (6.9%) and the highest in Greece (47.7% in June 2016), Spain (43.2%) and Italy (38.8%)(Eurostat, 2016).

However, the EU statistics not fully express the social dimension of unemployment among this group called NEET literature - "not in employment, education or training", who are not employees or involved in education or continuing training programs. In this respect, the NEET group presents a higher risk of social exclusion, which manifests itself in many of the Member States by their lower levels of trust, political interest and not least, social involvement in society (Eurofound, 2012).

The European Commission stressed that the solutions to youth employment must be established in the long term on a sustainable basis and that are not enough solutions in the short term, given that they need jobs offer of good quality and stable. The European Union experts recommend Member States to supporte the young people in finding a job and to ensure qualifications necessary for a successful integration of the labour market.

The EU Member States have endorsed the principle of the *Youth Guarantee* in April 2013 on a recommendation from the European Council. In order to develop and deliver a Youth Guarantee, the system requires close collboration between all actors on the labour market: public authorities, employment services, consultants on career guidance, educational and professional training, employers, trade unions etc.

The EU experts recommended that each EU country develop its own plan for implementing the guarantee for young people. For exemple, through a pilot project that runs in 4 Member States (Latvia, Finland, Portugal, and Romania) is supported the promotion of this initiative. The concept, the products and the effects of this pilot project were made available to all national, regional and local authorities wishing to use this

motion. In addition, the Mutual Learning Programme of the European Strategy for Employment facilitates the exchange of best practices between governments.

Although it is estimated that guarantee benefits for young people are much higher than the costs, the exact numbers for each EU member state are difficult to be determined. According to the International Labour Organisation, the total estimated cost of the guarantee schemes for young people is 21 billion per year, representing 0.22% of the GDP of the Euroarea (European Commission, 2016). The costs of the young people employment, either by offering jobs or by enrolling in some form of education or training, are estimated to a total of 153 billion annually (1.21% of the EU GDP), taking into account unrealized gains and tax exemptions, according to Eurofound Report on Youth Unemployment (European Commission, 2016). *But not all employment measures for young people are as costly, given that efficient activity in many cases does not require the use of high budgets, but only the strengthening of cooperation between the parties involved.*

Also, the European Commission specifically draws attention to the fact that the Member States should prioritize the employment measures for young in national budgets to avoid higher future costs of social exclusion. According to the Community experts, *employment is the most effective way to give people independence, financial security and a sense of belonging to society.*

4. Increasing employment through the qualifications diversification

The European Commission is aware that the fourth industrial revolution will transform the EU labour market and is considering a range of tools to stimulate employment and young workforce adaptation to the technological progress. The young people are the most affected by lack of qualifications that are adapted to the new technological developments, as the new created jobs require a highly skilled workforce. But, a lack of adequate training makes youth unemployment to be higher, even double than the general unemployment in the EU.

According to Nouriel Roubini (2015), the recent technological progress has three characteristics: they tend to be capital intensive (benefiting the holders of financial resources), suppose an intensive qualification (favoring those with high levels of experience) and stimulate a lower demand for labour ("labour-saving" - assuming reducing the number of unskilled jobs in the economy and low-skilled). He points out that the benefits of technology must be directed to a wider segment of the population, through *an education system capable of providing the necessary training for an economy based on knowledge, specific to the digital era.*

Andrea Nahles (2016), member of the German Bundestag and minister of Labour and Social Affairs, believes that the digital economy can create new employment opportunities through technology and new working arrangements, and it offers greater opportunities to increase participation in labour market of disadvantaged groups such as the disabled or those seeking a balance between work and family life. In her opinion, *the introduction of the auxiliary robots could reduce the work in routine activities, in unhealthy environments and in extremely demanding areas. Also, the digital economy can bring a competitive advantage for developed countries by lowering labour costs*. On the other hand, she draws attention to the fact that the digital economy requires a highly qualified workforce and an education system that keeps pace with technological developments. But to meet these new requirements, it needs more counseling opportunities and easier access to training programs, especially for low-skilled and older workers over 55 years (Nahles, 2016).

At the Annual Meeting in Davos World Economic Forum (WEF) on "Management of the fourth industrial revolution" that took place in late January 2016, it was released a report entitled *"Future jobs. Strategy on employment, skills and employment in the context of the fourth industrial revolution "*- referred as the WEF report - which presents information and data collected by the organization on many issues related to the future employment workforce. In the WEF report, were presented a number of recommendations for measures, both short and long term:

- *To use new tools and incentives for various forms of continuing education*. The governments and companies will have to work together to ensure that everyone has the time, the motivation and the means to seek opportunities for improvement.
- *To ensure access to specific "jobs of the future"*, it is necessary to enhance the collabouration and multi-sector industrial partnerships or public-private ones.
- *To reform the actual education systems*. The most actual education systems at medium and higher levels offer a curriculum that is unrelated to the realities and labour market developments and continue a number of practices of the twentieth century, hindering the development of qualifications in accordance with the requirements the fourth industrial revolution and create problems for the integration of graduates into the labour market.

At the 2016 World Economic Forum has emphasized the idea that the change of the business models will have a profound impact on employment in the coming years. The vast majority of the fundamentals of upgrading industries will have a significant impact on jobs, by creating new ones, by increasing labour productivity and by diversification of skills. In many industries and countries, the most popular majors did not exist a few years ago, and the pace of changes is projected to accelerate. According to the WEF report, about 65% of children now starting primary school, after graduation will have completely new jobs based on specialization still there today. Given that the labour market is evolving rapidly, it is difficult to predict its future structure and prepare the workforce for the future skill needs, that it is why will represent a big challenge to businesses, governments, and individuals. Therefore, it is necessary to seize the opportunities for creation of new jobs through technological advancement and mitigating long-term unemployment, due to the lack of adaptation of these changes. The previous waves of technological progress and demographic changes have led to increased prosperity, productivity and creating new jobs, and a good management of the results of its Fourth-Industrial Revolution can induce the same positive effects.

5. Conclusions

The long-term unemployment is a major problem for the European Union as a whole, and especially for some of its Member States (Greece, Italy, Slovakia, Bulgaria), being strongly influenced by the recent economic downturn. According to the experts in human resources, the long-term unemployment is one of the most destructive economic and social phenomena, with negative consequences for individuals, families, communities, and not least on society, while the long-term unemployed are part of the social group that are the most exposed to poverty and social exclusion.

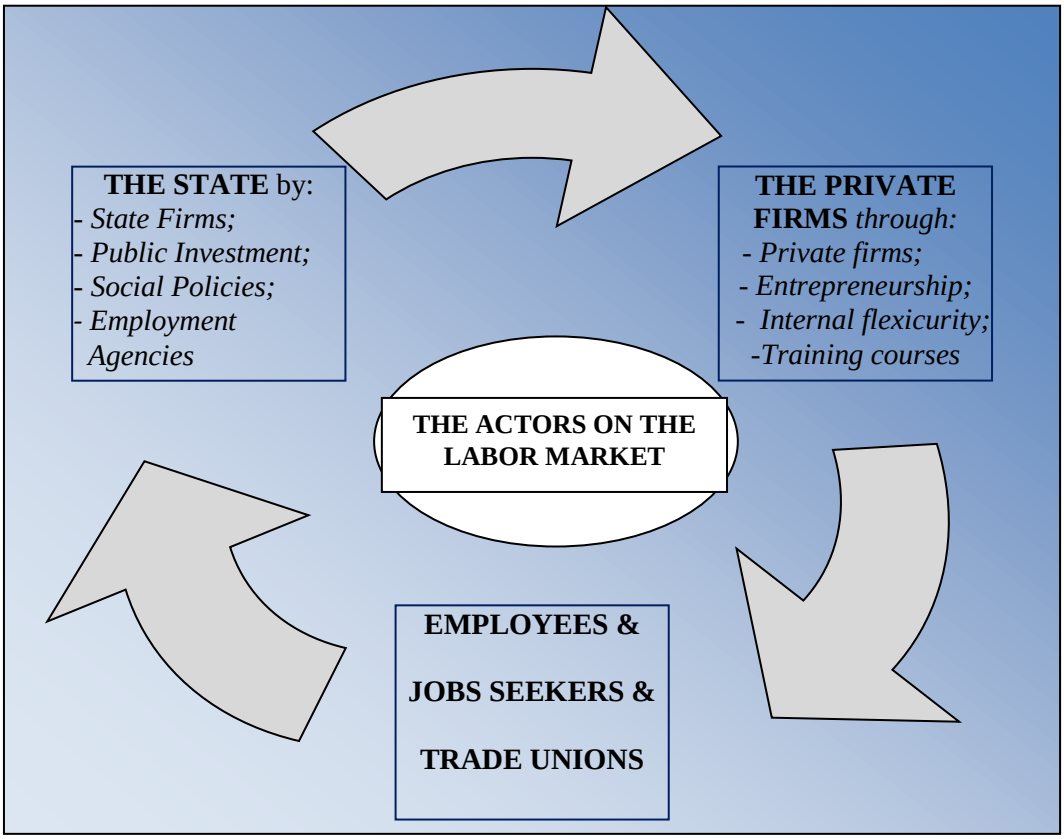
It is important to keep in mind that, when the active employment policies have produced positive results in the Member States, the development and implementation have been accompanied by a sustained series of measures related to legislative, institutional and human resource management.

The European Commission has stressed the need for increasing the early intervention and the introduction of reforms aimed to improve the education and training systems. The Member States are regarding the implementation of the "guarantee for young people" as an investment in the future and as a means of achieving the employment objectives of "Europe 2020".

As the labour markets become more specialized and require higher levels of skills, the governments and the companies are investing increasingly more in the future of education, both through training programs funded by the public sector and through apprenticeships subsidized by private firms. The multi-sectoral partnerships and collabouration between the public and private sectors are essential components of the viable solutions to safeguard jobs and to promote "the skills of the future", in terms of the Fourth Industrial Revolution.

The structure of the education system and the sectoral distribution of employment vary considerably from one Member State to another and from one region to another. The new member states have relatively high levels of training of human capital, but an bigger effort is needed decisively on their part to overcome the industrial base legacy and to launch new industries and services based on higher technology, generating higher value added and growth potential. *In order to cope with the negative impact of the future crisis on employment and growth and to improve the employment prospects in the long term, it is essential that all Member States perfect the monitoring, the evaluation, and the anticipation of qualifications and the compatibility between supply and demand on the labour market (See Figure 2).*

Figure 2: The proposed scheme for the employment policy flow



Source: Author based on the studied literature.

The success of future active employment policies in Romania as in other Central and Eastern European countries depend on decentralization and finding solutions locally and regionally, through their integration into regional development strategies. The main actors in the labour market: the state, the private sector, employees, those seeking of work and the unions will have to work together to find the best solutions profitable for both employees and employers, by ensuring flexicurity in the labour market (flexibility and security).The flexicurity requires a climate of trust and social dialogue between public authorities and social partners, in which all stakeholders take responsibility for changes to ensure efficient and equitable social policies, at the same time. Supplementary, the flexicurity implies a balance between rights and obligations of the main players on the labour market, requires the adaptation to the specific characteristics of the labour market and to technological progress in each Member State and does not involve a single labour market model.

References

[1] European Commission (2016a). COM(2016) 581 final. Strengthening European Investments for jobs and growth: Towards a second phase of the European Fund for Strategic Investments and a new European External Investment Plan. Disponibil la: http://eur-lex.europa.eu/legal-content/RO/TXT/HTML/?uri=CELEX:52016DC0581&from=EN

[2] European Commission (2016b). *Employment, Social Affairs and Inclusion*. Disponibil la: http://ec.europa.eu/social/home.jsp?langId=ro

[3] European Commission (2016c). *Unemployment statistics*, Update July. Disponibil la: http://ec.europa.eu/eurostat/statistics-explained/index.php/Unemployment_statistics

[4] European Commission (2015).*The Youth Guarantee First Successes The Youth Guarantee on the Ground,KE-04-15-325-EN-N*.Disponibil la:

file:///C:/Users/user/Downloads/The%20Youth%20Guarantee%20%20First%20Successes_final%20version2.1_EN.pdf

[5] European Commission (2010a*).* Recommendation for a Council Recommendation of 27.4.2010 on broad guidelines for the economic policies of the Member States and of the Union Part I of the Europe 2020 Integrated Guidelines, COM(2010) 193 final. Disponibil la: http://ec.europa.eu/eu2020/pdf/Brochure%20Integrated%20Guidelines

[6] European Commission (2010b*). An agenda for new skills and jobs: a European contribution towards full employment labour*. Strasbourg, COM (2010) 682 final.

[7] Duell, N.,Thurau, L.,Vetter, T. (2016). *Long-term Unemployment in the EU: Trends and Policies*. Bertelsmann Stiftung, Brussels.

[8] Eurostat (2016). *Long-term unemployment (12 months or more)***.** Disponibil la: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsq_upgal&lang=en

[9] Nahles, A. (2016).*Working conditions in the digital area, The Journal for a Progressive Economy, The Technological Revolution*. Disponibil la: http://www.progressiveeconomy.eu

[10] Roubini, N. (2015).*Will Technology Destroy Jobs?, Social Europe Journal Shaping the Digital Society*. Volume 9 • Issue 1 Autumn 2015. Disponibil la: http://www.socialeurope.eu

[11] Stiglitz, E.J (2013). *The Price of Inequality: How Today's Divided Society Endangers our Future.* Editura Publică, Bucureşti.

[12] Trading Economics (2016). *European Union Long Term Unemployment Rate*. Disponibil la: http://www.tradingeconomics.com/european-union/long-term-unemployment-rate

[13] World Economic Forum (2016). *The Future of Jobs Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*. January 2016. Disponibil la: http://www.weforum.org/reports?page=2

EMU after the Crisis: Key Challenges

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Abstract: After the financial crisis and the sovereign debt crisis and following some important reforms in fiscal policy accompanying also the start of banking union there is the need to complete EMU through convergence and social cohesion, more integration in financial sector, better fiscal governance and supervision and more cooperation between institutions. The 5 presidents Report mentions the principal steps necessary to complete the Economic Union and to support the Monetary Union. Single currency and Monetary Union are facing severe challenges now and in the next future due to serious financial difficulties in Southern Europe and troubles in the Italian and German banking sectors. The capital flight from Southern Europe into Northern Europe has imposed massive interventions of ECB. Italian Banks, especially Banca Monte dei Paschi, cannot be supported by state through bail out due to Single Resolution Mechanism of banking union. A great economist like Joseph Stiglitz suggested some important and useful measures for a proper functioning of single currency and Monetary Union.

Key Words: economic union, monetary union, single currency, financial union, banking union, fiscal union, convergence, crisis, debt, deficit, governance

JEL Classification: E 52, E 58, F 36, G01, H 30, H 62, H 63

1. Introduction

The global financial crisis which started in USA in 2007/2008 was followed by the euro area sovereign debt crisis which had a deep impact on EU's economic growth and macro-financial stability, the most affected country being Greece. Despite some important reforms in fiscal field, EMU seemed the most hit part of EU, due to the fragmentation of financial markets combined with the vicious circle between banks and sovereigns and different fiscal policies associated with macroeconomic imbalances and great policy mistakes and market failures. After the crisis, some important challenges confronted the EMU, like low potential growth, large macroeconomic imbalances in some MS, weak adjustment capacity, insufficient fiscal consolidation in good times and a supervisory capacity not keeping pace with financial integration (Robert Kuenzel and Eric Ruscher, 2013). To have a better coordination of policies and to deepen the economic integration by completing EMU, a banking union as a part of a larger financial union and a fiscal union are taken into consideration together with more political integration. Brexit shock and uncertainties in both banking sector and political spectrum may raise some questions regarding the future of monetary union and even of the EU. It is evident that financial stability must prevail in the face of price stability (targeting the inflation), vicious circle between banks and states should be broken, macroeconomic imbalances such as external imbalances, house price or credit developments have to be prevented and counteracted, a strong enforcement of SGP rules must be provided.

2. Report of the 5 presidents: Completing Europe's Economic and Monetary Union

It was a direct result of Euro Summit of October 2014 asking for a closer coordination of economic policies within EMU by developing mechanisms for this coordination, convergence and solidarity, and also for better economic governance. The report prepared by 5 presidents (EC, Euro Summit, Eurogroup, ECB, EP) reflects their opinions, exchange of ideas, intense discussions with MS and civil society, content of previous similar reports. A deeper EMU involves transparency, preserving the integrity of the Single Market and completing the four fundamental freedoms, strengthening the elements needed to boost economic union.

A. The Nature of a Deep, Genuine and Fair Economic and Monetary Union

There is no doubt that the financial and economic crisis led to the explosion of fiscal deficits and public debts in the euro area also affecting the project of the monetary union. Further steps are needed to complete EMU in order to achieve a balanced economic growth and price stability and also a competitive social market economy. Currently, Euro adoption is a political and economic project but for its full success is necessary for the MS to: a) to better prevent crises by means of a high quality governance at European and national level, sustainable fiscal and economic policies, and fair and efficient public administrations; b) to respond effectively to any economic shock by means of fiscal buffers and risk-sharing achieved through integrated financial and capital markets. Significant divergence across the euro area in fiscal policy creates fragility for the whole Union and progress is needed towards a genuine Economic Union, based on common structural features, towards a Financial Union, based on a Banking Union and a Capital Markets Union, insuring the integrity of euro and risk-sharing with the private sector, towards a Fiscal Union, meant to provide fiscal sustainability and fiscal stabilization, towards a Political Union, based on democratic accountability, legitimacy and institutional strengthening.

In order to build the four interrelated unions were designed short and long term measures organised in two consecutive stages: *Stage 1* between 1 July 2015 and 30 June 2017 (**deepening by doing**), the aim is to boost competitiveness and structural convergence, to complete the Financial Union, to achieve and maintain responsible fiscal policies at national and euro area level, and to enhance democratic accountability; *Stage 2* between 30 June 2017 and December 2025 **(completing EMU**), aiming at increasing the convergence process by using a set of commonly agreed benchmarks for convergence as an essential condition to participate in a shock absorption mechanism, *Stage 3 (Final)* at the latest by 2025, when a deep and genuine EMU will provide economic stability and social prosperity and will offer a positive example for non-euro states to join EMU.

B. Towards Economic Union - Convergence, Prosperity and Social Cohesion

Convergence between MS and convergence within European societies seem to be essential for a true Economic Union but they are difficult to attain with different economic policies although there is a common monetary policy. Presently, in the EU there is a monetary union but not a fiscal one as no large scale fiscal transfers between MS are made and the labour mobility is limited. Convergence may be achieved with high levels of growth and employment but also requires a deepening of the Single Market. It should be noted that sustainable convergence involves structural reforms meant to modernize the economies, to enhance the efficiency of labour and product markets while creating stronger public institutions. On short term *(Stage 1*) it is foreseen a convergence towards the best performance and practices in EU targeting a better governance and achieving resilient economic structures within Eurozone. On medium term (*Stage 2*) the convergence will be based on commonly agreed legal standards and after that a shock absorption mechanism will be set up.

Different pacts, as Euro Plus Pact, and EU law in the field may support the progress towards a union of convergence, growth and jobs, that should be implemented in *Stage 1* and is based on four pillars: the creation of a system of Competitiveness Authorities (CA) in euro area, a strengthened implementation of the Macroeconomic Imbalance Procedure, a greater focus on employment and social performance and on stronger coordination of economic policies within a revamped European Semester. A national body in charge of tracking performance and policies in the field of competitiveness was recommended for each MS of euro area. These bodies or entities will assess the dynamics of wages compared to labour productivity, progress made with economic reforms for enhancing the competitiveness, role played by the institutions and policies in supporting productive firms. Within this euro area system of CA, European Commission would coordinate the actions of national authorities on an annual basis and should then take into account the outcome of this coordination when it decides on steps under the European Semester, in particular for its Annual Growth Survey and for decisions to be taken under the Macroeconomic Imbalance Procedure (MIP), including the activation of the Excessive Imbalance Procedure. The Macroeconomic Imbalance Procedure (MIP), a part of the European Semester, represents the annual cycle of reporting and surveillance of EU and national economic policies and is a tool or a device to prevent and correct imbalances, for instance to prevent real estate bubbles, or to detect a current account deficit (an external one), or the loss of competitiveness, rising levels of private and public debt, and a lack of investment.

Labour markets and welfare systems need to function well, while the first ones should promote a high level of employment and be able to absorb shocks without generating excessive unemployment. Adequate education, an effective social protection system, reform of pension and health systems are also needed. A

deeper integration of national labour markets is required by facilitating geographic and professional mobility, including through better recognition of qualifications.

Steps have been taken to simplify and strengthen the European Semester: a greater focus was put on priority reforms, on accountability of MS for achieving their commitments, on better integrating the euro area and the national dimensions, on establishing a clear long-term vision.

On medium term (*Stage 2*) the convergence process involves adopting common standards focused primarily on labour markets, competitiveness, business environment and public administrations, as well as certain aspects of tax policy (e.g. corporate tax base). Country-Specific Recommendations and MIP may be used for monitoring the progress towards these standards. A deep scientific analysis is needed for adopting specific standards and indicators, as flexicurity - combining security and flexibility of working force on labour market.

C. Towards Financial Union - Integrated Finance for an Integrated Economy

An Economic Union must be fully sustained by a complete Financial Union they both are complementary and mutually reinforcing. A monetary union involves a common monetary policy but also an anti-crisis support on behalf of a banking union with a single bank supervision mechanism, a single bank resolution mechanism and a single deposit insurance system. The first two were implemented, the second only partially, but for completing the Financial Union one needs to launch a common deposit insurance scheme for Banking Union and the Capital Markets Union. But setting up the Single Resolution Fund and also a European Deposit Insurance Scheme (EDIS) implies some time and some financial efforts. Attention must be paid to potential new risks developing in the banking sector, including risks related to the shadow banking sector, and they have to be detected by existing structures like macro-prudential institutions, the European Systemic Risk Board (ESRB) and ECB, also it should be reviewed the treatment of bank exposures to sovereign debt, for example by setting large exposure limits. A Capital Markets Union will ensure more diversified sources of finance and will strengthen cross-border risk-sharing through deepening integration of bond and equity markets.

D. Towards Fiscal Union - an Integrated Framework for Sound and Integrated Fiscal Policies

Unsustainable fiscal policies may affect price stability in the Economic Union but may also harm financial stability by creating contagion between MS and financial fragmentation. National fiscal policies are important for having a sustainable public debt and effective fiscal automatic stabilisers for counteracting economic shocks. What happens at national level may affect the whole euro area. In order to resist to very severe crises it is necessary to create a euro area-wide fiscal stabilisation function in the longer term built on previous steps related to a significant degree of economic convergence, financial integration and further coordination and pooling of decision making on national budgets. The common EU fiscal governance framework should be reinforced after the improvements made following the crisis with the aim to prevent budgetary imbalances, to focus on debt developments and on better enforcement mechanisms. We now have an ample ex ante coordination of annual budgets of euro area MS and an enhancement of the surveillance for those experiencing financial difficulties, but MS must comply with stricter rules brought by the 'Six-Pack', the 'Two-Pack' and the Treaty on Stability, Coordination and Governance.

An advisory European Fiscal Board was suggested for coordinating and complementing the national fiscal councils that have been set up in the context of the EU Directive on budgetary frameworks. Establishing an automatic stabilisation mechanism at the euro area level would improve the cushioning of large macroeconomic shocks and make EMU overall more resilient to external shocks. The European Fund for Strategic Investments may support the stabilisation function and contribute to the development of specific projects. Stabilisation function must avoid permanent transfers between countries or transfers in one direction, it should not undermine the incentives for sound fiscal policy-making at the national level and the incentives to address national structural weaknesses; it should be consistent with the existing EU fiscal framework and with procedures for the coordination of economic policies; it should not be an instrument for crisis management replacing the European Stability Mechanism (ESM) but it must target the improvement of the overall economic resilience of EMU and individual euro area countries by preventing crises and future interventions by the European Stability Mechanism.

E. Democratic Accountability, Legitimacy and Institutional Strengthening

More dialogue, greater mutual trust and a stronger capacity to act collectively are needed at the level of European institutions. Linked to European Semester there are 'Economic dialogues' between the European Parliament and other European institutions. A new form of inter-parliamentary cooperation was established within the European Parliamentary Week, organised by the European Parliament in cooperation with national

Parliaments. European Commission has to cooperate with EP and national Parliaments having an effective interaction in the case of Country-Specific Recommendations and annual budgetary procedures. EU and the euro area must be better represented in the international financial institutions. Several intergovernmental arrangements created during the crisis need to be integrated into the legal framework of the European Union and this refers to the Treaty on Stability, Coordination and Governance, the Euro Plus Pact, the agreement on the Single Resolution Fund and the European Stability Mechanism. The presidency of Eurogroup should be reinforced for a greater role of this institution. The Stability and Growth Pact is seen as the main instrument for providing strong fiscal rules and stability. A genuine EMU will require more collectively decisions and a future euro area treasury.

As the main conclusions that could be drawn from the Report of the 5 presidents one may mention the principal steps necessary to complete EMU at the latest by 2025 and an ambitious and pragmatic roadmap. The report offered a clear sense of direction for Europe's EMU which is essential for citizens and economic actors, and also for their confidence in the single currency. The implementation of the first steps was not so easy and the prospects for the later steps are not very encouraging and we can see that translating the proposals made into actions will require a strong political will and commitment of the Member States and EU institutions.

3. Requirements regarding the future of Monetary Union and of the single currency

For **Nouriel Roubin**i after Brexit there are many signs of huge concerns especially for the Eurozone. Firstly, if the divorce between Great Britain and EU will become prolonged and difficult, economic growth and markets will suffer, and if Scotland and Northern Ireland would leave the UK then Catalonia may exert high pressures for its independence from Spain. And without Britain, for Denmark and Sweden, who have not intended to join the Eurozone, there is great concern that they will become second hand members of the EU, which may cause them to take the "Exit scenario" into account. Upcoming elections (from France, Germany and Netherlands) and referenda in some Member States will take place on a minefield created by Brexit. Currently, Italy seems the weak link in the euro area, as economic growth is anaemic, banks have 350 billion euros in debt and desperately need capital and fiscal targets agreed with the EU are difficult to achieve without triggering another recession. In addition Matteo Renzi is in total disagreement with Angela Merkel on bail in, which could attract a huge run of capital. If Renzi fails to resolve these difficulties then Movimento 5 Stelle (5 Stars Movement), an anti-European party, who stated recently in local elections, could come to power starting next year. Italy has a public debt of 2,000 billion euro or 135% of GDP, making Greece one less danger for the stability of the euro area. But budget deficits haunt many Eurozone countries, which have exceeded the 3% of GDP threshold, which Romania must observe it strictly. Therefore Brussels has given up to penalties (fines), even they were set at symbolic levels. Deliberate violations of Stability and Growth Pact represent, in addition to defiance of Brussels, an exacerbation of the economic problems, with effects that may go to the disappearance of the euro currency.

Lüder Gerken (2015), head of the Centre for European Policy in Freiburg believes that the Stability and Growth Pact would be exposed to arbitrary political decisions. It requires a common European treasury, in addition to an economic and fiscal policy. A thorny issue is that fiscal policies are totally different in concept in Member States and even the establishment of a EU treasury would not change anything. The European Union had always been a transfer union in that it sought to strike a balance between winners and losers of common market.

Until the completion of the national elections, the EU is unlikely to take steps to complete the monetary union by introducing risk sharing and accelerating structural reforms to speed up the process of economic convergence. Given the slow pace of reforms (and aging of population), growth potential remains a low one, while current real growth is a quite moderate recovery of cyclical type but anyway threatened by post-Brexit risks and uncertainties. At the same time, great deficits and debts, and the rules of the euro area, constrain the use of fiscal policy to stimulate economic growth, while the European Central Bank may reach the limits of effectiveness of its unconventional monetary policy (quantitative easing) to support economic recovery. According to **Lucian Croitoru** (2016), in addition to raising the inflation target over 2% per year, giving up the overregulation generated in the last 6-7 years and the illusion of positive effects of quantitative easing, the use of fiscal policy should be extended and accepted larger budget deficits until the exit phase of stagnation/insufficient growth and negative interest rates. Whereas the constraints of Stability and Growth Pact are high in respect of budget deficit and public debt one might consider the views of Joseph Stiglitz (2015) on a

fairer redistribution of income between capital and labour that would stimulate private consumer demand and help out of the liquidity trap and deflation.

Roubini does not seem so pessimistic as he was before and thinks that it is unlikely that the euro and EU to suddenly disintegrate, many of the risks they face now are in a not very dangerous phase, and the disintegration process may be of course avoided by a political vision that balances the need for greater integration with the desire to have a certain degree of national autonomy and sovereignty over a range of issues. But finding ways of integration that are democratic and politically acceptable is a pressing need and turmoil of economic policy led to an unstable equilibrium, that can inevitable produce the collapse of the EU and euro area and given the many risks and challenges confronting EU it is an urgent need of a new vision on its future.

Joseph Stiglitz (2016) believes that Europe is moving towards a *"cataclysmic event"* that could lead to a collapse of the euro and the end of the European project as we know it, because the single European currency could inevitably cease at a time in the future unless drastic measures are taken. There would be a growing hostility against the euro, to which one may unfortunately add a widespread hostility to the whole European project and to liberal values. Well defined consensus, that Europe is not working, will probably be explained by the dysfunctions of euro zone and the need to abandon the euro zone and single currency with the continuation or not of the European project.

Stiglitz believes that referendum to be organized by Renzi in Italy in November is quite risky based on the results of the referendum from Great Britain. Italy has a low productivity, a history of missing growth targets and has registered counter-performances as against the rest of Europe in the recent years. Because the Italian banking sector has a lot of bad loans the government forced bank managers, insurers and investors to place 5 billion euro into a bailout fund, Atalante, for the weakest banks from the country. Stiglitz believes that bail in cannot be a viable solution in Italy, i.e. shareholders and big depositors of commercial banks can not save them from bankruptcy. In October 2016 Joseph Stiglitz believed that Italy and other countries will exit the euro zone in the coming years and that the culprits for Europe's economic problems are the austerity policies promoted by Germany.

According to Stiglitz, after the 2008 financial crisis euro member countries behaved more modest than MS outside the euro area and more modest than the US, which was the crisis epicentre. Countries like Greece are in a deep recession, and Member States that have performed better, were more efficient economically, as Germany did, have done so on the backs of others, especially those from Southern Europe. Now Germany blames the victims, showing the waste made by Greece and other countries' debts and deficits. Spain and Ireland had still budget surpluses and a small debt to GDP before the euro crisis. So the crisis has appreciably increased deficits and debts, not vice versa. Deficit fetish is only one possible explanation, other would be that welfare state and excessive protectionist measures on the labour market caused the crisis. But some of the most advanced countries in Europe, like Sweden and Norway, have the strongest welfare state and best protected labour markets. Many of the countries that currently have significant difficulties performed very well - above the European average - before the introduction of the euro, and their decline is not the result of a sudden change in labour legislation or in real work of population, but only in monetary arrangements.

It could be also blamed the macroeconomic management provided by European leaders, who could conceive and implement better policies. Ineffective policies like austerity, but also so-called (erroneously) structural reforms that increase inequality and thus weaken overall demand and growth potential have worsened economic and social situation. But the euro was based on a political agreement, the German had a dominant voice. Another reason for the poor performance of the Eurozone is the critique stance of the political right on Eurocrats that imposed rules preventing innovation, but this criticism is flawed because Eurocrats, as well labour legislation or the welfare state, have not suddenly changed in 1999, with giving up exchange rates, or in 2008 when the crisis began. For Stiglitz what matters most is the standard of living, quality of life and any comparison between Western Europe and China is enlightening. Another explanation remains: one may blame the single currency, not policies and structures in certain states because the euro was defective at its birth and neither the best politicians nor the best economists in the world could make it work properly.

The single currency has deprived the MS of the monetary union of the most important adjustment mechanism - the exchange rate. The response to asymmetric shocks and differences in productivity level would have to materialize in adjustments of the real exchange rate, which means that prices at the periphery of the eurozone would have to fall relative to those in Germany and Northern Europe. But given Germany's obsession with price stability and keeping inflation at a very low level, the adjustment could take place through deflation

elsewhere, which meant high unemployment and weakening of trade unions; the poorest countries in the euro zone, particularly workers in these countries, have borne the greatest burden of readjustment. In this way the policy of encouraging convergence between the euro area countries failed miserably, with increasing disparities between countries and within them. This system can not function properly in the long term, and the single currency will be viable only if it will change the rules of the euro zone and the institutions. In Stiglitz's view it is still necessary:

1) to abandon the convergence criterion, which requires budget deficits below 3% of GDP;

2) to replace austerity with a growth strategy, supported by solidarity funds for stabilisation;

3) to give up a system prone to crisis, in which countries must borrow in a currency that is not under their control, and to introduce bonds issued by euro area or a similar mechanism;

4) to amend the mandate of the European Central Bank, which focuses only on inflation, unlike the US Federal Reserve, which has in view the unemployment, growth and economic stability;

5) to create the insurance pools to stop bleeding of euros in poor countries and to create the components of a "banking union" (largely completed);

6) to encourage rather than to prohibit industrial policies that provide Eurozone laggards a chance to catch the leaders (a reindustrialization policy was initiated).

Stiglitz believes these changes are minor ones, but they can not be taken due to lack of political will of decision-makers, who do not understand that the current situation is not sustainable in the medium and long term. The monetary union was meant to ensure prosperity and accelerate the integration but it had the opposite effect. Stiglitz said: *If European leaders can not or do not want to take the hard decisions, European voters will do for them - the leaders could not even be happy when they see the results.*

In his latest book launched in France in September 2016 and entitled *"The Euro: How a Common Currency Threatens the Future of Europe"*, Stiglitz argues that there were errors since the origin of the euro, since Europeans *"put the cart before the horse"* by launching single currency, without having the necessary institutions to manage it, and the single currency deprives states of two of the most important tools for adjustment: the exchange rate and interest rate. A solution envisaged by Joseph Stiglitz (2016) is the exit of Germany from the euro zone, which would make other countries more competitive, thanks to devaluation of the euro, but if this is not adopted Stiglitz recommends an amicably divorce and creating *"two or three currency areas"* pending the establishment of the necessary institutions. For Stiglitz is obvious that Greece, Portugal, Italy, Spain should not have to adopt the euro and now they should leave the euro zone.

At the informal meeting from 9 to 10 September 2016 in Bratislava, ECOFIN discussed issues related to evaluation of the first year of the European Fund for Strategic Investments (EFSI), the fight against tax evasion and consolidation of EU investment. They discussed issues related to creating a function of macroeconomic stabilisation for Eurozone in *Stage 2* (post 2017) by establishing the elements of a fiscal union, Slovak presidency presenting the following possibilities: an European Scheme for Unemployment Insurance, a Stabilisation Fund for Ailing States, a Joint Investment Fund. Not resisting well to shocks EMU needs structural reforms and tax compliance for promoting convergence and confidence between Member States, but also avoiding moral hazard and permanent transfers. However there are very significant differences, especially between countries in the euro area and those outside it, and between euro zone members on how to absorb symmetrical and asymmetrical shocks, while a larger Community budget or a fiscal union is a long term project, difficult to achieve and requiring the participation and non-members of the euro zone (Prisecaru, 2016).

4. Recent negative developments in the European banking sector and in the Eurozone

Troubles and systemic imbalances in the banking sector have aggravated in the last 2 years when banks like Deutsche Bank, Commerzbank, Monte dei Paschi and other German, Italian and Spanish banks have experienced major difficulties in terms of losses and debts. The main problem is represented by the situation of TARGET-2 and its imbalances at the National Central Banks of the Eurosystem that reflect the capital flight from Southern Europe into Northern Europe, mainly in Germany, not related to the trade balance deficit, as Spain and Italy have managed to reduce their trade balance deficits. TARGET-2 is a clearing system which allows commercial banks in Europe to conduct payment transactions in the euro. After the crisis in the euro area, commercial banks have stopped lending each other money and the compensation has to be provided by the European Central Bank. But a lot of capital was going from Spain and Italy to Germany, Luxembourg, the Netherlands and Finland, imposing massive interventions of ECB. These huge imbalances highlight the great

tensions existing in the Economic and Monetary Union (EMU), the need for macroeconomic balances to be restored, to re-establish the trust in banking systems, and to strengthen the institutional foundations of EMU.

Big differences between different economies of euro zone make extremely difficult any monetary policy of ECB, interest rates may be too high or too low depending on the specificity of respective economy. Different options for supporting banks, as bail out or bail in, are forbidden because there is a unified monetary policy and a banking union, and also a need for inseparable fiscal and monetary policies. In the euro area ECB had to provide liquidity in a traditional way through longer-term refinancing operations that did not work and ECB was forced to launch an unconventional monetary policy: quantitative easing.

For GEFIRA Foundation it is the design of the Eurozone that makes the European Central Bank's actions ineffective. If there is a lack of trust in the banking sector, then the banks do not lend money to each other any more, it is the National Central Bank that has to provide temporarily some cheap money and offer the government (fiscal authorities) time to solve the underlying solvency problems, but the euro area does not have this important mechanism. Governments may rescue a bank by financing a bail-out operation or nationalizing some banks or may impose new rules adapted to local circumstances. National governments may use some measures for supporting the banking system like mandatory conversion of foreign currency mortgages into local currency mortgages, temporary moratorium on foreclosures and repossessions if people fall behind on their payments, outsourcing national electronic payment system to commercial banks etc. In the euro area there are no fiscal authorities and no single fiscal policy, so the problems of banking system may be solved only by monetary authorities and the liquidity provided by ECB plays an essential role in this respect.

In the summer of 2016 it was obvious the critical situation of Italian banking sector, mirrored by the amount of nonperforming loans (NPLs) at around 200 billion euros, or around 8% of total loans but another €160 billion worth of loans could soon be pushed into NPL status. The third-largest bank by assets in Italy, Banca Monte dei Paschi, founded in 1472, was asked by ECB to cut its gross nonperforming loan exposure from €46.9 billion in 2015 to €14.6 billion by 2018. The great problems of Italian banks, especially of BMP, are related mainly to their solvency and there are concerns about a potential conflict between Italian government and European Commission over new restrictions on government bailouts of the financial sector. Due to the Single Resolution Mechanism within the banking union the national governments from euro zone cannot use the bail out procedure (public money, state aid) for rescuing bankrupt banks which may use only bail in procedure (money of shareholders and depositors). After the financial crisis Italy failed to restructure its banks and the financial sector's difficulties have been exacerbated by a sluggish economic growth, and one could see low yields of Italian government bonds and banks bonds, and also falling interest rates, which badly affected the situation of banks. The solution selected by Italian government has involved the money from private sector and state-backed institutions, including a privately backed bailout fund called Atlante (€5 billion). Decision makers from Italy must agree on a plan to recapitalize Italian banks and protect small investors in bank bonds. If an agreement on bail out fails then Italian voters may bring to power the 5 Star Movement which has called for a referendum on euro zone membership.

5. Conclusion

More financial and fiscal integration under the form of banking union, capital markets union and a fiscal macroeconomic stabilization mechanism are considered the best solution for a further progress of EMU. National governments should look not only at the deficits and debts but on their expenditures and incomes regarding the removal of public waste and combating firmly the tax evasion. A new European financial institution and a large EU budget (a treasury) may be two possible solutions for the deepening of integration within EMU. To exit from liquidity trap and deflation trap it is needed a better distribution of income between capital and labour which may support the recovery in consumer demand and economic growth in Europe. Austerity policy must be replaced by other policies targeting the reindustrialization of EU, regional development, green energies, research and innovation. A better and closer institutional cooperation between European institutions and between them and national institutions for strengthening EU governance and for providing more democratic accountability, legitimacy and institutional performance is imperiously required.

References

[1] Croitoru, Lucian (2016), *Something that should be repaired in our thinking,* HotNews.ro

[2] Davi, Luca, Ferrando, Marco (2016), *Italy's Atlante 2 fund plans to buy NPLs, starting with MPS,* ItalyEurope24, July,28

[3] Gerken, Lüder, Kullas, Matthias, Van Roosebeke, Bert, (2015), *Eine Staatsinsolvenzordnung für die Euro-Zone*, cepStudie, August
[4] Kuenzel, Robert, Ruscher, Eric (2013), *The Future of EMU*, ECFIN, Economic brief, Issue 22, April
[5] MarketWatch (2016), Why Italy's banks could ignite a eurozone crisis, August 1
[6] Prisecaru, Petre (2016), *The Requirements for a New Strategic Vision for the Development of EU*, A Proposal for A Strategic Vision of the EU, IWE, November 15
[7] Roubini, Nouriel (2016), *Why Europe needs new political vision after Brexit*, Guardian, 1 August,
[8] Stiglitz, Joseph (2016), *Italy could be the 'cataclysmic event' that leads to the fall of the eurozone*, Business Insider UK, 22 August
[9] Stiglitz, Joseph (2016), *Reformă sau divorț în Europa*, Cotidianul, 29 August
[10] European Commission (2015), *Completing Europe's Economic and Monetary Union*, Report of the 5 presidents, June 22

Trends of Primary Energy Consumption in EU-Its Dependence on Import

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Abstract: The dynamics of primary energy consumption in EU can be related to the dynamics of GDP, if during economic boom was evident an increase of consumption with the burst of crisis and afterwards one may see a lowering consumption that stood out. But there were other factors that have influenced the dynamics of consumption, as the trend in oil prices and public policies for energy conservation.
Dependence on energy imports of the EU has increased in the analyzed period, especially for countries in Central and Eastern Europe, and especially for crude oil and natural gas, while the main suppliers were Russia and Norway. But any serious analysis must be differentiated taken into account the specificity of energy mix/ sector in each MS and broad differences between energy policies across the EU.

Key Words: primary energy, consumption, energy intensity, energy mix, energy supply, economic crisis, renewable energy, oil prices

JEL Classification: D47, F64, P18, Q35, Q41, Q48, Q54

1. Introduction

Evolution of EU primary energy consumption since 1989 only partially confirms the theory of decoupling energy consumption from economic growth, because of slow growth during the economic boom and even a decrease in the period of stagnation (low growth). Other factors like the trend of oil prices, deindustrialization and fast development of green energies, environment protection policies and energy conservation measures had a stronger impact upon consumption growth and its structure. But we can not deny the significant impact of the financial and economic crisis, which led to a rebound of consumption not only in 2009 but later on which one needs to be associated with the impact of policies implemented for reducing energy intensity both at Community and national level. EU seems fully preoccupied by a massive reduction of greenhouse gas emissions while firm commitments and optimistic forecasts for long term periods like 2030 and 2050 are very encouraging and involve major structural changes in consumption besides permanent conservation measures. To enhance energy security is necessary not only the diversification of external supply sources and but also developing and diversifying the domestic energy mix with an accent on renewable resources with great potential as hydropower, biomass, wind.

2. Evolution of primary energy consumption in the EU

The evolution of primary energy consumption in EU countries during the period 1990-2014 is presented in the Table no. 1, being worthy of mentioning that there were four waves of enlargement/geographical expansion of the European Community during this period, which increased the number of members from 12 to 28. Consumption of the EU-28 increased from 1569.4 millions toe (tonnes of oil equivalent) in 1990 to 1617.9 mil. toe in 2000 and to 1712.8 mil. toe in 2005, followed by a decline mainly due to the financial/economic crisis and secondary to measures for increasing the efficiency (or reducing

energy intensity). Thus the total consumption declined to1693.6 mil. toe starting with 2007, to 1656.4 mil. toe in 2010 and to 1507.1 mil. toe in 2014. The main primary energy consuming countries in the EU were Germany, with a share of 21.2% in total in 1990 and 19.4% in 2014 (decline of consumption), followed by France with 13.7% in 1990 and 15.6% in 2014 (increase of consumption), the UK with 12.7% in 1990 and 12.1% in 2014 (decline of consumption) and Italy with 9.1% in 1990 and 9.5% in 2014 (increase of consumption but it declined noticeably in the recent years). Medium consumers in Western Europe increased their consumption and their share in total consumption in the same period, as Spain had a share of 5.4% in 1990 and 7.5% in 2014, Netherlands 3.6% in 1990 and 4.2% in 2014, Belgium 2.9% in 1990 and 3.0% in 2014, Sweden 2.9% in 1990 and 3.1% in 2014, Austria 1.5% in 1990 and 2.0% in 2014.

Table no.1: Primary energy consumption in EU in 1990-2014 (mil.toe)

Country/year	**1990**		**1995**		**2000**		**2005**		**2010**		**2014**	
mil. toe %	**Mtoe**	**%**	**Mtoe**	**%**	**Mtoe**	**%**	**Mtoe**	**%**	**Mtoe**	**%**	**Mtoe**	**%**
EU (28 countries)	1569.4	100	1567.5	100	1617.9	100	1712.8	100	1656.4	100	1507.1	100
Eurozone (19 countries)	1039.8	66	1055.7	67.3	1125.0	69.5	1202.0	70.2	1161.9	70.1	1057.8	70.2
Belgium	45.5	2.9	48.0	3.1	52.4	3.2	51.4	3.0	53.9	3.2	45.0	3.0
Bulgaria	26.2	1.7	21.5	1.4	17.5	1.1	18.9	1.1	17.4	1.0	17.2	1.1
Czech Rep.	48.2	3.1	39.4	2.5	39.0	2.4	42.2	2.5	41.9	2.5	38.6	2.6
Denmark	17.6	1.1	19.9	1.3	19.4	1.2	19.3	1.1	19.8	1.2	16.7	1.1
Germany	333.3	21.2	318.0	20.3	317.3	19.6	317.2	18.5	310.4	18.7	291.8	19.4
Estonia	9.7	0.6	5.3	0.3	4.8	0.3	5.4	0.3	6.1	0.4	6.6	0.4
Ireland	9.6	0.6	10.5	0.7	13.8	0.8	14.7	0.9	14.8	0.9	13.4	0.9
Greece	21.6	1.4	23.4	1.5	27.6	1.7	30.6	1.8	27.7	1.7	23.7	1.6
Spain	84.2	5.4	94.2	6.0	114.2	7.1	135.9	7.9	123.2	7.4	112.6	7.5
France	214.4	13.7	225.9	14.4	241.4	14.9	259.9	15.2	252.8	15.3	234.5	15.6
Croatia	8.8	0.6	7.0	0.4	7.8	0.5	9.1	0.5	8.8	0.5	7.7	0.5
Italy	143.2	9.1	152.0	9.7	165.8	10.2	181.5	10.6	168.4	10.2	143.8	9.5
Cyprus	1.6	0.1	1.9	0.1	2.3	0.1	2.5	0.1	2.7	0.2	2.2	0.1
Latvia	7.9	0.5	4.6	0.3	3.8	0.2	4.5	0.2	4.6	0.3	4.4	0.3
Lithuania	15.1	1.0	8.1	0.5	6.4	0.4	7.9	0.4	6.1	0.4	5.6	0.4
Luxembourg	3.5	0.2	3.3	0.2	3.6	0.2	4.8	0.2	4.6	0.3	4.2	0.3
Hungary	27.1	1.7	24.5	1.56	23.7	1.5	25.4	1.5	23.3	1.4	20.7	1.4
Malta	0.6	0.04	0.8	0.05	0.8	0.05	1.0	0.05	0.9	0.05	0.9	0.05
Holland	56.9	3.6	64.5	4.1	66.2	4.1	69.3	4.0	70.8	4.3	62.7	4.2
Austria	23.4	1.5	25.7	1.6	27.3	1.7	32.5	1.9	32.5	2.0	30.6	2.0
Poland	99.1	6.3	95.1	6.1	84.3	5.2	87.7	5.1	95.7	5.8	89.1	5.9
Portugal	16.1	1.0	18.6	1.2	22.9	1.4	24.9	1.4	22.6	1.4	20.7	1.4
Romania	*57.3*	*3.6*	*45.1*	*2.9*	*34.8*	*2.1*	*36.7*	*2.1*	*34.3*	*2.1*	*30.8*	*2.0*
Slovenia	5.7	0.4	6.0	0.4	6.2	0.4	7.0	0.4	7.1	0.4	6.5	0.5
Slovakia	20.2	1.3	16.8	1.1	16.9	1.0	17.8	1.0	16.8	1.0	15.3	1.0
Finland	27.4	1.7	28.2	1.8	31.4	1.9	33.4	1.9	35.9	2.2	33.4	2.2
Sweden	45.5	2.9	49.5	3.2	47.2	2.9	48.7	2.8	48.7	2.9	46.2	3.1
United Kingdom	199.8	12.7	209.8	13.4	219.2	13.5	222.8	13.0	204.7	12.4	182.4	12.1

Source: Eurostat. 13.10.2016

Countries of Central and Eastern Europe -CEE 6, outside Eurozone, (see Table no.2) have slightly reduced their consumption in the same period mainly due to deindustrialization process of the 90s, so Poland had a share of 6.3% in 1990 and 5.9% in 2014, Czech Republic of 3.1% in 1990 and 2.6% in 2014, Hungary of 1.7% in 1990 and 1.4% in 2014, Bulgaria 1.7% in 1990 and 1.1% in 2014, Croatia of 0.6% in 1990 and 0.5% in 2014. With the exception of Poland the shares of CEE countries (non euro) in total primary energy consumption of the EU 28 were quite low, reflecting the level of economic development and industry setback, but consumption decline was comparable to that of the EU 28. Romania has supported the most significant decline of consumption in the period 1990-2014 due to its massive deindustrialization, the drop being of 46.25%, from 57.3 mil. toe (3.6%) to 30.8 mil. toe (2.0%). The process may seem positive if it could be achieved by increasing energy efficiency, but energy intensity is on average 2.6 times higher than in the developed countries of the EU.

Table no.2: Share of CEE 6 (non-euro) in EU primary energy consumption in 1990-2014 period

Country /Year	1990		1995		2000		2005		2010		2014	
mil. toe %	Mtoe	%	Mtoe	%	Mtoe	%	Mtoe	%	Mtoe	%	Mtoe	%
EU (28 countries)	1569.4	100	1567.5	100	1617.9	100	1712.8	100	1656.4	100	1507.1	100
Bulgaria	26.2	1.7	21.5	1.4	17.5	1.1	18.9	1.1	17.4	1.0	17.2	1.1
Czech Rep.	48.2	3.1	39.4	2.5	39.0	2.4	42.2	2.5	41.9	2.5	38.6	2.6
Croatia	8.8	0.6	7.0	0.4	7.8	0.5	9.1	0.5	8.8	0.5	7.7	0.5
Hungary	27.1	1.7	24.5	1.56	23.7	1.5	25.4	1.5	23.3	1.4	20.7	1.4
Poland	99.1	6.3	95.1	6.1	84.3	5.2	87.7	5.1	95.7	5.8	89.1	5.9
Romania	*57.3*	*3.6*	*45.1*	*2.9*	*34.8*	*2.1*	*36.7*	*2.1*	*34.3*	*2.1*	*30.8*	*2.0*

Source: Eurostat. 13.10.2016

To differentiate the analysis on shorter intervals it should be mentioned that after it has remained relatively unchanged during the period 2003– 2008, the primary energy consumption fell by 5.5% in 2009, a part of this change may be attributed to the lower level of economic activity due to the financial and economic crisis rather than to a structural change in the pattern of energy consumption. In 2010, it was recorded an increase of 3.6% of primary energy consumption of the EU-28 and this was followed by a setback of the same proportion (-3.8%) in 2011. After three years of relatively important changes, in 2012 and 2013 consumption has marked modest rates of change, respectively decreases of 0.6% and 1%. In 2014, the gross domestic consumption of energy has intensified its decline (- 4%) to the absolute lowest level since the beginning of the data series available for the reporting period (1990-2014).

Domestic consumption of primary energy in each EU Member State depends to a large extent on the structure of its energy system, the availability of natural resources for the production of primary energy as well as on the structure and level of development of each economy, this being true not only for conventional fuels and nuclear energy, but also for the renewables. The dynamics of primary energy consumption should be reported to GDP dynamics to see to what extent it has been reduced the energo-intensity of economy in line with the target set at European level to increase energy efficiency by 20% during the period 1990-2020, but also with the objective of raising the productivity of production factors and hence the competitiveness of the European economy. But if the productivity of factors increases faster than the consumer demand due to an unequal distribution of income between capital and labour then one may occur big problems with the level of employment and implicitly of unemployment, and with the emergence of an oversupply of products and services, with particularly very negative effects on prices (deflation), interest rates, savings level, growth rate. We don't have an impressive economic growth in the EU in the period under discussion, for example the average growth in Germany, the engine of EU economy, was just 0.32% per year. On the domestic supply, the energy mix is also quite different in MS, in France predominates nuclear power, in the United Kingdom hydrocarbons, in Italy the same, while in Germany the mix is more balanced, hydrocarbons and nuclear energy have a higher contribution, but coal and green energies have a certain participation. Continental Europe is in general quite poor in hydrocarbon deposits, those in the North Sea being largely exhausted, less natural gas.

Energy intensity is a measure of the energy efficiency of an economy. In 2014 economies with the lowest energy intensity in the EU were Denmark, Ireland, UK and Luxembourg, that consumed the smallest amount of energy per unit value of gross domestic product (GDP). The EU Member States with the higher energy consumption per unit of GDP, in other words the least energy efficient, were Bulgaria and Estonia. The economic structure of an economy plays an important role in determining the energy intensity as economies based on services will record the lowest energy intensity , while economies with large share of heavy industry (such as steel production) in their economic activity, will have a higher energy intensity.

Between 2004 and 2014 substantial savings of energy were made by Latvia and Poland, as well as by Romania, Bulgaria, Hungary, Greece and Czech Republic, and the amount of energy required to produce an economic unit (measured by GDP) has been reduced by at least a quarter (25.0%). None of the Member States of the European Union has reported an increase of energy intensity between 2004 and 2014, the smallest percentage decrease was recorded in Cyprus and Sweden. The importance of energy-intensive industries in determining international competitiveness of EU economy is slightly exaggerated because these industries represent only 1.3% of the value added as a percentage in total GDP in the EU.

3. Dependence of EU gross domestic consumption on imports of primary energy resources.

Dependence on imports of primary resources of EU Member States (see the Table no. 3) has increased from 1990 to 2014, when it rose from 44.2% to 53.5%. In fact import dependence has increased significantly until 2005 after which it remained at high levels, but the situation differs from country to country depending on the resource endowment of each country and on the dynamics and structure of consumption of primary energy. Germany has increased import dependency from 46.5% in 1990 to 61.6% in 2014, France has decreased its dependence from 52.4% in 1990 to 46.1% in 2014, the UK has increased it from 2.4% in1990 (when it massively exploited hydrocarbons in the North Sea) to 45.5% in 2014 and Italy has reduced its dependency from 84.7% in 1990 to 75.9% in 2014. Spain has increased its dependence from 63.1% in 1990 to 72.9% in 1990, Netherlands (which has significant gas deposits) from 22.1% in 1990 to 33.8% in 2014, Belgium from 75.1% in 1990 to 80.1% in 2014, Sweden has reduced its dependence from 38.2% in 1990 to 32.1% in 2014, Austria from 68.5% in 1990 to 65.9% in 2014.

Table no.3: Dependence of MS on import of primary energy resources in 1990-2014 period (%)

Country/ Year	**1990**	**1995**	**2000**	**2005**	**2010**	**2014**
EU (28 countries)	44.2	43.1	46.7	52.2	52.6	53.5
Eurozone (19 countries)	57.4	59.7	64.1	65.0	62.0	60.3
Belgium	75.1	80.8	78.1	80.1	77.9	80.1
Bulgaria	62.8	55.9	46.0	46.7	39.6	34.5
Czech Rep.	15.4	20.6	22.9	28.0	25.6	30.4
Denmark	45.8	33.4	-35.0	-49.8	-15.7	12.8
Germany	46.5	56.8	59.4	60.4	60.1	61.6
Estonia	44.2	32.3	32.2	26.1	13.6	8.9
Ireland	68.6	69.5	84.8	89.6	86.6	85.3
Greece	62.0	66.7	69.5	68.6	69.2	66.2
Spain	63.1	71.7	76.6	81.4	76.7	72.9
France	52.4	48	51.5	51.6	49.1	46.1
Croatia	39.8	36.1	48.4	52.5	46.6	43.8
Italy	84.7	81.9	86.5	83.4	82.6	75.9
Cyprus	98.3	100.5	98.6	100.7	100.8	93.4
Latvia	88.9	70.4	61.0	63.9	45.5	40.6
Lithuania	71.7	63.1	59.4	56.8	81.8	77.9
Luxembourg	99.5	97.7	99.6	97.4	97.1	96.6
Hungary	49.0	47.9	55.2	63.1	58.2	61.7
Malta	100.0	104.8	100.3	100.0	99.0	97.7
Holland	22.1	20.0	38.1	38.0	30.3	33.8
Austria	68.5	66.4	65.4	71.6	62.8	65.9
Poland	0.8	-1.2	9.9	17.2	31.3	28.6
Portugal	84.1	85.3	85.1	88.6	75.1	71.6
Romania	*34.3*	*30.3*	*21.8*	*27.6*	*21.9*	*17.0*
Slovenia	45.7	50.9	52.8	52.5	48.6	44.6
Slovakia	77.5	68.5	65.5	65.3	63.1	60.9
Finland	61.2	53.6	55.1	54.2	47.8	48.8
Sweden	38.2	38.9	40.7	36.8	36.6	32.1
United Kingdom	2.4	-16.4	-16.9	13.4	28.4	45.5

Source: Eurostat. 13.10.2016

Countries from Central and Eastern Europe -CEE 6 (see the Table no.4) have increased their dependence on imports, Poland from 0.8% in 1990 to 28.6% in 2014, Czech Republic from 15.4% in 1990 to 30.4% in 2014, Hungary from 49.0% in 1990 to 61.7% in 2014, Croatia from 39.8% in 1990 to 43.8% in 2014, while Bulgaria has reduced its dependence from 62.8% in 1990 to 34.5% in 2014. Romania has decreased its dependence on imports from 34.3% in 1990 to 17.0% in 2014 mainly due to the high decrease of consumption in all industry. With the exception of Romania and Bulgaria the import dependence of other CEE countries (non euro) has more increased than the average of the whole EU 28.

Table no.4: Comparison between EU 28 and CEE 6 (non-euro) concerning the import share of primary energy resources in total consumption in 1990-2014 (in %)

Country/ Year	1990	1995	2000	2005	2010	2014
EU (28 countries)	44.2	43.1	46.7	52.2	52.6	53.5
Bulgaria	62.8	55.9	46.0	46.7	39.6	34.5
Czech Rep.	15.4	20.6	22.9	28.0	25.6	30.4
Croatia	39.8	36.1	48.4	52.5	46.6	43.8
Hungary	49.0	47.9	55.2	63.1	58.2	61.7
Poland	0.8	-1.2	9.9	17.2	31.3	28.6
Romania	*34.3*	*30.3*	*21.8*	*27.6*	*21.9*	*17.0*

Source: Eurostat. 13.10.2016

The decrease of domestic production of coal, lignite, crude oil, natural gas and more recently nuclear energy has led to a situation where the EU had increasingly more to rely on imports of primary energy in order to meet domestic demand, although this situation has stabilized after the financial and economic crisis.

Imports of primary energy in the EU-28 exceeded the exports by about 881 mil.toe in 2014. The largest net importers of primary energy were generally the most populated MS of the EU, with the exception of the Poland (which has huge domestic reserves of coal). In 2004, Denmark was the only net exporter of primary energy among the EU Member States, but in 2013, Danish energy imports exceeded its exports so that there were no net exporting states of energy in EU. Relative to population size the biggest net energy importers in EU were Luxembourg, Malta and Belgium in 2014.

External energy supply sources of EU have recorded some changes in the recent years, although Russia has maintained its positions as the leading supplier of crude oil and natural gas (although its share has decreased in the last years). In 2014, 29.0% of crude oil imports of the EU-28 came from Russia. Also, since 2006 Russia is a leader in providing solid fuels (coal) to the EU, exceeding South Africa, after it exceeded Australia in 2004 and Columbia in 2002.The share of Russian imports of solid fuels to EU-28 increased from 18.0% in 2004 to 30.0% in 2009, falling to 25.7% in 2012 and increasing to 29.0% in 2014. Instead, Russia's share in EU gas imports decreased from 43.6% to 32.1% between 2004 and 2010, but this has subsequently alternated with increases that led to a share of 37.5% in 2014. In the past 10 years, Norway has remained the second largest supplier of EU of crude oil and the natural gas.

The security of EU primary energy supply is threatened where high parts of imports are concentrated among a reduced number of external suppliers. More than two thirds (69.1%) of EU-28 imports of natural gas came from Russia and Norway in 2014, as such there is a greater concentration of imports than in 2010, when the same two countries ensured only 59.6% of EU natural gas imports.

A similar analysis shows that 43.5% of the EU oil imports came from Russia and Norway in 2014 (with Nigeria, Saudi Arabia and Kazakhstan having an appreciable share), while 70.7% of imports of solid fuels of EU-28 had their origin in Russia, Columbia and USA. Between 2004 and 2014 new developing countries have emerged as partners: for oil imports Nigeria, Kazakhstan, Azerbaijan and Iraq and for natural gas imports Qatar and Libya.

The dependence on energy imports of EU-28 increased from less than 40% of primary energy consumption in 1980 to the level of 53.5% by 2014 after reaching a maximum rate of 54.5% in 2008. The highest rates of dependency on energy imports were recorded in 2014 for crude oil (88.2%) and natural gas (67.4%). In the last decade (between 2004 and 2014), EU dependence on the third countries in supplying natural gas has increased by 13.8 percentage points, faster than the increased dependence on oil imports (7.5 percentage points) and solid fuels (7.4 percentage points). Since 2004, net imports of energy in the EU-28 were higher than its primary energy production; in other words, more than half of gross domestic energy consumption of EU-28 was provided by net imports.

The lowest rates of dependence on imported energy in 2014 were recorded in Estonia, Denmark, Romania and Poland. Malta, Luxembourg and Cyprus were (almost) entirely dependent on imports of primary energy, with dependency rates which exceeded 90%.

CEE 6 (non euro) are almost totally dependent on imported crude oil (from Russia and the Middle East), except Romania that produces some of the necessary (around 40%) and also are totally dependent on imports of natural gas (from Russia), except Romania which provides almost all consumption from domestic

production. They are less dependent on imported coal because coal production is quite developed in these countries.

More than half the energy of EU-28 comes from third countries, outside the EU, and this share has generally increased in the recent decades (although there is some evidence that the rate of dependence has stabilized in the recent years). A large part of the EU imported energy comes from Russia, whose disputes with transit countries have threatened to disrupt winter supplies in the recent years. Concerns about security of Russia supply were further enhanced by the conflict in the Eastern Ukraine. In response to the Russian-Ukrainian gas crisis in January 2009, the legislative framework concerning the security of supply has been revised, and in September 2009, the EU Council adopted Directive 2009/119/EC, which requires MS the obligation to hold a minimum level of stocks of oil and/or petroleum products. These measures targeting oil and gas markets have been designed to ensure that all parts adopt effective measures for the prevention and mitigation of potential disruptions of supply, at the same time creating mechanisms for Member States to work together to effectively cope with any major disturbances in the oil or natural gas supply; it was established a coordination mechanism so that MS may respond uniformly and immediately in emergency cases.

4. Conclusions

In November 2010 the European Commission adopted an initiative entitled "*Energy 2020- A strategy for competitive, sustainable and secure energy"* (COM (2010) 639 final).This strategy has defined energy priorities for a period of 10 years, and measures to be taken in order to address a variety of challenges, including achieving markets with competitive prices and secure supplies, boosting technological innovation and effective negotiation with international partners. One of the priorities was to promote good relations with external suppliers and external energy transit countries. This activity was further developed through Energy Strategy 2030, which provides a political framework for environmental policy and energy policy for 2030 and a Roadmap for energy until 2050, which fixed a long-term goal of reducing greenhouse gas emissions in EU by 80-95% until 2050.

Through Energy Community[5], established in October 2005, the EU is also working to integrate neighboring countries in its internal energy market. A broad mix of energy sources and a diversity of suppliers, of transport routes will play an important role in enhancing energy supply. Building reliable partnerships with supplier, transit and consumer countries is seen as a way to reduce the risks associated with EU big dependence on energy imports. In September 2011 the European Commission adopted a Communication entitled " *The EU Energy Policy: Engaging with Partners beyond Our Borders"* (COM (2011) 539 final).

In response to the constant concerns about EU dependence on energy imports, in May 2014 the European Commission to launched *European Energy Security Strategy* (COM (2014) 330 final), which aims at ensuring a stable and abundant supply of energy. Energy Efficiency Directive from 2012, which focuses on energy efficiency in buildings, better management of consumption, energy audits, will be replaced by a new directive this year. New measures in the energy field are going to be announced later this year with the aim to increase EU GDP by 1% until 2030, i.e. a surplus of €190 billion for EU economy and creation of 900,000 new jobs. The new package will cover renewable resources, energy efficiency - particularly in the building sector, design of a new electricity market and governance of EU Energy Union.

References

[1] European Commission, 2010, *Energy 2020 A strategy for competitive, sustainable and secure energy*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2010) 639 final, Brussels, 10.11;

[2] European Commission, 2011, *The EU Energy Policy: Engaging with Partners beyond Our Borders"*

[5] The Energy Community is an international organisation containing the EU, represented by the European Commission, and the countries of Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Kosovo (*in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence)*, Moldova, Montenegro, Serbia, and Ukraine - these countries are known as the 'contracting parties'. It aims to extend the EU's internal energy market to South Eastern Europe and the Black Sea region.

[3] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2011) 539 final, Brussels, 7 September;
[4] European Commission, 2012, *Energy Efficiency Directive*, https://ec.europa.eu/energy/en /topics/energy-efficiency/energy-efficiency-directive;
[5] European Commission, 2011, *European Energy Security Strategy*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, (COM (2014) 330, Brussels, 10.11;
[6] Europa, 2016, *List of Planned Commission Initiatives*, ec.europa.eu/atwork/pdf/planned _commission_initiatives_2016.pdf;
[7] Eurostat, 2016, 13.10.

Price Convergence to the EU: Some Evidence for the Czech Republic

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Abstract: The question of price convergence is highly topical especially before entry of a member state of EU into the Eurozone. Price convergence, respectively price stability is one of the Maastricht convergence criteria, whose fulfillment is exposed to a number of factors and wide issues of fiscal and monetary character. Reporting of price convergence and price stability is influenced by the composition of the consumer basket and the level of consumption. Some of the commodities in the Czech Republic have a higher price level than in the EU and vice versa. The rate and pace of price convergence are then directly influenced by the pace of economic growth and development of the exchange rate of the national currency against the euro. This paper deals with the main aspects of price convergence in the Czech Republic and analyzes the major influences acting on it and its future development.

Key Words: price, price level, inflation, central bank, the Czech Republic

JEL Classification: E 31, E 58.

1. Introduction

The constant and constantly increasing debate on the issue of price-level targeting was enlivened at the beginning of 1990s. The topic was pursued by, among others, McCallum (1990), Lebow et al. (1992), Fillion and Tetlow (1994), Goodhart (1994), Duguay (1994), Fischer (1994) and Haldane and Salmon (1995). Most working papers dating from this time period regard lower uncertainty about the future price level as the main benefit of price-level targeting. On the other hand, increased output variability (and – according to some authors – increased inflation variability) is considered the primary disadvantage of the regime (Bohm et al., 2012).

Although a high degree of market integration is already achieved, price dispersion in the EU has considerably increased with the enlargement in 2004. Because of their lower income levels, price levels in the New Member States are as a rule substantially lower than in the Old Member States In addition, inflation rates in the New Member States exceed the average of the EU-15. The rapidity of the transition process can be seen, among others, by the development of inflation. At the beginning of the transition all countries faced high inflation rates. Liberalization by the removal of controls and quantity allocations, which repressed demand formerly, led to rapid adjustments to free market prices. In addition, fiscal and financial crises resulted in periods of rapid monetary expansion since governments relied on seignorage to support public budgets as well as state owned enterprises.

Despite advances in the integration of markets, however, there is strong evidence that the pace of price convergence has slowed down in recent years, see several reports conducted by the EU Commission (2004a, 2005) and Eurostat (2003). Hence, other forces might be important to explain the development. Nevertheless, price level dispersion is higher for non tradables than for tradables, where the latter are clearly more affected by the process of integration. The dispersion of overall price levels has decreased after the inception of the Internal Market in the EU12, but stayed rather unchanged after the introduction of the EMU. Nevertheless, the dispersion of prices for tradables has been on a stable declining trend over the entire period. In this study, the EU12 benchmark is preferred over EU15 as it allows eliminating the effect of exchange rate fluctuations in the euro area countries. But, even with EU12 as a benchmark these fluctuations are inherent in the remaining EU member states (Dreger, 2007).

2. The price stability and inflation

The link between the long-run GDP and price convergence processes has been discussed for a long time by researchers and policy makers in the accession countries. The price convergence process may create challenges for monetary policy, as it means an appreciating real exchange rate trend (Balassa, 1964). This is particularly important for the accession countries, which will have to fulfil simultaneously the Maastricht inflation and exchange rate stability criteria in the future before joining the Eurozone (Holub, 2003). The fulfillment of Maastricht criteria with forecast in the Czech Republic is on the Figure 1.

Figure 1: The fulfillment of Maastricht criteria in the Czech Republic between 2001 – 2018 (forecast)

	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Reference value	3,1	2,6	2,7	2,2	2,5	2,9	2,8	4,1	1,5	2,4
Czech Republic	4,5	1,4	-0,1	2,6	1,6	2,1	3,0	6,3	0,6	1,2
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Reference value	3,1	3,1	1,8	1,3	1,0	2,4[f]	2,7[f]	2,9[f]		
Czech Republic	2,1	3,5	1,4	0,4	0,4[f]	1,0[f]	1,9[f]	**1,9[f]**		

Source: (Dedek, 2015)

A converging economy that achieves a growth differential compared to the EU of 2 percentage points a year, which might be realistic for the more advanced accession countries, can be expected to show a yearly real exchange rate appreciation of about 1.8 percentage points on average. This "benchmark convergence scenario" is close to the real exchange rate appreciation that some recent studies predict for Central European economies due to the Balassa–Samuelson effect (Halpern and Wyplosz, 2001; Begg et al., 2002; Deutsche Bundesbank, 2001).

Such a rate of real appreciation can be real, but may still be hard to achieve. On the one hand, the countries with currency boards may theoretically face problems with fulfilling the monetary Maastricht inflation criterion and criterion for national exchange rate. Inflation must be no more than 1.5 percentage points above the average rate of the three EU member states with the lowest inflation over the previous year and the national currency is required to enter the ERM 2 exchange rate mechanism two years prior to entry. Their currency is confined within a set rate against the euro of plus or minus 15 percent.

This circumstances should be interpreted with a degree of caution, though, as it neglects other factors besides GDP growth which may influence the speed of price convergence. The other factors that effect price levels are in the wide are of cross-country differences in employment rates, non-trade productivity, the size of the non-tradable sector, government policies and the structure of foreign trade, for example (Holub, 2003).

It should also be remembered that the international price differences do not concern average price levels only, but also – and perhaps even more importantly – relative prices. There are many prices in the Czech Republic which are less than 20 percent of the average EU level, such as rents, schooling, health care and transport services. On the other hand, communications, cars and alcoholic beverages have virtually the same price as in the EU. This means that relative prices (such as the price of cars in terms of rents) are significantly different in the Czech Republic – and other accession countries – compared with the EU. Moreover, we show that these differences in relative price structures are still much bigger than in the least developed EU countries. (Holub 2003).

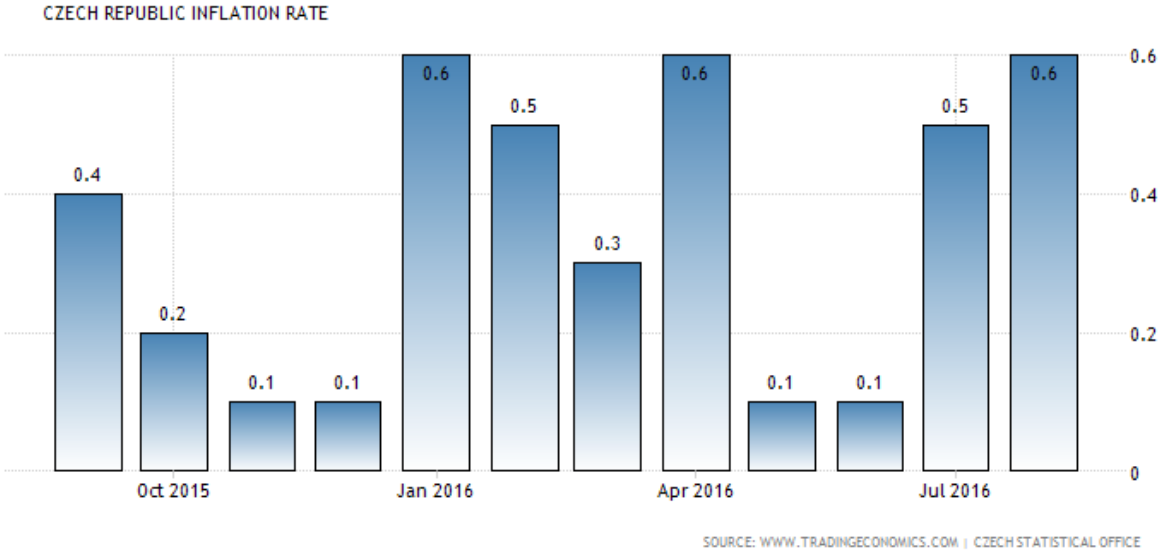
In Czech Republic, the most important category in the CPI is Housing and Utilities (26.6 percent of total weight). Food and Non-Alcoholic Beverages accounts for 17.1 percent; Transport for 10.1 percent; Alcoholic beverages and Tobacco for 9.5 percent; Recreation and Culture for 8.8 percent and Miscellaneous

Goods and Services for 6.8 percent. Furniture, Household Goods and Maintenance; Restaurants and Hotels; Clothing and Footwear; Communication; Health and Education account for the remaining 21.1 percent of total weight (Tradingeconomics, 2016).

In Euro Area, the inflation rate is calculated using the weighted average of the Harmonised Index of Consumer Price (HICP) aggregates. The main components of the HICP are: food, alcohol and tobacco (19 percent of the total weight), energy (11 percent), non-energy industrial goods (29 percent) and services (41 percent). The HICP aggregates are computed as the weighted average of each country's HICP components. The weight of a country is its share of household final monetary consumption expenditure in the total of the country's group. The local HICPs are supplied to the Eurostat by the National Statistical Institutes (Tradingeconomics, 2016).

Czech consumer prices increased by 0.6 percent year-on-year in August of 2016, following a 0.5 percent growth in the previous month and in line with market expectations. It was the biggest rise since April this year, mainly due to higher prices for alcoholic beverages and tobacco (+0.5 percent from +0.4 percent in July). Additional upward pressure came from: Housing and utilities, clothing and footwear and restaurants and hotels (each rose 0.1 percent, the same as in July). In contrast, cost of transportation fell 0.3 percent (from -0.2 percent in the previous month). On a monthly basis, consumer prices fell 0.2 percent. Inflation Rate in Czech Republic averaged 4.52 percent from 1993 until 2016, reaching an all time high of 21.90 percent in February of 1993 and a record low of -0.40 percent in January of 2003. The inflation rate in the Czech Republic within last two years is on the Figure 2.

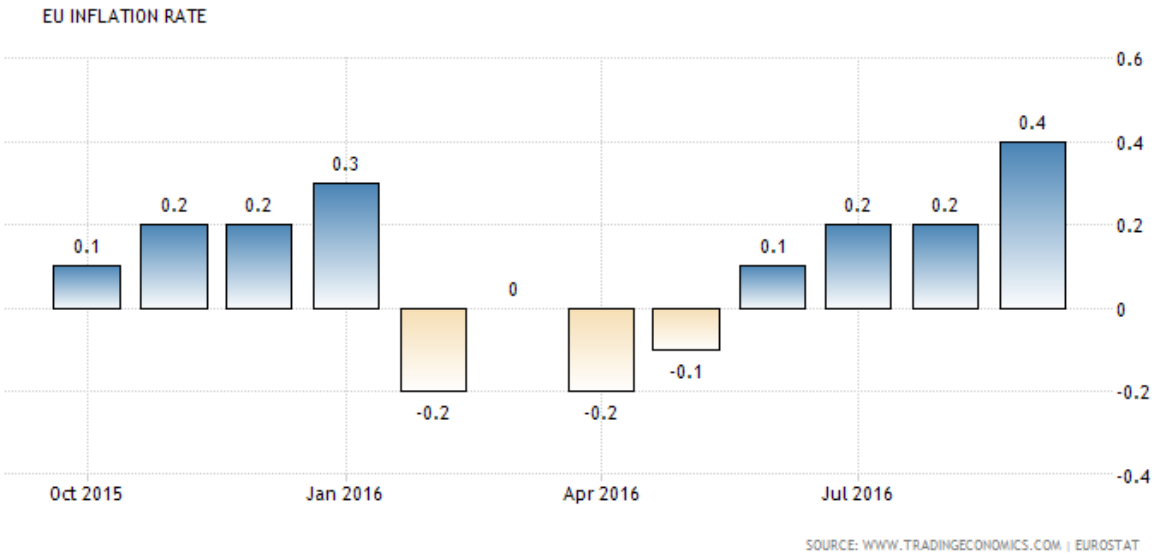
Figure 2: The inflation rate in the Czech Republic in 2015 and 2016



Source: Tradingeconomics

Consumer prices in the Euro Area are expected to increase 0.4 percent year-on-year in September of 2016, following 0.2 percent growth in the previous month and in line with market expectations. It was the highest inflation rate since October 2014, as prices rose for services, food and energy cost fell at a slower pace. Inflation Rate in the Euro Area averaged 2.01 percent from 1991 until 2016, reaching an all time high of 5 percent in July of 1991 and a record low of -0.70 percent in July of 2009. The inflation rate in the EU within last two years is on the Figure 3.

Figure 3: The inflation rate in the EU in 2015 and 2016



Source: Tradingeconomics

3. The price level adjustment

In such a situation, a smooth price adjustment to the EU level would require companies and labour unions to adjust their behaviour to the circumstances of low inflation, nominal exchange rate appreciation and falling prices of tradable goods. Policy makers can contribute in this respect by communicating more actively to the private sector the implications of the announced inflation targets and the process of real economic convergence. This could help overcome the behavioural aspect of the downward rigidity of prices and its real macroeconomic costs which may stem from the companies' and labour unions' lack of experience with the low-inflation environment, the appreciating nominal exchange rate and the falling prices of tradable goods. (Holub, 2003).

The speed of adjustment of price level toward the longer term trend in EU was influenced by two institutional factors: the absolute size (depth) of the market and the degree of liberalization of the foreign exchange market and financial account of the balance of payments. Moreover, both factors tended to reinforce each other. Our findings have some attractive policy implications. Early liberalization of prices may pay off in terms of market liquidity and, hence, faster adjustment of the exchange rate to the longer-term trend. However, early liberalization is a necessary condition for liquidity, not a sufficient one, as shown by some currencies.

We conclude that it may take about 15 years for the Czech aggregate price level to reach 60 percent of the EU price level, and it would take about the same time to reach the same degree of relative price differences as observed in the least developed EU countries. This corresponds to an average rate of real exchange rate appreciation of 2.5–3.5 percent a year, which is above the "benchmark" estimate based on the aggregate cross-country regressions, but still somewhat below the trend observed in the Czech Republic over the past decade.

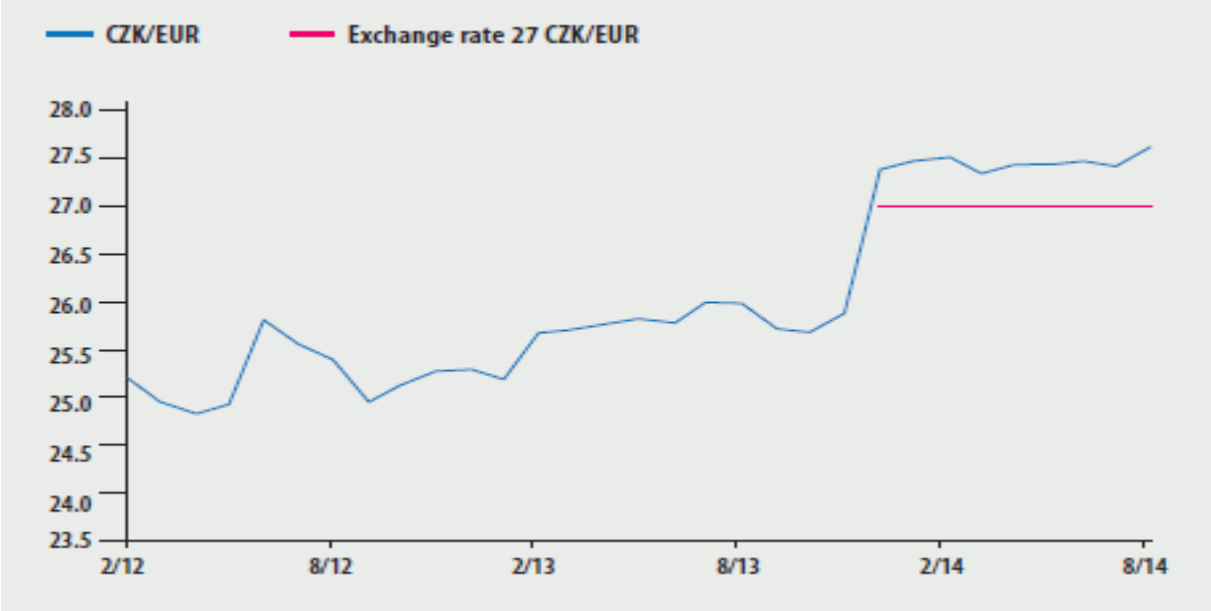
This process is within last 3 years hugely affected by depreciation of the Czech koruna. Prices for many items in the consumer basket had been decreasing for a long time and there was a danger that Czech consumers and companies would take falling prices for granted, and that these prices would be reflected in price and wage expectations and negotiations. At the same time, this would spark a tendency to put off purchasing certain consumer and investment goods, which would happen despite record- low nominal interest rates. The consequence would be the additional reinforcement of anti-inflationary pressures in the economy. Without a further easing of monetary policy by the CNB, the hi it to relatively stable exchange rate development could be interrupted and the koruna could start to significantly appreciate. There was a much higher risk that the Czech economy would slide into a long-term price level fall. (Holub, 2014).

During 2012, the Czech economy saw domestic inflation fall gradually, for both external and domestic macroeconomic reasons, from above the target level of 2% annually to below it. Towards the end of the year, the CNB's forecasts for the next several quarters started to signal that, in order to keep inflation from falling below 1%, that is, from leaving the 1 percentage point target band around the target level, the monetary policy stance should be eased enough to bring market interest rates just a few tenths of a percentage point above zero.

On top of that, however, official CNB communication flagged – for the first time in a decade – the possibility of implementing the rest of the needed monetary policy easing "by influencing the exchange rate of the koruna. Then in 2013, new forecasts indicated that inflation would most likely fall even lower than had been expected, reaching zero or even a slightly negative level for a short time at the beginning of 2014. The probability of several quarters of negative inflation ceased to be negligible, implying the threat of a subsequent deflation spiral not unlike the one observed some 10 years earlier in Japan (Hampl and Skorepa, 2014).

Throughout 2013, the Bank Board kept emphasising the possibility of forex interventions, but the impact of these verbal initiatives seemed to wane gradually. Under those circumstances, on 7 November 2013, the Bank Board decided to initiate actual forex interventions immediately, with the publicly announced objective of weakening the exchange rate so that it would not fall below €1 = CZK27. Given the doubts that quite a few market participants initially had about the CNB's resolve to achieve the stated aim, it took several hours before the exchange rate actually reached the €1 = CZK27 level. Within about three days, the volume of the Czech currency that the CNB had to sell in the market to keep the exchange rate from falling below €1 = CZK27 dropped to almost zero. The resulting rise in the CNB's holdings of forex reserves between end-September and December 2013 was about 20% (almost €7 billion). The CZK/EUR exchange rate before and recently after the interventions is on the Figure 4.

Figure 4: The CZK/EUR rate in the period of the beginning of interventions



Source: Czech National Bank

Analyses and simulations conducted by the CNB clearly showed that a depreciation of the exchange rate would have a positive effect in terms of achieving price stability and promoting economic recovery. In the initial phase, depreciation leads to an increase in the price of imported goods and thus to headline inflation, which prevents a fall in inflation expectations far below the central bank's target or into the deflationary zone. Households and businesses accordingly conclude that it is not worth waiting for a further price drop, and some of them start to consume more and invest. At the same time, the weaker exchange rate leads to the increased price competitiveness of Czech producers in international markets, which is then reflected, with a slight time delay, in an increase of exports. The weaker exchange rate simultaneously encourages demand for domestic goods also in the Czech market. Czech companies sell more and generate higher revenues, workers will have longer working time and there will be renewed growth in wages.

A weakening of the exchange rate of the koruna leads to an increase in import prices and thus also in the domestic price level. To a lesser extent, it also boosts domestic economic activity. The rise in import prices can be expected to reduce households' purchasing power, but households' demand may be redirected towards domestic goods and services to a greater extent and additionally supported by lower real interest rates as a result of higher inflation expectations. At the same time, the weaker exchange rate supports Czech exports and

the profitability of corporations and their willingness to invest. The recovery in production then contributes to a rise in employment and wages, which increases the purchasing power of households.

4. Conclusions

Two principal forces are crucial to explain the process of price convergence in the Internal Market. On the one hand, the catching up process of low income countries leads to a rise in the price levels and higher inflation over a transition period. The increase in overall price level affects consumption and production patterns. This tendency is based on market reforms, the composition of value added and an increase in the variety and quality of goods. On the other hand, the rise in competition exerts a downward pressure on prices because of lower mark ups.

The negative relation between the initial price level and subsequent price increases is evident. Countries with lower initial price levels tend to have higher inflation rates thereafter. Convergence of price levels will gradually occur. Catching up and competition seems to be important drivers to explain the path of price convergence. Catching up appears to be the most important regressor, especially for the New Member States.

Competition exerts a downward pressure on prices, most notably in the New Member States. For the Old Member States competition may have increased especially during the 1990s. Finally, the removal of price controls will lead to a decrease in relative prices in the Old, but to an increase in the New Member States. The opposite effects can be explained by the different degrees of price regulation in the Old and New Member States.

To sum up, there is some evidence that price convergence takes place in the Internal Market. Due to the enlargement, the speed of convergence has increased. Both catching up and competition factors are relevant to explain the process of price convergence, especially for the New Member States. However, it should be noted that the time series dimension of the regressions is too short for definitive conclusions. This is particularly true in the case of basic headings, and might explain some inconclusive results of the analysis.

References:

[1] BALASSA, B. (1964). "The Purchasing Power Parity Doctrine: A Reappraisal," Journal of Political Economy, Vol. 72: pp. 584–596.

[2] BEGG, D., EICHENGREEN, B., HALPERN, L.,VON HAGEN, J., AND WYPLOSZ, C. (2002), "Sustainable Regimes of Capital Movements in Accession Countries". London: Centre for Economic Policy Research, Final Report, May 2001, revised March 2002 (see http:// heiwww. unige.ch/~wyplosz/ ac_report.pdf).

[3] CZECH NATIONAL BANK. (2014). Selected Exchange rates – Charts. Available at http://www.cnb.cz/en/financial_markets/foreign_exchange_market/exchange_rate_fixing/charts_form.jsp?c=EUR

[4] BOHM, J., FILACEK, J., KUBICOVA, I., ZAMAZALOVA, R., (2011). Price Level Targeting – a Real Alternative to Inflation Targeting. CNB, Research Policy Notes.

[5] DEDEK, O., (2015). Zavedeni eura – Maastricht Criteria, Ministry of Finance of the Czech Republic, available at http://www.zavedenieura.cz/en/maastricht-criteria.

[6] DEUTSCHE BUNDESBANK. (2001). "Monetary Aspects of the Enlargement of the EU," Deutsche Bundesbank Monthly Report, October 2001: pp.15–30.

[7] DREGER, Ch., KHOLODILIN, K., LOMMATZSCH, K., SLACALEK, J., (2007). Price Convergence in the Enlarged Internal market. European Commission, Economic Papers No. 292.

[8] DUGUAY, P., (1994). "Some Thoughts on Price Stability versus Zero Inflation." mimeo, Bank of Canada.

[9] EUROPEAN COMMISSION., (2004a). Preliminary analysis of price data, DG Internal Market.

[10] EUROPEAN COMMISION., (2005). Internal market scoreboard 14.

[11] EUROSTAT., (2003). Purchasing power parities and related economic indicators for the euro area, accession countries, candidate countries and EFTA, Statistics in Focus 64.

[12] FILLION, J. F., TETLOW, R., (1994). "Zero-Inflation or Price-Level Targeting? Some Answers from Stochastic Simulations on a Small Open-Economy Macro Model." in Economic

Behaviour and Policy Choice under Price Stability, pp. 129–166, proceedings of a conference held by the Bank of Canada, October 1993.
[13] FISCHER, S., (1994). “Modern Central Banking.” in The Future of Central Banking: The Tercentenary Symposium of the Bank of England, pp. 262–308, edited by F. Capie, C. Goodhart, S. Fischer and S. Schnadt, Cambridge: Cambridge University Press.
[14] GOODHART, C. A. E., (1994). “What Should Central Banks Do? What Should Be Their Macroeconomic Objectives and Operations?” Economic Journal No. 104, pp. 1424–1436.
[15] HALDANE, A. G., SALMON, C. K., (1995). “Three Issues on Inflation Targets.” in Targeting Inflation, edited by A. Haldane, pp. 170–201, a conference of central banks on the use of inflation targets organised by the Bank of England, March 1995, London: Bank of England.
[16] HALPERN, L., WYPLOSZ, C., (2001). "Economic Transformation and Real Exchange Rates in the 2000s:The Balassa–Samuelson Connection," in Economic Survey of Europe 1, Geneva: UN Economic Commission for Europe, Chapter 6: pp. 227–240 (seehttp://heiwww.unige.ch/~wyplosz/lh_cw_bs.pdf).
[17] HAMPL, M., SKOREPA, J., (2014). Czech currency intervention. Central banking journal, BIS Paper 78. Available at http://www.cnb.cz/en/monetary_policy/bank_board_minutes/2012/amom_121219.html
[18] HOLUB, T., (2003). Price Convergence to thee EU: Some challenges for the monetary policy. Available at http://www.cnb.cz/miranda2/export/sites/www.cnb.cz/en/research/research_publications/erb/download/ERB_No1_2003.pdf
[19] HOLUB, T., (2014). Using the koruna rate as an additional monetary policy tool. Available at http://www.cnb.cz/en/public/media_service/interviews/media_2015/cl_15_150108_holub_doing_business.html
[20] LEBOW, D. E., J. M. ROBERTS, STOCKTON, D.J., (1992). “Economic Performance under Price Stability.” Working Paper No. 125, Board of Governors of the Federal Reserve System.
[21] MCCALLUM, B. T., (1990). “Inflation: Theory and Evidence.” in B. M. Friedman and F. H. Hahn, Handbook of Monetary Economics, Vol. 2 (North-Holland, Amsterdam), pp. 963–1012.
[22] TRADINGECONOMICS., (2016). Czech Republic Inflation rate. Available at http://www.tradingeconomics.com/czech-republic/inflation-cpi

Structural Funds (Cohesion Policy) 2007-2013. A comparative analysis of the EU Member States in the Central and Eastern Europe

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Abstract: The aim of the Cohesion Policy and its implementing financial instruments, the Structural Funds, was to reduce the development gap between different EU regions and strengthen the economic and social cohesion (Structural Funds Regulations 2007-2013, 2007). With the accession to the EU of new Member States (10 countries in 2004; 2 countries in 2007 and 1 country in 2013), the objective of the Cohesion Policy is even more actual and necessary, especially because these new Member States were all from the Central and Eastern Europe, having had a different political and economical regime and status. The aim of the present study was to understand how the new EU Member States managed the implementation of the Cohesion Policy 2007-2013 (how the EU funding was distributed nationally, what the money was spent on and what were the main results and lessons learnt), particularly because of their lack of experience of administering programmes.

Key-Words: *Structural Funds; Cohesion Policy; ERDF; Cohesion Fund; Central and Eastern Europe*

1. Introduction

European Union Structural Funds 2007-2013

The main objective of the European Union (EU) Cohesion Policy (and the accompanying Structural Funds) is to reduce the gap in the different EU regions' levels of development, in order to strengthen economic and social cohesion (Structural Funds Regulations 2007-2013, 2007).

Prior to the financial framework and programming period 2007-2013, the European Union was facing challenges as main effects of globalisation: acceleration of economic restructuring, the opening up of trade, the effects of the technological revolution, the development of a knowledge-based economy, but also derived from an ageing population and the growth of immigration (European Union - Regional Policy, 2007). The programming of the Structural Funds for the period 2007-2013 within the framework of the EU Cohesion Policy aimed at tackling these major challenges trough new legislative provisions, new objectives, simplified funding instruments, new norms for implementation, financially managing, controlling and evaluating the projects.

The **EU legislation** regulating the Structural Funds for the period 2007-2013 consisted of seven regulations adopted by the Council of the European Union and the European Parliament in 2006: General Regulation (Council Regulation (EC) No 1083/2006 of 11 July 2006) (European Union Law - EUR-Lex - a, 2006); Implementing Regulation (Commission Regulation (EC) No 1828/2006 of 8 December 2006) (European Union Law - EUR-Lex - b, 2006); ERDF Regulation (Regulation (EC) No 1080/2006 of 5 July 2006) (European Union Law - EUR-Lex - c, 2006) ; ESF Regulation (Regulation (EC) No 1081/2006 of 5 July 2006) (European Union Law - EUR-Lex - d, 2006); EGTC Regulation (European Grouping of territorial cooperation) (Regulation (EC) No 1082/2006 of 5 July 2006) (European Union Law - EUR-Lex - e, 2006); Cohesion Fund Regulation (Council Regulation (EC) No 1084/2006 of 11 July 2006) (European Union Law - EUR-Lex - f,

2006); IPA Regulation (Instrument for Pre-Accession) (Council Regulation (EC) No 1085/2006 of 17 July 2006) (European Union Law - EUR-Lex - g, 2006).

The Cohesion Policy (and the Structural Funds as implementing tools) for 2007-2013 targeted the following **policy areas**: research and technological development; innovation and enterprise; a knowledge-based society; transport; energy; the protection of the environment; investment in human capital; employment market policy; improving worker and business adaptability.

The Structural Funds 2007-2013 were **implemented** in the EU Member States following a simple process: the European Union developed strategic guidelines and the Member States adopted them into national strategic reference frameworks, maintaining their national specificities and priorities. In general, the Member States had a lot of flexibility in implementing operational programmes, with the responsibility of monitoring and control of implementation at national level.

The Cohesion Policy 2007-2013 has been organised around three **strategic objectives**: Convergence; Regional competitiveness and employment; and European territorial cooperation. The Convergence objective aimed to stimulate growth and employment in the least developed regions in the EU. It focused on innovation and the knowledge-based society, adaptability to economic and social changes and the quality of the environment and administrative efficiency. The Convergence objective was used in the EU regions whose GDP (Gross Domestic Product) per inhabitant was less than 75% of the Community average. The Regional competitiveness and employment objective aimed to reinforce the regions' competitiveness and attractiveness as well as employment, by anticipating economic and social changes. The European territorial cooperation objective aimed to reinforce cooperation at cross-border, transnational and interregional level, to promote common solutions for the authorities of different countries in the domain of urban, rural and coastal development, the development of economic relations and the setting up of small and medium-sized enterprises (SMEs) (European Union Law - EUR-Lex - a, 2006).

In order to implement these three strategic objectives, the Cohesion Policy 2007-2013 set up **three financial instruments** (the Structural Funds): the European Regional Development Fund (ERDF); the European Social Fund (ESF); the Cohesion Fund (CF). These financial instruments were intended to contribute to the achievement of the Cohesion strategic objectives as follows (Table 1):

Table 1. The Cohesion policy 2007-2013

Objective	Financial instruments
Convergence	ERDF ESF CF
Regional competitiveness and employment	ERDF ESF
European territorial cooperation	ERDF

Source: (European Union Law - EUR-Lex - a, 2006)

At the beginning of the programming period the **EU funding** available for the Structural Funds 2007-2013 were 308,041 billion Euro (at 2004 prices), i.e. 346,5 billion Euro (at today's prices, 2016) (European Union Law - EUR-Lex - a, 2006), which had to be complemented by Member States with national co-financing from public and private sources.

At the end of the programming period (calculated in March 2016) the **total funding** for the Structural Funds 2007-2013 was 477.1 billion Euro, of which 346.5 billion Euro from the EU budget, 105,3 billion Euro public co-financing and 25,3 billion Euro private co-financing from the Member States (European Commission, 2016)

2. Data and methods

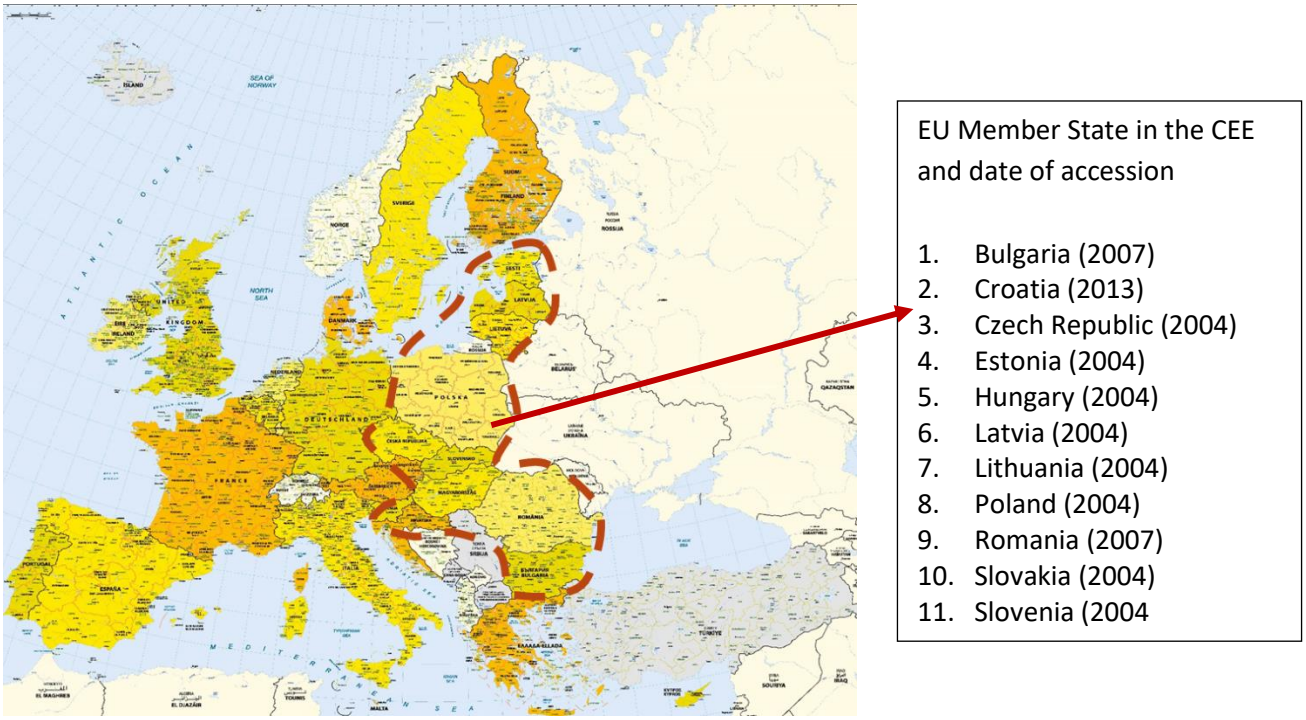
2.1 Research question and limitations

The aim of the Cohesion Policy and its implementing financial instruments, the Structural Funds, was to reduce the development gap between different EU regions and strengthen the economic and social cohesion (Structural Funds Regulations 2007-2013, 2007). With the accession to the EU of new Member States (10 countries in 2004; 2 countries in 2007 and 1 country in 2013), the objective of the Cohesion Policy is even more actual and necessary, especially because these new Member States were all from the Central and Eastern Europe, having had a different political and economic regime and status.

The aim of the present study was to understand how the new EU Member States managed the implementation of the Cohesion Policy 2007-2013 (how the EU funding was distributed nationally, what the money was spent on and what were the main results and lessons learnt), particularly because of their lack of experience of administering programmes.

For the purpose of the present paper, the group of EU Member States in the Central and Eastern Europe (the "new" Member States) was selected (Figure 1). The paper also refers in only to the Structural Funds ERDF (European Regional Development Fund) and CF (Cohesion Fund), thus not addressing the EU policy areas related to human capital and employment market, covered by the ESF (European Social Fund).

Figure 1. The EU Member States in the Central and Eastern Europe (CEE)



Source: (European Union, 2016)

2.2 Overall methodology

In order to find answer(s) to the research question stated above, the study used a qualitative research approach, involving exploratory research methods which provided opportunities to understand how the EU Member States in the CEE (the "new" Member States) used the Structural Funds 2007-2013, to understand the decisions taken at national levels to distribute these funds and to see how they have been used and what were the main results and lessons learnt. Among the research methods used in the study, there can be mentioned interpretation of data and qualitative review of statistics.

2.3 Data and data collection

The study used as data information provided by the European Commission (EC), Directorate General for Regional Policy – InfoRegio and results gathered by the European Commission based on the national inputs and published by the open databases of the European Commission, using as sources European Commission databases (Inforegio database), EU synthesis reports and country reports, EU working staff documents, EU archives legislation (EUR-Lex). The methods used in the study to collect this data were mainly data sets analysis; study of EU archival documents for 2007-2013 and 2016; collection of the most recent published reports and data of the EC (2016); analysis of public and official documents and materials (2007-2013, 2016). The EU evaluation of the programming period 2007-2013 for the Structural Funds ERDF and CF was finalized in March 2016, in terms of financials and figures; a EU synthesis report was published in August 2016, while country specific reports were published in September 2016 (European Commission - Regional Policy, 2016)

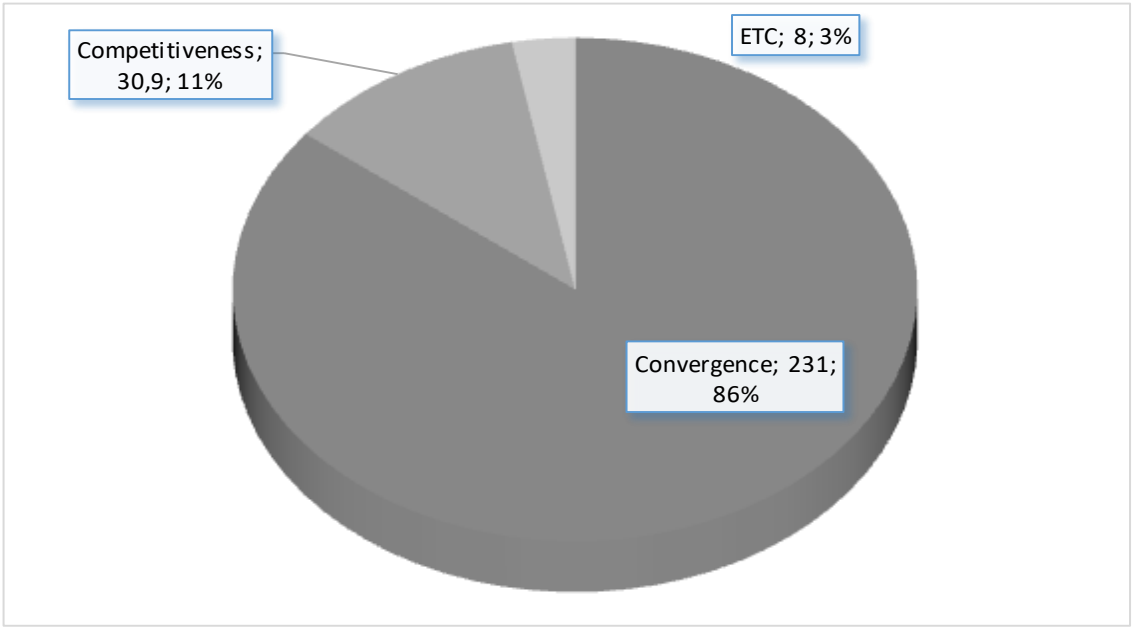
3. Structural Funds ERDF and CF 2007-2013 in the EU Member States in the CEE. Results and Discussion.

The total EU allocations for Structural Funds 2007-2013 was 346,5 billion Euro (in current prices, 2016), of which ERDF amounted to 200.0 billion Euro; CF represented 69.9 billion Euro; and the ESF was 76.6 billion Euro (European Commission, 2016).

3.1 The distribution of the ERDF and CF 2007-2013 on Cohesion Policy strategic objectives and policy areas

The Structural Funds ERDF and CF for the period 2007-2013 were allocated by the European Commission mostly on the Convergence objective, i.e. 88% of the total ERDF & CF Funds 2007-2013 (Figure 2). The Convergence objective referred to regions whose GDP (Gross Domestic Product) per inhabitant was less than 75% of the Community average. All the "new" EU Member States in the Central and Eastern Europe, as well as some of the "old" Member States, were eligible for receiving funding under the Convergence objective.

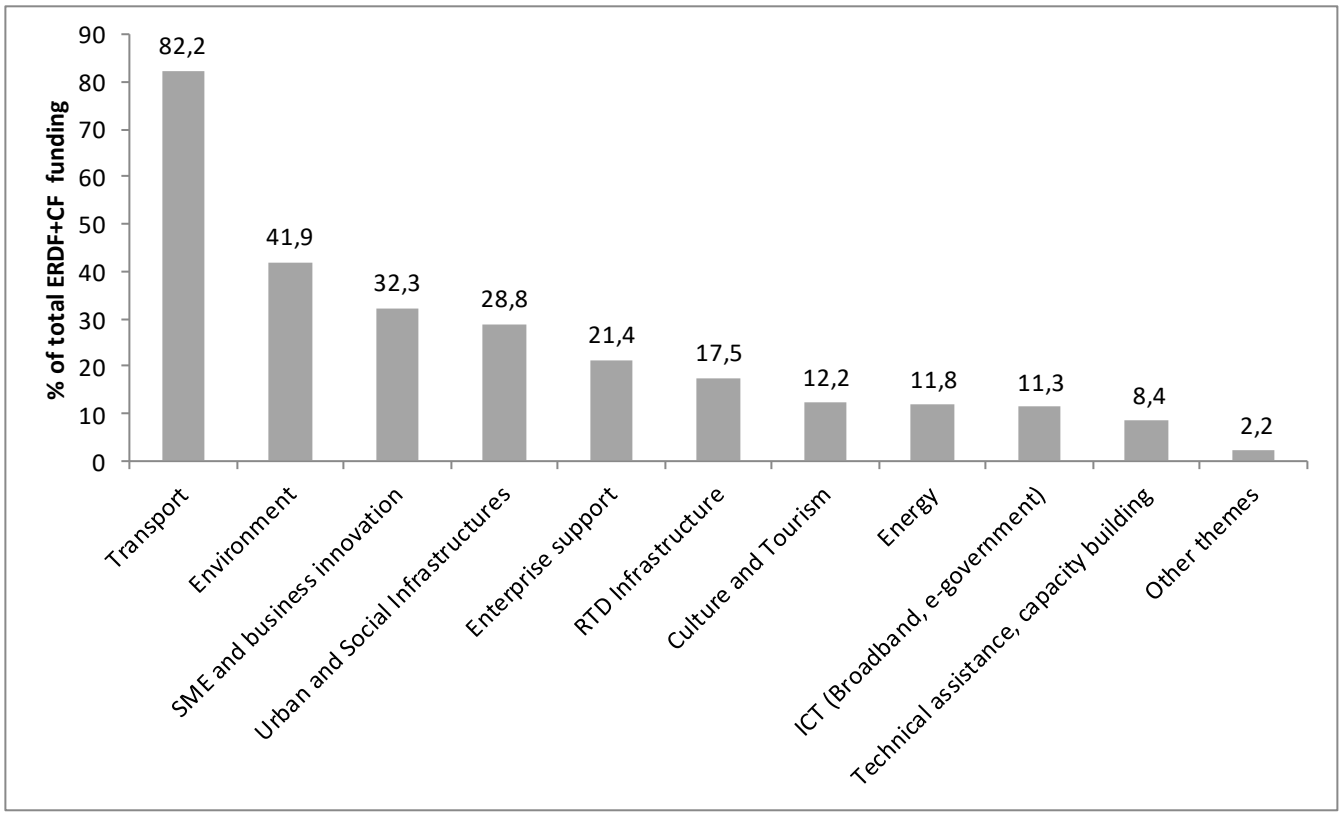
Figure 2. Distribution of ERDF and CF 2007-2013 per strategic objective of the Cohesion Policy, in billion Euro and percentage of total ERDF+CF



Source: DG Regional and Urban Policy, Infoview database, (European Commission, 2016)

The analysis and evaluation of the ERDF and CF Structural Funds 2007-2013 has been done along 7 policy areas, concerning innovation & RTD; enterprises (large; small and medium-sized – SMEs); transport; energy; environment; culture & tourism; urban development and social infrastructures. Within these policy areas, the European Commission identified 8 thematic areas which were evaluated, and for which this study collected data, namely Support to SMEs and business innovation; Financial instruments for enterprise support; Support to large enterprises; Transport; Environment: waste, water and waste water infrastructure; Energy efficiency in public and residential buildings; Culture and tourism; Urban development and social infrastructures (European Commission, 2016). The distribution of ERDF and CF on these thematic areas is presented in Figure 3.

Figure 3. Distribution of ERDF and CF 2007-2013 on Cohesion Policy thematic areas (in % of total 269.9 billion Euro)

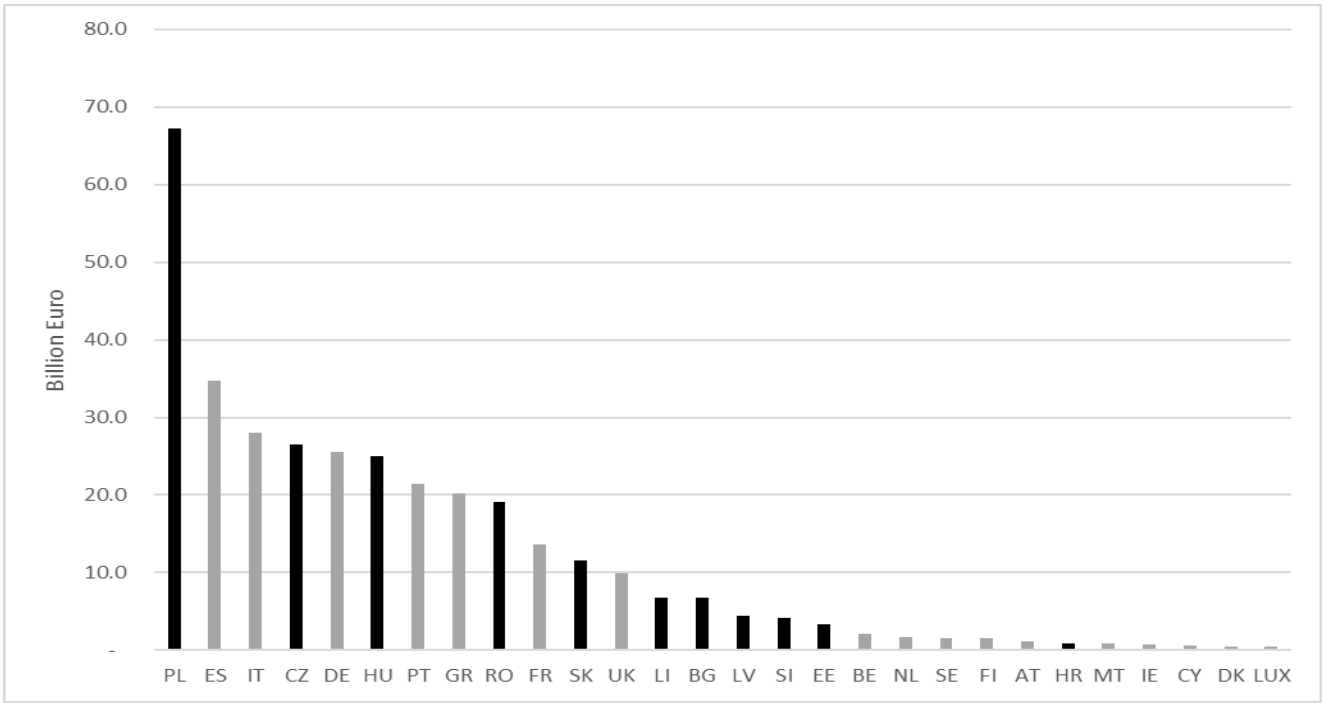


Source: (European Commission, 2016)

3.2 The distribution of the ERDF and CF 2007-2013 in the EU Member States

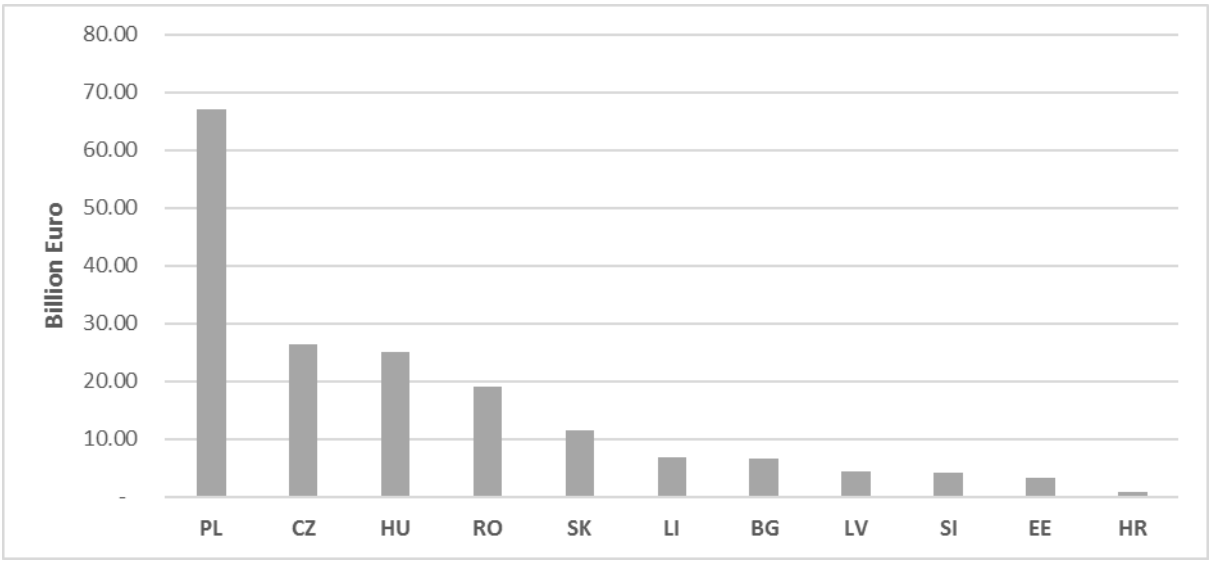
With 67.2 billion Euro, Poland received the largest ERDF+CF contribution among all EU Member States, "new" and "old", whilst the lowest amount went to Luxembourg (50.5 million Euro) (Figure 4). The EU Member States in the CEE that received Structural Funds ERDF&CF over 10 billion Euro for 2007-2013 were Poland, Czech Republic, Hungary, Romania, Slovakia (Figure 5).

Figure 4. ERDF and CF distribution of funding 2007-2013 (March 2016), in billion Euro
(Note: Croatia – HR, joined the EU only in 2013, at the end of the programming period 2007-2013)
"New" EU Member States in the CEE
"Old" EU Member States



Source: (European Union Open Data Portal, 2016), based on Eurostat and government statistics

Figure 5. ERDF and CF distribution of funding 2007-2013 in the EU Member States in the CEE (March 2016), in billion Euro
(Note: Croatia – HR, joined the EU only in 2013, at the end of the programming period 2007-2013)



Source: (European Union Open Data Portal, 2016), based on Eurostat and government statistics

3.3. The implementation of the ERDF and CF 2007-2013 in the EU Member States in the Central and Eastern Europe (CEE)

According to the Commission strategic priorities, the largest of the ERDF & CF Structural Funds were assigned to Transport (82.2% of total ERDF+CF funding), Environment (41.9%), SMEs and business infrastructure (32.3%) (see Figure 2). The Commission distribution of funding among priority areas did not, however, influence the national setting of priorities, all Member States being asked to develop their own national strategic frameworks. It can be understandable why all EU Member States in the CEE allocated high percentages of the ERDF&CF Structural Funds to Transport, for example, and low percentages to Energy (Figure 6e and Figure 6d). It is rather more difficult to explain why Bulgaria, Romania and Hungary allocated under 8% to Innovation and RTD, whilst all other Member States in the CEE considered over 15% and, in case of Estonia and Slovenia), over 20%. Looking at the data presented in Table 2 and Figure 6c, it can also be noted the differences between the Member States in the CEE with regard to Environment. Bulgaria, Croatia, Estonia, Latvia, Romania and Slovenia assigned over 20% of the ERDF&CF Structural Funds to the protection of the environment and waste recycling.

Table 2. The distribution of the ERDF and CF 2007-2013 among thematic areas in the EU Member States in the Central and Eastern Europe, in % of total ERDF and CF per country (at the end of March 2016)

Thematic area	BG	HR	CZ	EE	HU	LV	LI	PL	RO	SK	SI
Innovation & RTD	4.5	16.4	15.3	20.1	7	15.5	15.2	15.4	5.5	11.6	25.7
Entrepreneurship & Enterprise	8.9	1.9	3.6	3.3	11.4	1.6	4.1	5.0	9.2	1.2	4.0
ICT (citizens & business, broadband)	0.8	1.1	3.8	2.5	3.2	4.8	4.2	6.2	2.9	9.9	3.3
Environment	25.4	38.7	17.7	25.5	19.7	20.1	16.9	11.8	28.8	18.3	24.5
Energy	5.4		5.9	1.0	4.9	3.5	8.8	4.1	3.9	1.9	5.1
Transport	38.8	32.5	36.0	22.9	31.8	29.2	27.3	44.9	35.7	33.3	27.4
Culture & social infrastructure	6.1	1.3	8.2	19.5	13.9	15.2	16.8	6.6	8.9	15.4	5.5
Territorial dimension	3.5	2.9	6.7	3.2	4.1	7.7	5.5	3.3	1.4	4.7	2.7
Technical assistance, capacity building	6.6	5.2	2.8	2.0	4.0	2.4	1.2	2.7	3.7	3.7	1.8

Source: Compiled data from DG from Regional and Urban Policy, Country Reports ERDF & CF published September 2016, (European Commission - Regional Policy, 2016)

Figure 6. The distribution of the ERDF and CF 2007-2013 among main thematic areas in the EU Member States in the Central and Eastern Europe (CEE)

Source: DG for Regional and Urban Policy, Country Reports ERDF & CF published September 2016, (European Commission - Regional Policy, 2016)

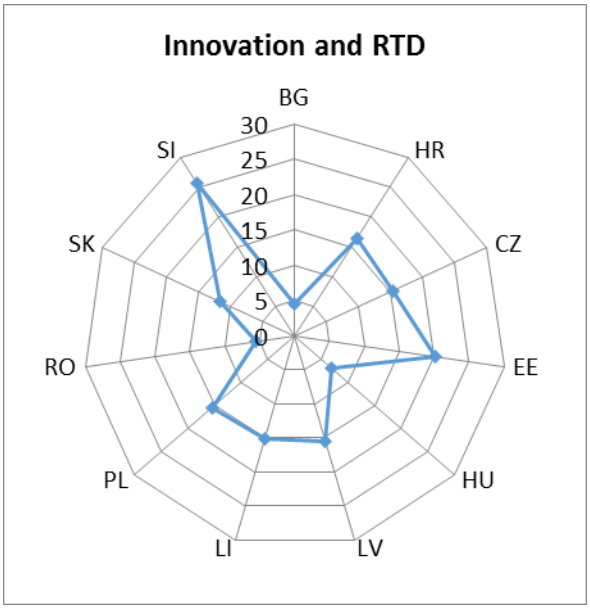


Figure 6a. ERDF and CF 2007-2013 for Innovation and RTD in the EU Member States in the CEE

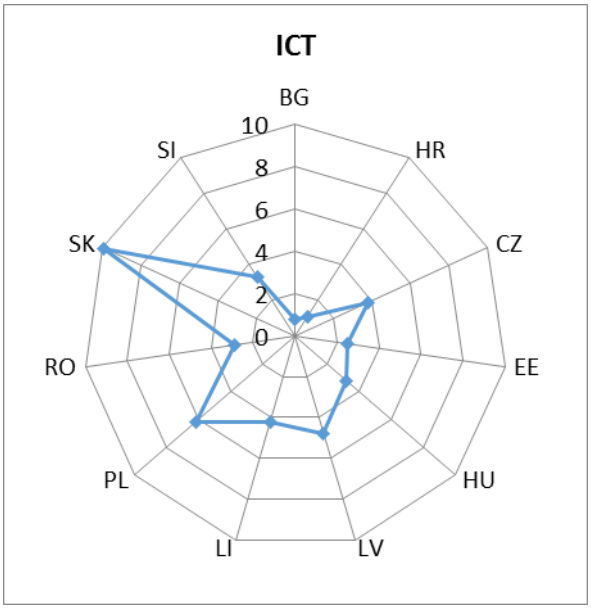


Figure 6b. ERDF and CF 2007-2013 for ICT in the EU Member States in the CEE

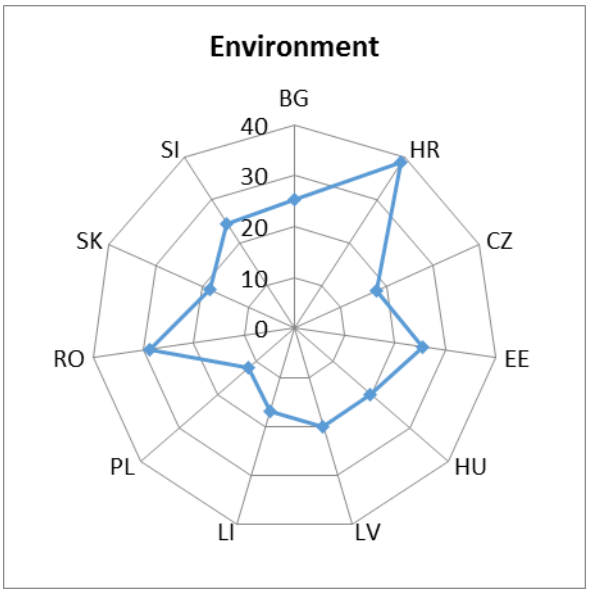


Figure 6c. ERDF and CF 2007-2013 for Environment in the EU Member States in the CEE

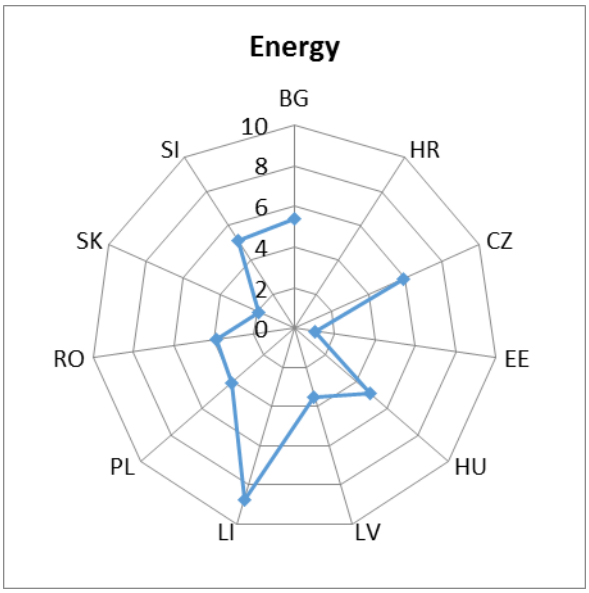


Figure 6d. ERDF and CF 2007-2013 for Energy in the EU Member States in the CEE

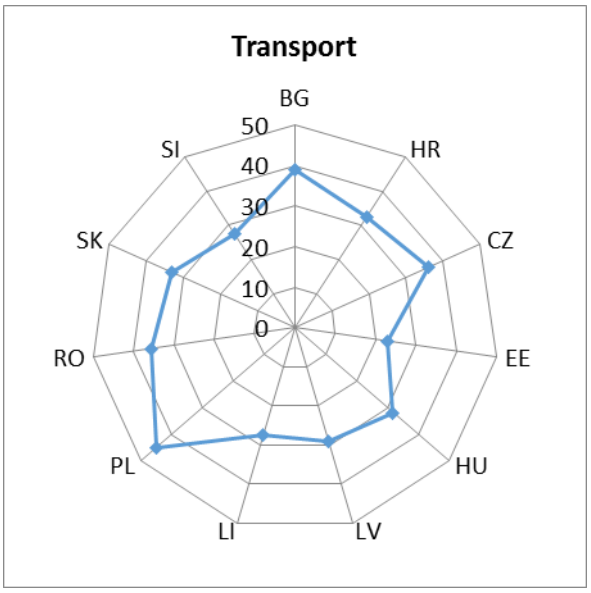
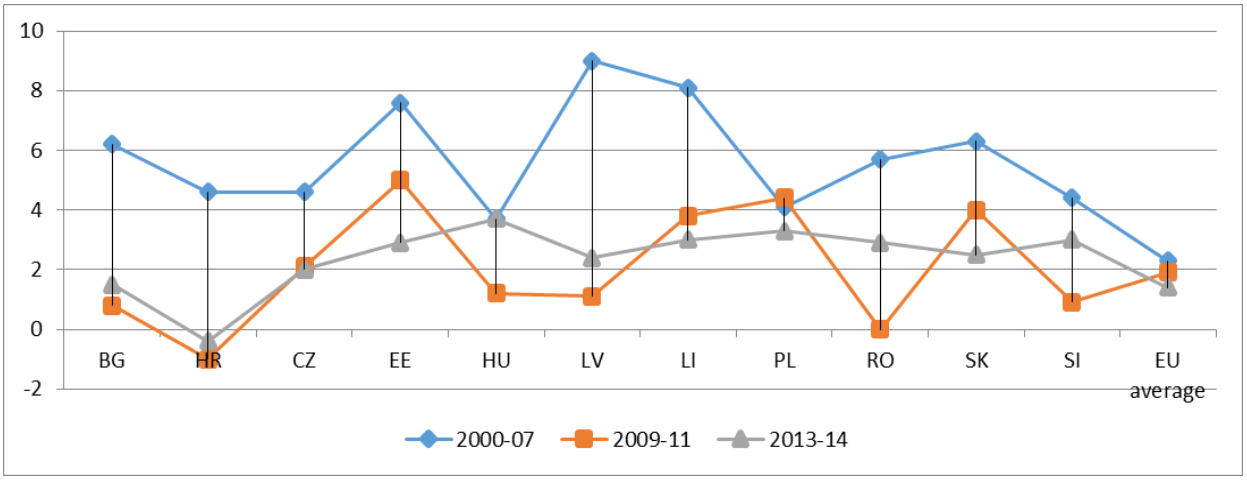


Figure 6e. ERDF and CF 2007-2013 for Transport in the EU Member States in the CEE

3.4 Core indicators measured as a result of implementing the ERDF and CF 2007-2013 in the EU Member States in the CEE

Following the global crisis in 2008, and subsequent economic and financial crisis, all EU Member States manifested a drop in the GDP. Among the Member States in the CEE, the most affected were Latvia, Lithuania, Croatia, Bulgaria, Romania (the biggest GDP drop) (Figure 7). The Structural Funds ERDF & CF have had a positive impact on the GDP growth on all EU Member States in the CEE, with an estimated increase in the GDP in 2015 by average + 4% above the level it would have been in the absence of EU funding (Table 3).

Figure 7. GDP growth 2000-2015 in the EU Member States in the Central and Eastern Europe



Source: Compiled data from DG Regional and Urban Policy, Country Reports Sept. 2016 (European Commission - Regional Policy, 2016)

Measured at the end of March 2016, the absorption of Structural Funds for the period 2007-2013 was maximum for Estonia, Latvia, Lithuania and Poland. The lowest absorption rate was identified in case of Romania (75%) (Note: Croatia, even if it joined the EU in 2013, still managed to absorb 64% of the Structural Funds) (Figure 8).

Figure 8. Absorption rate for Structural Funds 2007-2013 (ERDF, CF, ESF) (April 2016)
(Note: Croatia joined the EU in 2013, at the end of the programming period)

Source: Compiled data from DG Regional and Urban Policy, Country Reports Sept. 2016 (European Commission - Regional Policy, 2016)

According to the core indicators measured by the European Commission (based on national results), such as jobs created; number of RTD projects; research jobs created number of start-ups supported; km of road/rail new/reconstructed, etc, created as a result of the implementation of the Structural Funds ERDF&CF, the most successful among the EU Member States in the CEE were Hungary and Poland (Table 3). However, the core indicators were not compulsory in 2007-2013. For some indicators (e.g. the jobs figure) reporting was systematic, but for the other indicators there were cases where achievements on the ground went unreported, leading to undercounting (European Commission, 2016).

Table 3. Core indicators measured as a result of implementing the ERDF and CF 2007-2013 in the EU Member States in the Central and Eastern Europe

Core indicator	BG	HR	CZ	EE	HU	LV	LI	PL	RO	SK	SI
Jobs created	6018		22485	10908	108908	3333	7841	84636	35172	5068	5860
Number of RTD projects	71		1423	2000	3916	153	1526	1382	569	504	655
Number of cooperation project enterprises-research institutions	37		636		640	36	31	1057	41	279	3101
Research jobs created	244		3908		3623	336	674	5000	1160	40	
Number of direct investment aid projects to SME			8047		40644	163	1509	14955	2898	2104	
Number of start-ups supported			36		1991	1184		1993	101	291	25
Jobs created in SME (gross, full time equivalent)			241		41453			38624	13228	3111	
km of new roads	175		312	70	502			1886	368	80	52
km of new TEN roads	173		111		135			1056	314	41	
km of reconstructed roads	1040		2018	205	2521		1473	7216	1893	1626	11
Km of TEN railroads	234		294		20			482	22	64	89
km of	234		369		216	637			122	64	89

Core indicator	BG	HR	CZ	EE	HU	LV	LI	PL	RO	SK	SI
reconstructed railroads											
Additional capacity of renewable energy production (MW)			226	19		140	337	915	532	191	172
Additional population served by water projects (no)			371321	13695	478117	672161		262221		33019	291626
Additional population served by waste water projects (no)			490266	15804		90121	78478	537311		44195	194160
Area rehabilitated (km2)			147		581			144		1	
Number of jobs created in tourism			1792				814	3948		733	887
Impact on GDP growth	+4%		+4%	+4%	+5%	+5%	+4.3 %	+4.3%	+4%	+3.5%	+2.5%

Source: Compiled data from DG Regional and Urban Policy, Country Reports Sept. 2016 (European Commission - Regional Policy, 2016)

4. Conclusions

The EU Structural Funds ERDF and CF 2007-2013 assisted the EU Member States and regions in a period with many difficulties, the most important ones being on one hand the economic and financial crisis of 2008 and, on the other hand, the accession to the EU of a large number of countries with different stages of economic and social development.

For all the "new" Member States (all of which being located in the Central and Eastern Europe, CEE), the 2007-2013 was the first programming and implementation period, and they faced many challenges in terms of infrastructure and administrative capacity.

The difficulties in implementation of the Structural Funds 2007-2013, coupled with the effects of the global crisis, resulted in a slow take-up of the funding until 2012. Since that time, however, some of the EU Member States in the CEE increased their rate of absorption and in March 2016, Estonia, Latvia, Lithuania and Poland succeeded in 100% reimbursement rate. Romania and Croatia lag behind, with 75% absorption rate in case of Romania, and 64% absorption rate for Croatia, although it has to be noted that Croatia joined the EU only in 2013, at the end of the programming period 2007-2013.

The distribution of the Structural Funds ERDF and CF 2007-2013 on policy areas and priorities has been made by the European Commission. However, Member States had the possibility to decide, within their national strategic frameworks, how and how much to allocate on their own national priorities. The study noted that the EU Member States in the CEE approached two different strategies for the implementation of the structural funding: a focused approach on some target areas (for example, Slovenia) and a dispersed approach, with funding assigned to all areas (for example, Hungary, Poland, etc).

Based on the results presented in the paper, it can also be observed how the interests of the EU Member States in the CEE vary along policy areas. For example, Bulgaria, Romania and Hungary allocated under 7 % of the ERDF and CF Funds to Innovation and RTD, whilst Slovenia and Estonia assigned over 20% to the same priority. The same discrepancies among Member States are observed in case on Environment and Culture and Social Infrastructures.

Cohesion Policy 2007-2013, through its financial instruments ERDF and CF, had a positive impact on many indicators in the EU Member States in the CEE. The positive effect is clear in terms of the GDP growth, in the number of new jobs created or in terms of transport (road, rail, trans-European).

References

[1] European Commission - Regional Policy. (2016, April 08). *Evaluations of the 2007-2013 programming period* . Retrieved from Regional Policy: http://ec.europa.eu/regional_policy/en/policy/evaluations/ec/2007-2013/

[2] European Commission. (2016). *Ex post evaluation of the ERDF and Cohesion Fund 2007-13* . Brussels: European Commission.

[3] European Union - Regional Policy. (2007). *Cohesion policy 2007-2013.* Brussels: European Commission.

[4] European Union. (2016). *EU member countries*. Retrieved from Countries: https://europa.eu/european-union/about-eu/countries/member-countries_en

[5] European Union Law - EUR-Lex - a. (2006, July 11). Council Regulation (EC) No 1083/2006 of 11 July 2006. Brussels, Belgium.

[6] European Union Law - EUR-Lex - b. (2006, December 8). Commission Regulation (EC) No 1828/2006 of 8 December 2006. Brussels, Belgium.

[7] European Union Law - EUR-Lex - c. (2006, July 5). Regulation (EC) No 1081/2006 . Brussles, Belgium.

[8] European Union Law - EUR-Lex - d. (2006, July 5). Regulation (EC) No 1081/2006. Brussels, Belgium.

[9] European Union Law - EUR-Lex - e. (2006, July 5). Regulation (EC) No 1082/2006 . Brussels, Belgium.

[10] European Union Law - EUR-Lex - f. (2006, July 11). Council Regulation (EC) No 1084/2006 of 11 July 2006 . Brussels, Belgium.

[11] European Union Law - EUR-Lex - g. (2006, July 17). Council Regulation (EC) No 1085/2006 of 17 July 2006 . Brussels, Belgium.

[12] European Union Open Data Portal. (2016, September 12). *EU Regional Policy 2007-2013 : Allocation by Member State and by Fund* . Retrieved from European Union Open Data Portal: https://data.europa.eu/euodp/en/data/dataset/allocation-by-member-state-and-by-fund-2007-2013

[13] *Structural Funds Regulations 2007-2013*. (2007). Retrieved from EU Regional Policy: http://ec.europa.eu/regional_policy/en/information/legislation/regulations/2007-2013/

Theories Regarding Risk Rates: Structure, Factors That Influence Fixes Income Financial Investments

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Abstract: Bonds – as a representative type of securities for fixed income financial investments with a long-term maturity – have a price which reflects the disadvantages of interest rate modifications. This price illustrates a well-known characteristic of financial markets, respectively: the high volatility of long-term bonds rate in comparison with short-term securities rate. The variations of interest rates reflect the risks of investments made in long-term bonds. Investors and financial investment managers are permanently concerned with protecting against interest rate risk.

Keywords: default risk, anticipation theory, the theory of the segmented markets, liquidity premium theory, preferred areas theory.

1. Introduction

Long-term fixed income financial investments pose an interest rate risk that is higher in comparison with short-term securities rate. The duration of owning securities which have an equal maturity is different; thus, because the final value of securities is fixed, this value cannot be affected by interest rate variations. The return for owning such securities is equal with the actuarial rate calculated at its acquisition price.

Buying high rate bonds is the only important choice for a good placement. Actually, everything depends on the interest rate calculated during the period of owning the bonds. The correct measurement of the income for owning bonds during a certain period represents their return, i.e. the return rate. Return is the sum of payments made during the owning period and it is a capital income that finally is gained (including by reimbursement) and it is calculated in relation to the initial price.

Return results from owning bonds and it can be different from their interest rate. Return results after a placement is made and it is calculated in relation to the evolution of the interest actuarial rate, which may amount at the initial level of an owned asset until this asset reaches its maturity.

2. Literature review

The rate structure expressed as an interest rate risk. This rate structure is explained in relation to three factors:

(a) Non-payment risk (default risk)

Non-payment risk (or default risk) is one of the characteristics that are specific to bonds which are influenced by the interest rate; in other words, the bond issuer is unable to pay interests or to reimburse the main bond owner.

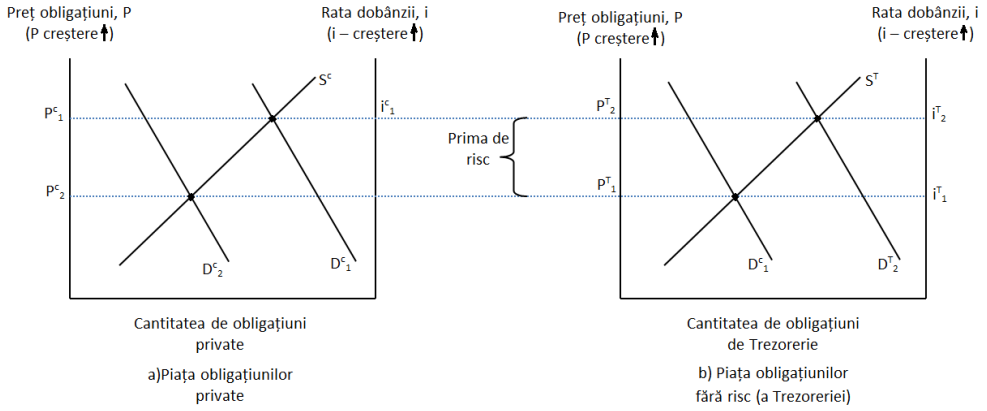
In general it is considered that Treasury bonds do not have a nonpayment risk in comparison with the ones issued by enterprises because governments can increase charges for debt payment or they can issue currency for paying debts. These bonds are known as riskless bonds. Similarly, in reach countries State debts are considered risky.

The difference between the interest rate of risky bonds and riskless bonds is known as premium risk. It represents the additional rate that the owner of a bond gets and it poses a nonpayment risk for accepting the owning of more riskless bonds.

The analysis of supply and demand existing on bonds market allows us to explain why a bond that poses a nonpayment risk still pays a positive risk premium and why this premium increases alongside with nonpayment risk.

For evaluating the effect of non-payment risk on the interest rate, we have elaborated the charts of supply and demand for riskless bonds issued by Treasury and for the private bonds issued by an enterprise – see picture 1. We presume that private bonds have the same risk as the ones issued by the Treasury. Their price and their interest rate are initially equal ($P_1^C = P_1^T$ and $i_1^C = i_1^T$) naturally if the risk premium of private bonds $(i_1^C - i_1^T)$ is null.

Figure 1. The effects of an increase in nonpayment risk for bonds within an enterprise



An increase of the nonpayment risk for private bonds modifies the demand curve for these bonds, named "D_1^c" and "D_2^c". Simultaneously, it modifies the demand curve for Treasury bonds, named "D_1^T" and "D_2^T". The balance prize (on the left axis) for private bonds named "P_1^c" and "P_2^c" and the interest rate for these bonds, named "i_1^c" and "i_2^c" (on the vertical axis). On the Treasury bonds market one can find the balance price "P_1^T" and "P_2^T" and the interest rate "i_1^T" and "i_2^T". The difference between "i_2^T and "i_2^c" identifies the risk premium that is specific to private bonds.

If nonpayment is more likely to appear, for example because the enterprise suffers losses, then the nonpayment risk is increased and this reduces the anticipated return of the bonds. Moreover, return is uncertain. Active demand theory stipulates that if the anticipated return of an asset increases in relation to other assets (in this case we refer to the riskless bonds issued by the Treasury) or if relative risk increases, its demand is reduced.

The demand curve for private bonds moves to the left in part (a) - Figure 1.

(b) Liquidity

The second characteristic of bonds, which affects the interest rate, is its liquidity. A liquid active is an asset which can be converted into money quickly and at a low price. Furthermore, an asset is liquid when its owning is desirable and any choice from the existing assets seem to be similar. In several countries, the Treasury assets are long-term bonds and are more liquid because modifications are quite large, while these assets are facile and can be sold quickly. Private bonds are, in general, less liquid because no enterprise issues bonds as the State does. They can be issued for sale in emergency and it might be difficult to find buyers immediately.

The supply and demand analysis of bonds reveals that liquidity is affected by the interest rate. If we suppose from the beginning that private bonds and the Treasury bonds have the same liquidity and are identical from all the other points of view, their price and the balance interest rate are similar. If private bonds become less liquid, their demand drops, as well as the price, while the interest rate goes up. Similarly, the Treasury bonds supply increases because their liquidity increases in relation to private bonds, their price goes up and the interest rate decreases.

At the same time, "the premium risk" of private bonds and Treasury bonds does not represent the only nonpayment risk difference; the same is true for the liquidity difference between the two. This premium should be named "risk and liquidity premium", even though the name of this premium remains unchanged out of habit and because it is more facile to call it this way.

(c) Fiscality

The behavior of municipal bonds is mysterious, especially in the USA. Bonds issued by local bodies are less liquid than the ones issued by the American Treasury although for more than 60 years the interest rate has been lower than the one for Treasury bonds. This happens in the countries in which the bonds of local bodies are exempted from the federal taxes on income and this increases their return. After 25 years the USA has reconsidered federal taxes.

3. The rate structure through maturity of the interest rate

Another essential characteristic of bonds, which affects their interest rate, apart from the identification of their structure through the interest rate risk, is represented by the maturity of the interest rate: two bonds whose risk, liquidity and fiscality are identical may have different interest rates because their maturity is different. The representation of interest rates for bonds in relation to their maturity is known as the yield curve.

The yield curve is the structure identified through the interest rate for a category of bonds, for example for the Treasury bonds.

The yield curve can be descending, flat or ascending (we refer to the inverted yield curve). It is ascending when the long-term interest rate is higher than short-term interest rates; it is flat when these rates are identical and it is descending when short-term interest rates are higher. Rate curves may be found in more complicated shapes, which could be successively ascending and descending or vices versa.

A good theory of the structure through the interest rate maturity is not the only one which can explain the varied shapes that rate curves can take; however, similarly, the following facts have been proved valid by many empirical studies:

a) The interest rate for different bonds which have various maturities varies, in general, in time.

b) When the short-term interest rate is low, rate curves are more likely to be ascending because they are high.

c) Rate curves are normally ascending.

There are three theories that explain the structure through the maturity of the interest rate:

A. Anticipation theory

B. Segmented markets theory

C. Liquidity premium theory.

Anticipation theory explains the first two statistical facts except for the third one. The theory of segmented markets explains the last statistical fact but it fails to explain the first two ones. The theory of the liquidity premium is a synthesis of the first two ones, which explicitly combines all the three facts.

3.1. Anticipation theory

According to the anticipation theory – in connection with the structure explained through the interest rate maturity – the interest rate of a long-term bond is equal with the average of the short-term interest rate for the economic agents selected to notice the evolution of bonds in time. For example, if we anticipate that the short-term interest rate maturity corresponds with the 10% average for a period of 5 successive years, the anticipation theory foresees that the interest rate for the 5-year bonds will be equal with 10%. If we anticipate that the short-term interest rate increases after 5 years and that the average for 20 successive years amounts at 11%, the interest rate for a 20-year bond will be 11%, i.e higher than the interest rate for 5-year bonds.

According to this theory the interest rate of bonds with different maturities differs from the short-term interest rate with anticipated maturity for different periods in the near future.

The final hypothesis of this theory is that the buyer does not prefer to buy bonds which have a higher maturity than the other ones; thus, the buyer is not going to own bonds whose return, for a given period of time, will be lower in comparison with other bonds that are perfect substitutes. In fact, if bonds are perfect substitutes, their interest rate is going to be rigorously equal.

To understand why these hypotheses - referring to perfect substitutes between bonds that have different maturities - lead to the anticipation theory, we suggest considering two investment strategies, i.e.:

1) Buying a 1-year bond, and buying a newly issued one, for a 1-year term; in other words, these bonds have a 1-year maturity.

2) Buying a 2-year bond and owning it till it reaches maturity.

Because there are two bonds that are owned, they will have the same anticipated return and the interest rate for 2-year bonds will be equal with the average of the two 1-year bonds. If, for example, the interest rate

for 1 year is 9% and if we foresee that the 1-year interest rate will be 11%, the first strategy leads to an anticipated 2-year return (9%+11%)/2 of 10% per year.

A buyer is not indifferent to the two strategies because the interest rate for 2-year bonds is 10%. The substitute nature of the two strategies reveals that the interest rate for 2 years is the average of two interest rates that are owned for 1 year successively.

Generally speaking, for a 1 Euro placement, one chooses, for two periods, either to own a bond whose maturity is a two-period term or successively two bonds which have the maturity for each period.

The variables are the following ones:

$-i_t$= the interest rate today (time t) for a bond whose maturity is established for one period.

$-i^e_{t+1}$ = the anticipated interest rate today for a close maturity (time t+1) for a bond whose maturity is established for one period.

$-i_{2t}$= today's interest rate of a bond with a two-period maturity.

The anticipated return for the two periods of a 1-Euro placement for bonds that are owned during two periods of time, and preserved during the 2-period term, is equal with:

$$(1 + i_{2t})(1 + i_{2t}) - 1 = 1 + 2i_{2t} + (i_{2t})^2 - 1 = 2i_{2t} + (i_{2t})^2$$

Consequently, the value of the 1-Euro placement for a 2-period term is equal with:

$$(1 + i_{2t})(1 + i_{2t})$$

The return is equal with the diminished volume of the 1-Euro placement in relation to the initial placement, which is of 1 Euro.

Since "i^e_{2t}" it is, in general, very low in relation to $2i_{2t}$, it can simplify and consider that the anticipated return for two periods is of $2i_{2t}$.

If we adopt another investment strategy, successively buying two bonds with a maturity for a certain period, the anticipated return for a 1-Euro investment that have a two-period term will be:

$$(1 + i_t)(1 + i^e_{t+1}) - 1 = 1 + i_t + i^e_{t+1} + i_t(i^e_{t+1}) - 1 = i_t + i^e_{t+1} + i_t(i^e_{t+1}).$$

Thus, after a certain period, the 1-Euro investment becomes "$1 + i_t$" Euro, which, reinvested in a new bond becomes"i^e_{t+1}" what we give $(1 + i)(1 + i^e_{t+1})$. Deducing the Euro of the initial placement and dividing through the volume (still 1 Euro) of the initial placement, we obtain the anticipated return of this strategy. Since for a moderate interest rate, the outcome "i_t" through "i^e_{t+1}" is low (if $i_t = i^e_{t+1} = 10\%$, therefore 0,01), one can simplify and consider that the anticipated return for two period amounts at:

$$i_t = i^e_{t+1}$$

If we could resort to an arbitrage, there would not be holders for all bonds considering that the return for these two placement strategies were similar; in other words:

$$2i_{2t} = i_t + i^e_{t+1}$$

Hence:

$$i_{2t} = \frac{(i_t + i^e_{t+1})}{2}$$

Thus, the rate for bonds whose two-period maturity is equal with the average for the two rates for one period.

The same return could be obtained for bonds whose maturity is more important and for an important number of periods, as wished. Thus, we find that the interest rate marked with “i” of a bond with a maturity for “n” periods that may be equal are written as follows:

$$i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + .. + i^e_{t(n-1)}}{n}$$

In other words, the interest rate of a bond with “n” periods will be equal with the average of the interest rate of a period, as well as with the interest rate of a bond for an anticipated period, respectively for “n” successive periods. The anticipation theory for the rate curve is precisely expressed in this manner.

An example could facilitate understanding. Let us suppose that the interest rates for an anticipated year for every 5 successive years are subsequently: 5%, 6%, 7%, 8% and 9%, through equation 2; the interest rate for a 2-year bond could be:

$$\frac{5\% + 6\%}{2} = 5{,}5\%$$

The interest rate for a 5-year bond could be:

$$\frac{5\%+6\%+7\%+8\%+9\%}{5} = 7\%$$

The anticipation theory is an elegant theory that explains why the rate curve can have various shapes. It suggests that if the interest rate curve is ascending, this is due to the fact that it anticipates an increase of the short-term interest rate for the future. Vice versa, when the interest rate curve is descending, the anticipation theory suggests that the short-term interest rate will be descending in the future.

It does not foresee stability for the interest rate if the rate curve is flat.

The anticipation theory explains for the first time the facts that we previously presented and it refers to the interest rate of bonds that have different maturities which interchange in time in parallel. Historically, the interest rate has the following characteristics: if it is ascending today, it tends to ascend in the future; consequently, if it is descending today, it tends to ascend the anticipated interest rate in the future.

The long-term interest rate is the future average of short-term rates; an increase of the short-term interest rate influences the long-term interest rate, which leads to parallel variations.

The anticipation theory explains the second fact for it is known that the rate curves tend to be ascending when the interest rate is low and descending when the interest rates are high.

Consequently, when rates are low, one generally anticipates that they will be higher in the future, and that they will later have an average or "normal" level; similarly, the anticipated interest rates for the future are higher to the short-term interest rates which are currently very high; one can anticipate that the interest rate will be lower and will be again "normal" in the future. This makes today's long-term rate to be even lower in comparison with the short-term interest rate, which is illustrated as an inverted yield curve.

The anticipation theory must also simply explain a large number of characteristics of the structure through the maturity of interest rates. Unfortunately, it does not explain the third fact presented before: the interest rate follows a normally ascending trend.

Consequently, according to the anticipation theory, for a normal anticipation it is recommended to use a high level of the short-term interest rate.

The anticipation theory supposes that there are systematical errors of anticipations, which is quite unacceptable. In order to be keep up with the historical evolution of the interest rate, the rate curves become, according to this theory, flat averages, i.e. curves which do not ascend.

3.2. Segmented markets theory

According to the theory of segmented markets, the markets of bonds that have varied maturities are segmented or evolve separately. The price for each of these markets and the interest rate for bonds that have their own maturity is determined in relation to supply and demand, without having an effect on the anticipated returns of bonds that have different maturities.

The key hypothesis of this theory is that bonds with differential maturity cannot be substituted, which leads to the fact that the anticipated return of a bond with a certain maturity does not have any effect on the demand for a bond with a different maturity. This hypothesis is quite different from the anticipation theory, according to which bonds with varied maturities can be perfectly interchanged.

The argument that does not support the substitution of bonds which have different maturities is that investors have important arguments when they choose a certain maturity or another one. This happens because they think of a precise placement duration and they wish that their placement maturity is identical for eliminating risk (when the maturity is equal with the placement duration, the return is well-known and it is equal with the actuarial interest rate; thus, the interest rate risk is reduced to zero).

The theory of segmented markets explains the differentials of rate curve shapes through the different supply and demand trends between the different maturities bonds markets. It is likely for investors to have in general a preference for shorter placement duration; we refer to loan duration; thus, the balance interest rate on the bonds market for short-term bonds is lower than the one for long-term bonds.

Similarly, the theory of the segmented markets explains the third statistical fact that we referred to above, for it considers as it is well-known that short-term interest rates are in general lower in comparison with long-term interest rates; in other words, the rate curve is in general ascending.

The theory of segmented markets explains the ascending rate curves but it does not explain the first two facts. In consequence, if markets for bonds with different maturities are previously separated, this is not sensible because interest rates for bonds with different maturities vary in general. The relation between different maturities and the rate level does explain why the interest rate curve tends to be ascending when rates are low and descending (or vice versa) when rates are high.

Since each of the two theories referring to the structure through the maturity of interest rates partially explains facts, it is logical for them to be combined with the liquidity premium theory so that together they could offer a general explanation.

3.3. The liquidity premium theory and preferred areas theory

3.3.1. The liquidity premium theory

According to the liquidity premium theory, the interest rate for a long-term bond is equal with the average of anticipated short-term interest rates calculated for the whole duration of a bond, whereas the increase of a liquidity premium depends on the supply and offer that exist on the market for these bonds.

The key hypothesis for the liquidity premium theory is that bonds with different maturities can be substituted, a fact which proves that the anticipated return of a certain type of bonds influences the price of another type of bonds; however, this substitution is irreversible because investors can prefer bonds with a certain maturity to bonds that have a different maturity. Similarly, investors prefer short-term bonds because they pose a lower risk for the interest rate.

Actually, long-term bonds are not owned by investors because their return has a positive liquidity premium, which compensates their shortcomings in relation to short-term bonds. Similarly, the anticipation theory is modified with the help of a liquidity premium in the equation and in relation to long-term interest rates and the anticipated short-term interest rates; the equation if written as follows:

$$I_{nt} = \frac{i_T + i^e_{t+1} + i^e_{t+2} + .. + i^e_{t(n-1)}}{n} + i_{nt}$$

where:

I_{nt}= the liquidity premium of a bond with a maturity for "n" periods and for the moment "t ".

This theory, i.e. the liquidity premium theory, corrects a lack in the previous theory, i.e. the fact of knowing the indifference attributed to investors in relation to the maturity of the bonds that they own.

According to the theory created by J. Hicks in 1939, the long-term rate takes into account the future short-term interest rates anticipations and also contain a liquidity premium:

$$or_T = \sqrt[T]{(1+or_1)(1+E(1r_1)+1L_1)(1+E(2r_1)+2L_1)\ldots.+(1+E(1r_1+T-1L_1))} - 1$$

where:

or_T= the noticeable actual interest rate

$1L_1$, $2L_1$= the liquidity premium which investors have for accepting the risk posed by the prolongation of maturity for the bonds that they hold for each supplemented year.

This is so because the volatility of the bonds price increases with its maturity in a descending rhythm with ${}_1L_1 < {}_{T-1}L_1 < {}_{T-2}L_2$, …

The different values for "L" remain positive, however.

Liquidity premiums make the structure of the rate have the same framework if the future short-term rates are stable; the ascending trend of this structure is stronger if there is a decrease of the rate and the decreasing curve of the structure is stronger if there is a decrease of the rate, whereas the ascending curve of the structure is diminished and it will even follow an ascending trend.

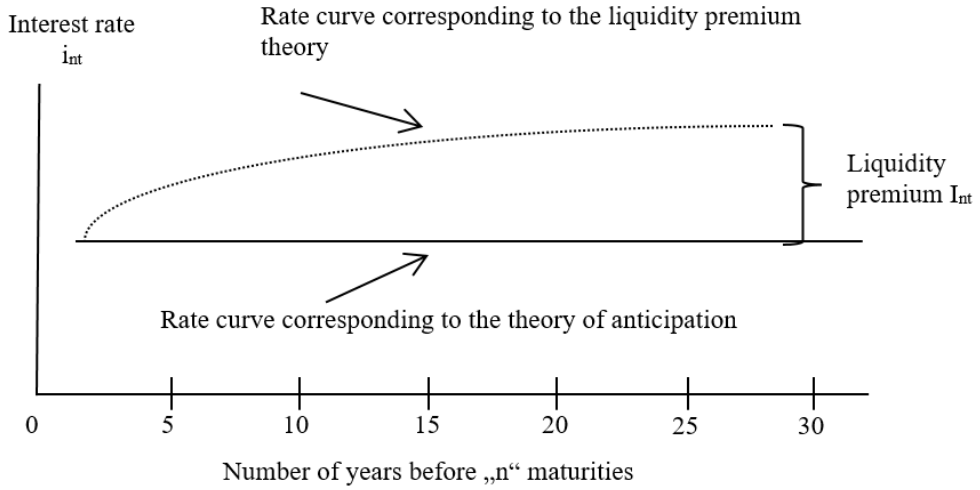
3.3.2. Preferred areas theory

This theory is quite close to the liquidity premium theory. It also modifies the anticipation theory. It supposes that investors prefer bonds with a certain maturity, which respond to a preferred localization. The reason why they prefer bonds with a certain maturity is represented by the fact that they do not accept to hold bonds with different maturities whose return is higher.

Since, in general, investors prefer short-term maturities to the long-term ones, they do not accept to own long-term bonds whose anticipated returns are higher and lead to the same equation as it happens with the liquidity, i.e. normally ascending together with the maturity.

The relation between the anticipation theory and the liquidity premium theory (or the preferred areas theory) is presented in picture 2. Since the liquidity premium is positive, it (normally) increases with maturity, whereas the rate curve foreseen by the liquidity premium is however low in comparison with the one foreseen by the anticipation theory and it is, in general, ascending on the curve that evolves faster.

Figure 2. The relation between liquidity and the theory of anticipation



Liquidity premium theory (or the theory of preferred areas) facilitates the explanation of the three formerly presented facts. Thus, it explains that the interest rates of bonds that have different maturity terms vary in parallel in the course of time because an increase of the short-term interest rate illustrates that this rate is going to be higher on the average in the future, a fact which implies an increase of the long-term interest rate, as well.

It also explains that the interest rate curve tends to be faster when the rate is very low and vice versa when the rate is very high. This fact generally makes investors anticipate that the short-term rate will increase when the average of the future short-term interest rates is abnormally low, thus becoming higher to the present ones. With the increase of a liquidity premium, the long-term interest rates are going to be significantly low. Vice versa, if short-term interest rates are very high, the anticipation of their reduction can be thus through the liquidity premium, so that long-term rates are lower than short-term rates, generating an inverted yield curve.

Premium liquidity theory facilitates market anticipations for the future short-term interest rates, which are partially noticeable with the yield curve. An ascending curve indicates that the short-term interest rate is going to go up in the future. A moderately ascending curve indicates that the rate is going to be relatively stable; a flat curve points out that short-term interest rates are going to moderately go down. Finally, an inverted yield curve indicates that the interest rate is going to be forced to go down.

4. Conclusions

The structure through the interest rate risk, in other words the relationship between the interest rate for bonds which have the same maturity is explained by three factors: nonpayment risk, liquidity and fiscality. When the nonpayment risk of a bond is increased, the risk premium (the difference between the interest rate and the riskless payment Treasury bonds) increases, too. The higher liquidity of Treasury bonds is also justified by the fact that their interest rate is lower than the one of securities with lower liquidity. Finally, a favorable fiscal treatment, as the one of American municipal bonds, lead to a lower interest rate.

References

[1] Frederic S. Mishkin – “Monnaie, banque et marchés financiers”, Pearson Education Publishing House, France, Paris, 2007;
[2] Alexandru Olteanu, Florin Manuel Olteanu – “Managementul portofoliului și a riscului pe piața titlurilor financiare”, The Publishing House of “Andrei Șaguna” Foundation, Constanța, 2011.

Exchange Rate Differences-the Accounting Treatment and its Influence on the Financial Performance of an Economic Entity

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Abstract: Currency rate differences arise when there are certain debt rights or obligations in foreign currency of an economic entity which are collected i.e. paid for at a different course from the one displayed by the Romanian National Bank on the date of their establishment. Such differences, according to the situation, generate expenditure or revenue which affects a company's financial result and, consequently, the accountant result as well. The results registered by an economic entity presented in the Profit and Loss Account provide information about its financial performance. This performance can be influenced by the favorable or unfavorable exchange rate differences existing when an economic entity carries out transactions or has incurred foreign currency loans having a significant share in the total amount of transactions or in capitals. The present paper shows the accounting treatment of the exchange rate differences and its impact on the financial performance.

Key words: exchange rate differences, financial result, accounting result, financial performance.

1. Introduction

The relationships that economic units have with customers, suppliers and lenders generate debt rights and payment obligations or commitments. Depending on the field of activity, some or all transactions with customers and/or suppliers may be in foreign currency. Some economic units resort to foreign currency loans to finance their working activity. The accounting law stipulates that all transactions in foreign currencies be expressed in Romanian currency (lei), at the exchange rate displayed by the National Bank of Romania, an exchange rate that may undergo alterations from the date of lodging the claim/debt in foreign currency and the time of settlement. Therefore, exchange rate differences may appear.

The study undertaken aims at presenting the concept of exchange rate differences, the possible situations that arise, their recognition in accounting in accordance with the national rules in force, as well as their influence on the financial performance of an economic unit.

The importance of this study lies in highlighting the impact of exchange rate differences on the results obtained by an economic unit and presented through the profit and loss account indicators.

In order to highlight the impact of exchange rate differences on the accountant results and, consequently, on the performance of an economic unit, we have analyzed the situation of a company having foreign currency long-term loans, receivables and payables to suppliers.

Regardless of the business field, an economic unit must be competitive in order to remunerate its production factors and ensure its development.

The term "performance", as supplied by general language dictionaries, is referred to as an accomplishment in a specific field of activity. At the level of an economic unit, performance include the ability to gain access to resources, to allocate and optimally use them with a view to make sufficient payments to cover

the risk undertaken and to justify the interest, on the trajectory of future sustainable development. [1] Therefore, the economic performance of a unit lies in the efficiency and effectiveness with which resources are used and results are generated. Efficiency involves maximizing the results of an activity in relation to the resources used, while the effectiveness shows the degree of achievement for the scheduled objectives, as well as the relationship between the provisioned effect and the outcome of the activity carried out.

The assessment of the financial performance can be equally achieved by means of profitability indicators. The first step in the evaluation of profitability is to determine the results as the difference between the income and the consumption of resources pertaining to it. The main result indicators from the profit and loss account of an economic unit are the operation result, the financial result and the gross result of the exercise.

The operating result represents the difference between the operating revenue and the expenditure of the resources allotted to the operation, while the financial result is determined by deducting the financial expenditure from the financial revenue. The two results, the operation and the financial ones summed up, form the gross result of the exercise or the accounting result.

The accounting profit provides information relating to the company's ability to control costs and to achieve revenue that is higher than the expenditure. [2]

The exchange rate differences may be financial income or expenses, as appropriate. Therefore, their existence and amount influence the financial result and, consequently, the gross profit of the exercise.

2. Currency Rate Differences – Accounting Treatment

In order to carry out activity, some economic units make foreign currency transactions. Foreign currency represents any currency, but the national one.

In Romania accounting is held in the national currency, therefore foreign currency transactions must be initially recorded at the exchange rate communicated by the National Bank of Romania on the date of the transaction.

A foreign currency transaction is a transaction that is expressed in or requires settlement in a currency other than the national currency (lei), including transactions arising when an entity:

- buys or sells goods or services whose price is expressed in currency;
- borrows or loans funds, and the amounts to be paid or cashed are expressed in currency; or
- purchases or gives in assets in any other manner, contracts or pay debts denominated in foreign currency.[3]

The differences arising from the conversion of a certain number of units of a currency into another currency at different exchange rates represent exchange rate differences. The currency exchange rate refers to the exchange ratio between the two currencies. [4]

According to the accounting regulations in force, exchange differences arise:

- upon settlement of foreign currency receivables and payables to rates that were different from those at which they were initially recorded;
- upon evaluation at the end of each month of the claims, debts in foreign currency, foreign currency availability and other treasury values, such as state currency titles, letters of credit and deposits in foreign currency at the exchange rate of the currency market, communicated by the National Bank of Romania in the last banking day of the month.

When the claims or liabilities in foreign currencies are settled in the same month in which they occurred, the resulting difference is recognized in that month. In the case when these claims or liabilities in foreign currencies are settled within a subsequent month, the difference is recognized in each month, which intervenes by the month of settlement and is to be determined taking into account the modification of exchange rates in the course of each month.

Exchange rate differences can be favorable and are recorded in accounting as income from the exchange rate differences or they can be unfavorable and are recognized as expenses from he exchange rate differences.

The change of the exchange rate may generate expenses from the exchange rate differences or income from the exchange rate differences depending on the type of the transaction as follows:

Tabel 1

Transaction in foreign currency	Exchange rate trend	
	Ascending	Descending
Incurred loans	Exchange rate differences expenses	Exchange rate differences revenue
Offered loans	Exchange rate differences revenue	Exchange rate differences expenses
Goods delivery/services	Exchange rate differences revenue	Exchange rate differences expenses
Purchase of goods	Exchange rate differences expenses	Exchange rate differences revenue
Bank deposits, deposits in the current account, cash	Exchange rate differences revenue	Exchange rate differences expenses

Source: Authors based on the studied literature.

From the normal course of the activity of an economic unit there may result receivables and payables denominated in lei, whose settlement is to be made depending on currency rates. At the time of the settlement of such claims and debts there may arise differences in value due to an exchange rate different from that at which they were originally recorded, differences which are to be recorded in the accounts as other financial expenses/revenue.

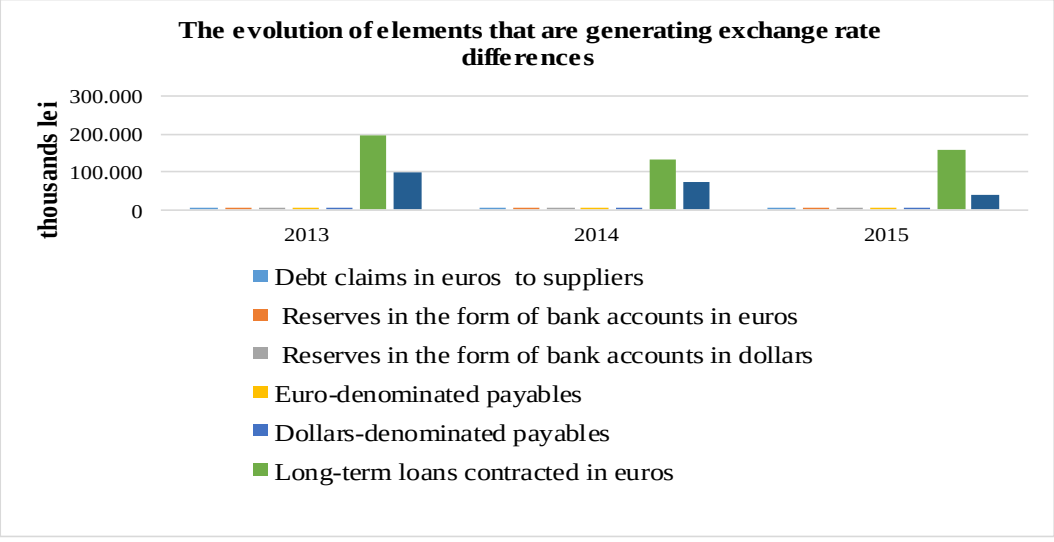
3. The Influence of the Exchange Rate Differences on the Financial Performance of an Economic Unit

At the time of the settlement of foreign currency receivables and payables or on a monthly basis, both in their assessment and in the assessment of the foreign currency reserves at the exchange rate communicated by the National Bank of Romania, in accounting there can be registered expenses or income resulted from the exchange rate differences. These expenses, financial income affects the result respectively obtained an economic entity.

In order to analyze the influence of the exchange rate differences over the financial performance we have studied the case of economic unit with euro-denominated payables, debt claims in euros and dollars to suppliers, long-term loans contracted in euros and dollars, reserves in the form of bank accounts in euros and dollars.

The evolution of assets, payables and foreign currency deposits as well as the debt-items, i.e. debts to suppliers and long-term debts is presented as follows:

Figure 1



Source: Authors based on the studied literature.

The euro and dollar currency exchange rate at the end of the 2013, 2014 and 2015 financial exercises varied as follows:

Table 2

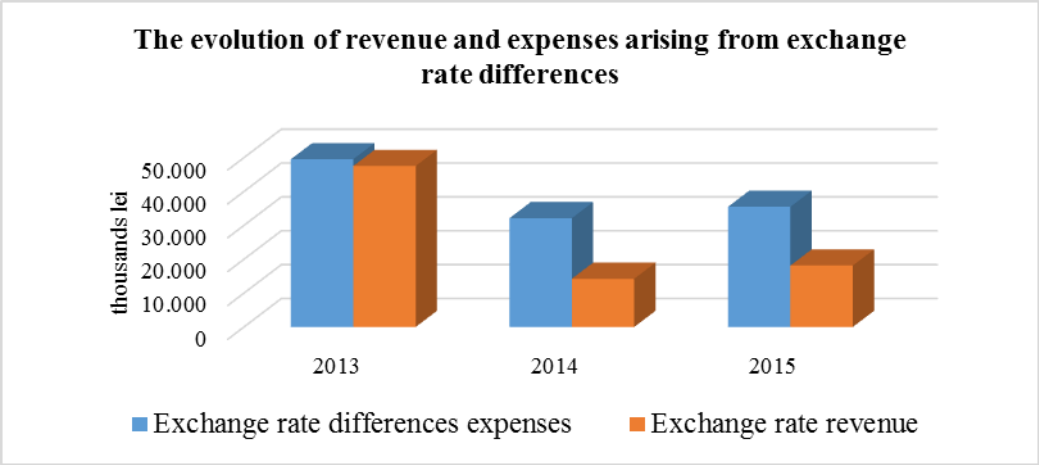
Currency	Financial exercise		
	2013	2014	2015
Dollar	3.26	3.69	4.15
Euro	4.48	4.48	4.52

As it can be noticed from the above table, the exchange rate had an ascending trend over the analyzed period for both currencies in which the economic unit made transactions.

The devaluation of the Romanian currency in comparison to the US dollar and the euro led to the recording of exchange rate differences expenses larger than the exchange rate differences income at the end of each year, as euro and dollars loans have the largest share in the total foreign currency transactions.

We present below the evolution of the expenditure and income from exchange rate differences:

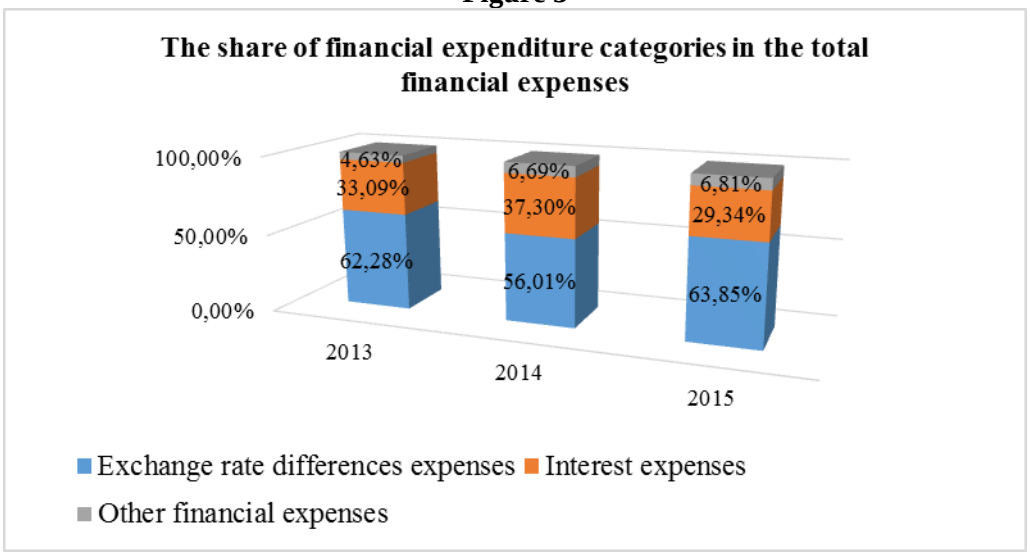
Figure 2



Source: Authors based on the studied literature.

In addition to the expenses from the exchange rate differences, the determination of the financial outturn includes the interest expenses and the other financial expenses, but the former have the largest share in the total financial expenditure (Fig. 3), consequently having a huge impact on the financial result.

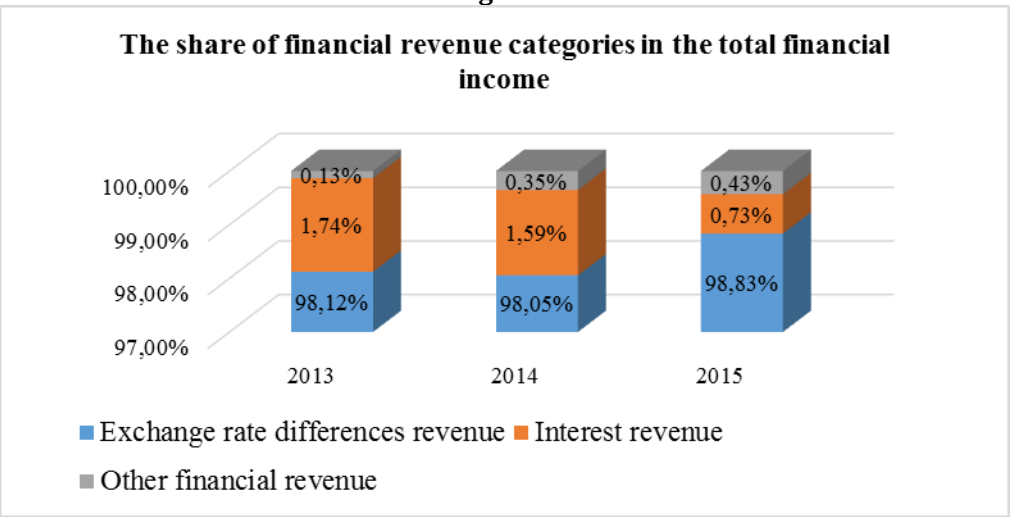
Figure 3



Source: Authors based on the studied literature.

The structure of financial income is as follows:

Figure 4



Source: Authors based on the studied literature.

The information presented above implies that both expenditure and income from the exchange rate differences hold the largest share among the items that participate in establishing the financial result, so that its evolution depends largely on the expenses and income from the exchange rate differences. Exchange rate fluctuations that are reflected in accounting as revenue and expenditure according to which the economic unit's results are determined, have a significant impact on its financial performance.

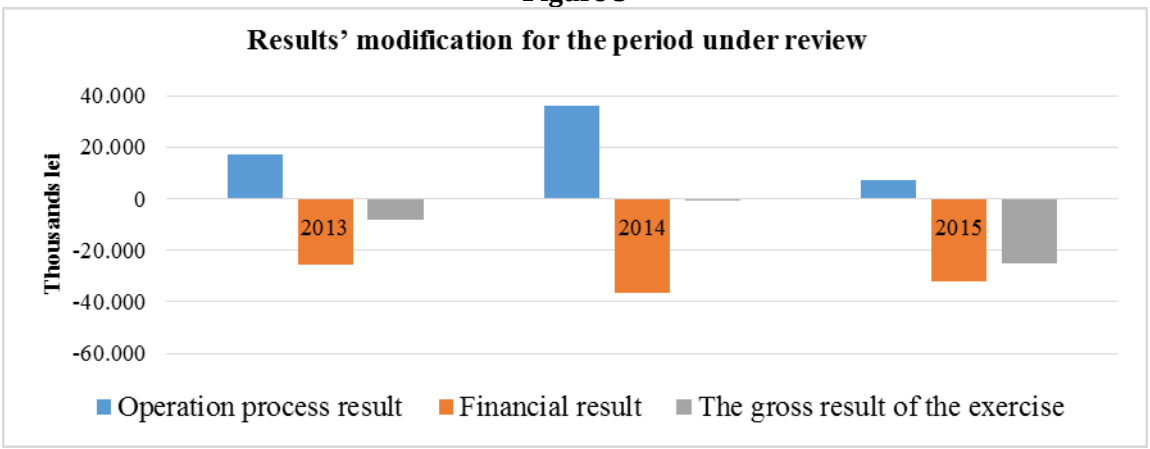
The elements of expenditure and revenue from the exchange rate differences negatively influence the evolution of the financial result because of the larger amount of the expenditure as compared to the revenue, due to unfavorable currency exchange rate evolution.

The operational activity of the economic unit, throughout the period under review, ended with profit, while the financial activity ended in loss. The loss from the financial activity was larger than the profit generated by the operational activity, therefore, the gross profit of the financial exercise, the accounting outcome, amounts to loss nevertheless.

Table 3
- thousand lei-

Indicator	Financial exercise		
	2013	2014	2015
Operational activity result	17,248.84	35,795.33	6,949.34
Financial result	-25,533.25	-36,735.07	-31,931.46
The gross result of the exercise	-8,284.41	-939.74	-24,982.12

Figure 5



Source: Authors based on the studied literature.

A business is competitive when it covers both its operating costs and the cost of capital. The economic unit studied through the positive operating result shows that it has the ability to cover its operating expenses, but the negative financial result indicates an inability to cover the cost of borrowed capital.

The long-term financing of a company can be made from its own resources or from borrowed resources. The respective company holds loans in foreign currency, so that the rate of foreign currency debt in permanent capital has a significant impact on its financial performance.

The capital of the company is represented by both its own capital subscribed and paid up by shareholders, legal reserves, reevaluation reserve and other reserves, as well as by the loan represented by long-term credits in lei and in foreign currency.

The structure of the permanent capital (the company's own capital and long-term debts) of the company is given in the tables below:

Table 4

- thousand lei -

Indicator	**Financial exercise**		
	2013	**2014**	**2015**
Long-term debts in euro	194,390	131,191	160,062
Long-term debts in dollars	100,879	74,549	39,196
Company own capital	622,701	634,869	609,126
Permanent capital	917,971	840,610	808,384

Table 5

Indicator	**Financial exercise**		
	2013	**2014**	**2015**
Long-term debts in euro	21%	16%	20%
Long-term debts in dollars	11%	9%	5%
Company own capital	68%	76%	75%
Permanent capital	100%	100%	100%

Long-term credits in foreign currency generate costs, namely interest costs, but also expenditure caused by exchange rate fluctuations. These expenses are to be covered from the financial revenue and the operating profits. The extent to which the operating profit and the financial income have covered financial expenses:

Table 6

	Financial exercise		
	2013	**2014**	**2015**
The proportion of covering the expenditure from the operation process result and the financial income	88.79%	98.16%	50.23%

Throughout the period under review the company hasn't covered its financial expenditure on account of the profit from operations and the financial income, thus obtaining gross accounting loss at the end of each financial exercise.

We present below the value of the result from operations, financial income and the financial expense categories:

Table 7

- thousand lei -

	Financial exercise		
Indicator	**2013**	**2014**	**2015**
Operational activity result	17,249	35,795	6,949
Financial revenues total	48,387	14,463	18,266
Exchange rate differences expenses	46,036	28,675	32,050
Interest costs	24,461	19,098	14,727
Other financial expenses	3,423	3,425	3,421
Financial expenses total	73,920	51,198	50,198

As shown in the table above, for each financial exercise, the operation profit and the financial income entirely covered the interest expenses and the other financial expenses and only partially the exchange rate differences expenses. Therefore, the revenues recorded by the company from both its operation activity as well as from the financial activity, cover the operation costs, the interest charges on loans' expenses, other financial expenses, but it does not entirely cover the unfavorable rate differences generated by the monthly assessment of loans, receivables, payables to suppliers and the amounts available in foreign currency.

In the case of the studied company the significant share of foreign currency loans in the total amount of patrimonial elements which give rise to differences in exchange rates linked with the evolution of the exchange rate has led to a high level of financial expenditure so as to generate a financial loss that is not covered in the exploitation result. In this way, differences in exchange rates have a significant impact on the financial performance of the economic unit.

4. Conclusions

The economic units engaged in foreign currency transactions must record these in the national currency at the exchange rate communicated by the National Bank of Romania at the date of the transaction. Fluctuations in currency exchange rates between the transaction date and the settlement date give rise to exchange rate differences that are either favorable or unfavorable to the economic unit. These differences are recognized in accounting as follows: the favorable ones in the financial income accounts, and the unfavorable ones in the financial expenses accounts.

The debts and/or claims in foreign currencies can be settled in the month of their establishment or in a subsequent month. National accounting regulations stipulate that at the end of each month claims, debts, and liquidity reserves in foreign currency owned by the economic units are to be evaluated at the exchange rate communicated by the National Bank of Romania. As a result of this, exchange rate differences appear both on the settlement of claims/debts, as well as at the end of each month.

The competition for any market segment has become increasingly fierce, therefore the market position depends on the performance of economic units, including their financial performance.

The performance measurement indicators include the gross profit of the financial exercise or the accounting result. This result is determined by subtracting the total expenses from the total revenues recorded by a company over a period of time, a year, in most cases.

The accounting result is influenced by the operation result calculated as the difference between the revenues and expenses related to the operating activity and the financial result obtained by deducting the financial expenses from the financial revenues.

The exchange rate differences are recorded in the accounts as financial expenses when:

- the settlement of debts towards suppliers is carried out at an exchange rate higher than the one existing at the time of their incurrence;
- the monthly evaluation of debts to suppliers and/or foreign currency credits is to be made at an exchange rate higher than the one communicated by the National Bank of Romania upon their incurrence/establishment;
- the collection of receivables in foreign currency are to be carried out at an exchange rate lower than the one existing at the date of their establishment;
- the monthly assessment of claims and/or reserves in the bank accounts in foreign currency are to be carried out at an exchange rate lower than the one released by the National Bank of Romania at the time of their establishment/of their previous assessment.

The exchange rate differences are registered in accounting as financial revenues when:

- the settlement of debts to suppliers is carried out at an exchange rate lower than the one existing at the date of their establishment;
- the monthly assessment of debt to suppliers and/or loans denominated in foreign currency must be carried out at an exchange rate lower than the one released by the National Bank of Romania on the date of their establishment/their commitment;
- the collection of receivables in foreign currency is to be carried out at an exchange rate higher than the one existing at the time of their formation;;
- the monthly assessment of claims and/or reserves of bank accounts in foreign currency is to be carried out at an exchange rate higher than the one released by the National Bank of Romania at the time of their establishment/ their previous assessment.

The larger the amount of the debt to the suppliers and foreign currency loans the higher the exchange

rate differences expenses where the exchange rate has an ascending trend. The exchange rate differences expenses together with the other financial expenses such as interest expenses must be covered on account of the financial revenue, otherwise they will generate a loss from the financial activity. This loss must be compensated with a positive result from the operation activity in order to get the accounting profit.

Differences in exchange rates have a significant impact on the financial performance only in the case of companies that carry out transactions in foreign currency or hold foreign currency reserves, and they have a large share in the total transactions/availability.

In addition to exchange rate differences, the financial performance of an economic unit may also be influenced by other elements that have no direct link with the operation activity such as expenses/income from the re-evaluation of fixed assets. We consider it to be worth studying in further research.

References

[1] Monica Petcu, *Economic and Financial Analysis of the Company. Problems, approaches, methods, applications*, Ed. Economică, Bucharest, 2009, p. 313

[2] Tabără Neculai, Dicu Roxana-Manuela, *"Performance Indicators in the Context of International Accounting Regulations",* Al. I. Cuza University, Iaşi, 2007, p. 368

[3] O.M.F.P. 1802/2014 A*CCOUNTING REGULATIONS concerning the individual annual financial statements and the consolidated annual financial statements,* art. 317, par. (1)

[4] O.M.F.P. 1802/2014 A*CCOUNTING REGULATIONS concerning the individual annual financial statements and the consolidated annual financial statements,* art. 317, par. (2)

Scenario Analysis for the Perspectives of the EU-Russian Federation Relationship

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Abstract: In the current geopolitical environment the "cold" relations between the European Union (EU) and the Russian Federation are not only the consequence of the mutual imposed sanctions after the Ukrainian crisis, but also a result of EU's increased influence in former Soviet space (especially through Baltic States integration and Eastern Partnership extension). Both Eastern Partnership and the Neighborhood Policy initiatives have bean considered as an imminent threat to the Russian hegemonic position in the former USSR member states. In our opinion the EU was not prepared to manage the relationship with Russian Federation in a pragmatic approach, hence in the post-Soviet Union era the Ukraine crisis has led to extreme tension between these two powers which reflected negatively on trade and diplomatic relations. Taking into consideration those realities, this paper presents a scenario analysis regarding the perspectives of the EU-Russian Federation relationship in the light of the impact of political and economical sanctions imposed after the Ukrainian crisis. Our research is based on a quantitative analysis of the two countries trade and FDI flows (before and post the Ukrainian crisis), but also on a qualitative approach based on the most relevant theories about international sanctions.

Key-Words: economic sanctions, Ukrainian crisis, EU-Russian Federation trade, FDI flows

JEL Classification: F, F10, F16, N, N10 Z, Z18

1. Introduction

After the disappearance of the USSR, the EU-Russian Federation relationship was an oscillatory one with positive and negative phases in terms of assimilation of a democratic regime and a market economy in the Russian society. In the Russian Federation, the transition from Communism (a totalitarian political and economic system) to an authoritarian oligarchy (the current regime) occurred simultaneously with country's declining military and political influence (during the former president Yeltsin regime) in the international arena. This decline was followed by a relative economic recovery and by Vladimir Putin regime's efforts to restore the country's superpower status in the international relations. It should be noted that Russian efforts to "reborn" as a major global player occurred amid great transformations[6] in the international political system (the EU enlargement being the most important factor). While the Russian Federation has started to consolidate its economic recovery (briefly interrupted by the international and economic crisis impact in the 2009), a new focus on democracy and human rights as an outcome of foreign policy has boosted in all the former soviet countries, while the Eastern Partnership was launched as a pillar of the EU's cooperation with former USSR

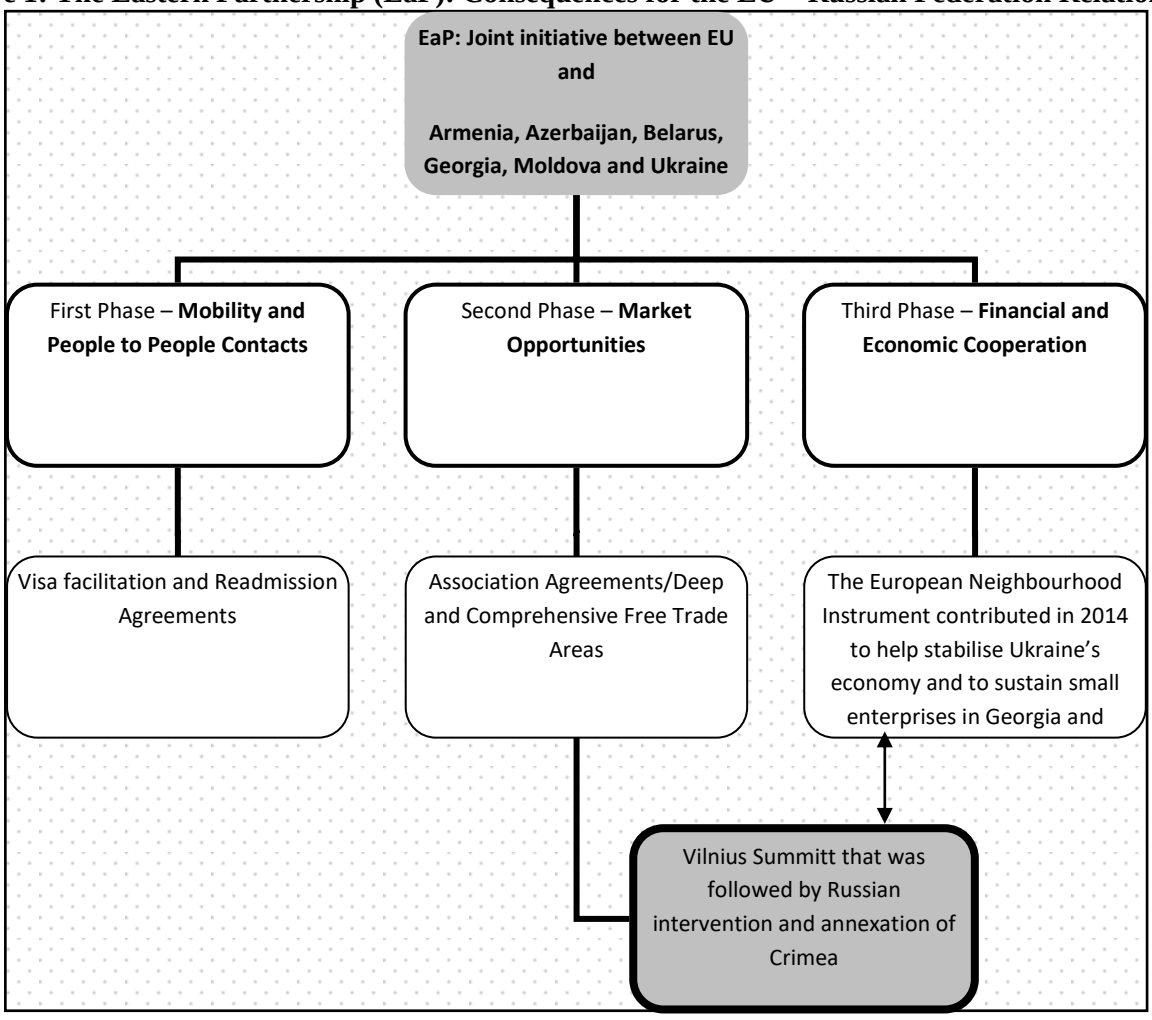
[6] A new wave of democracy was born worldwide as the old Communist regimes collapsed in the Eastern Europe and as the US abandoned its support for authoritarian right-wing regimes in Latin America, especially, as the country no longer felt the need to stop the USSR possible influence in those countries.

member states. This continuous expansion of the EU's influence toward the East has reached its limits on the Vilnius summit[7] that was the starting point for the Ukrainian crisis.

2. From the Eastern Partnership to the Ukraine Crisis

As some authors have underlined (Penkova, 2014) the Vilnius Summit was "a critical turning point for the EU to assess its Eastern Partnership's effectiveness, potential and regional challenges". The same analysis highlights the fact that the dramatic events in Ukraine should not be analysed as a single case but rather as a symptom of the Eastern Partnership's shortcomings and as an indication of EU ambitions and approach to the common neighbourhood with Russia". There are some analysts (Demsey, 2014) that have pointed out the fact that Ukraine crisis means that the EU "can no longer continue doing business as usual", but must reconsider its options concerning both the Neighbourhood Policy and the Eastern Partnership. In order to further analyse these assumptions we should briefly expose the main milestones of the Eastern Partnership (See Figure 1) and how the EU's actions in the field have slowly, but surely affected the relationship with the Russian Federation.

Figure 1: The Eastern Partnership (EaP): Consequences for the EU – Russian Federation Relationship



Source: Authors representation based on the studied literature.

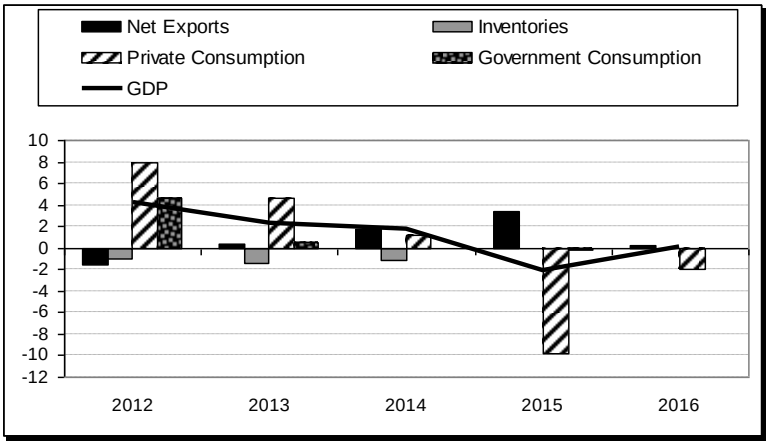
[7] At the Vilnius Summit, held in 2013, Georgia and Moldova initiated trade and association agreements with the EU, while other Eastern Partnership countries -Armenia, Azerbaijan, and Ukraine- rejected the offers. The crisis in Ukraine erupted after its former President Viktor Yanukovich cancelled plans to sign trade and political pacts with the EU at the Vilnius Summit and instead sought closer ties with Russian Federation, triggering protests that drove him from power. Russian Federation annexed Crimea in March 2014 following a referendum staged after Russian forces established control over the Black Sea peninsula, thus starting the biggest East-West crisis since the Cold War.

As we may see in the Figure 1, the increased cooperation with the six member states was followed by the Russian Federation reaction after the Vilnius summit. After the Ukrainian crisis EU reacted both by imposing sanctions and by financially sustaining Ukraine. From the above we may say that although the Eastern Partnership was not created as an act "against" Russian Federation, after the accession to power of Vladimir Putin and the revival of the nationalist spirit, this type of initiative was perceived as some sort of "geopolitical game" in which the EU has made the first aggressive move. This perception led to the gradual emergence of tensions between the two parties and culminated with the Ukrainian crisis. In the following sections of our paper we will asses both the effectiveness of the mutual sanctions imposed after the Ukrainian crisis (in terms of changing Russian Federation behaviour toward Ukraine), but also the damages inflicted on the bilateral economic cooperation between the two states.

3. The sanctions impact: consequences for the Russian economy and for the economic cooperation with EU

Economic sanctions are an instrument of coercion frequently used in the context of international disputes (Bonnetti, 1998). Given the fact that some studies (Caruso, 2003) are underling that such measures in the economic field are not always successful in changing the foreign policy of the targeted state, our analysis proposes to critically assess the effectiveness of the sanctions imposed on Russian Federation after its involvement in the Ukrainian crisis. Our research has two objectives: on the one hand we assess the impact on the Russian economy (analyzing the effect on trade, FDI flows, exchange rate of the ruble and the capital markets) and on the other hand we highlight if the imposed sanctions had achieved their goal: changing the behaviour of the Russian Federation toward Ukraine. The annexation of Crimea by the Russian Federation led to a "cooling effect" in the economic and diplomatic relations with the European Union (Poladian, Drăgoi, 2014), followed by a series of mutual economic sanctions[8] that have reflected badly on the Russian economy. Thus, in 2016, two years after the imposition of sanctions, the Russian Federation is in recession (see Chart 1) while the banking sector is seriously affected by the Russian banks participation ban on the European capital markets[9].

Chart 1: Russian Federation – Real GDP growth and contributions (%)



Source: Authors, based on IMF data.

One year after the Ukrainian crisis, the FDI collapsed (see Chart 2) amid capital exodus generated by the distrust in the Russian economy stability correlated with the downgrading of the country rating into the

[8] The EU imposed economic sanctions on Russia's banking, oil and defence sectors. In response the Russian Federation banned the imports of agricultural and food products from the Member States. Russian embargo significantly affected the European agricultural market [European Commission (b)], the most disadvantaged sectors being those of fruits and vegetables, followed by dairy and meat. The Russian ban was prolonged until 2017, in retaliation for the EU decision to maintain the sanctions during 2016-2017.

[9] The European Union banned five Russian banks (Sberbank , VTB Bank, Gazprombank, Vnesheconombank (VEB) and Russian Agriculture Bank – Rosselkhozbank) from raising capital on the European Union's capital markets as part of a wider package of sanctions imposed to the Russian Federation after the Ukraine conflict. The ban targets Russian banks with state ownership of more than 50% and excludes EU subsidiaries of the Russian banks.

"junk category" (by Moody's and Standar & Poor's). The ruble has also suffered a sharp drop compared to major international currencies (dollar and euro) (see Chart 3).

Chart 2: Inward FDI (USD billions)

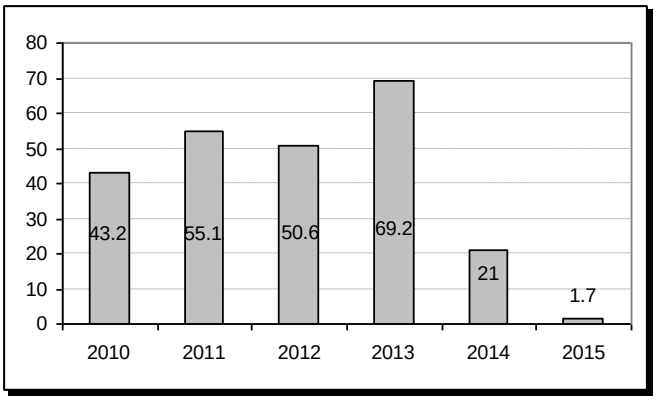
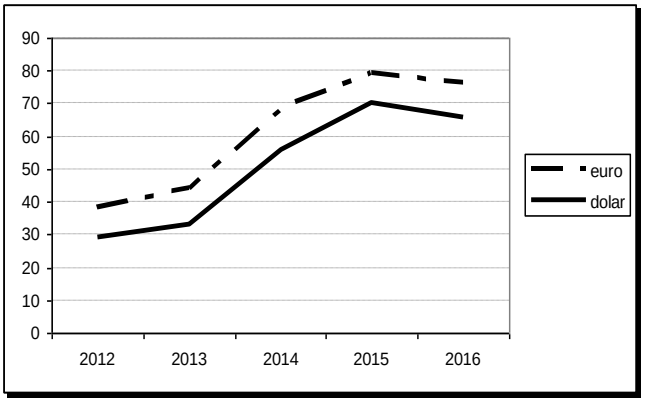


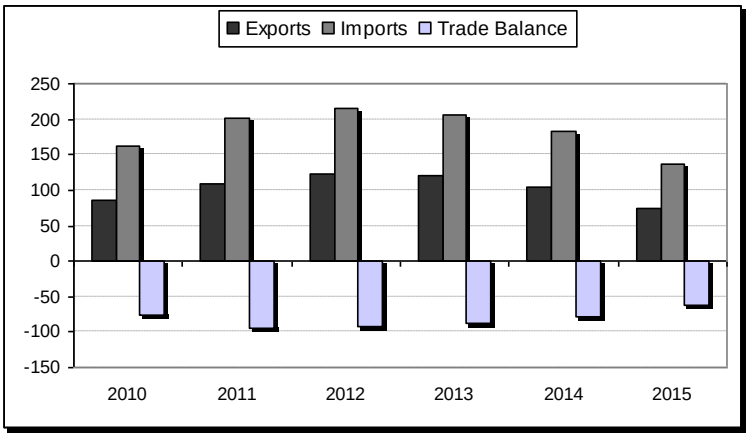
Chart 3: The exchange rate of the ruble



Source: Authors, based on UNCTAD data.

The economic impact of the sanctions was immediate, but failed to change the foreign policy of the Russian Federation. As some recent estimations (European Commission, 2016) are showing "Russian Federation's economy is set to continue to contracting in 2016, and growth could turn positive from 2017 onwards, although the recovery is expected to be only gradual as structural impediments to growth persist, aggravated further by tightening fiscal policy and only limited space for monetary easing". The sanctions impact on bilateral trade was also a powerful one (see Chart 4).

Chart 4: Bilateral trade between Russian Federation and EU (billions euro)



Source: Authors, based on Eurostat data.

However, it should be noticed, that, in spite of the sanctions, the EU remain, in 2016, the most important trade partner for the Russian Federation, due to the Russian energy exports in the Member States (See Chart 5 and Chart 6).

Chart 5: EU main sources for oil imports in 2016 (%)

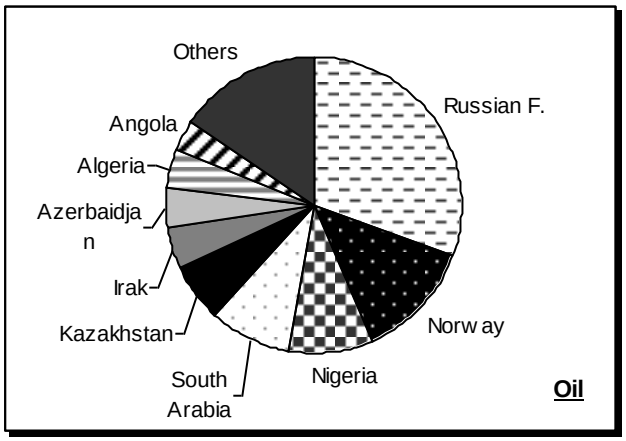
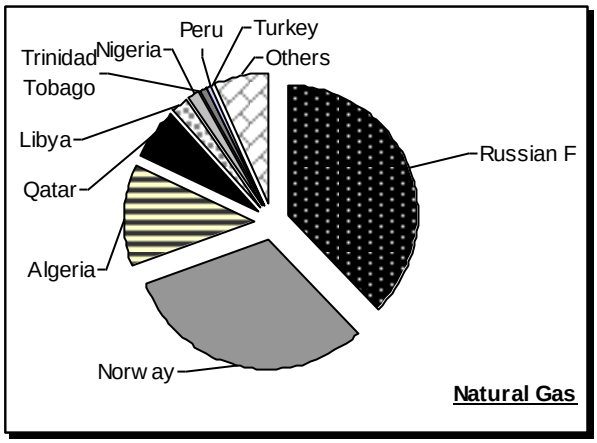


Chart 6: EU main sources for natural gas imports in 2016 (%)



Source: Authors, based on European Commission (a) data.

4. Possible scenarios for the future of bilateral relations

Most studies (Hufbauer et al. 2007; Kaempfer, 2007; Jentleson, 2000; Larn, 1990) show that while the economic efficiency of international sanctions is immediate, such measures are seldom producing a change of the international behaviour that attracted them. Moreover, Jura (2015) highlights that although the economic sanctions are considered a successful pressure tool in the economic field they remain controversial as concerning the foreign policy.

In this regard, it seems important to remember the case of Iran that unquestionably proved that while sanctions could affect the national economy to the point of collapse, the foreign policy of the targeted state may remain inflexible.

Given this reality, some studies (Kholodilin 2014) emphasized that all the sanctions imposed to the Russian Federation (consisting mainly of travel and visa bans and assets freeze for companies and corporations) are unlikely to determine a change of this country behaviour toward Ukraine in the foreseeable future. Galbert (2015) has underlined that after the sanctions enforcement, despite their impact on the Russian economy, they have not altered Russian Federation's strategy to use military force to destabilise Ukraine and retain influence over its future.

At the contrary, as the same author shows after almost two years of significant economic sanctions, the situation in eastern Ukraine is far from stable, balancing precariously between the possibility of new-scale hostilities and the prospect of long-term frozen conflict – sustained by Russian Federation through its support to separatists and rebel groups. Other studies (Caruso, 2003; Connolly, 2015) have pointed out that contrary to the common vision the sanctions adopted in 2014 have not been designed to isolate Russian Federation from the West in the same way as in the case of Iran, North Korea and Cuba.

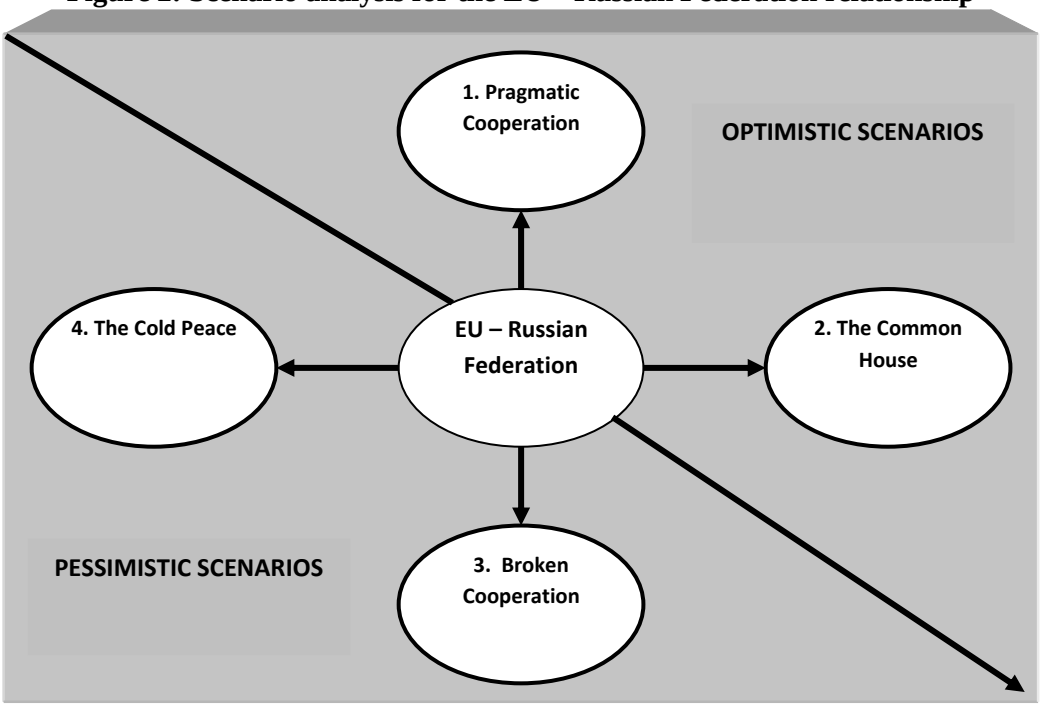
Rather than to isolate the country, the sanctions were targeted to have strong impact on the Russian economy. But was it the only affected economy?

Considering the higher degree of integration of the Russian economy into the global markets and even more importantly the strong economic relations between EU and Russian Federation, the sanctions also had a real impact on the member states economies. In the first year after the imposition some projections (Norman, 2014) have shown that their impact for the European economy was important, most affected sectors being those of dual-use goods and technologies, the defence sector and energy – related technologies.

In these circumstances the question naturally arises: is it appropriate to continue such sanctions that are politically ineffective? Taking into account the current tensions and centrifugal forces from insight the EU (Brexit , the crisis of migration, the sovereign debt crisis, the problems of the banking sector, especially the Deutsche Bank case that could become Europe's next "Lehman Brothers') we believe that the sanctions might be too expensive for the EU, not only for the Russian Federation.

From all the aspects outlined previously in our analysis, we have identified ***four possible scenarios*** regarding the evolution of the EU - Russian Federation relationship, each presenting a series of consequences as concerning the preservation of a balanced international climate (see Figure 2).

Figure 2: Scenario analysis for the EU – Russian Federation relationship



Source: Authors own representation.

1. The scenario that we've named "pragmatic cooperation" would mean that the relations between the EU and the Russian Federation will continue on the basis of common interests, but they will be strictly economic limited, the two parties not sharing common political values. In this scenario between the two countries will be possible a new gradual approach that could reduce the tensions in the bilateral relationship culminating with the renunciation of mutual economic sanctions.

2. The "common house scenario" would involve not only a new boost of the economic relations, but the embracement of common values, perceiving the need for a unit of interest in the face of new global challenges such as the resurgence of terrorism that pose a global threat. Of course for such scenario to take place, the Russian Federation should renounce to try to put pressure on Ukraine, but EU should also reconsider its position concerning the future of EaP.

3. The scenario entitled "broken cooperation" would mean the returning to a new situation of "Cold War" type where there is no economic cooperation while the divergent ideological values make the political cooperation impossible. Such scenario will be negative for both parties while they are intrinsic linked in terms of economic cooperation: the EU is still Russian Federation's most important trade partner, while the Russian energy exports are vital for the member states.

4. The "cold peace" scenario will involve the preservation of the existing status quo, with no common political interests, but with economic exchanges, while the sanctions are maintained and both parties are enduring the consequences.

5. Conclusions

As we may see there are optimistic and pessimistic possible scenarios for the EU – Russian Federation relationship. However, in the current global geo-political context, shaped by many challenges, resuming economic cooperation without sanctions is, in our opinion, the most desirable outcome. It should be noted however that such scenario should not be accomplished with the price of renunciation from the EU part of political and human rights values in exchange for economic profit. Still, the rebirth of cooperation could occur amid new negotiations in the EaP with the participation of Russian Federation in order to truly build a "shared

European house" and a strong economic partnership. Antagonizing Russian Federation is the wrong approach while the Iran case has shown that international isolation may not produce the desired results, but will negatively affect the international climate.

Moreover, some analyzes (Pop, 2016) are highlighting that "in the context of multiple messages that argues the need for a new international order, which obviously will require a new dynamic in the international economic relations and in the global market field, the Russian Federation has the ability to become an influential force in the United Europe ".

It should not be neglected the fact that, according to prestigious international analysts (Brezinski, 2016) the future relationship between the EU and the Russian Federation must be thought in the context of the new global realities [the new realities are concerning the priorities of countries aiming to reposition their status in the global arena (USA, EU, China and the Russian Federation), the "Arab spring" and its consequences extended from North Africa to Middle East, the sovereign debt crisis, the migration crisis] which may lead to a new architecture of power within the current international order.

Some authors (Pop, 2016) are showing that these realities may boost a new global realignment of international powers and the creation of a "global equilibrium in the current multipolar world with shared responsibilities".

Undoubtedly, in this context, a pragmatic and cooperative EU - Russian Federation relationship appears, in our opinion, as crucial for achieving this new global equilibrium. In this respect, an approach that is circumscribed to the gradual renunciation of mutual sanctions would undoubtedly be a signal that the Russian Federation and the EU are prepared to restart a dialogue for pragmatic cooperation, finally escaping the trap of the current "cold peace".

References

[1] Brezinski, Z. (2016). *Toward a Global Realignment. The American Interest*, Vol.11, No.6

[2] Bonetti, Shane (1998). *Distinguishing characteristics of degrees of success and failure in economic sanctions episodes*. Applied Economics. Volume 30, Issue 6, p.3

[3] Caruso, R. (2003). *The Impact of International Economic Sanctions on Trade - An Empirical Analysis*. Catholic University of the Sacred Heart of Milan, p.3

[4] Connolly, R. (2015). *Troubled Times – Stagnation, Sanctions and the Prospects for Economic Reform in Russia*. Chatman House. Russia and Eurasia Programme, The Royal Institute of International Affairs

[5] Demsey, J. (2014). *What Ukraine Crisis Means for the EU*. Strategic Europe. No. 17, http://carnegieeurope.eu/strategiceurope/54536

[6] European Commission (a) (2015). *Directorate General for Trade. European Union, Trade with Russia*, , Brussels

[7] European Commission (b) (2015). *Value of EU agri-food exports August 2014-May 2015*, relative to 12 months earlier, http://ec.europa.eu/agriculture/newsroom/218_en.pdf

[8] European Commission (2016). *Russian Federation - A gradual upturn in activity but numerous uncertainties remain*. European Economic Forecasts. November. Brussels

[9] European Parliament (2015). *Economic Impact on the EU of Sanctions over Ukraine Conflict*, October 2015, Brussels

[10] Eurostat Database (2016). available online at: http://ec.europa.eu/eurostat/data/database

[11] Galbert, S. (2015). *Sanctions against Russia – Now What?A European Assessment of the Outcome and Future of Russia Sanctions*, Center for Strategic & International Studies (CSIS), a Report of the CSIS Europe Program, October 2015

[12] Jura, Cristian, Buruian, Denis (2015). *International Sanctions. Case study*. Acta Universitatis George Bacovia (Juridica) Vol. 4 Issue 1, p. 8-19

[13] Jentleson, Bruce W. (2000). *Economic Sanctions and Post-Cold War Conflicts: Challenges for Theory and Policy*, in International Conflict Resolution after the Cold War. edited by Paul C. Stern and Daniel Druckman, Washington, DC: National Academy Press, p. 123-177

[14] Hufbauer, Gary Clyde, Jeffrey J. Schott, Kimberly Ann Elliott, Oegg, Barbara (2007). *Economic Sanctions Reconsidered*. 3d ed. Washington, DC: Peterson Institute for International Economics, p.14

[15] Kaempfer, W., K., Lowenberg A., D. (2007). *The political economy of economic sanctions*, Handbook of Defense Economics. Vol.2, Edited by Todd Sandler and Keith Hartley, Elsevier , p.2

[16] Kholodilin, K. A. (2014). *Are the Economic Sanctions against Russia Effective?* DIW Roundup Politik im Fokus

[17] Larn, S. L. (1990). *Economic sanctions and the success of foreign policy goals: a critical evaluation*. Japan and the World Economy, vol. II, p. 240

[18] Lo, B. (2015). *Russia and the New World Disorder*. Brookings Institution Press, http://councilforeuropeanstudies.org/critcom/russia-and-the-new-world-disorder/

[19] Norman, L. (2015). *EU Prospects Impact of Sanctions on Russian Economy*. Wall Street Journal, October 29

[20] Penkova, T. (2014). *The Vilnius Summit and Ukraine's Revolution as a Benchmark for EU Eastern Partnership Policy*. ISPI Analysis 240, March, http://www.ispionline.it/sites/ /pubblicazioni/analysis_240__2014.pdf

[21] Poladian – M., S., Drăgoi, A.-E. (2014*). Crimean Crisis Impact on International Economy: Risks and Global Threats*. Procedia Economics and Finance 22 Elsevier, p.453

[22] Pop, N. (2016). Spre o aliniere a puterilor în globalizare. Piaţa internaţională, available online at: http://iem.ro/publicatii/piata-internationala/

[23] Rumer, E. (2016). *A World Order Reshaped by Vladimir Putin's Ambition*. Financial Times, April 6, 2016

[24] UNCTAD Database (2016). available online at: http://unctad.org/en/Pages/Statistics.aspx

Determinants, Goals and Different Approaches of the 16+1 Strategic Cooperation Framework[10]

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Abstract: The present paper has three main objectives. The first one is to emphasize the rationale for creating the 16+1 platform. The second goal is to underline the evolution of the common targets of the participants, through the lens of the five summits that took place during 2012-2016. The third objective is to highlight the heterogeneity of the CEE-16 and China's need to set specific targets, according to the characteristics and opportunities offered by each country.

Keywords: China, Central and Eastern Europe, 16+1 platform, CEE-16, CEE-11, CEE-5, trade, investment, tourism, cultural exchanges, macroeconomic indicators

JEL Classification: E22, F14, F21, O52, O53

1. Introduction

China's present foreign policy is an assertive one and it contrasts with its previous tāo guāng yǎng huì philosophy, synonymous with "hide brightness, nourish obscurity". China's self-confidence is reflected by its recent enterprises such as *One Belt, One Road*, the establishment of the Asian Infrastructure Investment Bank (AIIB), its leadership role in the BRICS alliance,[11] its stance in Asia-Pacific, the enlarging list of strategic partnerships and the enhanced presence in other regions of the planet, including through new cooperation tools. In this investigation we refer to the 16+1[12] cooperation mechanism.

China's initiative to strengthen cooperation with CEE was materialized through the first economic forum held in Budapest in 2011. That was followed by the first heads of government meeting in Warsaw in 2012, which marked the official launch of the 16+1 platform. The subsequent yearly summits and business forums (Bucharest, Belgrade, Suzhou and Riga) brought the participants closer. In official declarations and literature it is also called the 16+1 process, as it has been evolving continuously,[13] both institutionally and pragmatically.

The present paper has **three main objectives**. The first objective is to emphasize the rationale for creating this platform. The second goal is to underline the evolution of the common targets of the participants through the lens of the five summits that took place during 2012-2016. The third objective is to highlight the heterogeneity of the CEE-16 and China's need to set specific targets, according to the characteristics and opportunities offered by each country

2. Motivations for cooperation in the 16+1 formula. Potential risks

The 16+1 platform has become a relevant cooperation mechanism between China and 16 countries of the Central and Eastern Europe (CEE-16) and a distinct component of the Chinese foreign policy since 2011. The delay of China-CEE approaching is due to their different priorities during the last two decades. Immediately after the fall of the Iron Curtain, the European countries of the former communist block have turned westwards, while China has become once again a global player.

[10] This paper includes results of the author's research paper *China, "16+1" and the BRICS in a Century of Deep Transformations*, presented at the Shandong University of Finance and Economics, Jinan, China, September 22, 2015.
[11] Made up of Brazil, Russia, India, China and South Africa.
[12] The acronym refers to Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, plus China.
[13] Please consult the http://www.mfa.gov.lv/en/policy/multilateral-relations/cooperation-between-central-and-eastern-european-countries-and-china.

The global financial and economic crisis of 2008-2009 underscored that the European integration generates not only benefits but also losses, as most of the CEE countries became strongly dependent on the EU markets and capital. That resonated with the acceleration of the Chinese "going-out strategy" accompanying its "peaceful rise".[14]

Moreover, China's historical ties with the CEE are deep, as most of the countries in this region established diplomatic relations with China in the early days of the founding of the People's Republic, which was considered by the Chinese authorities an "invaluable support".[15] Nowadays, these countries' attractiveness in terms of resources, market size, efficiency (including the agglomeration economies),[16] labour market and geostrategic position, as well as investment needs represent only several motivations for a strong bilateral relationship (Oehler-Şincai, 2016).

Recent analyses (EBRD, 2016) point to *the growing economic links between China and CEE-16, including through projects in transport and energy sectors.* Lending, trade and direct investment are the main channels of strengthening these ties. The political will plays a major role in this matrix and the best results can be obtained in those countries that are open both to the Western and Eastern partners.

So far China has concluded more than 70 strategic and cooperation partnerships with countries and groups of countries around the world (Yan, 2015). Its European strategic partners are France, Germany, Italy, the United Kingdom, Spain, Portugal, Greece, Denmark, Serbia, Ukraine, Poland, Ireland, Belarus and more recently Czech Republic. Among the CEE countries in the 16+1 cooperation framework, three enjoy the status of strategic partners for China: Serbia (since 2009), Poland (since 2011) and Czech Republic (March 2016). Moreover, the strategic partnerships with Serbia and Poland were upgraded to the *comprehensive* level in June 2016 (Oehler-Şincai, 2016).

According to the literature, China's relations with the whole group of the 16 CEE countries are not included in the strategic partnership category and scholars are still debating whether the 16+1 cooperation represents a "window of opportunity" or a "strategic opportunity" (Liu, 2013). From China's standpoint, there are many motivations for this cooperation platform, as China considers it: (1) a "bridgehead" to the EU (via investments and production of goods "made in the EU") (Liu, 2013, Simurina, 2014), (2) a channel to facilitate business contacts, build social networks and diminish the costs of doing business in the CEE (Kong, 2015), (3) a way to obtain support in the relevant EU institutions and forums (Kaczmarski and Jakóbowski, 2015), (4) a "tool for building a positive image of China" in the region (Kaczmarski and Jakóbowski, 2015) and also (5) a means of coordinating China's policy towards the CEE (Kong, 2015, Kaczmarski and Jakóbowski, 2015).

It is important to underline that **China is the supporter of the long term perspective**, **while its Eastern European counterparts expect rapid results**, in terms of *green-field investments, increasing exports, diminishing trade deficits in relation with China and also attracting more Chinese tourists* (Turcsányi, 2015), especially after China became in 2012 the first tourism source market. Some authors underline that it is necessary to bring expectations and achievements closer (Turcsányi, 2015), as the **realistic approach** is beneficial for both sides.

Recent papers (Kaczmarski and Jakóbowski, 2015) underline also major barriers obstructing the 16+1 progress. Among the most significant there are: regulations which restrict access to the public procurement market, special provisions in tender procedures, restrictions concerning technical standards, equipment and employment rules, differences existing at the level of legislative systems in the eleven CEE countries which are EU member states and the five that are outside the EU, the lack of knowledge of the "rules of the game" in CEE. For instance, according to the EU rules, the governments of EU member countries cannot provide state guarantees to specific investment projects. However, the state guarantee is necessary in order to apply for financial aid from the US$ 10 billion special credit line provided by China in the China-CEE cooperation framework. This offers an advantage to the CEE-5 countries, which have a large space of manoeuvre. Another hindrance is the competition between the CEE-16 countries to attract Chinese capital. At the same time, the

[14] The term was coined in 2003 by Zheng Bijian, an advisor to the Chinese leadership. The doctrine of promoting a peaceful stance became the official policy in China during the presidency of Hu Jintao and governance of Wen Jiabao (2003-2013).

[15] Please consult the remarks by H.E. Li Keqiang Premier of the State Council of the People's Republic of China at Third China-Central and Eastern European Countries Economic and Trade Forum, Bucharest, 2013/11/26, available at: http://www.fmprc.gov.cn/mfa_eng/wjdt_665385/zyjh_665391/t1109671.shtml.

[16] i.e. geographic clustering and networking of firms and industries, due to infrastructure advantages, labour market pooling, input sharing, knowledge spillovers – Cohen and Morrison Paul, 2009 – but also customer proximity.

"Western EU factor" is present in this equation, as old member states and EU institutions consider this platform as a "threat" to the EU unity (Turcsányi, 2014, Kaczmarski and Jakóbowski, 2015).

3. Participants' goals in the 16+1 process. Noteworthy results

The 16+1 cooperation framework is tri-dimensional[17] and all its components (economic, political, social) are subsumed into the Chinese public diplomacy. China's explicit goals were presented for the first time in the "Twelve Measures for Promoting Friendly Cooperation with Central and Eastern European Countries" (April 2012). These are synthesized as follows: *(1) Setting up an organisational structure, starting with a Secretariat under the aegis of the Chinese Ministry of Foreign Affairs, with specific objectives; (2) Establishing a US$10 billion special credit line, with a focus on cooperation projects in such areas as infrastructure, high and new technologies, and green economy; (3) Setting up an investment cooperation fund with the goal of raising US$500 million in the first stage; (4) Increasing total bilateral trade to US$100 billion by 2015; (5) Encouraging the establishment of economic and technological zones in CEE; (6) Exploring the financial cooperation (via currency swaps, local currency settlements for cross-border trade, and establishment of bank branches in each other's countries; (7) Establishing an expert advisory committee on the construction of transportation network; (8) Supporting cultural cooperation; (9) Encouraging cultural, educational and academic exchanges; (10) Exploring ways of cooperation in the field of tourism; (11) Establishing a research fund on China's relations with CEE-16 (RMB2 million every year to support academic exchanges); (12) Organizing yearly the young political leaders forum of China and CEE from 2013 onwards* (Ministry of Foreign Affairs of the People's Republic of China, 2012).

At the summit of November 26, 2013 (Bucharest), were adopted the Bucharest Guidelines for Cooperation between China and CEE countries. They included eight major objectives and sub-objectives (subscribed by all the participants), reiterating some of the goals of April 2012 and urging to: *(1) Hold a China-CEE meeting of heads of government every year to review cooperation achievements and set the direction for future cooperation; (2) Consider formulating a medium-term agenda for cooperation when appropriate in light of how China-CEE cooperation evolves; (3) Promote investment, economic and trade cooperation; (4) Expand financial cooperation; (5) Enhance cooperation in connectivity; (6) Expand cooperation in science, technology, innovation, environmental protection and energy; (7) Promote dynamic people-to-people and cultural exchanges and cooperation; (8) Encourage cooperation at the sub-national level (as one of the important pillars of China-CEE cooperation)*[18] (Romanian Government, 2013).

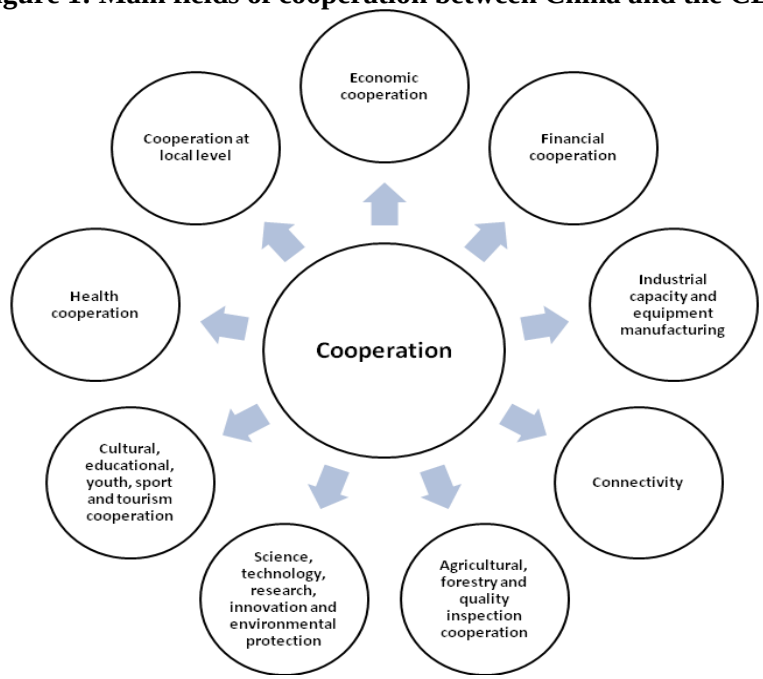
On December 17, 2014, during the 16+1 summit in Serbia on the theme "New Driving Force, New Platform and New Engine", it was evaluated the degree of implementation of the previous Guidelines and were adopted the Belgrade Guidelines for Cooperation between China and the CEE countries. The participants resumed the majority of the goals of 2013 but in a more detailed manner and added another one: the convocation of the 1st China-CEE health ministers' meeting in the Czech Republic in 2015 (Ministry of Foreign Affairs of the People's Republic of China, 2014).

During the meeting of Suzhou (November 24, 2015) on the theme of "New Beginning, New Domains, New Vision", were adopted the Suzhou Guidelines for Cooperation and the Medium-Term Agenda for Cooperation between China and Central and Eastern European Countries (Ministry of Foreign Affairs of the People's Republic of China, 2015a and 2015b). The second document underlined the **nine pillars of the 16+1 sectoral cooperation (Figure 1)**.

[17] Please consult Jaroch (2016).

[18] It was foreseen the establishment of a China-CEE countries association of provincial governors, joined by Chinese and CEE-16 provinces, states and municipalities on a voluntary basis. The China-CEE Local Leaders' Meeting is held once every two years. The 3rd meeting was held in Tangshan, Hebei Province on June 17, 2016.

Figure 1: Main fields of cooperation between China and the CEE-16



Source: Own representation based on Ministry of Foreign Affairs of the People's Republic of China (2015b).

On November 5, 2016, the fifth China-CEE Summit was held in Riga. The Riga Declaration focused on the Adriatic-Baltic-Black Sea Cooperation, in order to develop transportation hubs involving ports and industrial parks in the coastal areas of the three seas (The State Council of the People's Republic of China, 2016).

During the 6th Economic and Trade Forum in Riga, the Chinese prime-minister Li Keqiang synthesized proposals in order to: *extend bilateral trade scale, accelerate the connectivity process, support the production capacity cooperation, stimulate the financial cooperation and explore the potential of tourism cooperation (including through the easing of visa policies, simplifying border entry procedures and launching more direct flights, which might lead to the doubling of the number of tourists between China and CEE in five years)* (Ministry of Foreign Affairs of the People's Republic of China, 2016).

Obviously the "Twelve Measures for Promoting Friendly Cooperation with Central and Eastern European Countries" of April 2012 and the subsequent Guidelines for Cooperation (Bucharest, Belgrade and Suzhou) and the Riga Declaration have given a new impetus to the bilateral relationship.

Besides, at the Suzhou summit (November 2015), the Chinese President Xi Jinping proposed the goal of *fully integrating the "16+1 Cooperation" into the "Belt and Road" initiative*. Both are guided by the "Silk Road Spirit" of "peace and cooperation, openness and inclusiveness, mutual learning and mutual benefit" (Sun, 2016). The One Belt, One Road has five complementary ways of implementation (wǔ tōng): policy coordination, facilities connectivity, trade facilitation, financial integration and people-to-people exchanges (Jiang, 2015, p. 7), which are the same as in the case of the 16+1 process.[19]

We consider that it is enough room for manoeuvre for all the participants, according to their own priorities, as demonstrated by the structures opened/announced to be opened in the CEE countries. These include: the Secretariat of China-CEE Mechanism for Investment Promotion Agencies in **Poland**, Joint Chamber of Commerce in **Poland (and China)**, Association of Tourism Promotion Institutions and Travel Agencies in **Hungary**, Association for the Promotion of Agricultural Cooperation in **Bulgaria**, the Secretariat on logistics cooperation in **Latvia**. **Romania** will set up a Center for Dialogue in energy-related projects. **Slovenia** announced the intention to establish a China-CEE coordination mechanism for forestry cooperation. In its turn, **Serbia** intends to host the China-CEE Federation of Transport and Infrastructure Cooperation, while the **Czech Republic** hosts the Federation of Heads of Local Governments (Kong, 2015). Besides, the 16+1 Think Tank Network was officially launched in Beijing on the 16th of December 2015.

[19] Please consult the Ministry of Foreign Affairs of the People's Republic of China (2016a).

4. The CEE-16, a group characterized by diversity

The CEE group is heterogeneous (Turcsányi, 2014, Szczudlik-Tatar, 2013 and 2014) from many standpoints. Four countries are EU candidates (Albania, Macedonia, Montenegro and Serbia), one is a potential candidate to the EU (Bosnia and Herzegovina) (CEE-5)[20], while 11 are EU member states (CEE-11), out of which five belong to the Euro zone. The 11 EU member countries have different voting powers in the EU. Several of them are euro sceptics. Beyond their different goals, ambitions and strengths, the 16 CEE countries consider China as a relevant market and a valuable source of investment, at least at the declarative level.

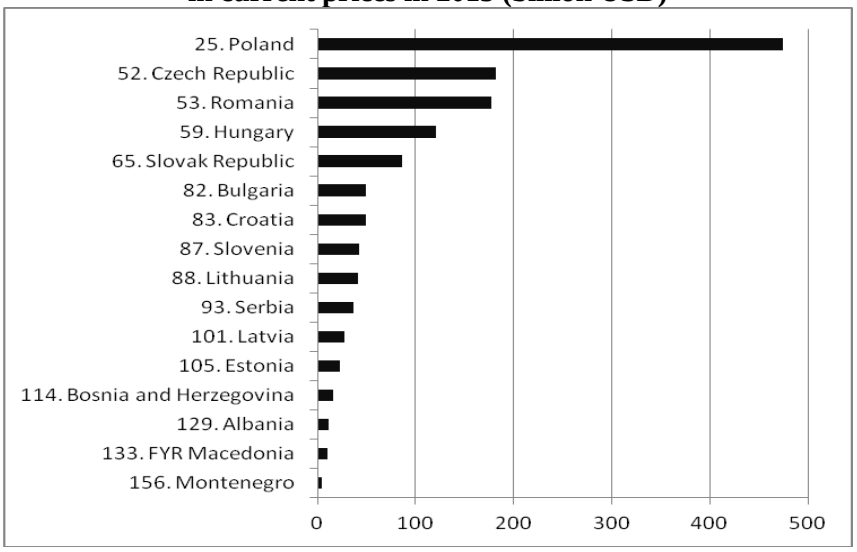
It is worth underlining that in CEE there are other "established" stakeholders (for instance Western European and American investors), which consider China as a "threat" to their positions (Turcsányi, 2014). There are also other determinants, such as internal weaknesses and the interdependencies with the Western Europe, which might influence the behaviour of the CEE-16 towards China.

In a study on EU member states attitudes towards China, Fox and Godement (2009, p. 6) divide the EU countries in four groups. One is made of *Accommodating Mercantilists*.[21] Five CEE-11, namely Bulgaria, Hungary, Romania, Slovakia and Slovenia, are included in this group. The main common characteristic of these countries is related to the assumption that *good political relations with China will lead to commercial benefit* and *economic considerations must dominate the relationship with China*. This group is opposed to the Assertive Industrialists (Czech Republic, Germany and Poland), "ready to pressure China with sector-specific demands" and impose a particular conduct on both political and economic issues. It is also different from the Ideological Free-Traders (Denmark, Netherlands, Sweden and United Kingdom) and European Followers (Austria, the three Baltic States, Belgium, Ireland and Luxembourg) that do not consider the relationship with China as central to their foreign policy. As regards the CEE-5 group, as the EU enlargement process has been suspended until 2020, the prospects of their cooperation with China are bright.

4.1. A comparative analysis of the economic situation of the CEE

Economically, the 16 CEE countries' cumulative share in the gross world product remains below 2%. Poland is the largest country among them if we take into account population, area and also nominal GDP. Romania ranks second in terms of both population and land area, third in terms of nominal GDP but only the tenth if we take into account the GDP per capita (**Charts 1 and 2**).

Chart 1: CEE-16 in the world hierarchy in terms of GDP in current prices in 2015 (billion USD)

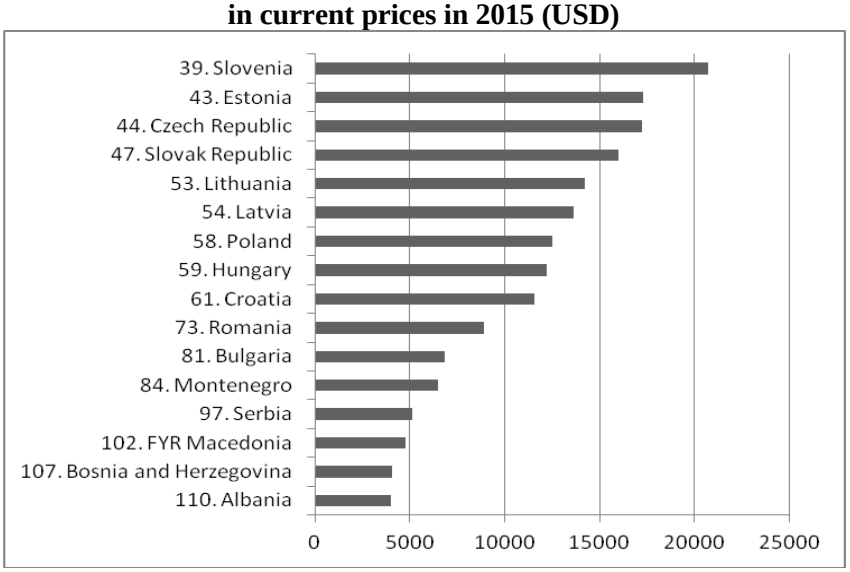


Source: Own representation based on IMF (2016)

[20] We will use the acronym CEE-5 for this group of five countries.

[21] Bulgaria, Cyprus, Finland, Greece, Hungary, Italy, Malta, Portugal, Romania, Slovakia, Slovenia and Spain.

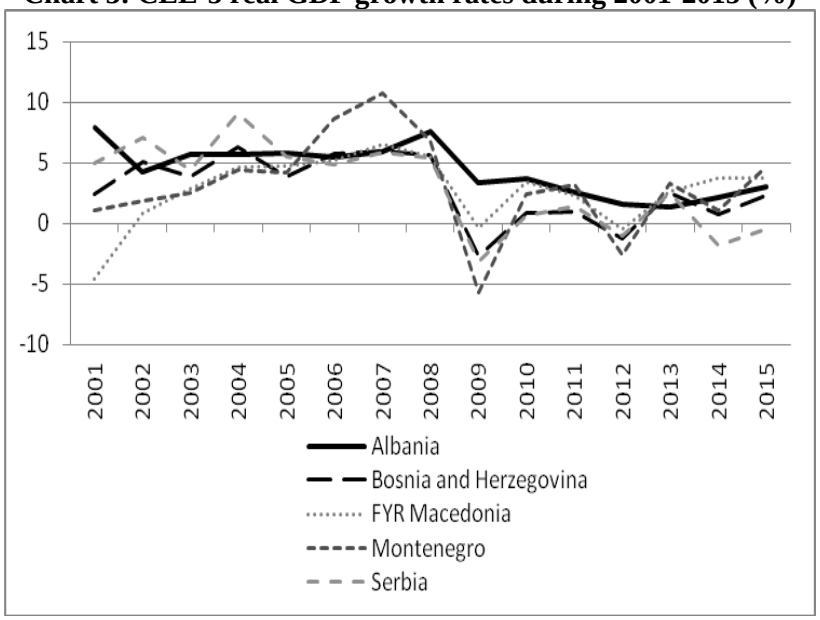
Chart 2: CEE-16 in the world hierarchy in terms of GDP per capita in current prices in 2015 (USD)



Source: Own representation based on IMF (2016)

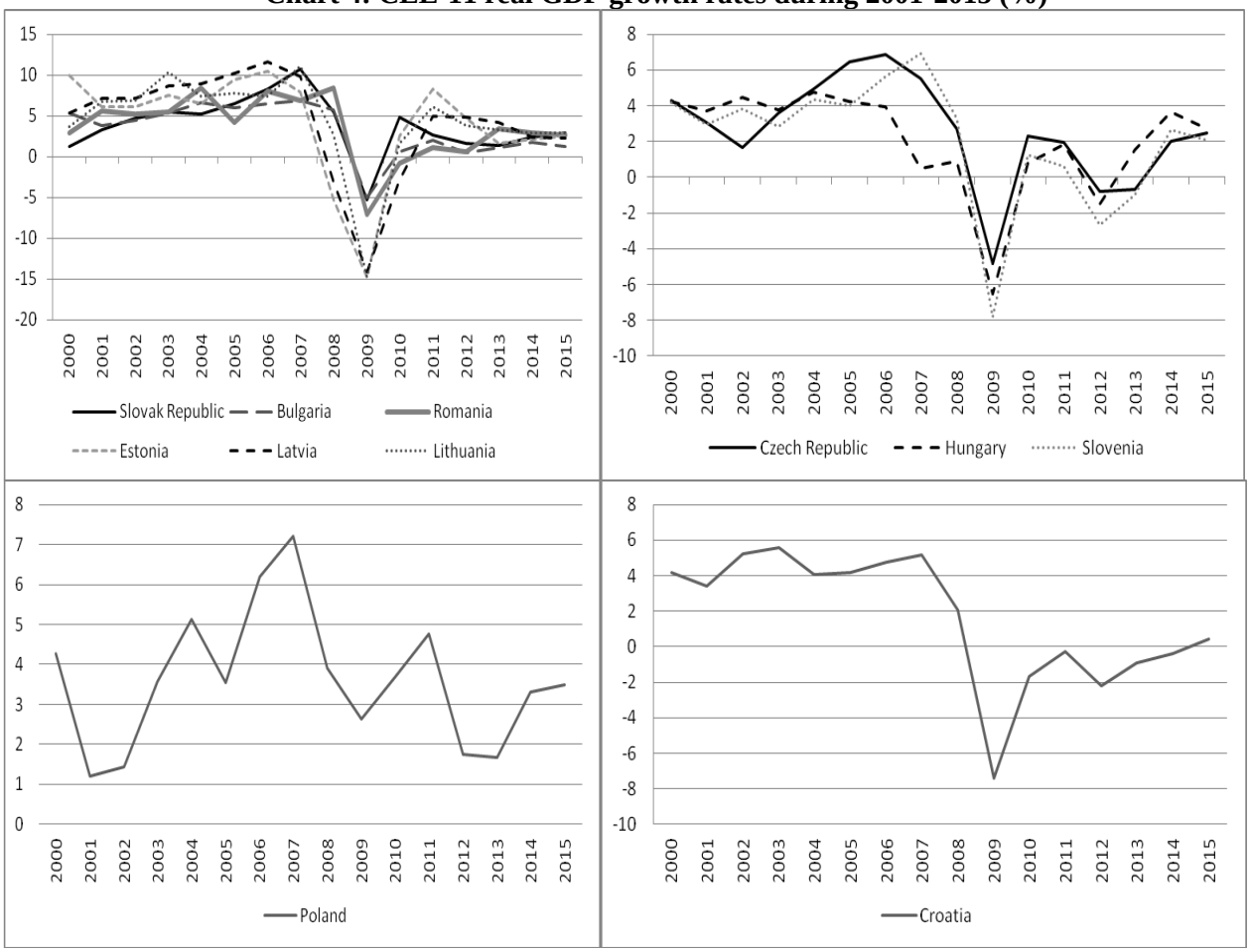
Among the CEE-16, one can notice large differences in terms of main macroeconomic indicators. During 2008-2015, four CEE-5 and three CEE-11 countries (Czech Republic, Hungary and Slovenia) recorded a double-dip recession (**Charts 3 and 4**). Albania and Poland were the only two economies have not witnessed any recession episode. The Baltic States, Romania, Bulgaria and Slovakia registered one medium term recession and their GDP decrease was quite abrupt. Similar with the PIIGS countries (Portugal, Ireland, Italy, Greece and Spain) and Cyprus, the newest EU member state, Croatia appears as another "problem" member state, with long term recession, large public debt and fiscal deficit as well as negative current account balance until 2012.

Chart 3: CEE-5 real GDP growth rates during 2001-2015 (%)



Source: Own representation based on IMF (2016)

Chart 4: CEE-11 real GDP growth rates during 2001-2015 (%)

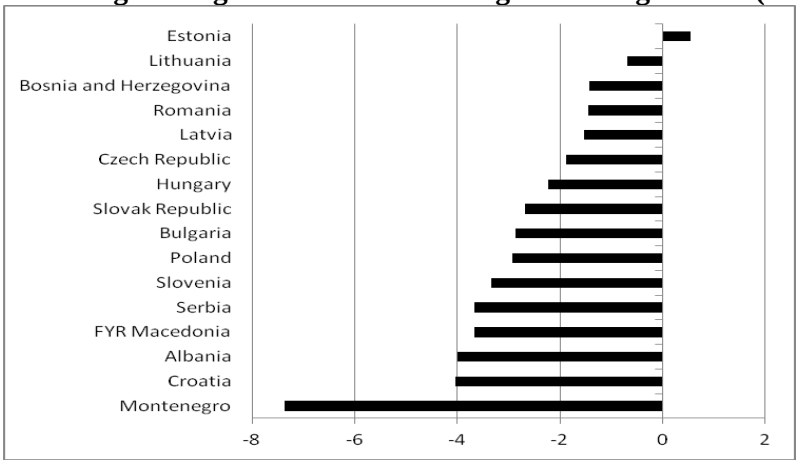


Source: Own representation based on IMF (2016)

As regards unemployment, most CEE-16 recorded in 2015 double-digit rates: Macedonia (28%), Bosnia and Herzegovina (27%), Serbia (20%), Croatia (17%), Montenegro (15%), Albania (17%), Slovak Republic (11%), Bulgaria, Latvia and Lithuania (each circa 10%), Slovenia (9%). The other five CEE, including Romania, have moderate unemployment rates (IMF, 2016).

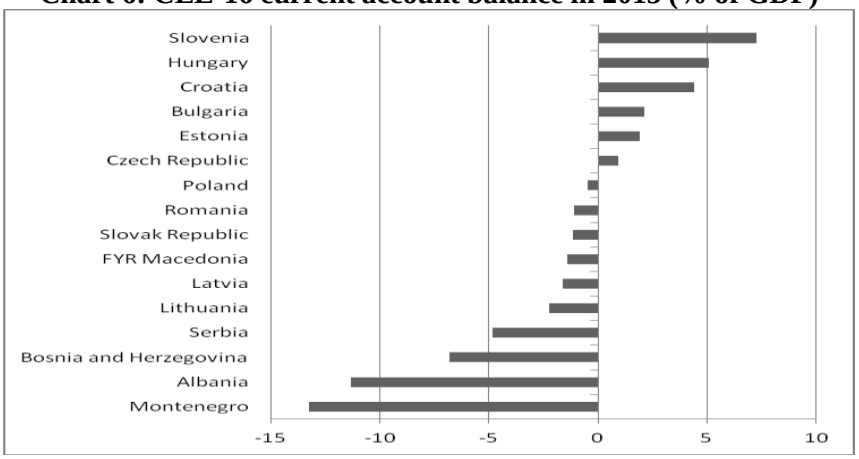
With the exception of Estonia, all the other CEE-16 countries registered in 2015 fiscal deficits and ten of them recorded current account deficits (**Charts 5 and 6**). Current account surpluses marked by Slovenia and Hungary have been increasing since 2011-2012.

Chart 5: CEE-16 general government net lending/borrowing in 2015 (% of GDP)



Source: Own representation based on IMF (2016)

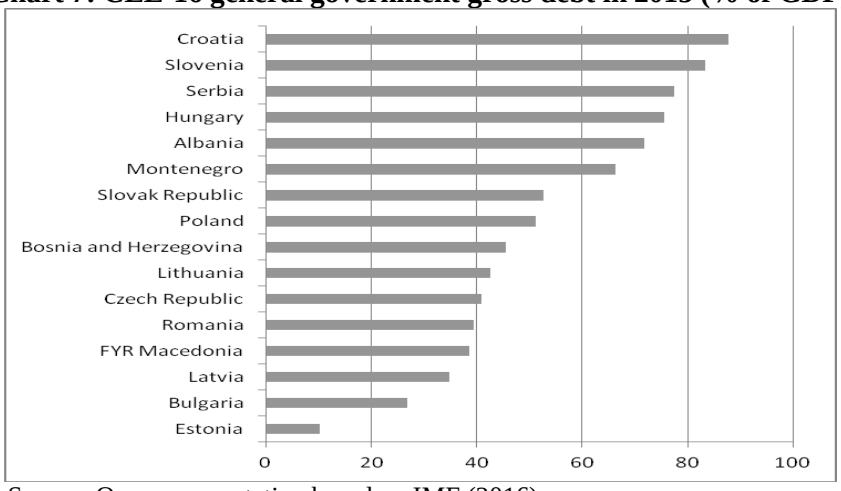
Chart 6: CEE-16 current account balance in 2015 (% of GDP)



Source: Own representation based on IMF (2016)

Six CEE-16 countries recorded a gross debt larger than 60% in 2015: Croatia, Slovenia, Serbia, Hungary, Albania and Montenegro (**Chart 7**). Generally, the CEE-5 and the newest EU member state, Croatia, reveal economic weaknesses.

Chart 7: CEE-16 general government gross debt in 2015 (% of GDP)



Source: Own representation based on IMF (2016)

4.2. Comparisons on investment environment in terms of ease of doing business, quality of public institutions, infrastructure and innovation.

Romania's main macroeconomic indicators, its geographical position, the presence of three Pan-European corridors crossing it (IV, VII and IX), its harbours at the Black Sea, the Danube-Black Sea Channel and also natural resources and the remaining skilled labour force in spite of the "drain brain" process underscore its strengths.

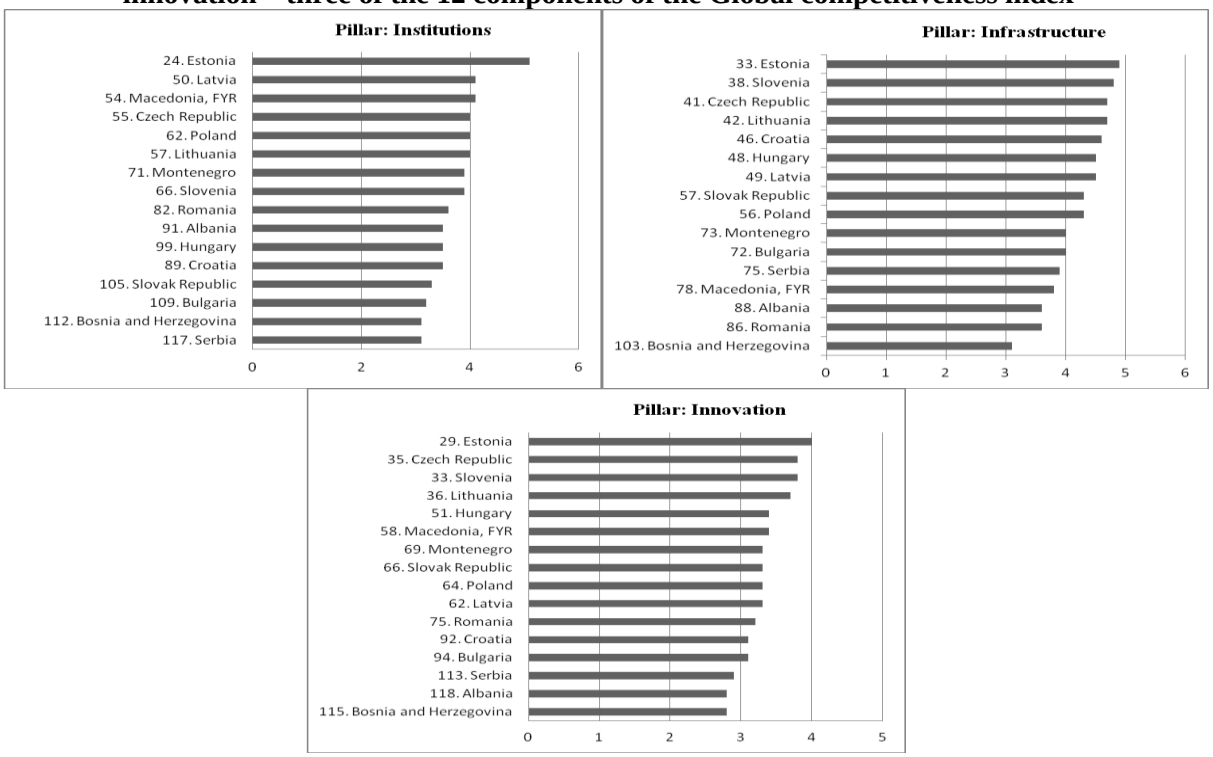
However, according to the experts of the European Commission "policy measures on the supply side of the economy, such as investment in innovation and infrastructure or improvements to the business environment and public administration, remain limited" (European Commission, 2016). **Table 1** and **Chart 8** underscore that Romania lags behind Macedonia, the Baltic States and the countries of the Visegrad Group, in terms of ease of doing business, quality of public institutions, infrastructure and innovation.

Table 1: The CEE-16 ranked on their ease of doing business

Country	Ranking
Macedonia, FYR	12
Estonia	16
Lithuania	20
Latvia	22
Poland	25
Slovak Republic	29
Slovenia	29
Czech Republic	36
Romania	**37**
Bulgaria	38
Croatia	40
Hungary	42
Montenegro	46
Serbia	59
Bosnia and Herzegovina	79
Albania	97

Notes: Economies are ranked on their ease of doing business, from 1–189.
Source: The World Bank Group (2015).

Chart 8: Hierarchy of the CEE-16 according to quality of public institutions, infrastructure and innovation – three of the 12 components of the Global competitiveness index*



Note: * Institutions, Infrastructure, Macroeconomic environment, Health and primary education, Higher education and training, Goods markets efficiency, Labour market efficiency, Financial market development, Technological readiness, Market size, Business sophistication, Innovation.
Source: Charts elaborated by author based on World Economic Forum (2015).

The literature offers a vast evidence of factors such as agglomeration effects induced by proximity to large Western European markets and technology sources, which are more important for China than tax regimes or ease of doing business (Szunomár, Biedermann, 2014). Countries such as Poland, Czech Republic, Slovak Republic, Slovenia, Latvia, Lithuania, Estonia are closer to the Western European markets than Romania, have

an adequate infrastructure and besides are better ranked in terms of ease of doing business, which insures a strong base of economic cooperation.

Moreover, the **Czech Republic** intends to become a centre of the New Silk Road Initiative. **Hungary** became in June 2015 the first European country to sign the Silk Road memorandum of understanding with the Chinese authorities. **Poland** plans to become the "railway transportation gate for Chinese exports to Europe" and develops the logistics centre in Malaszewicze, situated at the boarder of Poland and Belarus, which "will reduce the transportation time between China to Germany from 35-40 days by sea to 11-14 days by railway" (The Diplomat, 2015). Besides, Poland is the only country of the CEE-16 group with the status of prospecting founding member of the Asian Infrastructure Investment Bank.

In Romania there is a declared political will for cooperation with China but with the exception of cultural field, we remark the absence of significant tangible results. After the legislative elections of December 2016, we consider suitable to make a reassessment of the relationship with China, based on the priorities of the new political leaders.

5. Conclusions and areas for further research

The debate among scholars regarding whether the China-CEE-16 cooperation represents only a "window of opportunity" or a "strategic opportunity" is in progress even after six Economic and Trade Forums and five high-level summits. However, in a world where fragmentation has become the norm and cohesion remains an ideal, China's initiatives appear as a driving force of integration (Oehler-Şincai, 2015).

The goals of cooperation included in the "Twelve Measures for Promoting Friendly Cooperation with Central and Eastern European Countries" of April 2012 and the subsequent Guidelines for Cooperation (Bucharest, Belgrade and Suzhou) and the Riga Declaration are realistic, however uncertainties remain. Even if the actual 16+1 platform is "in line" with the EU-China 2020 Strategic Agenda for Cooperation[22], EU-China Connectivity Platform and China's New Silk Road Project, nevertheless, the following weaknesses deserve attention:

- This group of countries represents a "heterogenic region, with different frameworks and expectations" (Szczudlik-Tatar, 2013 and 2014).

- Some political leaders of the CEE countries consider the EU integration as a main priority, to the detriment of the CEE-China relationship, even if the cooperation with the EU does not exclude other partnerships.

- In the CEE there are other stakeholders (Western Europe, US), which consider China as a threat to their "established" positions. Such a rivalry could be detrimental both to China and the CEE.

The Bucharest and Belgrade Guidelines for Cooperation indicate that among the ways to reach the 16+1 common goals there are: *facilitation of customs clearance; simplification of visa application procedures; participation at fairs and exhibitions; organization of forums, seminars, conferences on topics of common interest; support of the existing direct flights between China and CEE countries, the opening of new routes at an early date, and the exchanges and cooperation in fields related to civil aviation; support the People's Bank of China and CEE central banks in signing currency swap agreements and facilitate local currency settlement as one of the effective means to increase trade and investment; encourage Chinese and CEE businesses to use RMB as settlement currency in cross-border trade and investment; encourage and support Chinese and CEE financial institutions to establish branches, develop market and expand business in each other's countries; support Chinese and CEE institutions in investing in each other's inter-bank bond market.*

We mention in this context China's preferential loans granted to EU candidate countries (Albania, Macedonia, Montenegro and Serbia) and potential candidate Bosnia and Herzegovina and the special relation created between them, having in mind that the EU enlargement process is suspended until 2020.

In relation with the CEE-11, the number of investment projects substantially increased. At the institutional level, new cooperation mechanisms were launched in CEE-16 countries. A China-CEE Investment Cooperation Fund has been launched and a US$10 billion special credit line has been established in order to spur the Chinese investments in the CEE.

[22] See *The Belgrade Guidelines for Cooperation between China and Central and Eastern European Countries.*

Regarding Romania, although from a geographical standpoint it is well positioned to be China's "gateway" to Europe, other CEE countries such as Hungary, Czech Republic, Poland, Bulgaria and even Croatia and the Baltic States proved to be more active than Romania.

With respect to areas for further research, we consider necessary to put more emphasis on: potential risks associated to the 16+1; comparative analyses of the China-CEE trade and investment flows with focus on best practices; evaluation of the 16+1 platform efficiency, by comparing the results with the objectives; possibility of enlargement, including countries such as Ukraine, Belarus or Moldova; potential of the Adriatic-Baltic-Black Sea Cooperation and also the reassessment of the Sino-Romanian relationship, based on the geopolitical realities and also those related to the new political cycle after the legislative elections of December 2016.

References

[1] Cohen, J. P., Morrison Paul, C. J. M. (2009), *Agglomeration, Productivity and Regional Growth: Production Theory Approaches*, in: Capello, R., Nijkamp, P. (editors), Handbook of Regional Growth and Development Theories. Edward Elgar, Cheltenham, UK, pp. 101–117.

[2] The Diplomat (2015), *The Chinese good intention*, October 18, Bucharest, available at: http://www.thediplomat.ro/articol.php?id=6607.

[3] European Commission (2016), *Country Report Romania 2016 Including an In-Depth Review on the prevention and correction of macroeconomic imbalances*, Brussels, 26.2.2016, SWD(2016) 91 final, Commission staff working document.

[4] European Bank for Reconstruction and Development (EBRD) (2016), *China and South-Eastern Europe: Infrastructure, trade and investment links*, July.

[5] Fox, J., Godement, F. (2009), *A Power Audit of EU-China Relations*, European Council on Foreign Relations, London.

[6] International Monetary Fund (IMF) (2016), *World Economic Outlook Database*, April, available at: https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx.

[7] Jaroch, E. (2016), *China's Foreign Policy Towards CEE Countries: Determinants, Development And Problems*, People's Square, March.

[8] Jiang, S. (2015), *Europe and China's One-Belt-One-Road Initiative*, 12th Annual conference on "The Taiwan Issue in China-Europe Relations", Shanghai, September 21-22.

[9] Kaczmarski, M., Jakóbowski, J. (2015), *China on Central-Eastern Europe: '16+1' as seen from Beijing*, OSW, No. 166, April 15.

[10] Kong, T. (2015), *The 16+1 Framework and Economic Relations Between China and the Central and Eastern European Countries*, Council for European Studies, December 14.

[11] Liu, Z. (2013), *The Pragmatic Cooperation between China and CEE: Characteristics, Problems and Policy Suggestions*, Working Paper Series on European Studies, Institute of European Studies, Chinese Academy of Social Sciences, Vol. 7, No. 6.

[12] Ministry of Foreign Affairs of the People's Republic of China (2012), *China's Twelve Measures for Promoting Friendly Cooperation with Central and Eastern European Countries*, April 26, available at: http://www.fmprc.gov.cn/mfa_eng/topics_665678/wjbispg_665714/t928567.shtml.

[13] Ministry of Foreign Affairs of the People's Republic of China (2014), *The Belgrade Guidelines for Cooperation between China and Central and Eastern European Countries*, 2014/12/17, available at: http://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/t1224905.shtml.

[14] Ministry of Foreign Affairs of the People's Republic of China (2015a), *The Medium-Term Agenda for Cooperation between China and Central and Eastern European Countries*, Suzhou, November 24.

[15] Ministry of Foreign Affairs of the People's Republic of China (2015b), *The Suzhou Guidelines for Cooperation between China and Central and Eastern European Countries*, November 24.

[16] Ministry of Foreign Affairs of the People's Republic of China (2016), *Li Keqiang Attends Sixth Economic and Trade Forum of China and Central and Eastern European Countries and Delivers a Keynote Speech*, November 6.

[17] Oehler-Şincai, I. M. (2015), *Strategic motivations at the core of the 16+1 initiative*, China Daily, November 24, available at: http://www.chinadaily.com.cn/opinion/2015-11/24/content_22513889_4.htm.

[18] Oehler-Șincai, I. M. (2016), *Country Report – A Romanian Perspective on the Opportunities and Challenges Linked to the Belt and Road and 16+1 Initiatives*, contribution to the Project "Opportunities and Challenges of Belt and Road Initiative: Perspective from China and Central and Eastern European Countries", Undertaking Organization: Central Compilation & Translation Bureau (CCTB) – China, Joint Research Organizations: 12 Institutions from 11 Central and Eastern European Countries.

[19] Romanian Government (2013), *The Bucharest Guidelines for Cooperation between China and Central and Eastern European Countries*, available at: http://gov.ro/en/news/the-bucharest-guidelines-for-cooperation-between-china-and-central-and-eastern-european-countries.

[20] Simurina, J. (2014), *China's Approach to the CEE16*, Short Term Policy Brief 85, Europe China Research and Advice Network (ECRAN).

[21] The State Council of the People's Republic of China (2016), *The Riga Declaration*, available at: http://english.gov.cn/news/international_exchanges/2016/11/06/content_281475484335120.htm.

[22] Szczudlik-Tatar, J. (2014), *China and the CEE Look for New Development Opportunities*, The Polish Institute of International Affairs (PISM), Bulletin No. 134 (729), December 12.

[23] Szczudlik-Tatar, J. (2013), *China's Charm Offensive in Central and Eastern Europe: the Implementation of Its "12 Measures" Strategy*, The Polish Institute of International Affairs (PISM), Bulletin No. 106 (559), October 4.

[24] Sun, Z. (2016), "16+1 Cooperation" in Synergy with the "Belt and Road" Initiative: Approach and Prospect, Keynote speech at China-Poland Foreign Policy Forum, Warsaw, June 20.

[25] Szunomár, A., Biedermann, Z. (2014), Chinese OFDI in Europe and the Central and Eastern European region in a global context, in: Szunomar, A. (editor), *Chinese Investments and Financial Engagement in Visegrad Countries: Myth or Reality?*, Institute of World Economics, Centre for Economic and Regional Studies of the Hungarian Academy of Sciences, Visegrad Fund, Budapest.

[26] Turcsányi, R. (2014), *Central and Eastern Europe's Courtship with China: Trojan Horse within the EU?*, European Institute for Asian Studies, EU-Asia at a Glance, January.

[27] Turcsányi, R. (2015), *The Limits of China's Cooperation With Central and Eastern Europe – What "new beginnings, new domains, and new visions" are possible for China-CEE cooperation?*, The Diplomat, December 4.

[28] The World Bank Group (2015), Ease of Doing Business, Washington D.C., data base available at: http://www.doingbusiness.org/rankings.

[29] World Economic Forum (2015), *The Global Competitiveness Database 2015-2016*, Geneva, available at: http://reports.weforum.org/global-competitiveness-report-2015-2016/competitiveness-rankings/.

[30] Yan, X. (2015), *China-U.S. Competition for Strategic Partners*, China-US Focus, October 29, available at: http://www.chinausfocus.com/foreign-policy/china-u-s-competition-for-strategic-partners/.

The Influence of Foreign Direct Investments on Business Environment in Romania

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Abstract: Europe remains one of the attractive world's regions for investment due to workforce highly skilled, rule of law and the existence of an integrated single market. Europe is the region that attracts most foreign direct investment. The level of investment in the EU has dropped significantly, but can see variations from country to country, both in terms of private investment and public investment. Investments in Romania had a downward trend. Obstacles to foreign investment include difficult access to finance often associated with poor insolvency frameworks, the challenges of an administrative nature (regulatory burden or lack of predictability of regulation) and low capacity of response of the labor market.

Key-Words: foreign investment, public finance, public investments, economic developments, gross domestic product (GDP)

1. Introduction

The domestic economy has felt the effects of the international financial crisis, although their intensity managed to be somewhat tempered by a series of measures taken by the Romanian authorities in terms of macroeconomic and financial stability: 1) conclusion of multilateral financing agreement with the European Union, International Monetary Fund and World Bank, 2) materialization of commitments under the European Bank Coordination initiatives, financial deleveraging commitments prevented disorderly or excessively rapid or strengthened cooperation between supervisors; 3) issue directives to the central bank's prudential plan, which focused banking system intensified efforts provisioning, capital adequacy and stricter regulation lending in foreign currency, in accordance with the recommendations of the European Systemic Risk Board.

The observed evolution in the real economy and financial crisis with international submissions are well founded so conventional theory and by historical precedent. Accelerated increases in asset prices, anchored by optimistic expectations regarding future capital gains that have coexisted with alert credit expansion were followed by severe financial crisis and economic recession deeper and longer. The main obstacles to investment are often related to unpredictability, complexity and the heavy burden of the regulatory framework, the lack of transparency of public administration, the judiciary and tax system and often the difficulties of getting access funding.

Potential obstacles to investment are classified into five categories:

- government / business;
- employment / education;
- the financial / taxation;
- research, development and innovation;
- regulation sector (business services / regulated professions, retail, construction, digital economy / telecommunications, energy and transport).

A negative aspect is that funding opportunities from sources both national and international are underutilized. Investments financed exclusively from national resources represent 9 percent of total public expenditure or 2.6 percent of GDP.

2. Investment implications on business environment

Funding sources for investment are funds from the state budget, structural funds and loans from international financial institutions such as the European Investment Bank and European Bank for Reconstruction and Development. Domestic banking sector is the main financier of the authorities, approximately 70 percent of the bonds they hold Romanian financial system is in the banks' portfolio.

Public investments are still supported largely by funds from the EU. Romania has the second lowest level of public investment between countries with similar characteristics and is the only country where public investment has declined every year since 2008.

Managing public investment is affected by the lack of defining priorities and lack of coordination. Overall, government capacity affects the business climate, public investment and delay causes a decreased absorption of public funds.

Public investment in Romania fell, although there are various sources of funding. In 2013, investment accounted for almost 24% of GDP, compared to 19% of GDP in the EU and public investment accounted for approximately 20% of total investments (or 5% of GDP).

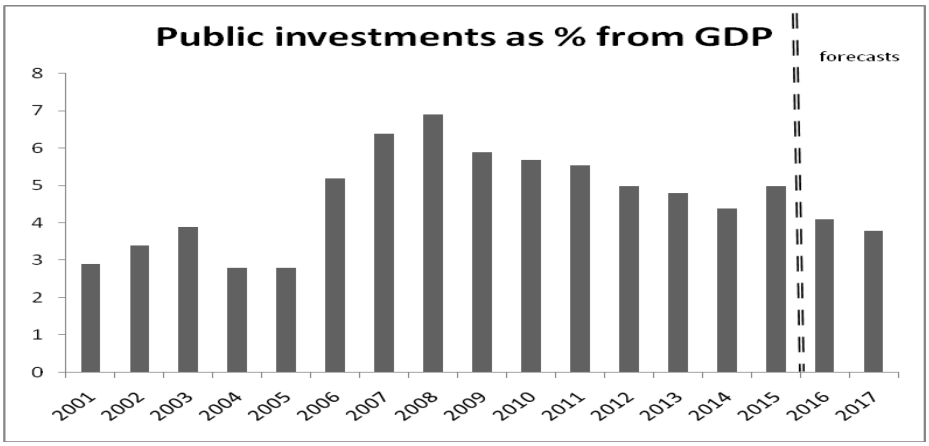
In 2014, public investment in Romania accounted for 4.3 percent of GDP. The percentage of public investment is still above the pre-accession period, but below the record level of 6.7 percent of GDP in 2008.

Investments in national economy shows a historic low recorded in 2014 of 65.5 billion lei, down compared to 2013. For comparison, investments in the national economy in 2008 amounted to 90 billion lei, up by 17.1 % compared to 2007.

In 2015 Romania has allocated an amount of nearly 17 billion lei for public investment, which meant the equivalent of 2.3% of GDP. Most of the funds allocated by the principal public investment was focused on the financing and completion of the investment objectives and we continue with multiplier effect and direct contribution to gross fixed capital formation (50.2% of spending over investment total sources, namely over 57.3% of investment costs allocated from the state budget)

In 2016 investment spending was totaling 37.7 billion lei, representing approximately 5,1 percent of GDP and their share in total budget expenditure of 14.9 (script no. 10). For 2017 they are estimated at 37.7 billion lei in 2018 valuation stands at 44.7 billion lei and a share of GDP and 5.3 percent of GDP in 2019 was estimated 47.2 billion lei, respectively 5,2 percent of GDP, an upward trend in nominal horizon from 2016 to 2019, increasing in 2019 to 9.5 billion lei in 2016, according to MPF.

Graphic no. 1

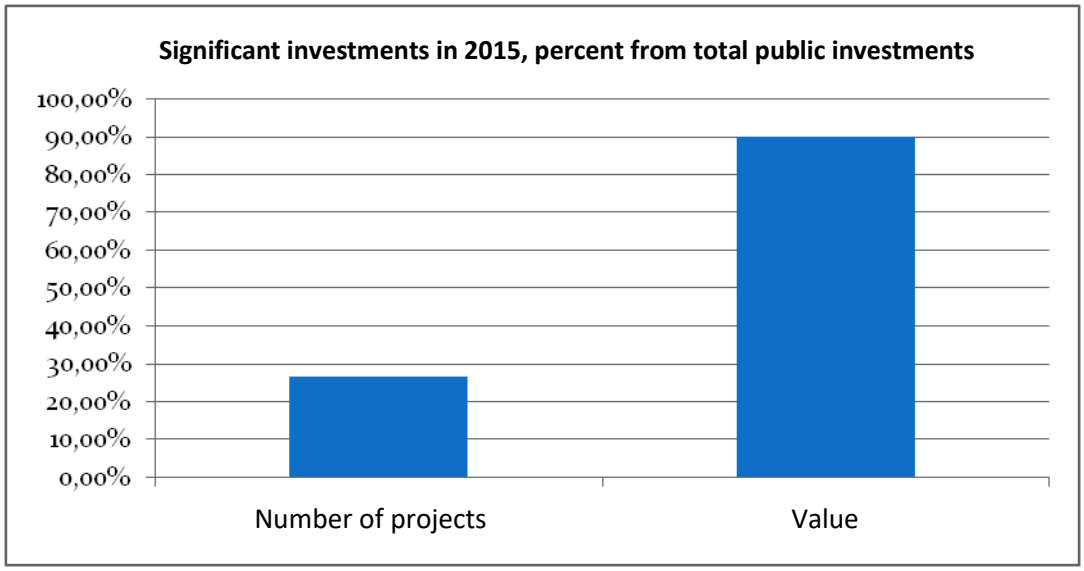


Source: BNR, Financial Stability Report, 2016

Investments help the increasing of business profitability. Attracting and efficient allocation of capital flows (especially in the form of high quality investments) constitutes the main driver of growth in the medium and long term GDP. In this way, it facilitates the private sector access to finance investments, encourage technology transfer and innovation, promotion of technology parks and business incubators, stimulating innovation and entrepreneurship, supporting women entrepreneurship, growth private companies and labor productivity, and practices management based on the principle of investing in people.

Effective mobilization of investment resources contributes to increased industrial production, improving complex national economy, tackling the problems of refurbishing the enterprises, but also to the sustainable development of regions.

Graphic no. 2 the amount of significant investments in 2015



Source: Ministry of public finances, Report on analysis of existing portfolio of public investment projects, 2015

For 2016, the Ministry of public finances started implementing mechanisms for transparency and efficiency of public spending that will contribute to increase fiscal space for investments, improving the sustainability of public finances in the medium and long term, increasing absorption capacity of European funds and increase the predictability of budgetary policy medium term.

The action consists in analyzing the sector of public spending, to prioritize and streamline their allocation, identifying ways of achieving savings in various items of expenditure and development of sectorial strategies spending proposals.

Principles on which public investment projects are evaluated in the prioritization process are: opportunity of investment project in the context of sector strategies or national economic justification and its social, affordability and financial sustainability arrangements for implementation / performance implementation and the remainder until the completion of public investment project (for further public investment projects).

3. Foreign direct investment in Romania

Investment relationship on a long term between a resident entity and a non-resident entity, which usually implies that the investor exerts a significant influence in the management of the investee company, is foreign direct investment.

Are considered FDI investment capital: share capital and reserves due to a foreign investor who owns at least 10 percent of the vote or the subscribed share capital of a company resident credits the investor or group to which it belongs and company in which he invested and reinvested earnings this, loans from companies resident whose voting power or share in the company's share capital resident is under 10 percent, but are part of a direct investor in resident company in question (sister companies).

Non-residents' direct investment in Romania amounted to 2.036 million Euros of equity stakes (including reinvested earnings estimated net) amounted to 1.561 million Euros and recorded net intergroup loans of 475 million Euros in the first half of 2016.

According to the National Trade Register Office (NTC), the number of newly established companies with foreign capital in the first six months of 2016 decreased by 12 percent compared to the same period last year, to 2,687 companies.

The total amount of the share capital of 2.687 new companies is 19.72 million dollars. Most companies were set up in March, 509 respectively, 17.7 percent fewer than the same month of 2015.

At the end of June, the number of companies with foreign participation in the capital of Romania was 207.153; the total capital is over 43.4 billion Euros.

According to NTC, 2015 Romania recorded the lowest number of newly established companies with foreign capital in 18 years.

In the table below are presented on the principle directional direct investment. Directional principle is that it follows the relationship between the investor direct investment and foreign direct investment company (claims on non-resident investors of these companies are recorded as decreases / withdrawals FDI).

Table no. 1. Direct investment on directional principle

Netto mil. Euro

Components	2015 (January - July)	2016 (January - July)*
Residents investments abroad	- 316	- 130
Companies that accept deposits, excluding central bank	-2	-0
Equity, including reinvested earnings	-2	-0
Debt instruments	0	0
Other sectors	- 314	- 129
Equity, including reinvested earnings	109	- 3
Debt instruments	- 423	- 126
Non residents investments in Romania	2 153	2 339
Companies that accept deposits, excluding central bank	94	369
Equity, including reinvested earnings	91	375
Debt instruments	3	- 5
TOTAL	1 837	2 210

*) provisional data

Source: BNR, 2016

Between 1991 – 2015, 204 466 companies were founded by foreign capital, the total subscribed share capital to over 42.8 billion Euros, predominantly construction companies (accounting for 27.2 percent), industry (25, 9 percent) and professional services (19.3 percent). Most such companies were established in Bucharest, respectively 92 072 (total amount of share capital - 21.9 billion Euros).

Of the 204 466 companies, 41 749 Italian firms have capital, but the most valuable capital is a Netherlands company, namely 8.4 billion Euros, although about 4,600 companies.

Most Foreign Direct Investments in Romania are from the EU in terms of share of total FDI ranking of 31 December 2015 is as follows: Netherlands (25.0 percent), Austria (14.2 percent), Germany (12, 4 percent), Cyprus (6.9 percent) and France (6.7 percent).

The size of FDI in Greenfield enterprises, order their own countries differ in part by the order determined by the total balance of FDI origin. Thus, the biggest Greenfield investment in enterprises came from the Netherlands (21.5 percent), followed by Germany (16.9 percent), Austria (11.2 percent) and 7.6 percent in Italy FDI in Greenfield enterprises.

Table no. 2. Distribution by countries of origin of FDI 31 December 2015

Distribution by countries of origin of FDI 31 December 2015		
	Value (mil. Euros)	**Share in total FDI (percent)**
Holland	16 100	25,0
Austria	9 131	14,2
Germany	7 991	12,4
Cyprus	4 421	6,9
France	4 308	6,7
Italy	3 349	5,2
Luxemburg	2 700	4,2
Switzerland	2 231	3,5
Greece	1 747	2,7
United States of America	1 627	2,5
Belgium	1 444	2,2
Spain	1 423	2,2
Great Britain	1 346	2,1
Hungary	938	1,4
Czech Republic	652	1,0

Source: BNR, Financial Stability Report 2016

In 2014 net Foreign Direct Investments flows reached the level of 2421 million, structured as follows: contribution to the equity of foreign direct investors in direct investment enterprises in Romania worth 2846 million. The contribution from equity consists of ownership interests in FDI enterprises, worth 4222 million, plus reinvested earnings, the negative amount of 1376 million.

For 2014 FDI were directed to manufacturing (929 million euro) and in its main branches recipient of foreign direct investment were transport (411 million euro), manufacture of computer, electronic products, electrical and optical (EUR 168 million) and metallurgy (158 million); Other sectors with significant investments were construction and real estate (646 million euro), information technology and communications (253 million Euros) and trade (€ 225 million).

Foreign Direct Investments were located mainly in manufacturing (32.0 percent of the total balance FDI). And within this industry branches: petroleum, chemicals, rubber and plastic products (5.7 percent of the total balance FDI), transport industry (5.4 percent), metallurgy (4.5 percent), food, beverages and tobacco (4.0 percent), cement, glass, ceramics (2.6 percent) and manufacturing of wood products, including furniture (2.5 percent).

Besides industry significant FDI activities that are financial intermediation and insurance (representing 13.0 percent of total FDI), wholesale and retail trade (11.7 percent), construction and real estate (9.8 percent), information technology and communications (6.0 percent). At the end of 2014 tangible and intangible assets recorded a balance of 30 883 million euro, representing 51.3 percent of total balance of FDI, which indicates a considerable degree of foreign investment.

In 2014 the Greenfield investment and mergers and acquisitions category registered a low of 77 euro 196 million respectively; the preponderance in the flow of shareholdings in 2014 is the restructuring of companies with a value of 2438 million or 58 percent of equity, and development companies with 1511 million, representing 36 percent of holdings.

To assess the lasting impact of Greenfield investment on the economy were highlighted and accumulation of foreign direct investment (stocks) in enterprises established as Greenfield investments, called Greenfield enterprises. Foreign direct investment in Greenfield enterprises, are amounting to 32 527 million, representing 54 percent of total balance of FDI.

Net inflow of FDI in 2015 was driven primarily trade (1,000 million Euros) and for financial intermediation and insurance (926 million Euros). The manufacturing industry also benefited from a major influx of FDI (euro 745 million); within its main activities recipient of foreign direct investment were transport (532 million euro), oil processing, chemicals, rubber and plastics, and machinery and equipment, each with 183 million Euros each, and manufacture of computer, electronics, optical and electrical 133 million.

Business activities where FDI is reflected in tangible and intangible assets to a significant degree are: industry (26.6 percent of total FDI) (in its manufacturing owns 18.7 percent of total FDI), construction and real estate transactions (6.1 percent) and trade (6.0 percent).

Besides industry significant FDI activities can be count on financial intermediation and insurance (13.1 percent of total FDI), trade, and construction and real estate, both being by 12.2 percent of total FDI, and activities professional, scientific, technical, and administrative and support services (6.3 percent of total FDI).

4. Conclusions

Attracting FDI in the economy is a competitive activity both globally and regionally. The efficiency of foreign investment must necessarily be reflected in the creation of production capacity of goods and services, creating new jobs and of course, the actual contribution to increasing the stock of inputs.

The financial crisis has revealed in particular that imbalances in financial markets as excessive increase in the pace of credit indebtedness across all sectors of the economy, asset prices can coexist with low and stable inflation. The analysis of foreign direct investment is justified by the fact that they are seen as the main factor stimulating economic growth.

Attracted investments should be directed towards those economic sectors that contribute to sustainable economic growth - agriculture, tourism, and manufacturing - and not for speculative sectors such as real estate or retail.

Based on these aspects we concluded that the development of the SME sector by facilitating its access to financing creates the prerequisites for economic growth and social sustained by creating new jobs and ensuring a level of development that is appropriate for the individual and society.

References:

[1] Albrecht, S., Stice, E. and Stice, J., *Financial Accounting, Tenth Edition*, Thomson South-Western, USA, 2008

[2] Alfonso A., Schuknecht L., Tanzi V., *Public Sector Efficiency. Evidence from the New EU Member States and Emerging Markets*, European Central Bank, Working Paper Series, no. 581/January, 2006

[3] Altăr M., Necula C.,Bobeică G.,) "*Estimating Potential GDP for the Romanian Economy. An Eclectic Approach"*, Romanian Journal of Economic Forecasting No.3, http://www.ipe.ro/rjef/rjef3_10/rjef3_10_1.pdf 2010

[4] Bulgariu, C., *The process of allocating public financial funds: a systemic treatment*, Iasi, Editura Ion Ionescu de la Brad, 2009

[5] Morse, J.N., Stern, P.N., Corbin, J.M., Bowers, B., Clarke, A.E., Charmaz, K., *Developing Grounded Theory: The Second Generation*, Left Coast Press, 2008

[6] Pike, A. Rodriguez-Pose, J. Tomaney, (edt.*) Handbook of Local and Regional Development*, New York: Routledge, 2011

[7] CE, Horizon2020, http://ec.europa.eu.programms/horizon2020/en

[8] Zaharia, R., Vintilă, D. (2012). *Foreign direct investements and economic growth in Romania*, Business and Management

[9] http://ec.europa.eu/economy_finance/explained/economies_of_europe/european_economic_outlook/index_ro.htm

[10] http://www.consilium.europa.eu/ro/policies/emu-report-2015/

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The Significance of Total Quality Management Principles in Industrial Organizations

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Abstract: Nowadays the industry is one of the main economic sectors, with a major contribution to achieving and maintaining a high rate of economic growth. The processing industry operation to high economic performance requires changes in structural terms, the re-engineering of processes and management. In this regard, one of the main actions taken at the level of companies in the manufacturing industry is the implementation of quality systems. Practicing quality management system not only allows businesses to react to changes taking place in business, but also to inflict them by the controlling of the future. This paper aims to analyze the principles of Total Quality Management – TQM and will highlight the advantages that organizations could obtain by applying each principle separately in the process of management.

Keywords: Quality, Total Quality Management, Quality Assurance System, Quality Standards, Competitiveness.

1. Introduction

The principles of total quality management (TQM) can be defined as rules or fundamental and complete convictions in the management of an organization, oriented towards the continuous improvement of performance in the long term, by the total customer orientation, while taking into consideration the needs of all other stakeholders.

Both in theory and in practice organizations it is generally accepted that the conceptual basis of the TQM philosophy is the principle of continuous improvement. To lead the continuous improvement process it is necessary to apply a number of fundamental principles of TQM. There are different formulations of the basic principles of TQM. For example, R.J. Schonberger makes particular attention to the principles of continuous improvement and quality assurance processes. G. Merli highlights the following basic principles: customer satisfaction, quality first, continuous improvement, involving all staff. Stora and Montaigne (2006) believe that the basic principles of TQM are: management implication, involving all staff and rational improving of quality. According to the authors Haist and Fromm (2011), they highlight the following principles: customer orientation, the 'zero defects' principle, continuous improvement, and focus on prevention.

2. The eight principles of TQM

Considering the different opinions expressed by specialists, as well as the stipulations of SR EN ISO 9000: 2006 – Chapter 02, we support the assertion that the basis for TQM and the development of family ISO 9000 were the eight principles of quality management considered being determinant for continuous performance improvement. Analyzed and interpreted today (under the impact of the increasing number of enterprises which have implemented ISO Standards and the methods of Kaizen system), the eight quality principles on which ISO 9001 is based are totally harmonized on the European Model of Excellence, Lean, Six Sigma and Business Process Management (BPM), but they are deficient when it comes to quality critical concepts such as social responsibility and stakeholder needs, which are limited to customers.

2.1 Customer Advocacy

This principle is to relief the organization's capacity to understand and meet the needs of its customers. For this, it is necessary, first, to identify external customers and internal customers. Then the requirements, the needs and the expectations are determined and then they are translated into specifications, based on which the products are made with certain quality characteristics. The customers' needs knowledge through market research is done on buyers, consumers and even competitors' customers. Also, if customers of the organization

are other organizations, the study should be extended to their clients. Based on study results, a list is drawn up with the needs expressed by customers and the importance given to each need.

Then it will be determined the technology and the processes required for the achievement of appropriate product requirements, and the investments that are necessary to provide manufacturer technical equipment.

In developing forecasts of customer needs organizations must cover both current interests and their evolution over time. Also, manufacturers can even determine an orientation of future customer requirements using intelligent advertising, like other channels offered by the media. The collaboration with the customer is recommended ('partnering') for cases where customers' real needs are different than those expressed in conducting the study. This can be done either through a dialogue with customers either in an organized frame or by customer participation in developing processes for a new product required by him, or through customer engagement in internal activities processes of the company such as planning new product development, technological estimation etc. Thus may be introduced in product design features that meet the unexpressed needs.

One method to correlate the customer requirements and expectations with the manufacturer's possibilities is Quality Function Deployment (QFD) developed by Yoji Akao and Mizuno Shigheru. The method can be applied in the market research process planning and in the customer-oriented production. The method is based on the answers to the following questions: 'What will consumers?' and how their requirements can be met? Based on analysis of customer requirements, the characteristics and technical specifications of products designed to satisfy these requirements will be set. But for this goal, the organization must provide the necessary information to knowledge needs. To this end it is necessary to adapt management subsystems, especially information subsystem. This subsystem should be adapted to allow the organization to retrieve and process all customer data. Thus, a customer-oriented information system should enable the compilation of reviews, the analysis of the customer after their effectiveness etc. The system also must exchange information with upstream and downstream partners of the organization.

Regarding the acceptance of orders made by the client, ISO Methods referring to the customer describe how to proceed to set a number of questions that must be addressed by the manufacturer, for example:

- What are the conditions specified by the customer, including those related to shipping the product and support requirements?
- What are the conditions unspecified by the customer but necessary for intended use (e.g. color)?
- What are the rules on product (e.g. legal or otherwise)?

Then the standard requires a review covering the following questions:

- It was well explained the requirement?
- If the order was made verbally, it was confirmed by the client?
- They were resolved all issues of contract?
- Is the company able to meet customer requirements?
- What happens if the customer changes the order?

Finally, the standard tries to clarify if the company has effective methods of contacting the client in order to obtain: product information, call for tenders, orders and changes, customer response including complaints.

Most companies have their own method of receiving orders. ISO standards in this area are flexible, asking just to formalize and adapt them to cover all aspects of the standard.

Since this principle is considered crucial to the present and future competitiveness of organizations we have introduced questions in our studies about how the organization's management understands this principle in the current activity. When asked 'What consumers / customers want?' The answer of the most business representatives was limited to three requirements that they considered most common in relationships with customers: the best quality; compliance with the delivery time; lowest price.

Trying to make a summary of the benefits generated by the application of this principle, they could be:

- provide reliable information for knowledge and understanding of customer needs and expectations
- allow the establishment of appropriate organizational objectives according to the customer needs and expectations;
- increase market share
- create the best conditions for customer loyalty;
- allow to measure and analyze customer satisfaction and initiate actions based on results;
- managing the client relationship, ensuring a balance between satisfying customers and other direct stakeholders (shareholders, employees, suppliers, society etc.).

2.2 Ensuring leadership (management involvement)

This criterion covers both the capabilities of a leader and the organization management. Leaders have the mission to find solutions to motivate employees and develop enthusiasm for quality. While managers are currently working, leaders are leading for future. In quality management, the term refers to how all managers of an enterprise initiates, supports and ensures the promotion of TQM culture. Leadership for Quality expresses the ability to positively influence people and systems under a single authority to have a significant impact and achieve important results.

This principle is to ensure the personal commitment of the general manager and management structure to be involved in the implementation of the integrated approach to TQM. For this purpose, the organization management will adopt plans for the development of TQM, the management system of the organization, internal training system, financial resources and personnel etc. Leaders involve employees in the implementation of quality management, with a decisive role in the operationalization of all the principles underlying quality management. Top management of the organization is formulating the vision, mission, strategy, policy and quality objectives and it is required to observe permanently the realization of those, in all activities of the organization, and to react in case of nonconformities to remove them.

The role of managers in promoting TQM to the structural operating levels must be:

- Top managers must focus their attention throughout the organization. Activities in which they are directly responsible for quality must be: establishing the purpose of the implementation of the quality standard; direct involvement in solving the problems that are generated by the achievement of the aim; allocation of resources required for implementation and effective operation of the quality system; rewarding employees for participation in continuous quality improvement; minimize problems of communication between organizational levels.
- Middle level managers (heads of departments) must focus their attention at process level to optimize the activities of the departments they lead. Activities are evaluated, correlated and made in a unitary manner.
- Employees must understand and comply with quality system at execution level: ‘well done the first time and every time’ to remove non-quality and to the compliance with the requirement of ‘zero defects’.

This principle plays a key-role in developing and implementation of projects. Project managers must act as leaders themselves, establishing unity of purpose of the project, project objectives and actions of the project team. The project manager is the person who has formal authority and responsibility for project management and thus to ensure that quality management is established, implemented, maintained and improved. He must assume leadership, developing a favorable culture for the project quality.

To get the desired results, the project manager's decision related to the implementation and efficient operation of the quality management system must be taken in an effort to ensure the beneficiaries that there are conditions for it to be executed in conformity with the stipulations set by the contract.

The benefits of applying this principle can be summarized as follows:

- ensure compliance with the needs of all stakeholders;
- enable the development of the objectives that will ensure increased competitiveness of organization and thereby will establish a clear vision of the organization’s future;
- providing the necessary resources for the training and the freedom to act with responsibility and efficiency for the staff;
- build confidence and eliminate fear, by encouraging and recognizing personal contributions;

2.3 The involvement of all staff in decision-making

This principle consists in developing the capacity to act and to decide individually in solving problems, and to engage in quality improvement projects. The staff has the main role at all organizational levels and only by total and conscious involvement and aware is possible that everyone’s skills should be involved to achieve quality policy. For this purpose it may act through measures to ensure full motivation of all staff to permanently participate to the process of improvement, innovation and creativity, thus ensuring the organization’s objectives.

For the implementation of this principle it is very important to create an internal environment based on the cult of quality, and for the ‘well done work for the first time and every time’.

If we refer again to the development projects, to achieve this goal it is necessary that for all project team members to be clearly defined the authority and responsibility to participate in the project. Employee involvement in improvement (quality, cycle-time and loss), usually by teams, can be achieved through various forms of training associated with participation in management decisions and actions that give rise to employee

empowering. The results of applying this principle can be measured through the quality indicators, among which the most important are the quality and cost of labor productivity.

Among the advantages of applying this principle we retain:

- understanding by employees of the importance of their role and contribution in the organization;
- employees can evaluate their own performance compared to their personal goals;
- employees will be permanently preoccupied to develop the knowledge and experience to enhance their performance;
- it creates the framework in which employees openly share their knowledge and experiences in solving involving problems.

2.4 Process approach to management

Principle 'approach as a process' for quality management system is reflected in clauses 4.1 and 4.2 of ISO 9001: 2008. This principle is a fundamental concept underlying the international standard ISO 9000 family, each process having inputs and outputs and involving people and other resources. More resource-intensive activities that contribute to achieving an output element (a blank, subassembly products, part of a service, important activities of a project, etc.) can be considered a process. In this interpretation, the process means a set of activities that relate and interact to transform inputs into outputs. We observe that most times the output elements are elements of a process of entry into the next process. Applying a system of processes within an organization, including identification and interactions between them and their management may be considered a 'process approach'. This type of approach is aimed at fulfilling a dynamic cycle of continuous improvement and enable significant gains for the organization by reducing costs, shortening the implementation process by efficient use of resources and better results based on focusing to consistent and predictable opportunities of process improvement.

This approach requires, in particular, identifying processes that an organization should implement to keep them under control and continuously improve their efficiency. Such an approach will allow management to focus on those processes and not every activity that takes place within an organization. It will also facilitate the focusing on customers and increasing their satisfaction by identifying the key-processes in the organization and their further development towards continuous improvement.

By knowing the main processes of the company we can determine precise responsibilities for the management and identify process interfaces with the organization functions to be pursued consistently.

To identify the processes needed for quality management system and their application in organizations we need to know what processes is required for the proper functioning of the quality system and which are inputs and outputs of each process, if there are processes subcontracted and, of course, who are customers for these processes and what are their requirements. Generally, the processes-chain includes processes of management, execution of works processes, support processes and monitoring and measurement processes. For the needs of quality management the identified processes system should include all production processes, execution and customer service provided by the administration that product or service quality and customer satisfaction.

The process identification may be performed by more than one solution – for example, the outline of broad processes or simply by listing the departments of the organization, e.g. purchasing, receiving, production control, sales and marketing, customer service, production, quality control, expeditions. Then it will be shown the correlation between the processes, by using a flow chart or diagram representing visually the sequence of interfaces between them. This activity is a prerequisite for the subsequent formulation of the process improvement solutions.

Another solution is recommended by a document of ISO TC 176 Secretariat / SC 2 which specifies four categories of management processes: processes for management of the organization; resource management processes; product development processes; measurement, analysis and improvement processes.

- processes for management of the organization include processes referring to strategic planning, determining quality policy and quality objectives, ensuring communication between functions and processes in the organization, ensure availability of the resources for quality objectives and the analyzes of the quality management system;
- Resource management processes are those processes that provide resources, and they are necessary for the organization's management processes for realization and measurement of the product.
- Processes for implementation (product development processes) are those which result in the intended outcome and refer to the product or production process of service. These processes include: planning processes of product realization, processes related to customer care, processes of design and development of the product

or service, production process or service provision, the supply process control measurement devices and monitoring. Product realization processes can be adapted in quality management system documentation and implementation to the specific needs of the organization. Document specifying the quality management system processes, including product realization processes and resources to be applied to a product, project or contract is called 'Quality Plan'.

• The measurement, analysis and improvement processes are necessary to measure and collect data to analyze performance and to improve the effectiveness and efficiency of quality management system. These include processes for measuring, monitoring and auditing, performance analysis and improvement processes (e.g. for corrective and preventive actions) and constitute an integral part of management processes, resource management and realization processes.

These four categories of quality management processes can be considered as typical processes, but it can be identified also specific processes for each organization.

To implement the processes, the organization must develop draft-implementing activities that compose processes and measurement processes, projects that include: communications in the organization, awareness, training, re-engineering management, involvement of top management, applicable analysis activities. Implementation projects must include measurements, monitoring processes and achieving planned inspections

Every part of the processes-system has clients (internal or external to the organization) and other stakeholders who are influenced by the process and determine the desired outputs, according to their needs and expectations. To ensure the operation and monitoring of these processes there are necessary information about the required resources for each process, about the characteristics outcomes, criteria for monitoring, measurement and analysis and also determine how these criteria can be included in the quality management system and in the works.

Among the advantages derived from this principle, we mention:

• defining systematic activities necessary to obtain the desired result and formalization of their main processes.

• setting clear and quantifiable responsibilities for the process management and identifying process interfaces with functions of the organization that will be tracked constantly;

• analyze and measurement of key processes capability;

• identifying interfaces between key-activities and the other organization's functions;

• focusing on factors that can lead to improving the organization's activities (resources, methods and materials);

• risk assessment, consequences and processes impact on all stakeholders;

2.5 System approach to management

The principle of the system approach for quality management system is reflected in clauses 4.1 and 4.2 of ISO 9001: 2008. The principle requires global approach to quality management, including all structures of the company and all employees. A perfect work performed by a department of the company, but neglected to another, loses all value. In fact, all departments of a company are, in one way or another, customers or suppliers to one another, as are the customers and external suppliers to the company. The qualitative approach will not bring positive results than respecting the condition that the entire company to align this approach that quality management is an organic component of the overall management of the company. Quality management system is part of the overall management of the organization, along with other parties such as human resources management subsystems, suppliers, health and safety etc. Even if these subsystems are not enough visible, they are found in every organization.

The principle involves understanding and conducting the quality management system in the company, given that its activities are embodied in interrelated processes, so as to ensure efficiency improvement organization. Quality management system processes are managed as a system by creating, understanding and conducting network-processes and their interactions. Consistent operation of this network of processes is often called a 'systemic approach' management and applies to the entire quality management system. 'The process' is related to the activities carried out and results obtained intermediate to produce the desired result for the client. Every process in the system processes has clients (internal or external to the organization) and other stakeholders who are influenced by process and defining the desired outputs according to their needs and expectations.

Applying this principle has as results:

• better achieve of the objectives pursued by integration and alignment of processes

• it provides confidence to the stakeholders on the existence, effectiveness and consistency of the organization;
• understanding the interdependencies between processes within the organization;
• a structured approach to harmonization and integration of processes;
• achieving a better understanding of roles and responsibilities;
• understanding the organization's capabilities and prioritization of actions according to material constraints;
• defining how specific activities will take place within the system;
• pursuing permanently the system improvement by measurement and evaluation;

2.6 Continuous improvement in performance

This principle consists in involving all staff at all levels and in all entities in activities to improve the organization's distinctive capabilities.

Responding to the requirements of this principle it was invented in Japan and applied by Masaaki Imai (2006) a new strategy of continuous improvement, named in Japanese 'Kaizen' which involves continuous improvement and involving everyone from managers to workers. In his turn, W.E. Deming has developed a continuous improvement process called 'P-D-C-A Cycle', introduced in Japan in 1950 and called 'the Deming Cycle'.

The four phases of this cycle are:

• *Plan (P)* – Planning activities for the improvement plan. At this stage the goals and necessary processes are determined to obtain results in accordance with customer requirements and the organization's policies.
• *Do (D)* – Implementation of the improvement plan. This stage consists in implementing in fact the processes.
• *Check (C)* – Checking the performed work. This stage consists in monitoring and measuring processes and products against policies, objectives and requirements for products, and reporting results. It is check therefore whether or not the implementation is on schedule and where the activities are, comparing to the planned activities.
• *Act (A)* – Action to correct the process. The stage includes actions to continuously improve process performance based on the findings of the previous stage. It aims at conducting and achieving standardization of the new procedures to prevent recurrence of nonconforming problems or to set goals for further improvements. PDCA cycle continuously spins given that once an improvement is made the resulting state becomes another target for improvement.

Current standards will be improved by KAIZEN activities, which will make it possible by passing from maintenance stage to improve stage.

Corresponding to this principle, the organization's overall performance should be a permanent objective of management. The phrase 'continuous quality improvement' can be used only when, as specified in ISO 9000: 2005, quality improvement is permanent, temporary actions to improve quality do not meet this principle.

Although most experts consider to be the most important principle of TQM, understanding its importance and how it applies is very different in the world. The greatest interest is granted by the quality management system practiced in Japan. We retain in this regard, Kaizen system practiced in this country, which is a concretization of the principle.

In our assessment, the inclusion of this principle in the 2000 edition of the standard 9001 by dropping the phrase 'quality assurance' and replacing it with the phrase 'continuous quality improvement', targeting the excellence, was correct. It can be considered that the implementation and efficient operation of the quality management system presumes that was effectively ensured quality in all activities of the organization. Therefore the concern of management and employees must focus on continuous quality improvement, i.e. towards excellence, as required by the guidelines provided by ISO 9004: 2011, which was designed to pair with ISO 9001. The observation is consistent with requirements for continuous quality improvement, which is manifested in the European Union. Currently, the requirements for product quality and service have increase beyond the level implied by the phrase 'quality assurance', and believe that customer satisfaction is no longer sufficient to overcome expectations by promoting the concept of 'Beyond Customer Satisfaction' according provided that the product must exceed customer requirements, to enthuse him.

Among the advantages of organizations applying this principle, we remember:

• continuous performance improvement becomes a permanent approach across the organization
• requires staff training methods and tools for continuous improvement;
• continuous improvement of products and processes is a goal of every person in the organization;

- establishment of measures for continuous improvement and its tracking;
- recognition and distribution of the improvements.

2.7. Management by facts

This expression signifies that each person involved in the organization must ensure that any decision is based on facts. Management decisions and actions on quality management system is based on the analysis of 'facts' that represent data and information on the performance levels of current products or services provided by the organization and which are obtained from information contained in the audit reports, corrective actions, non-conforming products, customer complaints, etc. Analysis of relevant data based on information reduces the risk decisions based on personal 'opinions'. All documents, information, procedures constitute a proper quality management information system that intertwines, in some areas, with general information system existing in the organization. Those managers must be reserved in making decisions for which there are no verified information in practice

The benefits of the principle can be:

- decisions are pertinent and reliable because they are based on accurate and verified data and information;
- data and information analyzing is made using established methods;
- making decisions and setting up actions based on an analysis of the facts, balanced with experience and intuition;
- providing access to data to those who need them.

2.8. Mutually advantageous relations with suppliers

The latter implies definition and proper documentation requirements that must be met by suppliers. It is necessary to analyze and assess their performance to control the supply of quality products or services.

At the same time the manufacturer must also take account of the interests of the supplier, so both have benefited from business conducted jointly. Relations beneficial win-win between the organization and suppliers increases the capacity of both entities to create added value. This principle includes relationships with domestic suppliers. Mutually beneficial relations between all processes undertaken within the organization and between them and external partners contribute to an osmosis between internal activities, on the one hand, and between the organization and working environment on the other. So the management of relations with suppliers focuses on providing quality and performance of services, involvement and integration provider (supplier partnership) and the capability of providing improvements in its work.

In practice, we noticed that there are few companies that were aligned to the requirements of stakeholders in the supply chain, manufacturing processes and solutions capabilities to achieve this "best practice" deeply rooted in quality standards. Therefore, we consider it necessary to reconsider the customer-supplier relationship, often adverse positions they were in traditional models of management in achieving the idea of partnerships throughout the supply chain.

As said Professor Daniel T. Jones, co-author of the paper 'The Machine That Changed the World', '*No organization is like an island. Your customers depend on the excellence of your supplies ... The best companies create alliances with suppliers to ensure their customer retention'* (Daniel T Jones, James P Womack, Daniel Ross, 2007).

In fact the application of quality management in terms of efficiency is impossible without the existence of these alliance relationships with suppliers. One example is enough to confirm this assertion: the method Just In Time, which aims "zero inventories and total quality" means that the product must reach exactly when the client needs it. However, a prerequisite in this regard is thus synchronizing the production may be achieved only reduce inventory, related costs, increase quality, productivity and adaptability to changes.

During the process of choosing suppliers to establish relations of partnership, companies pursue objectives such as:

- the possibility of establishing relationships that balance short-term gains with long-term;
- mutual consent providers and beneficiaries on resource gains;
- identification and selection of major suppliers able to make improvements in their own activity;
- setting common activities to improve quality.

3. Conclusions

Analyzing the above principles, we believe that the basic principles of TQM must be included in the organization's culture to generate a climate of open cooperation and teamwork between members, customers and suppliers. Managers must understand that by implementing total quality management principles can improve considerably the competitiveness of organizations. We consider that the implementation of generalized systems of quality management, organizations can record a short-term benefits such as winning new business, increasing customer demand and protect business reduce costs by continuously improving efficiency and reducing losses and increasing labor productivity.

References

[1] Haist, F., Fromm, H. (2011) – *Qualität im Unternehmen, Prinzipien - Methoden - Techniken,* Carl Hanser Verlag, Műnchen-Wien.
[2] Imai, Masaaki (2006) – *KAIZEN: The Key to Japan's Competitive Success* New York Random House.
[3] Imai, Masaaki (2013) – Gemba Kaizen, Edited by Kaizen Institute Romania, Bucarest.
[4] Daniel T Jones, James P Womack, Daniel Ross (2007) *The Machine that Changed the World* Publisher Harper Collins.
[5] Juran, J.M. (1991) – *Quality Control* Handbook Mc Graw-Hill New York.
[6] Stora, G., Montaigne, J. (2006) – *La Qualité Totale dans l'entreprise*, Les Editions d'Organisation, Paris.
[7] xxx – *ISO Standards* editions 2001-2011.

Entrepreneurship Evolution in Terms of Economic Development Stages. Retrospective Analysis

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Abstract: Entrepreneurship and economic competitiveness are intensely debated subjects being both in economic analysts' and decisions makers' attention, being promoted at a national, European and global stages by creating, coordinating and implementing a favorable strategic, legislative and financial framework.
From this perspective, the purpose of this paper is to highlight and promote the entrepreneurship's role as a fundamental source for enhancing growth potential and national and regional development on the long run, but also to identify based on compared experiences of some additional levers in order to efficiently implement the national and European entrepreneurial strategies.
Furthermore, considering that theorists, practitioners and decision makers focus on highlighting the crucial role entrepreneurship plays in ensuring a sustainable economic growth, the current paper approaches the correlation between entrepreneurship and economic competitiveness form a reverse perspective. Thus, the main objective of the study is to promote the influence that the economic competitiveness has (determining factor, alongside with GDP in establishing the development stages of the member states) on the entrepreneurial activities dynamic.

Key-Words: entrepreneurship, economic development, competitiveness, the overall rate of entrepreneurship, Global Competitiveness Index, correlation, fluctuations

1. Introduction

Economic growth, sustainability, sustainable development, as determinant drivers of the humanity's general progress, through positive changes seen both from the point of view of the macroeconomic results and the social structure, national institutions and population behavior, represents and indispensable instrument for fighting against the current economic, social and environmental issues (social inequalities, poverty, global warming).

From this perspective, entrepreneurship as a lever to achieving these objectives, represent the main focus of policies, programs and national, regional and global strategies. This is because, the studies, based on empirical data, reflect the same conclusion: the volume, the structure, the quality and the intensity of entrepreneurial activities decisively influence the national economies' competitiveness and the increase in competitiveness represents a fundamental factor of the economic development.

If, from a theoretical point of view the positive correlation between entrepreneurship and the evolution of the economic development stage is clear and undeniable, the reality reflects the fact that, in practice, between the two there isn't always a linear relationship nor a generally valid one.

In order to illustrate the viability of this standpoint, we shall make the transition from theory to practice through a retrospective analysis of the correlation between the entrepreneurship evolution rate and the evolution of competitiveness of national economies.

Therefore, we shall analyze the indicators published in one of the most known annual reports in terms of entrepreneurship, The Global Entrepreneurship Monitor, the only one that relates also to the development stage of national economies. Considering that the reference point for grouping countries by stages of development is represented by the Global Competitiveness Report, which starting with 2008 introduced the classification of countries following Michel Porter's model, we shall analyze further on the correlation between the entrepreneurship rate and the global competitiveness index, as a determining factor of the economic development stage, along with GDP/capita.

For this purpose, the evolution of the two indicators will be analyzed, in the period 2008-2015, based on data published in the two annual reports.

2. The analysis of the correlation entrepreneurship-competitiveness

2.1. Methodological classifications

The inter-conditional relationship between the entrepreneurship rate and the global competitiveness index shall be illustrated using scatterplot diagrams created with Microsoft Office Excel 2010, considering the following technical aspects:

- to synthesize entrepreneurship evolution, it shall be analyzed considering the prism of the entrepreneurship total rate (ER), calculated as a sum between the early stage entrepreneurship rate and the consecrated entrepreneurship rate.
- to ensure the comparability of the two variables, the Global Competiveness Index, was also expressed as a percentage, as a share of the index of each analyzed country, in the total maximum score;
- considering that the analysis on development stages according to the Porter model was introduced in reports starting with 2008, the period under analysis is comprised between 2008 and 2015;
- since the GEM reports do not comprise the same countries each year and the need to include in this study only the countries for which we have available data for each year of the concerned period, the analysis is narrowed to a small sample of 30 countries.
- having in view the small number of countries included in this study and the fact that the analysis of the correlation between the two indicators is made based on the national economies development stage, I order to ensure, from a statistical point of view, a sufficient number of countries, for each group, reference is made only at the three main levels of development- factors driven economies , efficiency driven economies and innovation driven economies (economies under transition at a superior stage, were included in the core group).
- the evolution in time of the two variables has been stated synthetically, by computing the total average rate of entrepreneurship and the average rate of the global competitiveness index of each national economy subject to this analysis.
- data on the evolution of the total average rate of entrepreneurship and the average rate of the global competitiveness index is presented in Table no.1.

Table no. 1: Average total rate of entrepreneurship and the Global Competitiveness Index average for the period 2008-20015[23]

NO.	Country	Average rate GCI %	Average ER %	NO.	COUNTRY	Average rate GCI %	Average ER %
1	**Belgium**	73,98	8,76	**16**	**France**	72,57	8,16
2	**Finland**	76,89	14,41	**17**	**Columbia**	58,62	30,40
3	**Germany**	74,75	9,78	**18**	**Argentina**	55,72	27,83
4	**Greece**	59,14	21,01	**19**	**Brazil**	62,20	31,36
5	**Italy**	64,55	8,40	**20**	**Chile**	68,00	28,69
6	**Holland**	76,72	16,75	**21**	**Croatia**	58,64	10,93
7	**Norway**	73,20	13,74	**22**	**Hungary**	60,57	14,25
8	**Slovenia**	61,93	10,69	**23**	**Latvia**	62,45	18,67
9	**Spain**	65,71	13,60	**24**	**Peru**	60,46	30,74
10	**Great**	77,07	13,64	**25**	**Uruguay**	62,46	19,70
	Britain			**26**	**South**	61,61	10,58
11	**USA**	75,23	18,98		**Africa**		
12	**South**	71,95	19,61	**27**	**Romania**	57,77	12,63
	Korea			**28**	**China**	67,80	26,27
13	**Japan**	77,84	11,29	**29**	**Malaysia**	71,18	11,49
14	**Ireland**	69,86	15,74				
15	**Switzerland**	81,43	16,21	**30**	**Russia**	60,67	6,96

Source: Personal processing, based on available data in "Global Entrepreneurship Monitor" Annual Reports 2009 -2016 and "The Global Competitiveness Report" Annual Reports 2009 -2016

[23] The table includes only the countries for which data was available for this period, countries that belong only to two of the three development stages- innovation driven economies, denoted with grey and efficiency driven economies. Factor driven economies

Analysing the relationship between the overall rate of entrepreneurship and the global competitiveness index we conclude firstly that it implies establishing the existence of this relationship but also determining the intensity and sense of this relation. With this purpose, the Data Analysis function is used from the Excel spreadsheet program, function that provides the value of the "r" linear correlation coefficient. A positive value of this coefficient shows a direct correlation, positive between the two indicators, while a negative value reflects the negative relation, in reverse in terms of their evolution.

To establish the correlation intensity, although specialized statistical papers do not have a unified approach, they do relate to the interpretation proposed in 2000 by Professor Will G. Hopkins. In his view, interpreting the value of the correlation coefficient "r", in absolute value, can be categorized as follows [1]:

- Between 0.0 and 0.1- negligible correlation between variables
- Between 0.1 and 0.3 - minor correlation;
- Between 0.3 and 0.5 – medium correlation, moderate;
- Between 0.5 and 0.7 – high correlation;
- Between 0.7 and 0.9 – very high correlation, elevated;
- Between 0.9 and 1.0 –almost perfect correlation.

2.2. The empirical analysis of the competitiveness-entrepreneurship correlation

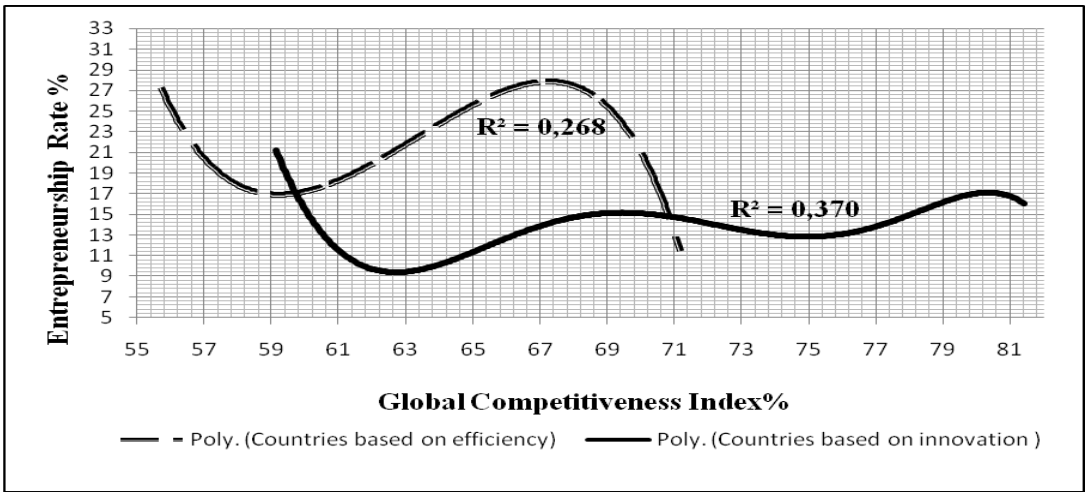
An initial analysis of the correlation between the total rate of entrepreneurship and the global competitiveness index considered grouping the national states on levels of economic development, according to Porter's model. This reflects the fact that between the two indicators doesn't exist a linear correlation, the correlation coefficient being null for the countries based on efficiency and negligible for the countries based on innovation (r=-0.02).

Thus, uneven distribution of data and the Pearson correlation coefficient with a negligible value proves that between the two indicators there is no linear relationship. Thus considering this aspect, the analysis of the graphical representation of the linear function and the coefficient of determination (R2) no longer has statistical significance. But, given the fact that the lack of linear connection doesn't exclude any relationship between the variables under analysis, continuing the analysis for identifying a different time of correlation is fully justified.

Scatterplot graphical representation of the two indicators' values for each of the two group of countries, reflect the existence of a polynomial trend, although it also has low intensity, as it can be seen in Chart no.1 (R2=26.8% for the countries based on efficiency, R2=37% for countries based on innovation). We should also bear in mind that for the nonlinear correlations the R2 coefficient doesn't reflect the determination degree as it usually does, but only the intensity of the analyzed trend. Also, according to the graphical representation rules, the ordinate is used to represent the dependent variable and on the abscissa the independent variable (predictor variable). In order to create the correlation curve for the two indicators, the total entrepreneurship rate has been considered as a dependent variable, and the index for global competitiveness the predictor variable, for the following reasons:

- considering that the positive impact of entrepreneurship on national economies but also on the society in general is already very well known, publicized and generally agreed upon, an increased interest, currently, is shown for the identification of factors and conjunctures that encourage the positive dynamic of the entrepreneurial initiatives, so as to ensure the favorable levers to their potentiation.
- if the effects of the entrepreneurial process on macroeconomic indicators (employment rate, GDP, inflation rate, commercial balance, etc.) are reflected in the macroeconomic results starting with the first year of the entrepreneurial initiative, the impact of this process on the qualitative factors which generates the increase in global competitiveness and consequently economic development is felt in time. This aspect makes irrelevant the analysis of the correlation between the values recorded by the two indicators during the same year.

Chart no.1: Innovation driven economies vs. efficiency driven economies seen from the perspective of the relationship between the total entrepreneurship rate and the global competitiveness index between 2008 and 2015



Source: Personal processing, based on pooled data from table. 1

The analysis of graphical representation between the two variables reflects the fact that for both development levels, the trend is fluctuating, the entrepreneurship dynamic being influenced both positively and negatively by the global competitiveness index. But, because the established trend has a low intensity, in order to better analyze more precisely the entrepreneurial cycle phases in light of the national competitiveness evolution level, the countries included in each of the two development levels under analysis shall be grouped in smaller clusters, according to the average index of the global competitiveness of each level.

Therefore, for each development level, the countries shall be grouped into two categories- under and above the average global competitiveness index of the group.

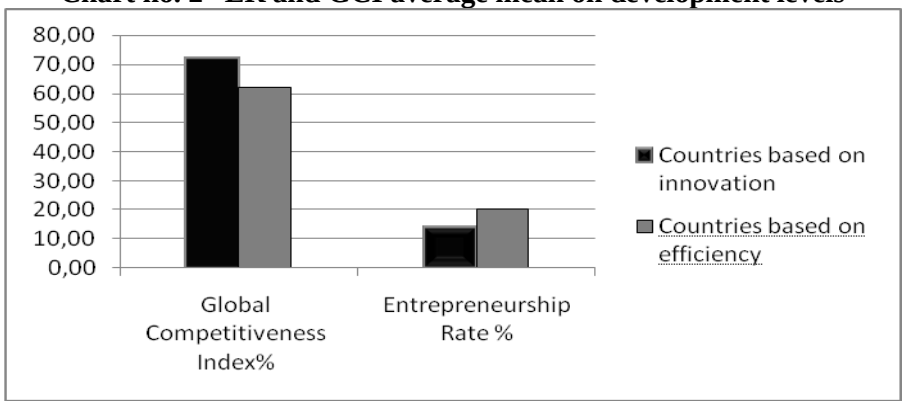
Based on available data for the period 2008-2015, chart no.3 illustrates the relationship between the stage of the total entrepreneurship rate and the stage of the global competitiveness index for the most developed economies, innovation driven economies and we would expect that at this superior level of competitiveness, the entrepreneurship rate to record the lowest levels.

Table no. 2. ER and GCI on development levels

Group	GCI – average group	ER – average group
Innovation	72,05	13,80
Efficiency	61,99	20,03

Indeed, as it can be seen in Table no.2 and as it is illustrated by Chart no.2, an overview, only on the average of each development level, confirms this point of view, - the average entrepreneurship rate is lower for the lower for the group comprising the more developed countries (based on innovation), compared to the total average entrepreneurship rate for the countries with a lower degree of development (countries based on efficiency).

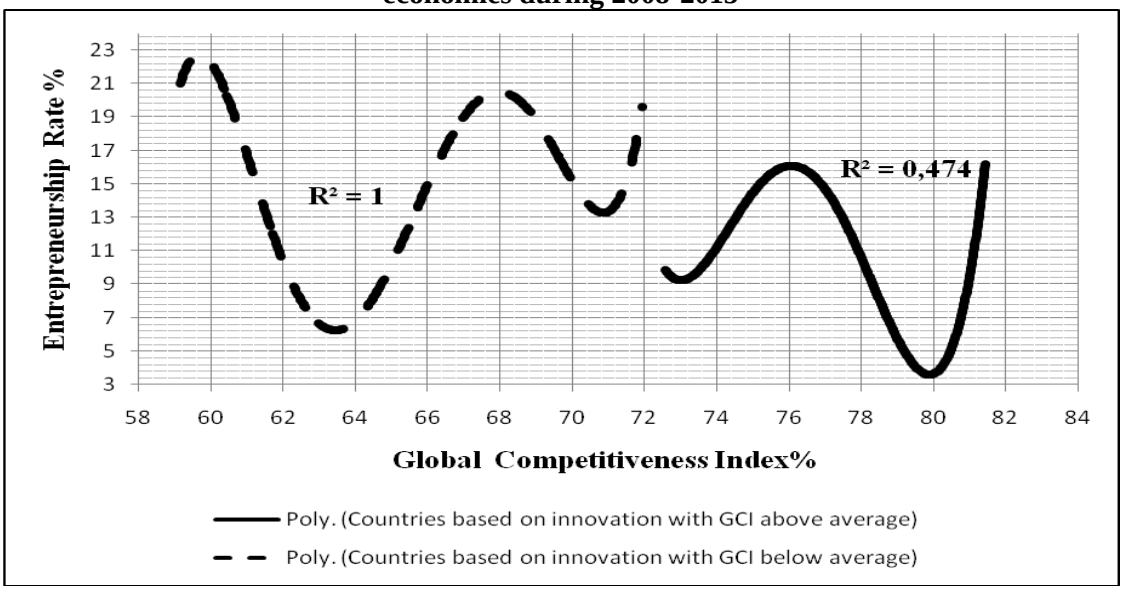
Chart no. 2 ER and GCI average mean on development levels



Source: Personal processing, based on pooled data from Table no.2.

But, the detailed analysis of the available data series, for each country included in the study and illustrated by graphs no.3 and 4, shows that entrepreneurship is not in a decreasing slope as the competitiveness in growing, but it has a fluctuant trend compared to the stage of global competitiveness.

Chart no 3.The total entrepreneurial rate and the global competitiveness index, for the innovation driven economies during 2008-2015

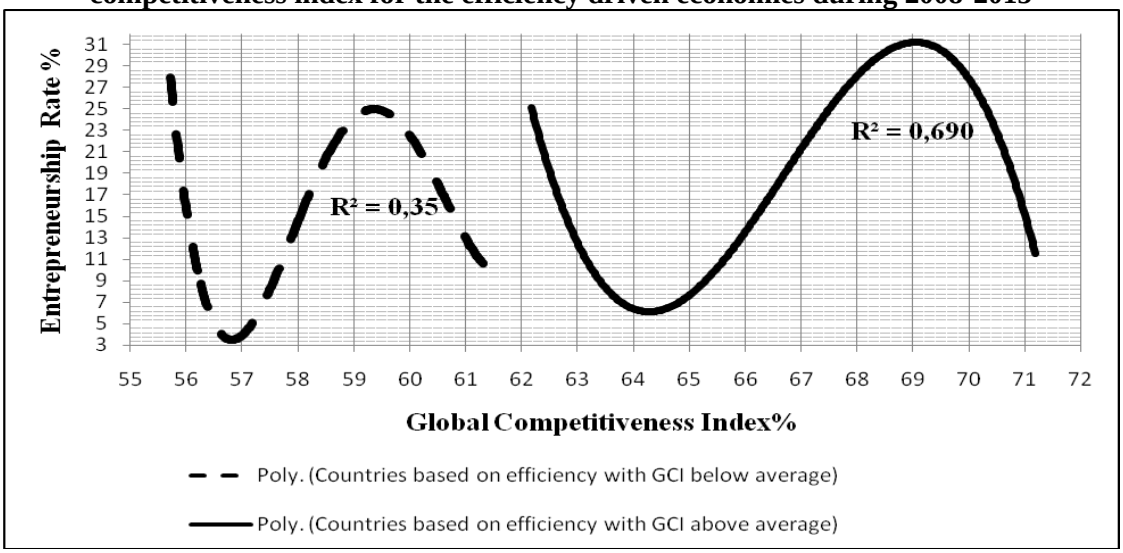


Source: Personal processing, based on pooled data from Table no.1

Indeed, from the comparative analysis f entrepreneurship evolution within the 30 countries comprised in the two development levels, we can note that when making the transition to a superior development stage (from factor-driven economies to efficiency driven economies - Chart no.4 and from efficiency driven economies to innovation driven economies - Chart no.3) the entrepreneurship rate decreases. The process can be interpreted from the perspective of the impact of the standard of living (GDP/capita) increase and of competitiveness of the entrepreneurial behavior of the active population (financial comfort is rising, satisfaction concerning the standard of living and confidence in its stability, which leads to a reduction of the interest for risk taking, inherent in any business). But a continuation of the competitiveness gradual increase requires an improvement of the socio-economic and politic context (aspects pursued by sub-indices included in the evaluation of the global competitiveness index), creating thus a favourable framework for a growing trend of entrepreneurial initiatives. Under these circumstances, the total entrepreneurship rate increases, leading to increased competition and consequently to a "natural selection" of the entrepreneurial activities. This pressure will generate a downward path of the entrepreneurial activities.

Of course, the impact is lower for the countries based on innovation because, in their case, the sophistication degree from an economic, legislative, educational, institutional and especially entrepreneurial point of view is higher, allowing thus a smooth adaptation to the requirements of an efficient competitive economy.

Chart no. 4: The relationship between the overall rate of entrepreneurship and the global competitiveness index for the efficiency driven economies during 2008-2015



Source: Personal processing, based on pooled data from Table no.1

Also from the comparative analysis of the trends that estimate the relationship between the two analyzed variables, we can note that, for approximately similar intervals of the competitiveness level the countries based on efficiency and those based on innovation have the same trend (increasing or decreasing) but, the extent of the reaction is stronger for the countries based on efficiency, which means that the latter will be more reactive to the policies of sustaining and encouraging entrepreneurial activities. For example, an increase in competitiveness from 64% to 69% (of the 7 points) in the countries based on efficiency it generates an increase in entrepreneurship from 5 to 31%, while in the countries based on innovation (with CGI below average), an enhancement of competitiveness from 63.5% to 68% determines an increase of the entrepreneurship rate from 6.5 to 21%. The situation is similar for the decrease of the entrepreneurship rate, thus: the increase in competitiveness from 69 to 71.5% for efficiency driven economies causes a tendency to reduce the rate of entrepreneurship from 31% to about 11%, while in innovative countries, increasing competitiveness from 68 to 71% imparts a downward trajectory of the entrepreneurship rate from 21 to 13%.

We note that, a rate of competitiveness over 73% is common only to countries based on innovation, with a CGI above average. Moreover, although we would expect the trend to downswing it appears that the ascending trend is resumed when the global competitiveness index exceeds the 80% threshold (CGI > 5.6 of the maximum of 7 points score). Of course, we are considering innovative, competitive and efficient investments.

Another interesting aspect revealed by the comparative analysis of the available data and illustrated using graph no.3 and 4 is that, if for the countries based on efficiency the lowest stage of the entrepreneurship rate (3%) corresponds to a low competitiveness (approximately 57%), for the countries based on innovation this stage is attained at a higher competitiveness (80%). This aspects leads to the conclusion that entrepreneurial activities have different determinants. Thus, in countries based on efficiency entrepreneurship is mainly determined by the necessity to obtain supplementary financial resources, and in more developed countries, innovative, the entrepreneurial initiatives are generated predominantly by the opportunities and facilities available in the socio-economic environment.

The highest stage of the entrepreneurship rate for the efficiency driven economies (approximately 31%) could be reached at a competitiveness stage of 69%, while, for countries based on innovation the maximum stage of entrepreneurship (approximately 21%) could be achieved, as the prediction line suggests, at a competitiveness stage of 68%. Therefore, for a similar competitiveness stage more developed countries, based on innovation, although they reach a lower maximum stage than of those based on efficiency, they ensure a higher quality of life. This aspects confirms the truth in the saying “It’s not the quantity, but the quality that matters”.

3. Conclusion

Identifying the ranges where competitiveness generates the change in entrepreneurship behavior, the magnitude and the reason for these oscillations, is very useful in choosing and using the encouragement

instruments, respectively of sustaining the entrepreneurial activities, suitable for each stage and for each country's particularity (economy state, standard of living , economic and social behavior characteristics, education and entrepreneurial culture levels, values, traditions and customs, etc.). Therefore, an important role in identifying and implementing the leverages for sustaining the entrepreneurial environment must be given to the national structures.

Thus, during the expansion phase of the entrepreneurial process, the regulatory framework must consider mainly the tools for sustaining the intensive development of the entrepreneurial sector.

In the recession phase of the entrepreneurial process, the policymakers should focus on creating a regulatory framework, that will encourage especially the extensive development of the entrepreneurial process by encouraging and supporting the competitive entrepreneurial initiatives.

A first step towards this direction is to identify the reasons for that led to entrepreneurial activities narrowing and the reduction of new initiatives, respectively, of the factors that generated an increase and the development of the entrepreneurial activities. In this context shaping the entrepreneurial profile of the active population may complement the overall picture of the entrepreneurial process. Valuable information regarding these aspects are available in numerous studies (within the current paper we only mention two of these- Annual Reports " The Global Entrepreneurship Monitor" and Annual Reports concerning Global Competitiveness, but being of reference and extremely useful in outlining a profile for the entrepreneurial environment within a country and the annual reports "Doing business" drawn up and published yearly by the World Bank, Gallup studies, EU studies regarding entrepreneurship). In GEM for example, are comprised for each country subject to this report (unfortunately, currently only 62 countries are included, and not always the same ones) information regarding the weight of entrepreneurial initiatives for each sector of economy, to reasons that led to withdrawal from business (loss, lack of financing, sale of the business, incidents, personal reasons, retirement, bureaucracy, the emergence of new opportunities), to reasons for entering the business world (necessity, opportunity), but also new aspects that make possible to outline the entrepreneurial environment in the respective country (social and cultural policies, market entry conditions, infrastructure, market dynamic, research-development, entrepreneurial education, financing, governmental support, taxes and bureaucracy).

All this information must however go beyond the realm of the academic and business environment and to form important premises in drawing up the strategies and programs designed to support entrepreneurship as a driver of the national economies.

In conclusion, regardless of the development stages of national economies, we must consider the fact that the evolution of the entrepreneurial process is fluctuating, that like the economic fluctuations, always after expansion periods follows the contraction, that we shouldn't rely on the "laissez faire" principle and that the measures to support the entrepreneurial sector must be implemented, depending on activities trend, on the entrepreneurial profile of active population, on the economic, social and politic context in general..

References

[11] Sticlaru Gabriel, *Statistical analysis using SPSS*, Cool Print Publishing, Bucharest, 2012, pp. 50-52

[12] Global Entrepreneurship Monitor, Rapoarte anuale 2009 – 2016

[13] Post Foundation, Privatization, *Innovation and entrepreneurship pillars of competiveness,* 2013

[14] Porter E. Michael, *Building the Microeconomic Foundations of Prosperity: Findings form the Microeconomic Competitiveness Index* , in Global Competitiveness Report 2002-2003, World Economic Forum, Geneva, Switzerland, 2003

[15] Sanandaji Tino, Sanandaji Nima, *Super Entrepreneurs And how your country can get them,* Centre for Policy Studies, Printed by 4 Print, 138 Molesey Avenue, Surrey, April 2014

[16] The Global Competitiveness Report, Annual Reports 2009 -2016

[17] http://ccir.ro/2015/09/30/raportul-competitivitatii-globale-2015-2016-2/, accessed online on 1st April 2016

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The Assessment of the Energy Potential of Biomass of Animal and Plant Origin in the Context of Local Development: The Case of Turkey*

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Abstract: This study was carried out because of the importance of energy of biomass, which is one of the renewable energy sources, for such country as Turkey having a production potential of biomass energy raw materials. Biomass energy has become a subject emphasized in Turkey as well as in the world after the 2000s and investigated in economic, environmental and social dimensions. With this study assessing the effects brought about by biomass production and consumption in the context of local development, Turkey's theoretical potential of plant origin was found as 5.527 TOE and its economic potential was found as 4.421 TOE, and the biomass energy achieved the energy value of 949.308 TOE that can be produced economically based on animal sources. At the same time, Turkey is a country that has not completed its development. In the case of the production of this amount of biomass energy that has been calculated potentially, its contributions to the local development and its positive and negative sides have been examined. Some of these are the series of contributions such as rural employment, an increase in the income level, technological development, reduction of migration and healthy living conditions. The effect of biomass energy production on food supply, the fact that biomass sources are inputs for some sectors such as construction sector, and the less energy content in comparison with fossil fuels can be considered as negative effects on local development. In this study, the economic potential for biomass energy production in Turkey, which is not sufficiently studied in the literature, was calculated, and the potential of biomass of plant and animal origin for Turkey was calculated for the first time. The effects of this potential on Turkey's development were examined.

Keywords: Biomass of Plant Origin, Biomas of Animal Origin, Local Development, Turkey

1. Introduction

Renewable energy and biomass energy, a type of renewable energy, are one of the issues that have been overemphasized since the 1990s. The fact that the countries of the world turned to renewable energy sources from fossil fuels and diversified their energy sources, the increasing importance of renewable energies in the energy security context, the lack of stability in energy prices, the fact that the countries adopted growth strategies based on local dynamics, the source of which they had in their lands, reducing transportation costs, alternatives to generate electricity were among the factors that brought this issue to the agenda of the world and made the scientists conduct studies on the issue (IEA, 2015). Biomass energy that is one of the renewable energy sources is an important energy source particularly for developing countries, and the production and use of it are increasing every day.

As a county that has biomass energy sources and production potential, Turkey is a country that can use biomass energy potential for growth and development objectives. Turkey is a country dependent on energy. On one hand, industrialization and urbanization continuously increased energy needs; on the other hand, available energy resources became unable to respond to this need because of the price volatility and the fact that they are stock assets. Moreover, the reasons such as the facts that commonly used fossil fuels lead to environmental disasters, that they are not distributed equally geographically and cause foreign trade deficits led the countries to turn to renewable energy sources. Because of the reasons that the countries having fossil fuel energy

started to consider their energy assets as a strategic element during and after 1973 energy crisis, biomass energy sources came into question because of their characteristics that they continue their presence within a continuous loop and do not cause environmental pollution, and contribute to the development of countries using their own resources. Ecological economists argued that depleted fossil energy sources could limit the countries' growth and development momentum after the 1980s. This situation can be overcome by renewable energy sources such as biomass energy source that is inexhaustible until the existence of a new energy technology, and the growth and development's sustainability depends on this (Bayramoglu, 2014).

Biomass energy is a type of renewable energy that is obtained from biomass such as agricultural, animal, forestry, municipal and industrial waste by chemical and biological methods (Yapraklı & Bayramoglu, 2014, pp. 319-336). Biomass energy can be obtained anywhere and anytime if the necessary investments and production infrastructure are made. From this perspective, it will make a major contribution to national and local economic development of the countries, including Turkey, which are poor in fossil fuels and have to allocate huge resources for energy. These effects can be evaluated under three main headings: economic, environmental and socio-demographic. All countries of the world need energy sources such as biomass energy that is environmentally friendly and the source of which is in their own land in order to reduce income differences between regions. It can be said that the countries and regions having these types of energy develop faster than the others.

2. The Relationship Between Biomass Energy and Local Economic Development

The effects of biomass energy on local economic development can be evaluated under three main headings: economic, environmental and socio-demographic (Duygu & Cısdık, 2008). Among these, economic effects drew attention particularly in the period after 1973 energy crisis. These effects can be mentioned as the instability of the energy markets, the effects caused by the inefficient use of energy, energy saving, the contribution of the production and use of renewable energy to technology and employment. Besides, the contributions that renewable energies would make to particularly local economy are ensuring energy diversity, that the countries increase their domestic production based on their own resources, reducing the dependence on foreign energy and import supply, energy production according to local conditions and appropriate policy strategies to geopolitical factors.

In addition to those mentioned above; another benefit is the diversification of energy for the continuity of production. This can only be achieved by introducing local elements. Increasing the use of biomass energy in local economic activities and developing technology in this field will reduce dependence on foreign sources of energy, contribute to stability of energy prices that are volatile, and can help to achieve the economic growth with low costs by reducing costs in energy sector and enabling the development of new job opportunities (Arenas and Real, 2008, p.1). On the other hand, countries can not benefit enough from biomass sources existing on their own lands. The reasons are inadequate regulations related to this subject, lack of sufficient incentive mechanism, incoordination in the sector and lack of planning (Aktakas, 2006). Additionally, if the capital and qualified staff problems of the energy sector are solved, it can contribute to the elimination of regional income disparities with revenue growth, employment opportunities, and new job areas.

Again, the economic impacts in the local economic development process based on biomass energy cover issues of economic prosperity such as poverty reduction, employment growth, income growth, access to social services, gender equality, population growth, agricultural production growth, climate change. Therefore, the production and consumption of biomass energy will make a positive contribution to the added value at the regional level and support the acceleration of local development.

Biomass energy supply and demand also have socio-demographic effects. One of the ways to reduce the migration from rural areas to cities in large numbers in developing countries is to improve the standards of living in rural areas. To achieve this, the rural population should be given the opportunity to benefit from fair and equal economic opportunities. Maintaining the charm of life in rural areas is only possible with proper living conditions. The factors such as education, health, infrastructure, employment, life expectancy at birth, the working age population are changing rapidly. That the problems in rural areas were continuously deepening led to increased interest in these regions. Among the reasons for this situation, in addition to economic factors, the increasing difference between living standards in urban and rural areas can be mentioned. One of the means of productivity growth, employment growth, reducing the migration and improving living standards is to increase the production and consumption opportunities based on clean energy sources. To activate the local potential

and continue the economic development based on local or regional advantages are possible with the development of biomass energy production and consumption technologies (Başar, 2016; http://www.enerji.gov.tr., 2016).

To increase the living standards in rural areas can be possible by activating biomass production and consumption mechanisms. By using biomass energy, it can be possible to provide lighting, give communication and heating-cooling services, maintain uninterrupted education, health and communication services. It can also enable girls in rural areas to spend the time that they used to spend to collect firing material in educational and social activities, convince the education and health personnel and other public officials in staying in rural areas, reduce migration from rural areas to cities, reduce the deaths and diseases resulting from the use of traditional biomass resources (http://www.fao.org/docrep/t1804e/t1804e04.htm, 2016).

As for the environmental effects of biomass use; among the reasons for environmental disasters, besides the brutal and excessive use of natural resources, the damage of the use of fossil fuels to the environment can also be mentioned. The relationship between energy, environment, and development dates back to 1973 energy crisis. A large part of the environmental problem is caused by the use of fossil energy. Today, economic development and local economic growth, in particular, are measured according to the importance that the countries give to the environment. The most basic element of increasing the standards of living is to have clean air, clean water, and clean soil and continue to use them without contamination. Biomass energy has the potential to fulfill important functions both in the world and local economies. Thanks to biomass energy that is a clean energy the gases harmful to the environment will be reduced (Bayramoğlu, 2014). When the positive and negative environmental effects of the use of biomass energy are considered together; that it reduces the greenhouse gas emission when used as a substitute for fossil fuels, contributing to biodiversity, increasing the carbon content in the soil and preventing erosion can be mentioned as examples of positive effects. Although a few, some negative effects can be mentioned as well. These are the increase in greenhouse gas emissions due to the energy agriculture, loss of biodiversity, change in the land use manner, the increase in water use and the environmental damages of the use of agricultural pesticides (Bhattacharya, et al, 2005, pp.153–166)

3. Literature Research on Turkey's Biomass Potential

Very few studies were conducted in Turkey on energy potential based on biomass potential. These studies generally began in the 2000s. The first of these studies was carried out by Kaygusuz (2001). The researcher did his study on all biomass sources based on 1998 data and reached the conclusion that the biomass source was the second source after hydro-electric. It was found out that up to 10% of Turkey's energy needs could be obtained from biomass resources, and this was, based on animal and vegetal sources, equal to 16,920 Ktoe (Kaygusuz, 2001, pp.775-799). Additionally, Demirtaş (2002) carried out a research on Turkey's energy production potential based on biomass sources and made predictions for 5 year-periods for the period 2000-2025. As a result of the study based only on agricultural waste, he found 6963 Ktoe, 6760 Ktoe, 6446 Ktoe, 6029 Ktoe, 5681 Ktoe and 5393 Ktoe biomass energy potential for the years 2000, 2005, 2010, 2015, 2020, 2025 respectively. With this research, it was concluded that Turkey had a large energy potential (Demirbaş, 2002, pp. 921-929). Kaygusuz and Türker (2002) determined 40-53 million tons of dry waste for all biomass energy potential based on 1998 data and estimated that 470 PJ -620 PJ BE could be obtained from 27-36 million tons of this waste. At the end of the research, it was concluded that it was necessary to develop energy policies appropriate to the economic structure, public support was needed, and it would make a significant contribution to health, building, and particularly education fields (Kaygusuz & Türker, pp. 2002, 383-401).

Sürmen (2003), starting from the point that biomass energy was important for the Turkish economy, reached the conclusion that the share of domestic sources within the total energy consumption of Turkey was 37% and 52% of this amount was based on biomass. He concluded that the amount of selected agricultural waste of Turkey was 39,35 million tons, and the energy value was 187,4 million kWh(Sürmen, 2003, pp. 83-92). Demirtaş (2004) concluded that, for the year 2001, based on the agricultural and animal waste, the national energy production of Turkey, bioenergy potential of which was 2,2 -3,9 billion m^3, would be 79,399 Ktoe in 2020, 95,946 Ktoe in 2025, and benefiting from this potential could make contribution to economic growth (Demirbaş, 2004, pp. 361-366). In the study based on animal and agricultural biomass sources, Acaroğlu and Aydoğan (2012) estimated that the share of biomass energy, which was 7,9 Mtoe, within renewable energy sources was large, and the total calory values of biomass energy that can be obtained from animal and vegetal sources were $60{,}552\times10^3$ GJ and 227,983,298 GJ respectively (Acaroğlu & Aydoğan, 2012, pp.. 69-76). Additionally, Yapraklı and Bayramoğlu (2013), in their study on TRA1 and TRA2 regions

of Turkey, taking into consideration the vegetal and animal biomass sources, found out that the dry theoretical and economic biomass energy potential in TRA1 region was 6,015 and 4,809 TOE respectively; and the dry theoretical and economic biomass energy potential in TRA2 region was 5,088 and 4,070 TOE respectively. The theoretical and economic animal biomass energy potential in TRA1 region was found as 790 and 593 respectively, and the theoretical and economic biomass energy potential in TRA2 region was found as 1,215 and 866 TOE respectively (Yapraklı & Bayramoğlu, 2013).

Apart from these studies, Balat (2005), Öztürk and Başçetinçelik (2006), Koçer, Öner and Sugözü (2007), Demirbaş (2008), Umutlu (2012), Kaygusuz and Keleş (2008), Demircan (2006), Esengün, Gündüz and Erdal (2007), Gokcol et al., (2009), Kızılaslan (2009), Demirbaş (2006), Özgür (2008), Gezer, Acaroğlu and Hacıseferoğulları (2003), Bilgen et al., (2015), Özcan, Öztürk and Oğuz (2015) concluded that Turkey had a big potential based on biomass sources and with the production it would make great contribution to many fields such as economic growth, employment, building, education, all obstacles to the production of biomass energy must be eliminated and public supports must be applied both in legal aspects and financially.

4. Data Sources and Method

For this study, animal and vegetal production values for whole Turkey were obtained from Turkish Statistical Institute (TSI), which is the national statistical agency of Turkey. This source was deemed adequate, for the data obtained from the study on animal and vegetal production of Turkey in 2014 were reliable, and other international databases reached this data through TSI. The information obtained from this study, which was conducted because of the importance of the difference between development levels of rural and urban regions, took into consideration the studies of the researchers such as Öztürk and Başçetinçelik (2006), Kurt and Koçer (2010), Voivontas et al. (2001) and Milhau and Fallot (2013). Here, the energy amount that can be generated based on animal and vegetal biomass sources of whole Turkey was calculated separately as theoretical and economic (Koçer, Öner & Sugözü, 2006; Kurt & Koçer, 2010, pp. 240-247; Voivontas, et al., 2001, pp.101-112) Based on these studies, vegetal waste amounts were calculated by multiplying the separated share product with 0.15 for agricultural use and with 0.8 for agricultural and non-agricultural use. Approximately one-third of wet vegetal waste is equal to dry waste amount. The calorific value of a ton of dry vegetal waste is 4050 (kcal)/kg as average. According to the unit conversion system, the calorific value of 1 kcal/kg of vegetal waste is equal to $1{,}10^{-7}$ TOE biomass energy value. The animal waste amount was taken as 3,6 tons/year for bovine animal, 0.7 tons/year for small cattle and 0.022 tons/year for poultry. Dry waste/animal manure was calculated as tons taking into account these amounts per animal, and the useful quantity of this amount was reached. It was found out that 200 m^3 biogas (65% methane and 35% CO2) can be obtained from one ton of animal waste. According to unit conversion system, the average calorific value of 1 m^3 biogas is 5200 kcal/m^3 and is equal to approximately 0,00052 TOE biomass energy value (Bayramoğlu, 2014).

Amount Of Animal And Vegetal Waste Of Turkey

Table 1 created by utilizing TSI database for 2015 gives the total value of some selected products.

Table 1.

Turkey's Total Vegetal Production / Waste Quantities (2015 / ton)

Cereals	**Sugar beet, corn, and seeds**	**Forage crops**	**Vegetable**	**Fruits**
32,714,157	98,257	40,246,496	28,579,781	18,363,563
Straw/Meadow	Agricultural products for textiles	Energy Plants	Potato/Root crops	
40,316,496	3,196,001	1,869,014	5,211,650	
Total	170,595,415			

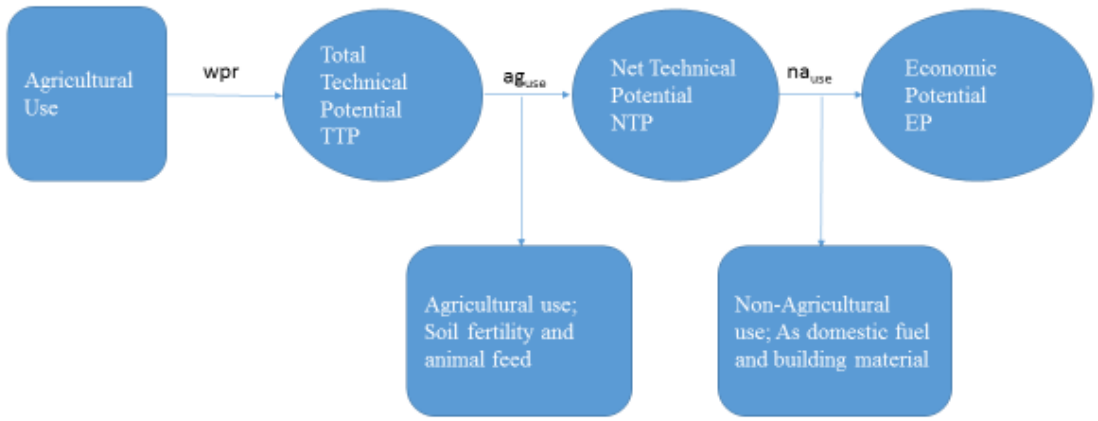
Source: Calculated by the Author utilizing Turkish Statistical Institute database.

Table 1 created by utilizing TSI database for 2015 gives the total value of some selected products.

As it is seen in the table, according to the official data, the amount of wet vegetal waste is 170.595.415 tons in Turkey. Ornamental plants are not included in this amount, for they are evaluated as units.

Turkey's theoretical and economic potential of biomass energy can be calculated on the basis of the data in Tables 1 and 4. The theoretical biomass energy potential is the amount of all animal and vegetal waste

produced. The economic biomass energy potential is the remaining amount that can be used for energy after deducting the amount of use for several purposes such as agricultural and food purposes. Some studies in the literature were benefited from when calculating the amount of theoretical and economic energy.



- Fig.1. Three definitions of crop residue potentials with different recoverability ratios
- Source: Antonio Milhau and Abigail Fallot
- Assessing the Potentials of Agricultural Residues for Energy: What the CDM Experience of India Tells us About Their Availability,
- *Energy Policy, Article in Press*, Available at: 2015

Using the findings of the said studies, vegetal waste amounts are calculated according to the product types using 1.1 notations.

$$TTP = \sum (\text{Amount of Product} \times wpr) \quad 1.1$$

Here, TTP shows the annual amount of products produced while wpr symbolizes the waste product rate. Wpr is found as 1.6 taking the average of waste amounts of 22 different products, for waste amounts of agricultural product are different. TTP is calculated by the multiplying amount of product with waste product rate.

1.2 notation is used to reach theoretical product amount

$$NTP = TTP \times ag_{use} \quad 1.2$$

Here, NTP shows net theoretical potential and ag_{use} shows the remaining amount after agricultural use. Agricultural use means the use for soil fertility and animal feed.

1.3 notation is used for economic potential

$$EP = NTP \times na_{use} \quad 1.3$$

Here, EP shows economic potential, and to reach this, theoretical potential should be multiplied with na_{use} for non-agricultural use. Non-agricultural use means the use of the waste as domestic fuel and building material [35]

For agricultural products, ag_{use} ratio is 0.15 in average, and na_{use} ratio for non-agricultural use is 0.80 in average. One-third of wet vegetal waste is equal to dry vegetal waste, and average calorific value of one ton of dry vegetal waste is 4050 (kcal)/kg. According to the calculation using unit conversion system 1 kcal/kg calorific value of vegetal waste is equal to $1{,}10^{-7}$ tons of petroleum (http://www.birimcevir.com, 2016).

In Table 3 that is created based on the data in Table 2, total theoretical potential of Turkey was calculated by multiplying annual amount of product with average waste amounts, then net theoretical potential was calculated by deducting agricultural use of vegetal products, and finally economic potential was calculated by deducting non-agricultural use of vegetal waste from net potential.

Table 2. The Amount of Theoretical and Economic Waste with Plant Origin for Turkey (TOE)

Turkey	Annual Product Amount	Waste Product Ratio (wpr)	Total Theoretical Potential (TTP)	Net Theoretical Potential Ratio	Net Theoretical Potential Amount (NTP)	Economic Potential Ratio	Economic Potential Amount (EP)
Wet	170,595,415	1.6	272,952,664	0.15	40,942,899	0.80	32,754,319
Dry	56,865,138	1.6	90,984,221	0.15	13,647,633	0.80	10,918,106

Net Theoretical Potential for Dry Vegetal Waste		Economic Potential for Dry Vegetal Waste	
Calorific value (kcal/kg) (10^3)	Biomass Energy Value (TOE)	Calorific Value (kcal/kg) (10^3)	Biomass Energy Value (TOE)
55,272,913	5,527	44,218,329	4,421
Conversion was made using http://www.birimcevir.com/enerji-ve-is-birimleri/enerji-ve-is-birimleri.aspx			

According to Table 2, there are minimum net theoretical biomass energy potential of 5.527 TOE and economic biomass energy potential of 4.421 TOE, which can be obtained from vegetal waste of whole Turkey. Economic potential shows the amount of energy that can be generated using all vegetal waste of Turkey.

Table 3. Distribution of Turkey's Total Number of Animals by Type and Amount of Waste 2015 (Head)

Turkey	Number	Annual Waste Amount (Tons)	Total Waste Amount (Tons)
Bovine animal	14,244,673	3.6	51,280,822
Small cattle	41,462,349	0.7	29,023,644
Poultry	298,029,734	0.022	6,556,654
Equidae	343,397	0.022	7,554
Pork	2,655	3.6	9,558
Camel	1,442	3.6	5,191
Total	354,084,250	-	86,883,423

Source: Calculated by the author using Turkish Statistical Institute data.

Conversion was made using http://www.birimcevir.com/enerji-ve-is-birimleri/enerji-ve-is-birimleri.aspx

As it can be seen from the data in Table 3, Turkey's total livestock assets for 2015 are 354 084 250 head. Total animal waste is 86.883.423 tons/year based on the average waste amount. Turkey's bovine animal asset increased at the rate of 66,6%, and small cattle asset increased at the rate of 75.4% in 2015 compared to 2002. It means that the opportunity to obtain biomass energy increased as a result of the increase in the total livestock. The amount of waste that can be used economically was calculated as 65% for bovine animals, 13% for small cattle and 99% for the poultry. Additionally, energy values that can be obtained from one ton of waste are found as 33 m^3 (65% methane, 34% CO_2) for bovine animals, 58 m^3 for small cattle and 78 m^3 for poultry. According to the unit conversion system, the average calorific value of 1 m^3 biogas is 5200 kcal/m^3 and equal to approximately 0,00052 TOE biomass energy.

Table 4. Turkey's Total Animal Biogas Amount by Type (m^3- TOE, 2015)

Turkey	Waste Amount (Ton)	Economic Waste Amount Ratio (%)	Economic Waste Amount	Energy Value (m^3)	Biogas Amount (m^3) (10^3)	Calorific Value 5200 kcal/m^3 (10^9)	TOE Value of Biogas
Bovine Animals	51,303,125	65	33,347,031	33	1,100,452	5,722	572,235
Small Cattle	29,023,644	13	3,773,073	58	218,838	1,137	113,795
Poultry	6,556,654	99	6,491,087	78	506,304	2,632	263,278
Total	949,308						
Reference: Calculated by the author using Turkish Statistical Institute data. * Includes equidae, pork, and camel							

Referring to the values calculated in Table 4, it can bee seen that Turkey has a biogas production capacity of 949.308 TOE. This value corresponds to significant potential for an energy-dependent country.

When both animal-origin and vegetal-origin biomass energy potentials are evaluated, it can be seen that the biomass energy with vegetal origin that can be used economically is 4.421 TOE and the animal waste amount that can be used economically is 949.308 TOE.

5. The Contribution That Biomass Energy Will Make To The Local Development

Biomass energy was started to be discussed worldwide along with other renewable energy sources after 1973 energy crisis. Volatility in energy production based on fossil fuels and environmental pollution caused by them and the adoption of sustainable development on the same dates increased the interest in biomass energy that is one of the renewable energy types. Economically, as a phenomenon attracting attention due to its supply and demand characteristics, biomass energy is one of the actors creating energy markets. Because it is a domestic resource for energy production, it is seen by developing countries including Turkey as a mean to reduce the difference between rural and urban regions, reduce the energy deficit, minimize the dependence on foreign resources.

The contributions that the production and consumption of biomass energy will make to local development can be listed as follows (Schmidhuber, 2006, p.8); BAKA, 2012, p.8; IEA, 2011, p.18; Anonim, 2011, p.6);

That the biomass energy is obtained from domestic resources is important for energy security,

The establishment of biomass energy production facilities will contribute to the increase of the revenue of the region where they will be established,

In terms of employment problems, the establishment of plants based on biomass energy will contribute to the reduction of unemployment.

Because these regions have migration problems, the development of plants based on biomass energy and the infrastructure will help to reduce the migration.

Thanks to the production and consumption of biomass energy, the environmental problems caused by animal and vegetal waste and the diseases arising from this waste can be eliminated.

The protection of rural areas, the environmental sensitivity of which is low and that are less polluted compared to the urban regions, can be possible through the use of biomass energy.

Prevention of greenhouse gases caused by the use of fossil fuels can only be possible through the use of renewable energy,

The solution of important worldwide issues such as climate change is possible through the use of renewable energies like biomass,

Healthy life, leaving future generations a healthy environment, reducing health spending also depends on the use of biomass energy,

The use of air, soil and water and the increase of their quality depend on biodiversity.

In addition to the topics mentioned above, the contribution of biomass energy supply and demand can be listed as; contribution to the development of new technologies, creating local solutions to employment, helping to increase the level of education, reducing poverty particularly locally by increasing incomes.

There are also some negative impacts of the production and consumption of biomass energy. These are listed below (Christy, 2008. p. 17)

The production of biomass energy is a sector that can not be developed quickly due to high first production costs,

It has a lower energy content than fossil fuels,

Raw materials needed to produce biomass energy are materials that are also needed by other sectors for the purposes such as fertility of soil, feeding and building material, and paper.

The priority given to agriculture for energy can reduce the cultivation of products required for food, and this can increase the food prices,

Transportation and storage of biomass resources are high-cost businesses.

When all these positive and negative effects are considered together, it can be said that the positive contribution of biomass energy to the local development is higher, and its production can make a great contribution to the development of the country if the appropriate political measures are taken.

6. Conclusion and Evaluation

Biomass energy is an issue that came to the agenda of the world and at the same time of Turkey particularly after 1973 energy crisis, and studies were made on it. It is certain that the production and use of biomass energy that is one of renewable energy types will make a great contribution to the development process and the solution of development problems of the developing countries like Turkey. In this regard, in this study, the contribution of the production of energy based on biomass sources to the development and, in particular, local development has been investigated. After the year 2000, studies have been carried out on this subject in Turkey. However, these studies only explained the theoretical potential and were not interested in how much biomass energy could be produced economically. In this study, by benefiting from the previous studies, the energy production potentials of Turkey have been calculated separately as theoretical and economic based on animal and vegetal sources. This study is expected to be exemplary in this respect for the studies to be carried out in the future.

Turkey is a country that is greatly suited for biomass energy production based on vegetal sources for its climate zone and the land of 770.760 km², and it is also suited for biomass energy production with its livestock asses of 354.084.250. According to the calculations made, biomass energy value with vegetal origin is theoretically 5.527 TOE and biomass energy amount that can be produced economically is 4.421 TOE. Biomass energy production potential with animal origin is 949.308 TOE economically. These values are important amounts for Turkey, an energy-dependent country. On the other hand, the contribution of biomass energy production to the rural development is rather high. These are energy security, rural employment, the increase in the income level, reducing the migration, reducing the environmental pollution, reducing the dependence on fossil fuels and inhibition of the release of greenhouse gases, increasing the conditions of healthy life, creating leisure time for the people living in rural areas, increasing biodiversity. However, it is possible to say that the production of biomass energy also has some disadvantages. They are as follows: raw materials of biomass energy are also an economic input for some other sectors, they have lower energy content than fossil fuels, and the development of energy agriculture may lead to reduced supply of food products. Considering the presence of the potential, it can be said that the positive effects are much more than the negative effects of the production of biomass energy. Considering the contribution to the development of the countries, it must be put more emphasis on economically and must be supported by public policies.

References:

[1] A. Demirbaş, (2002), Production Potential of Electricity from Biomass in Turkey, Energy Sources, 24(10), 921-929, http://dx.doi.org/10.1080/00908310290086879 E. T.: 06.11.2015

[2] A. Demirbaş, (2004), The Importance of Biomass, Energy Sources, 26(4), pp. 361-366, http://dx.doi.org/10.1080/0090831049077406 E.T.: 07.11.2015

[3] A. Demirbaş, (2008), Importance of Biomass Energy Sources for Turkey, Energy Policy, 36, pp. 834-842.

[4] A. Demirbas, E. Pehlivan, T. Altun, (2006), Potential evolution of Turkish agricultural residues as bio-gas, bio-char and bio-oil sources, International Journal of Hydrogen Energy 31, pp. 613–620

[5] Milhau,& A. Fallot, (2013), Assessing the Potentials of Agricultural Residues for Energy: What the CDM Experience of India Tells us About Their Availability, Energy Policy, Article in Press, http://www.dx.doi.org/10.1016/j.enpol.2013.03.041 E.T.: 08.11.2015

[6] A.D. Christy, (2008), Bioenergy From Agricultural Wastes, Dept of Food, Agricultural, and Biological Engineering USAIN April 2008, The Ohio State Üniversty, p. 17

[7] Anonim, (2011), Biomass Sustainability Analysis, April, p.6.

[8] B.G. Aktakas, (2006), Bölgesel/Yerel Kalkınma, Bölgesel Gelişme İçin Bir Model, (Yüksek Lisans Tezi), [Regional/Local Development, A Model for Regional Growth (Master's Thesis)], Çukurova Üniversitesi SBE, Adana 2006.

[9] Batı Akdeniz Kalkınma Ajansı (BAKA), (2012), Biyokütle Sektör Raporu, [West Mediterranean Development Agency (BAKA), Biomass Sector Report], September, s.8

[10] Biofuels Energy Sources and Future of Biofuels Energy in Turkey, Biomass and Bioenergy, 36, 2012, pp.. 69-76.

[11] E. E. Başar, (2016). Hane Halklarının Sürdürülebilir Tüketim Davranışlarının Ölçülmesine Yönelik Bir Ölçek Geliştirme Çalışması, [A Scale Development Study Towards The Measurement Of Households' Sustaınable Consumptıon Behavıors], Yayımlanmamış doktora tezi, [Unpublished doctorate thesis], Atatürk Üniversitesi Sosyal Bilimler Enstitüsü, Erzurum
[12] Gokcol et.al., (2009), Importance of biomass energy as alternative to other sources in Turkey, Energy Policy 37 pp. 424–431
[13] Voivontas, et al., (2001), Assessment of Biomass Potential for Power Production: A GIS Based Method, Biomass and Bioenergy, 20, pp.101-112.
[14] Duygu and İ. Cısdık, (2008), Biyokütle Enerjisi İçin Yetiştiriciliğin Etkileri Konusunda Araştırmalar: I. Bilgi Birikimi Işığında Türkiye'deki Eko-Ekolojik Etki Potansiyeli, [Studies on the Effects of Farming for Biomass Energy: Eco-ecological Effect Potential in Turkey in the Light of the 1st Knowledge Accumulation] Ankara Üniversitesi Sosyal Bilimler Enstitüsü Sosyal Çevre Bilimleri Ana Bilim Dalı Yayınlanmamış Yüksek Lisans Tezi, [Ankara University, Institute of Social Sciences, Social Environmental Sciences Department, Unpublished Master's Thesis] 2008.
[15] Enerji Birimleri Çevirici, (2016), http://www.birimcevir.com/enerji-ve-is-birimleri/enerji-ve-is-birimleri.aspx, A.D.: 04.11.2015
[16] FAO, (2016), http://www.fao.org/docrep/t1804e/t1804e04.htm A.D. 14.11.2015
[17] G. Umutlu, (2012), The Potential of the Netherlands and Turkey in the Renewables Arena, African Journal of Business Management, 6(9), 7 March, pp. 3413-3427
[18] G. Kurt and N.N. Koçer, (2010), Malatya İlinin Biyokütle Potansiyeli ve Enerji Üretimi, [Biomass Potential and Energy Production of Malatya Province], Erciyes Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 26(3), pp. 240-247
[19] H. H. Ozturk and A. Bascetincelik, (2006), Energy Exploitation of Agricultural Biomass Potential in Turkey, Energy Exploration & Exploıtation, 24(4-5), pp. 313-330.
[20] H. Kizilaslan, (2009), Input–output energy analysis of cherries production in Tokat Province of Turkey, Applied Energy 86, pp. 1354–1358
[21] I.Gezer, M. Acaroğlu, H. Haciseferoğullari, (2003), Use of energy and labour in apricot agriculture in Turkey, Biomass and Bioenergy 24, pp. 215 – 219
[22] IEA, (2011), Technology Roadmap Biofuels for Transport, p.18
[23] IEA, http://www.iea.org/techinitiatives/renewables/bioenergy/ E.T. 18.10.2015
[24] J. Schmidhuber, (2006), Impact of An Increased Biomass Use On Agricultural Markets, Prices and Food Security: A Longer-Term Perspective, International Symposium of Notre Europe, Paris 27-29 November, p.8
[25] K. Esengun, O. Gündüz and G. Erdal, (2007), Input–output energy analysis in dry apricot production of Turkey, Energy Conversion and Management 48 (2007) pp.592–598
[26] K. Kaygusuz and S. Keleş, (2008), Use of Biomass as a Transitional Strategy to a Sustainable and Clean Energy System, Energy Sources, Part A: Recovery, Utilization, and Environmental Effects, 31:1, 86-97
[27] K. Kaygusuz, (2001), Hydropower and Biomass as Renewable Energy Sources in Turkey" Energy Sources, 23(9), 775-799, http://dx.doi.org/10.1080/009083101316931861 E. T: 06.11.2015
[28] K.Kaygusuz and M.F. Türker, (2002), Review of Biomass Energy in Turkey, Energy Sources, 24(5), 383-401, http://dx.doi.org/10.1080/00908310252889898. E. T.: 06.11.2015
[29] M. A. Ozgur, (2008), Review of Turkey's renewable energy potential, Renewable Energy 33 pp. 2345–2356
[30] M. Acaroğlu and H. Aydoğan, (2012), Biofuels Energy Sources and Future of Biofuels Energy in Turkey, Biomass and Bioenergy, 36, 2012, pp.. 69-76.
[31] M. Balat, (2005), Use of Biomass Sources for Energy in Turkey and A View to Biomass Potential, Biomass and Bioenergy, 29, pp. 32–41
[32] M. Ozcan, S. Oztürk, Y. Oguz, (2015), Potential evaluation of biomass-based energy sources for Turkey, Engineering Science and Technology, an International Journal 18, pp.178-184
[33] N. N. Koçer, C. Öner and İ. Sugözü, (2006), Türkiye'de Hayvancılık Üretimi ve Biyogaz Potansiyeli, [Animal Production and Biogas Potential in Turkey], Doğu Anadolu Bölgesi Araştırmaları, [Research on Eastern Anatolia].

[34] S. Arenas and R. Real, (2008), Evaluation of Rural Development Programmes Failures Within The 2007-13 Regional Policy Frame, 12th Congress of The European Association of Agricultural Economists - EAAE, pp.1.
[35] S. Bilgen et.al., (2015), A perspective for potential and technology of bioenergy in Turkey: Present case and future view, Renewable and Sustainable Energy Reviews 48, pp.228–239
[36] S. Yapraklı and T. Bayramoğlu, (2013), Biyokütle Enerjisi ve Yerel Ekonomik Büyüme: TRA1 ve TRA2 Bölgeleri Üzerine Tanımsal Analizler, [Biomass Energy and Local Economic Growth: Agricultural Analysis on TRA1 and TRA2 Regions], 2. Uluslararası Bölgesel Kalkınma Konferansı, [2nd International Conference on Local Development], Fırat Üniversitesi, 16-17 May 2013, Elazığ 2013.
[37] S. Yapraklı and T. Bayramoğlu, (2014), Biyokütle Enerjisi Potansiyeli ve Ekonomik Etkileri: TRA1 Bölgesi Üzerine Bir Saha Araştırması, [Biomass Energy and Its Economic Effects: A Field Study on TRA1 Region] Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi 2014 18 (2), ss. 319-336
[38] S.C. Bhattacharya, et al., (2005), An Assessment of the Potential for Non-Plantation Biomass Resources in Selected Asian Countries for 2010", Biomass and Bioenergy, 29, 2005, pp.153–166,
[39] T. Bayramoğlu, (2014), Biyokütle Enerjisi ve Yerel Kalkınma, [Biomass Energy and Local Development], İmaj Yayınevi, January 2014
[40] V. Demircan et.al., (2006), Energy and economic analysis of sweet cherry production in Turkey: A case study from Isparta province, Energy Conversion and Management 47 (2006) pp. 1761–1769
[41] Y. Sürmen, (2003), The Necessity of Biomass Energy for the Turkish Economy, Energy Sources, 25(2), ss. 83-92, http://dx.doi.org/10.1080/00908310390142145 E.T.: 07.11.2015

Lithium Market Trends

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Abstract: It's no secret the world faces shortages in many commodities. The world's diminishing supply of everything from cocoa to coffee, lithium to lumber, phosphate to plutonium, silver to sugar, is of great concern. There's a reason Goldman Sachs is calling lithium "the new gasoline" and The Economist says it's "the world's hottest commodity". Just in the last six months, as evidenced by the Global X Lithium ETF (NYSE: LIT), it's up a bit more than 40%. It's outperforming the S&P more than twice over. And the world will need more lithium in addition to what they can produce. In the next 10 years or so, the world will need some three to five times more lithium than was produced in 2015. The battle on the supply side is huge and it has already sent lithium prices through the roof.

Key words: lithium reserves, lithium production, lithium consumption, lithium price trends

1. Introduction

Searching in Wikipedia on Lithium, we find that it is a soft, silver-white metal belonging to the alkali metal group of chemical elements. Under standard conditions, it is the lightest metal and the least dense solid element. Like all alkali metals, lithium is highly reactive and flammable. For this reason, it is typically stored in mineral oil. Because of its high reactivity, lithium never occurs freely in nature, and instead, appears only incompounds, which are usually ionic. Lithium occurs in a number of pegmatitic minerals, but due to its solubility as an ion, is present in ocean water and is commonly obtained from brines and clays. On a commercial scale, lithium is isolated electrolytically from a mixture of lithium chloride and potassium chloride. Lithium and its compounds have several industrial applications, including heat-resistant glass and ceramics, lithium grease lubricants, flux additives for iron, steel and aluminium production, lithium batteries, and lithium-ion batteries. These uses consume more than three quarters of lithium production.

2. Lithium reserves

Worldwide identified reserves in 2008 were estimated by the US Geological Survey to be 13 million tonnes, though an accurate estimate of world lithium reserves is difficult.
Deposits are found in South America throughout the Andes mountain chain. Chile is the leading producer, followed by Argentina. Both countries recover lithium from brine pools. In the United States, lithium is recovered from brine pools in Nevada. However, half the world's known reserves are located in Bolivia along the central eastern slope of the Andes (Bolivia's Uyuni Desert has 5.4 million tonnes of lithium) A newly discovered deposit in Wyoming's Rock Springs Uplift is estimated to contain 228,000 tons. Additional deposits in the same formation were estimated to be as much as 18 million tons.

However, according to a 2011 study conducted at Lawrence Berkeley National Laboratory and the University of California, Berkeley, the currently estimated reserve base of lithium should not be a limiting factor for large-scale battery production for electric vehicles because an estimated 1 billion 40kWh Li-based batteries could be built with current reserves(about 10 kg of lithium per car). Another 2011 study by

researchers from the University of Michigan and Ford Motor Company found sufficient resources to support global demand until 2100, including the lithium required for the potential widespread transportation use. The study estimated global reserves at 39 million tons, and total demand for lithium during the 90-year period analyzed at 12–20 million tons, depending on the scenarios regarding economic growth and recycling rates.

3. Lithium production

Lithium production has greatly increased since the end of World War II. The metal is separated from other elements in igneous minerals. Lithium salts are extracted from water in mineral springs, brine pools, and brine deposits. The metal is produced through electrolysis from a mixture of fused 55% chloride and 45% potassium chloride at about 450 °C.

This is a list of countries by lithium mine production in 2014.

Rank	Country/Region	lithium mine production (tonnes)
	World	36,000
1	Australia	13,000
2	Chile	12,900
3	China	5,000
4	Argentina	2,900
5	Zimbabwe	1,000
6	Portugal	570
7	Brazil	400

World production of lithium was in a sharp increase in the last two decades.

As for **2016,** Australia will supply 64,000 tons of lithium, ahead of Chile (62,000 tons) and Argentina (30,000 tons).

The biggest lithium mine is currently the Greenbushes lithium mine in southwest Australia. It's owned by Talison Lithium, which itself is 51% owned by China's Sichuan Tianqi Lithium Industries. U.S.-based Albemarle holds the rest.

Greenbushes is the world's largest single lithium reserve with roughly 4.3 million tonnes of lithium carbonate equivalent.

Australia may be the world's biggest lithium producer, but it's actually not home to the world's biggest reserves. That would be Chile. What makes Australia tops in the game, though, is that it's got a robust mining industry and close proximity to the Asian market.

One of the big problems with lithium is that its production is highly concentrated. Some 86% of production comes from just four large companies:

- Albemarle (NYSE: ALB)
- Chemical & Mining Co. of Chile (NYSE: SQM)
- FMC Corp (NYSE: FMC)

- Talison Lithium (a JV by Chengdu Tianqi Industry Group and Albemarle)

The lithium market is currently tiny in relation to other commodity markets. Annual sales of lithium in its various forms — pure lithium, carbonates, hydroxides, concentrates, etc. — total around $1 billion.

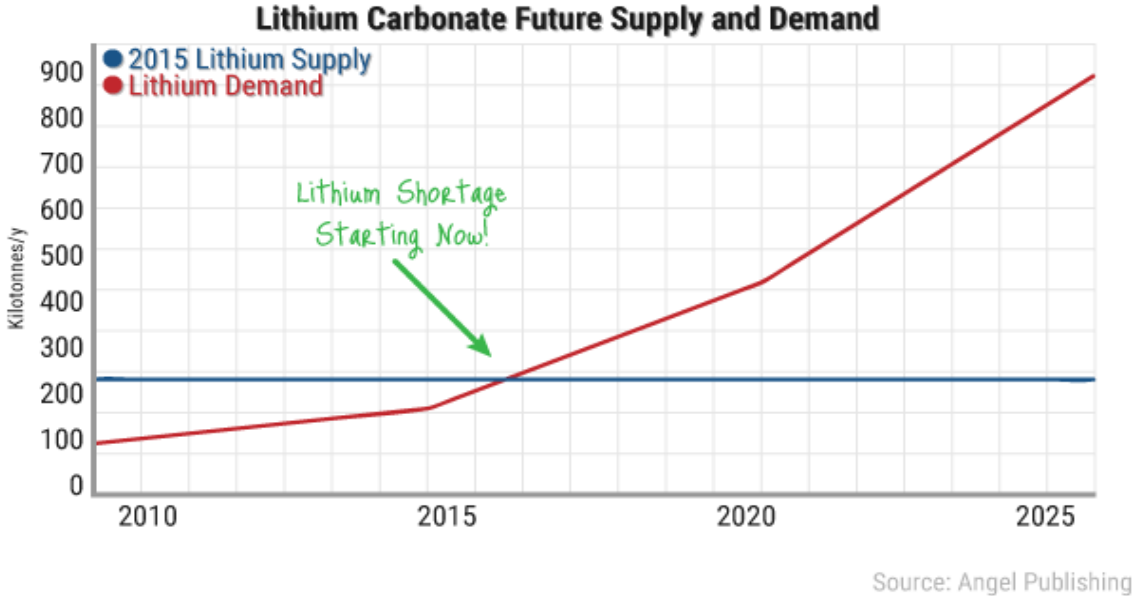
As of 2015 most of the world's lithium production is in South America, where lithium-containing brine is extracted from underground pools and concentrated by solar evaporation. The standard extraction technique is to evaporate water from brine. Lithium is present in seawater, but commercially viable methods of extraction have yet to be developed.

One potential source of lithium is the leachates of geothermal wells, which are carried to the surface. The lithium is separated by simple filtration. The process and environmental costs are primarily those of the already-operating well; net environmental impacts may thus be positive.

4. Lithium consumption

Global consumption may jump to 300,000 metric tons a year by 2020 from about 150,000 tons in 2012, to match the demand for lithium batteries that has been growing at about 25 percent a year, outpacing the 4 percent to 5 percent overall gain in lithium production.

First and foremost is that not enough lithium is being produced. In the next 10 years or so, the world will need some three to five times more lithium than was produced in 2015.



The reasons for this are straightforward: the world is using more and bigger things powered by lithium batteries.

There were 1.4 billion smartphones sold last year. 194 million laptops. 320 million tablets. And lithium powers them all.

Electric car sales jumped 42% worldwide in the first quarter of 2016, hitting new highs in each of the first four months of the year. Tesla's recent presales of over 200,000 cars for its Model 3 alone would consume half the world's annual lithium production.

Tesla’s biggest rival will likely be Build Your Dreams (BYD), the Chinese automaker backed by Warren Buffet. Already, BYD is building electric buses on American soil and has global gigafactory ambitions. By the end of the year, according to *Reuters*, BYD should have 10 GWh of battery production capacity, which it expects to increase to 34 GWh by 2020 with a new factory in Brazil — about the same capacity as Tesla’s.

China has been a chief driver in lithium demand. The country aims to have 5 million electric vehicles on its roads by 2020. Sales of “new energy” vehicles there nearly tripled last year. Meanwhile, major electronics manufacturers in Korea and Japan require lithium as well.

From 2015 to 2024, the market to supply lithium ion batteries for light vehicles may total $221 billion, according to Navigant Consulting Inc.

By 2040, 35% of light vehicles sold will be electric, generating a battery market worth a projected $250 billion, according to *Bloomberg*.

5. Lithium uses

- Estimates of global lithium uses in 2011 are as follows:
- Ceramics and glass (29%)
- Batteries (27%)
- Lubricating greases (12%)
- Continuous casting (5%)
- Air treatment (4%)
- Polymers (3%)
- Primary aluminium production (2%)
- Pharmaceuticals (2%)
- Other (16%)

1. **Ceramics and glass.** Lithium oxide is widely used as a flux for processing silica, reducing the melting point and viscosity of the material and leading to glazes with improved physical properties including low coefficients of thermal expansion. Worldwide, this is the single largest use for lithium compounds.
2. **Electrical and electronics.** Late in the 20th century, lithium became an important component of battery electrolytes and electrodes, because of its high electrode potential. Because of its low atomic mass, it has a high charge- and power-to-weight ratio. A typical lithium-ion battery can generate approximately 3 volts per cell, compared with 2.1 volts for lead-acid or 1.5 volts for zinc-carbon cells. Lithium-ion batteries, which are rechargeable and have a high energy density, should not be confused with lithium batteries, which are disposable (primary) batteries with lithium or its compounds as the anode. Other rechargeable batteries that use lithium include the lithium-ion polymer battery, lithium iron phosphate battery, and the nanowire battery.
3. **Lubricating greases.** The third most common use of lithium is in greases. Lithium hydroxide is a strong base and, when heated with a fat, produces a soap made of lithium stearate. Lithium soap has the ability to thicken oils, and it is used to manufacture all-purpose, high-temperature lubricating greases.
4. **Metallurgy.** Lithium (e.g. as lithium carbonate) is used as an additive to continuous casting mould flux slags where it increases fluidity. Alloys of the metal with aluminium, cadmium, copper and manganese are used to make high-performance aircraft .
5. **Silicon nano-welding.** Lithium has been found effective in assisting the perfection of silicon nano-welds in electronic components for electric batteries and other devices.
6. **Other chemical and industrial uses**

Pyrotechnics

Lithium compounds are used as pyrotechnic colorants and oxidizers in red fireworks and flares.

Air purification

Lithium chloride and lithium bromide are hygroscopic and are used as desiccants for gas streams.[13] Lithium hydroxide and lithium peroxide are the salts most used in confined areas, such as aboard spacecraft and submarines, for carbon dioxide removal and air purification.

Optics

Lithium fluoride, artificially grown as crystal, is clear and transparent and often used in specialist optics .It has one of the lowest refractive indexes and the farthest transmission range in the deep UV of most common materials. Lithium niobate is used extensively in telecommunication products such as mobile phones and optical modulators, for such components as resonant crystals. Lithium applications are used in more than 60% of mobile phones.

Organic and polymer chemistry

Organolithium compounds are widely used in the production of polymer and fine-chemicals.

Military applications

Metallic lithium and its complex hydrides, are used as high-energy additives to rocket propellants. Lithium aluminium hydride can also be used by itself as a solid fuel. Lithium hydride containing lithium-6 is used in thermonuclear weapons, where it encases the core of the bomb.

Nuclear

Lithium-6 is valued as a source material for tritium production and as a neutron absorber in nuclear fusion. Natural lithium contains about 7.5% lithium-6 from which large amounts of lithium-6 have been produced for use in nuclear weapons. Lithium-7 gained interest for use in nuclear reactorcoolants,

Medicine

Lithium is useful in the treatment of bipolar disorder. Lithium salts may also be helpful for related diagnoses, such as schizoaffective disorder and cyclic major depression.

6. Recent trends in lithium market

The lithium boom caught a lot of major analysts by surprise. Lithium carbonate has surged 33% in the past year from $6,000 per ton to $8,000 a ton. In some cases, it's even fetched as much as $25,000 on the spot market.

Now, that's not to say that lithium prices will shoot ever higher. There will eventually be some form of correction. But, ultimately, the trend in lithium prices leads higher over the next few years indeed, but more-so over the next few decades

Prices are up 43% so far this year. Benchmark "battery grade" lithium carbonate reached $8,500 per metric ton in June 2016, and analysts expect prices to reach $10,000 before the year ends. Compare that to just nine months ago when it was selling for $5,000 to $6,000 per ton.

Today, China is expanding at a fast pace its lithium supply chain. China's Tianqi Lithium Industries said it would build a $306 million lithium-hydroxide plant in Australia. The plant will take ore from the Greenbushes mine, one of the world's largest lithium producers, and produce 24,000 tonnes a year of lithium hydroxide. That will boost Tianqi's processing capacity by more than 50%. This way it can keep more lithium in its own supply chain instead of exporting it to the rest of the world, which also needs increasing amounts of lithium for their electric cars, smartphones, and power tools.

Greenbushes accounted for more than 35% of global lithium supply last year, and it will have to be expanded to feed Tianqi's new Australian plant. Tianqi's partner in the Greenbushes project is Albermarle, which also runs the only lithium-producing brine operation in North America — in Nevada's Clayton Valley.

The batteries will be used in electric cars as well as home energy storage. Indeed, electric car sales, the primary catalyst behind lithium demand, have torched analysts' expectations this year.

Electric car sales jumped 42% worldwide in the first quarter of 2016, hitting new highs in each of the first four months of the year. And that trend is on pace to continue throughout the year. A total of 91,300 plug-in electric vehicles were sold in Europe through the first six months of 2016, making for a 21% year-on-year increase. And U.S. plug-in hybrid car sales were up 45% this year through August.

Furthermore, sales of home energy storage batteries, another major source of lithium demand, are soaring as well. This is another trend that's poised to continue. Tesla, is expected sell 168.5 megawatt-hours of energy storage systems to the nation's leading residential solar system installer, SolarCity, this year. That's six times what Tesla sold to SolarCity last year and 60% larger than the entire 2015 U.S. market. Tesla expects revenues from SolarCity to increase from $8 million so far to $44 million this year.

Benchmark Mineral Intelligence projects lithium carbonate prices to peak near-term in 2017 at almost $9,000 a tonne before falling back a bit as new supply enters the market. It adds, however, that this may not prove enough, as new sources of demand such as Tesla's gigafactory in Nevada open up.

Prices have doubled since 2005, and are expected to remain elevated for the next several years.

Chinese government policies have sparked a boom in the sales of all electric cars and therefore in the use of lithium batteries. This has also been a driving force behind the rampant rise in lithium prices and lithium stocks. Last year, China surpassed the United States as the largest market for electric vehicles — the result of spending US$2.3 billion on subsidies since 2009. By 2025, China wants to be selling more than three million electric cars annually. And it may issue compulsory quotas to do it.

According to a draft document from China's National Development and Reform Commission, the country considers electric vehicles a "strategic industry" and a new proposed measure would require automakers to produce or import electric vehicles relative to the number of traditional vehicles they sell.

To support this growth, China needs as much lithium as it can get. And that's one of the reasons lithium prices have surged in recent months, from $5,000 per tonne last year to as high as $24,000 per tonne in China this year.

Recently *USA Today* reported that a lithium supply shortage is a very real possibility. It noted: We've gone electric, and there's no going back at this point. Lithium is our new fuel, but like fossil fuels, the reserves we're currently tapping into are finite — and that's what investors can take to the bank.

7. Conclusions

Just like Tesla (see Elon Musk), BYD (see Warren Buffet) will also need the world's entire lithium supply, every single year from now. And we talk just about the demand for the new battery-powered cars. So just like Musk, the "world's greatest investor" needs to dominate the supply of this „fuel", meaning that the two billionaires are at war for the world's tiny lithium supply. They're signing deals and buying mines. And in the process they've sparked a frenzy for this fuel including Google, Apple, Samsung, Panasonic, Virgin Airlines mogul Richard Branson and Chinese billionaire Jia Yueting. Toyota, GM, Nissan, and just about every big automaker have joined the race. Big Oil giant Total entered the market with a $1.1 billion buyout of a lithium company. The US Department of Defence also depends on this fuel and it has the "first dibs" on supply. The battle is huge and it has already sent lithium prices through the roof.

References

[1] Wikipedia
[2] US Energy Information Administration Reports
[3] The Economist
[4] Outsider Club 2016
[5] China's National Development and Reform Commission
[6] Benchmark Mineral Intelligence

The Influence of Accountancy Errors on Financial and Tax Reports

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Abstract: To make mistakes is human. An accountant may do mistakes, too. Accountancy errors are defined and classsified by accounting regulations. These set what is the accountant treatment for correcting accountancy errors. However, even though one of the objectives in accounting normalization is made by the disconnection between accountancy and taxation, the accountancy errors influence especially tax reports. We will further point the impact of accountancy errors on financial and tax reports. We will also approach the accountancy principles that impose the rules described for correcting the errors.

Keywords: Accountancy errors, accountancy principles, financial reports, tax reports, reported result.

1. Introduction

In every field of activity errors may occur. In carrying out the accounting activity, there may occur errors possibly referring mathematical mistakes, mistakes in applying accounting policies, ignoring or misapplication of the accounting judgment to the recognition of elements of financial statements, booking omissions.

In this study, we shall present the way the accounting errors affect the accounting and fiscal reports and the accounting principles applied to the specialist's reasoning to correct them.

In carrying out activity by the economic entities, there may occur situations in which some elements of the annual financial statements cannot be measured with precision, but only estimated.

Estimates can be easily confused with accounting errors because they sometimes require revision. The revision is not the correction of an error.

Unlike the correction of accounting errors, the estimates revision does not affect the tax reporting. They affect the financial statements.

Particularly important for the correction of the accounting errors is the date on which they are corrected and the financial year which they belong to. This information helps with determining the way to correct accounting errors.

An important issue addressed in the field is the error analysis so as to distinguish between errors and fraud. Our objective is to study accounting errors and, maybe in another work, we shall address the delicate issue of the border between error and fraud.

„The distinguishing feature between error and fraud would be the intentional nature of fraud. Error would result from a fortuitous action, not intentionally malicious and not with the purpose to distort the true financial performance of firms that disclose accounting information. An irregularity

can be seen as an intentional act that does not, however, have the purpose of generating an illegal advantage[24].

[24] Antonio Martins, Cristina Sa - Accounting errors, financial information and presumption based taxation: the Portuguese case – OBEGEF, Edicoes Humus, febr 2015, http://www.gestaodefraude.eu/wordpress/wp-content/uploads/2015/02/wp034.pdf

This study can help managers and auditors to understand the common circumstances and types of errors, and thus what activities to monitor more closely. The study also contributes to the academic literature by comparing the errors to estimations, by examining the influence on financial and tax reporting.

Besides the theoretical approach of the way to correct accounting errors, a case study on the correction of accounting errors will complete the work. This may be helpful for the accounting practitioners, managers, auditors, but it may also be used as material in future research.

The topic is little discussed in the specific literature.

Since accounting is a standardized science, the main source of information for the present study were the provisions of the Accounting Regulations on the individual annual financial statements and the consolidated financial statements, approved through the Order 1802/2014 issued by the Minister of Public Finance.

The author of the article "Accounting Errors and Errors of Accounting"[25] highlights the importance of assuming the accounting errors: "Accounting should pay more attention to errors, as errors are essential for the updating of beliefs. Accounting is an information system, and errors are the carriers of information according to Bayes' Theorem. Accountants are primarily concerned with the mean (value), but the variance of accounting numbers is equally important."

Christensen argues that „error is intrinsic to accounting systems, as it is to all information systems that seek to represent synthetically and objectively a corporate environment that is truly complex and subjective". According to this author, accounting serves several purposes in the context of economic systems, with diverse and contradictory interests.

Conflict between users is common. Thus, errors arise out of this conflict.

2. Accounting errors

2.1. What are accounting errors

Lourenço and Sarmento (2008: 34-35) state that "error", in the context of accounting, will emerge from a random, unintentional or eliberate act caused by negligenceor ignorance.

Errors possibly arising in respect of the recognition, assessment, presentation or disclosure of the financial statements elements. They do not comply with the accounting rules if they contain material or immaterial errors, errors intentionally made to achieve a particular presentation of the financial position, of the performance or cash flows of an entity.

Errors found in accounting may refer either to the current financial year, or to previous financial years.

Errors in prior periods are omissions and misstatements in the financial statements of the entity for one or several prior periods, arising from the mistake of using or not using reliable information that [26]:

a) was available when the financial statements for those periods were authorized for issue;

b) could reasonably be obtained and taken into account in the preparation and presentation of those annual financial statements.

Errors that may appear in the activity of an accountant may be:

- Mathematical mistakes;
- Mistakes in applying accounting policies;
- Ignoring or misapplication of the accounting judgment to the recognition of financial statements elements;
- Booking omissions.

Of the mathematical mistakes, we mention the calculation errors, but the most frequent ones are the inversions of the place of two figures. The latter obes are the most difficult to detect.

Errors in the application of the accounting policies occur, most often, in the situation where accounting is outsourced. Companies whose object of activity is the "Accounting" have a large portfolio of business entities, and the possibility of confusion regarding the accounting policies is higher.

However, as a result of frequent changes of legislation and of the burdensome implementation of the legislative requirements, companies are willing to outsource their services of fiscal assistance and accounting (67%), payroll and human resources management (40%) and legal administration (17%), in order to focus on their basic activities – this is the demonstration of a study by TMF Group Romania, a present since 17 years on outsourcing services market in Romania. In terms of the third category of accounting errors, here we may think

[25] John Christensen - Accounting Errors and Errors of Accounting – AAA Digital Lybrary, Volume 85, Issue 6, pp 1827 - 1838

[26] OMFP 1802 / 2014 - accounting reglulation individual financial statements and consolidated financial statements

if it comes about errors or fraud. The accounting reasoning may be intentionally ignorant, which creates doubts on the honesty of the accountant concerned.

Errors of prior periods also include the misrepresentation of information in the annual financial statements.

Sometimes, errors may be insignificant. Insignificant errors are not likely to influence the financial and accounting information. It is considered that an error is significant if it could influence the users' economic decisions taken on the basis of annual financial statements.

To determine whether an error is significant or not, an analysis is performed within the contextual point, given the nature or the individual or aggregate value of the items.

2.2. Corection of accounting errors

According to accounting regulation on individual financial statements and consolidated financial statements[27] correction of accounting errors is performed at the date of finding.

The accounting treatment which corrects an accounting error is differentiated according to the financial year which an error belongs to. Thus:

- Accounting errors belonging to the current financial year are corrected in the profit and loss account.
- Significant errors related to previous financial years are corrected on account of the retained earnings (account 1174 "Retained earnings resulted from the correction of accounting errors").
- Insignificant errors related to previous financial years are also corrected on account of the retained earnings. However, according to the approved accounting policies, the insignificant errors may be corrected in the profit and loss account.

In case the correction of an error requires booking cancellation, by the accounting policies, the entity will choose the method of cancellation:

- Red cancellation;
- Black cancellation.

The choice of the cancellation method also depends on the cancellation method used by the software in use.

To correct accounting errors related to prior financial years, there will not be changed the financial statements of those financial years, in order to observe the principle of intangibility of the opening balance sheet.

According to this principle, the opening balance sheet of a financial year shall fully comply with the closing balance sheet of the preceding financial year.

The booking, on account of the retained earnings, of the correction of the significant errors related to previous years, as well as the change of the accounting policies are not considered breach of the principle of intangibility.

***Example**: An entity approved the financial statements of the year N on 04/04/N + 1. On 05/15/N + 1 they found that, during the previous year, a building depreciation had not been booked. The error shall be corrected on the date on which it is found, on account of retained earnings (1174 = 281), the opening balance strictly observing the closing balance sheet of the previous financial year.*

2.3. Errors versus estimates

In carrying out economic entities' activity, there are situations in which some elements of the annual financial statements cannot be assessed with precision, but only estimated.

Examples of situations that require estimates:

- bad debts;
- obsolescence of inventory;
- economic life;
- amount of provisions constituted;
- expected pattern of consumption of future economic benefits embodied in depreciable assets etc.

Estimation involves judgments based on the latest credible information available at a time. In a situation where there are changes in the initial information or new information occurs, the estimate may require revision.

The revision is not the correction of an error but a result of inherent uncertainties characterizing the economic environment.

[27] Aproved by OMFP 1802/2014

Therefore, an estimate may need revision if changes occur in the circumstances on which the estimate was based or as a result of new information or of a better experience.

The use of reasonable estimates is an important part of the preparation and presentation of the financial statements. The credibility and relevance of the information in the financial statements are affected by the accounting estimates adopted.

For accounting practices, it is important the distinction between the changes in accounting estimates and the changes in the accounting policies.

A change in the valuation bases, even if based on estimates, represents a change in the accounting policies and not in the estimates. When it is difficult to distinguish between a change in the accounting policy and a change in an accounting estimate, the change in the accounting estimate prevails.

The effect of change in an accounting estimate is prospectively recognized by including it in the result of:

- the period of the change, if it affects only that period (for example, adjustments for bad debts); or
- the period of the change occurs and of future periods, if the change affects them, too (for example, the useful life of the tangible assets).

Unlike the correction of accounting errors, the change of an estimate is never booked in the retained earnings, it is not recognized retroactively.

Example:

An economic entity acquires a machine worth Lei 500,000. The useful life is 10 years, and the company books its depreciation it by the linear method. Due to the change of the conditions of use, at the end of the 2-nd operating year, the company decides that depreciation will be booked along a period of 8 years, the remaining useful life being of 6 years.

Year 1 :

● machine purchase :

213 = 404 Lei 500,000

● annual depreciation booking, during the first operating year :

681 = 281 Lei 50,000

Annual depreciation = Lei 500,000 / 10 years = Lei 50,000 / year.

Year 2 :

● *the economic life will be changed, by accounting estimate:*

remained depreciation value = 500,000 − 50,000 = Lei 450,000

annual depreciation =Lei 450,000 / 7 years = Lei 64,285

The 7 years consist of: 6 years + the 2-nd year during which the estimate is done.

681 = 281 Lei 64,285

● *during the following years (year 3,4,5,6,7,8), the booking will be repeated :*

681 = 281 Lei 64,285

3. Detecting of accounting errors

As shown in the second part of this work, accounting errors correction is not a difficult activity. But how do we detect the accounting errors?

Sometimes, accounting errors are detected incidentally. But we cannot rely on chance.

The moment for detecting most accounting errors is that of the preparatory works for the financial statements drawing up.

In this respect, based on a provisional trial balance, they check:

- the consistency between the accounting and the operational records, between the synthetic and analytic accounting;
- whether all justifying documents have been properly booked;
- the legality and honesty of the booked data, which must give a clear and comprehensive description of the economic and financial operations carried out;
- the accounts balances, so as the assets accounts book a final debit balance, and the liabilities accounts book a final credit balance;
- the balances total in the management report should match the balance of the account 371 "Merchandise";
- whether the cash balance is equal to the balance of the account 531 "Cash";
- whether expenditures and income were delimited in time, etc.

As a result of these checks, the probability of detecting possible accounting errors is quite high.

Error non-detection risk is influenced by the size of the economic entity for an important role in identifying errors belongs to the audit action which is not mandatory for micro-entities.

However, even if the financial audit is performed, the control risk cannot be zero for the internal controls cannot provide complete safety on preventing or detecting errors.

The auditor will establish a level of control so as errors arising from inherent risk may be determined.

Accounting errors are part of the qualitative factors affecting the audit materiality. Of these factors, we mention:

1. During the stage of the determining of the preliminary value of materiality:
   - significant errors from previous years
   - possible fraud
   - minor presentation errors possibly affecting certain contractual obligations
   - minor presentation errors possibly affecting the trend of the profits trend.

2. During the stage of estimating the distortions and of comparing them with the preliminary value of materiality:
   - errors hiding a change in the evolution of profits
   - errors causing the change of the loss by profit and vice versa
   - errors possibly causing a major positive or negative reaction of the market.

Following the audit, the auditor states whether, on the basis of the knowledge and understanding gained during the audit in relation to the entity and its environment, he/she has identified significant erroneous information given in the directors' report, by indicating the nature of such erroneous information.

4. Reflecting accounting errors in accounting and fiscal statements

The discovery of an error may result in several consequences. Everything depends on the type of error, on the financial year it belongs to.

In the lines below, we establish the way to proceed in case, following an error, the following situation occurs.

At the end of June, during the year N, an economic entity issued a bond loan worth Lei 500,000, with an interest rate of 5% per year. The interest is to be paid at the end of each bond year. According to the accrual principle, although the company owes the interest on late June of the year N + 1, during the month of December of the year N it should book the interest for the period 07/01/N – 12/31/ N.

The interest to be booked for six months = Lei 500,000 x 5% x ½ years = Lei 12,500

Some of the accounting errors occur as a result of erroneous data typing. Thus, the accountant typed by mistake Lei 15,200 instead of Lei 12,500

666 Interest-related expenditure	=	1681 Interest related to bond loans	15,200

At the end of June N + 1, the due date on the debt related to the bond loans interest, the accountant discovered the error, respectively the booking of an interest related to the bond loans accrued by Lei 2,700 (Lei 15,200 – Lei 12,500 = Lei 2,700). The error also led to the overstatement of the expenditure on the interest by Lei 2,700.

According to the accounting regulations on the individual annual financial statements and the annual consolidated financial statements, the accounting errors are corrected at the time of their detection. The error correction will be booked as follows:

1681 Interest related to bond loans	=	1174 Remained earnings resulted from the accounting errors correction	2,700

From a fiscal standpoint, the principle according to which the fiscal result is calculated based on the incomes and expenses booked in accordance with the accounting provisions in force, the operation of correcting the booking errors, eliminating the idea that they could have been made with intent, should influence the taxable profit for the fiscal year during which the operation is performed.

Thus, the tax on profit calculated for the year N was declared and paid to the State Budget less Lei 432 (Lei 2,700 x 16% = Lei 432).

Although in accountancy the errors correction does not involve the correction of the accounting statements, the same is not true for taxation. For the statement on the tax on profit (Statement 101), the accountant should:

- prepare and submit the statement of amendment,
- pay the difference in the tax on profit, undeclared following the accounting error, and
- calculate and pay delay penalties for the tax unpaid on due time.

As it may be seen, the tax implications arising from the correction of the accounting errors are more complex for they may involve additional costs.

If the error affects an income, the company pays extra tax on profit. If the profit obtained is distributed as dividends to the shareholders or associates, for the overpaid amounts it should ask for refunding. And, in such a situation, there arises tax on dividends paid extra. It should also be restored the statement 100 by which the company declared the tax on dividends.

5. Conclusions

In this paper, we have tried to combine the accounting and fiscal treatment of the accounting errors correction with the theoretical and applicative presentation of the theme we have chosen.

The accounting error correction is grounded by the principle of the opening balance sheet intangibility and the principle of the methods consistency. The latter is the foundation of the accounting policies handbook by which an economic entity must define the materiality threshold for accounting errors correction, on the one hand, and choose the method for errors cancellation in accountancy: the "red" or "black" cancellation method, on the other hand.

Many of the operations we need to correct require higher attention in terms of the regulations at the time, given the instability of the accounting and fiscal systems in Romania.

Given the current regulations, the main conclusion we have reached is the fact that the influence of the errors on the fiscal reporting is significant in terms of the accountant's activity, but especially in terms of additional costs incurred by the company. It is about penalties arising from the failure to pay some taxes on due time, or from the payment of extra taxes, depending on the structure affected, namely on the expenses or incomes.

References

[1] John Christensen - Accounting Errors and Errors of Accounting – AAA Digital Lybrary, Volume 85, Issue 6, pp 1827 – 1838;

[2] Mariana Gurau – Policies, options and accounting procedures for economic entities whose securities are not admitted to trading on a regulated market - Prouniversitaria Publishing, Bucharest, 2015, ISBN 978-606-26-0271-0;

[3] Mariana Gurau, Relation between accounting and tax reflected in accounting policies. Aggressive vs conservative. Case study for Romania, LAMBERT Academic Publishing, 2014, ISBN-13: 978-3-659-51150-9;

[4] Antonio Martins, Cristina Sa - Accounting errors, financial information and presumption based taxation: the Portuguese case – OBEGEF, Edicoes Humus, febr 2015, http://www.gestaodefraude.eu/wordpress/wp-content/uploads/2015/02/wp034.pdf;

[5] Lourenço M. and Sarmento M. (2008) "A fraude contabilística e o ambiente empresarial" Revista TOC, 103, pp. 34-35;

[6] OMFP 1802 / 2014 - accounting regulation on individual financial statements and consolidated financial statements;

[7] Law 227 / 2015 – Tax code.

The Professional Judgment of the Financial Analysts Regarded from the Perspective of Accounting through the Interview Method

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Abstract: The demarches of the research are based, besides the visions of the quantitative filtration also on the qualitative side of the scientific field of research. The qualitative research represents the focus of more methods, involving an interpretative, naturalist approach over the studied subject. This means a study of things in their natural environment, trying to understand each other or to interpret the phenomenon in the meaning that people invest in it. The qualitative research involves the use and collection of a variety of empirical materials (Denzin & Lincoln, 1994, p. 2) in which the interview is significantly highlighted.

Key-Words: accounting information, accounting professionals, theories of accounting, qualitative research, interview

1. Introduction

„The interview is the angled stone of the qualitative methodology and one of the most used data collection techniques. The interview technique allows the profound and nuanced understanding of a human being and its relationships with the world or the points of view specific to certain groups" (McCracken, 1988).

"The interview technique, beside the fact that it represents a major importance establishment within research, it represents also an instrument used at a qualitative level in various ways" (Briggs, 1986, p. 2).

In order to aid the realized actions for the development of our research based on the perception over the professional judgment we have continued our demarches by applying the interview technique by having in the position of interviewed persons financial analysts from working fields of distribution, production, commerce and consultancy and management services. A particularization of the perception of the professional judgment was aimed at through the exposure of the complex character of the professional judgment used by the financial analyst.

The applied type of interview is semi-directional, oriented on the chosen thematic, providing to the interviewed person both a scientific framework preset and certain flexibility in approaching the proposed subjects.

Based on multiple factors, the interview captures the statute of a documentary interview, personal, with open questions, planned and focused, in accordance with Fig.1.

Fig. 1. The applied interview labels

Source: issued by the author

2 Steps made for the research and the formation of the working hypotheses.

The steps made within this operation of qualitative research are as follows:

- Initial theoretical research that leads to the option of applying the interview method;
- The theoretical documentation specific to the interviewing techniques;
- Establishing the representative sample;
- Issue the interview file;
- Drafting the interview guide;
- Contacting the domain specialists;
- Actual performance of the interview;
- Centralization and interpretation of the provided answers;
- Forming the conclusions and validation/invalidation of the established hypothesis.

Through the interview of the financial analysts we aim at obtaining conclusive information regarding the research leads that we have set at the beginning of this paper.

Thus, the applied research interview becomes "a technique to obtain, through questions and answers, verbal information from the individuals and human groups in order to verify the hypothesis or for the scientific description of phenomenon" (Chelcea, 2001, p.122).

In the construction of the validation or invalidation demarche of hypothesis we used the answers provided by 20 financial analysts with a working experience between 5 and 10 years.

The hypotheses are formulated as follows:

First Hypothesis: The substantiation of the professional judgment of the financial analysts involve, besides the accounting information, other categories of information
Second Hypothesis: Knowing the reference Theories of accounting and finance consolidates the professional judgment of the financial analyst.
Third Hypothesis: Knowing the legal framework legitimates the professional judgment used by the financial analyst.

The interview file comprises of two categories of information:

- The identification fields related to the gender, job, work experience, interview duration
- The actual questions issued by the researcher.

The composition of the question aimed at focusing on the research elements found in the hypothesis. Based on the content of the answers provided to these questions the following information is getting shaped regarding the professional judgment of the financial analyst:

- The definition and particularities of the professional judgment;
- The factors that lead to the use of the professional judgment;
- The most often situations occurred that require the use of the professional judgment;
- Types of information that support the substantiation of the professional judgment;
- The reference theories that serve as support for the beginning of the activity;
- The limits and constraints that can emerge in the use of the professional judgment.

Within the interview guide, the interviewed persons are being informed that the purpose of the interview is to provide information specific to their perception of the professional judgment.

Also, they are being informed that their answers will be centralized and interpreted within a scientific research, while their confidentiality will be ensured.

The financial analyst is participating to an interview for half an hour, time in which he will answer to the set of questions and can ask for additional information from the interview operator, in the posture of the researcher, confirming that "the interview of research represents an expansive experience for the interviewed person which, through the interaction with the researcher, obtains a new perspective of the subject in the research" (Kvale, 1996).

3 Results and discussions

"The interview represents the most often and the most valuable method of qualitative research" (Bratucu & Bratucu, 1996, p. 49). The results obtained after the centralization of the answers provided by the 20 financial analysts gives a particularization of the domain highlighted by the professional judgment, emphasizing the following aspects:

The financial analyst's vision over the professional judgment

At the question related to the vision of the financial analyst over the professional judgment, most of the respondents have considered that the professional judgment represents the ability to judge, to correlate and interpret in certain situations in order to form conclusion on which decisions are being made.

Another vision shaped after the answers is associating the professional judgments with the personal ability to analyze and act accordingly to the unknown factors and various circumstances, that are not regulated and do not have any history of resolution of a predetermined finality.

The financial analysts have appreciated that the professional judgment correlated with this function is materializing particularly in applying the accumulated knowledge by stages of preparation on the financial statement, accounting and in current reports in order to establish a pertinent decisional package.

The interlocutors stated that the professional judgment of the financial analyst is practically overlapping the job's description. Without the ability to analyze the rates and without understanding the information needed to be used, the financial analyst cannot do his job.

The particularities consist of the need to thorough understand the financial statements and the rates that are being used, in the ability to synthetize and process the information received and the ability to put it into practice in order to be used for the accounting analysis, management analysis etc.

In accordance with the opinions that were formulated, the professional judgment is the main advantage of the financial analyst. The financial analyst must be an analytical person with a solid database of knowledge on which to rely its judgment.

The professional judgment of the financial analyst includes a developed spirit of observation that contributes to a good relationship between the analyzed elements, having a good capacity to present the information in a relevant structure of a report.

The materialization of the interviewed specialist's opinions points out that the financial analyst has the professional judgment as main resource. Without the ability to analyze, interpret and present a set of data, the added value of his activity does not exist.

Factors that lead to the use of the professional judgment

To the question regarding the factors that determine the use of the professional judgment of the financial analyst a unanimous confirmation has been recorded for the following factors:

- **The legal framework** determines directions of the use of the professional judgment through regulations, ethical conducts and legal acts that exist in their domain;
- **The professional training** of the financial analyst (the accumulated experience and working experience foregoes a solid background in performing their activity at an optimal level and impose the existence of an analytic spirit, organized, but also the existence of a professional skepticism and the ability to understand why there is a result instead of another);
- **Continuous training** (preoccupation of the financial analyst to keep up to date with all legal regulations and to permanently strengthen his theoretical and practical knowledge gathered at that point leads to perfecting the professional judgment and enrich the professional judgment of the employee).

Highlighting the circumstances that impose the use of the professional judgment

Following the centralization of the answers provided by the interviewed financial analysts we iterate some of the circumstances that require the use of the professional judgment:

- The establishment of trends, variations from the budgets or previous periods, for comparison with reference values;
- The interpretation of the information, it's processing and analysis;
- The issue of reports with essential information;
- Evaluation of the financial instruments;
- The computation of specific indicators for their activities;
- Budgeting activities;
- Update of the business plan;
- Identification of profitable investments;
- The collaboration with other departments in order to issue the analysis reports;
- The proposal of solutions for the issues found in their activity;
- The presentation of expansion perspectives for the development of the company;
- Fulfillment of their tasks and objectives provided by the jobs description;
- The realization of financial forecasts;
- The monitoring of the company's activities;
- The development of strategies in the financial and accounting fields.

The financial analysts have highlighted the fact that the professional judgment has a character of an activity continuously undertaken, therefore we can conclude that the exercise of professional judgment presents an intrinsic character.

The substantiation of the professional judgment strictly on the accounting information

At the questions related to the substantiation of the professional judgment exclusively on the accounting information, the interlocutor have unanimously answered that activity carried on the accounting information do not have and exclusive character and so, beside it, the financial analysts use complementary information regarding financial analysis, mathematics, informatics, marketing information, management, budgeting, market, information based on trends and macro-environment, and also other extra-accounting information. Also, the accounting information but not only also has a major impact on the accounting, financial, economic information.

Regarding of accounting services, they have developed continuously, in the same time with business environment and, as a result, the major accounting companies had adapted their capacity and expertise to the information needs of their customers and to the services required by them (Sudacevschi, 2016, p. 719).

The identification of the reference theories that come to aid the use of the financial analyst's judgment

The economy of information is neither perfectly shaped nor satisfying. It supposes sophisticated maximizing behavior that leads to the signing of complex agreements that are not found in practices (Grigore, 2009, p.374).

Following the question meant to identify what are the reference theories that come to aid the use of the professional judgment has revealed that the financial analysts are not aware of the reference theories of accounting and finance.

All the interviewed persons have stated that they are not aware of such theories.

Limits and constraints of the professional judgment

The financial analysts have concluded that the limits and constraints of the professional judgment are firstly determined by regulatory procedures and the availability of the information. Another situation could be when no way of action can be recommended based on the information received due to the fact that the information is incomplete or far too complex.

The limits of the professional judgment for a financial analyst can be given by the amount of information available to him but also limits imposed by the decisional factor to which the analysis report is intended.

The interviewed persons have considered also that the insufficient preparation and processing time of the data can be a limitation, along with the pre-established deadlines, with the informatics systems that does not cover the whole process of computation and management of the financial situations, and an insufficient training can also be looked at as a limitation.

4. The conclusions of the qualitative research based on the interview

The qualitative research applied in the case of 20 financial analysts has come to aid the sustaining of the initially formulated hypothesis. The demarche made by the structure of the interviews generated by the interviewing technique has led to the shaping of a complex image regarding the professional judgment of the financial analysts.

Two of the three hypotheses established have been validated after the highlighting of the particularized answers on the domain of the financial analysts' domain, therefore, in the following analysis we conclusively look at the results obtained that have directed these ways of the realized demarche.

The first hypothesis regarding *the substantiation of the professional judgment of the financial analyst which involved beside the accounting information, other categories of information* has been validated as a result of the appreciation of the responses given by the 20 financial analysts.

The categories of information presented by the respondents include information from the domains of financial analysis, mathematics, informatics, marketing, management, budgeting information, market, information based on economical tendencies and also other extra-accounting information.

Out of the 20 respondents, 17 have stated that mandatory in the activity of the financial analyst is the information related to the financial and accounting analysis and those related to place that the company has in the market in which the financial analyst activates. These categories of information stand at the foundation of the used of the professional judgment in the general character working tasks and are part of the usual activity of the financial analyst.

The validation of the first hypothesis established in our qualitative research had a predictable character if we take into consideration that the professional demarche undertaken by the financial analysts has a complex character therefore it draws into carrying the activities a plethora of information divided in categories by domains and the served purpose.

Another hypothesis initially formulated is the one referring to *knowledge of the reference accounting and financial theories that leads to the consolidation of the professional judgment of the financial analysts.*
This hypothesis has been invalidated due to the answers provided. Therefore, with a unanimously answer, 100% of the financial analysts have stated that they have no knowledge of the reference accounting and financial theories that could be useful in managing the professional judgment.
This fact occurred due to the lack of information at the organization's level regarding the financial and accounting culture and the conceptual fundament that determines the activity carried out. The financial analysts are situated in the posture of applying the reference financial and accounting theories but at a theoretical level they do not possess the knowledge to aid them in positioning and punctual association with the important theories.

The third hypothesis is referring to *knowledge of the regulatory framework as an element that legitimates the professional judgment used by the professional judgment* has been validated through the answers provided by the interviewed financial analysts.

After the identification and centralization of the analysts' answers we have concluded that a real advantage, at an organizational level, is the knowledge of the regulatory framework that, through the support offered by the professional training is legitimating the professional judgment of the financial analyst.

Out of the persons interviewed, 16 financial analysts stated that a major importance in the use of the professional judgment is the regulatory framework that supports and guides the functional processes of the company and the professional training that significantly influences the quality of decisions in the working processes.

In addition, the financial analysts have appreciated in the formation of the professional judgment that the continuous training as an extension of the professional training leads to achieving the targeted objectives at an organizational level.

Through the qualitative research regarding the construction of the professional judgment of the financial analysts carried out by us, we have obtained a particularization of the professional judgment of the financial analysts by exposing definitions of the professional judgment from the point of view of the interview's participants, factors and circumstances that determine the use of the professional judgment, information that comes to aid the building of this type of judgment and also the identification of the limits and constraints that are being taken into consideration in their activity by the financial analysts.

We have obtained, through the interaction with the financial analysts, valuable information that guides the trajectory of our research towards conclusive results that involve multiple elements on new through the perspective of the general and particular research.

References:

[18] Denzin, N. K. & Lincoln, Y. S. (1994), *Handbook of qualitatve research*, Thousand Oaks, SAGE Publications, apud Chelcea S. (2001), *Tehnici de cercetare sociologică*, suport de curs - Școala Națională de Studii Politice și Administrative - SNSPA, București.

[19] McCracken, G. (1988), *The long interview*, Sage Publications, Vol. 13, apud Băban, A. (2000), *Strategii și metode de cercetare calitativă. Interviul și observația*, Revista Cogniție, Creier, Comportament, Nr. 4.

[20] Briggs, C. L.(1986), *Learning how to ask. A sociolinguistic appraisal of the role of the interview in social science research*, Studies in the Social and Cultural Foundations of Language, Cambridge University Press, New York.

[21] Chelcea S. (2001), *Tehnici de cercetare sociologică*, suport de curs - Școala Națională de Studii Politice și Administrative - SNSPA, București.

[22] Kvale, S. (1996), *InterViews: An introduction to qualitative research interviewing*, Sage Publications, California.

[23] Bratucu, G. & Bratucu, T. O. (2006), *Metode calitative utilizate în cercetarea pieței*, Revista Marketing & Management.

[24] Grigore, M. Z. (2009). *Economia informației, instrument de analiză al noii microeconomii*, Lex ET Scientia International Journal (LESIJ), 16(2), 354-364.

[25] Sudacevschi, M. (2016). *The promotion of the accounting services within the limits of professional ethics*. Challenges of the Knowledge Society, CKS Journal, 718-722.

Overview on the History of Formal Education and Macroeconomic Development in Romania, Starting From the 19th Century, in Comparison With Other European States

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Abstract. The present paper is a part of a post-PhD research entitled Assessment on the Impact of Education on the Macroeconomic Development in Romania, As Compared to Other EU Member States. The survey starts with a short overview on the history of education and macroeconomic development in Romania, starting from the 19th century. To explain this situation, we must go far back in time in order to understand the deep historical roots of economic and social development in our country, in comparison with other European states. The industrial revolution and sustainable economic growth as well as the impact on education should also be analyzed.

Key-Words: formal education, macroeconomic development, history of education, linear regresion, statistics

1. Introduction

Formal education occurs in a structured, systematic and controlled environment where students are learning together with a trained, certified (preschool, primary, secondary or tertiary) teacher, professor or lecturer of the subject.

Etymologically, the word "*formal*" is derived from the Latin *formalis* which means ”official”, ”organized”, therefore, formal education is official education. Philip H. Coombs[28] defined *formal education* as the hierarchically structured, chronologically graded education system, running from primary school through the university and including, in addition to general academic studies, a variety of specialized programmes and institutions for full-time technical and professional training. Formal, official education includes social managing and evaluation, centered on the development of self-assessment capabilities learned within the formal education.

Formal education is extremely important because it provides access to cultural, scientific and artistic values, to literature and scientific knowledge as well as to social and human experience, having a critical role in shaping the students' personality, according to society and individual needs. Investing in human resources, i.e. in education, training and healthcare systems, is aimed at improving the professional and scientific abilities of trainees as well as at increasing their adaptability to cope with structural economic changes and the technological progress as well as efficiency.

Below, I intend to show that formal education plays a key role in improving living standards, leading to prosperity.

2. Problem formulation

Romania's integration into the European Union has brought to our society's attention the need to draft a long-term development strategy, a goal which cannot be achieved in the absence of significant progress in four fields, namely the economic, humanitarian, technological and environmental domains that can significantly improve living standards. This paper thoroughly analyzes the relationship between economic

[28] Philip Hall Coombs (1915-2006) was a program director for education at the Ford Foundation; he was appointed by President John F. Kennedy to be the first Assistant Secretary of State for Education and Culture; he worked for UNESCO and served as vice-chair and chair of the International Council of Economic Development

growth and training strategies in Romania, an issue I intend to dwell on, going back to the 19th-21st centuries as well as in contemporary history, based on a comparison with other European Union countries. I would like to familiarize you with the current premises that, in order to achieve sustainable development [8], following the prolonged economic and financial crisis, a new, coherent strategy based on short-term and long-term measures should be drafted, production costs should be reduced to fulfill the needs of the future generations, and social adaptability should be increased to avoid further crises or enable us to cope with them.

Europe 2020 strategy, launched in March 2010, clearly states that this new economic model should be based on knowledge, having three main goals, the most important of which is to achieve smart economic growth that means improving the EU's performance in education, research and innovation, as well as in digital society. As a result, EU targets for smart growth in the next four years include combined public and private investment levels to reach 3% of EU's GDP as well as better conditions for R&D and Innovation, and at least 40% of 30-34–year-olds with third level education.

As an example in Denmark, investment levels reach 7% of the country's GDP, in other European countries – an average of 4%-6%, while in Romania and Slovenia they fall below 4%. Another important goal is to reduce school drop-out rates below 10%. Students graduating from math, science and IT universities should also account for 15% of graduates. It means that, in the present moment as well as in the future, high quality education, available freely to all citizens and providing the foundation for equity in society, is key to social and economic development.

In 2016, Romania still faces the risk of economic and financial crisis, despite recent positive economic indicators and low budget deficits, which are based on growing demand instead of innovation, technology, and higher education.

At the same time, investments in education and R&D have fallen under 6% of Romania's GDP since 1995, which means poor curricula, high school drop-out rates and analphabetism, as well as low graduation rates. In addition, one should take into account the poor performance of vocational education, i.e. the absence of a close connection between training policies and employment policies, which has led to the lack of skilled workforce for sustainable development, amid the evolving demands of labor markets.

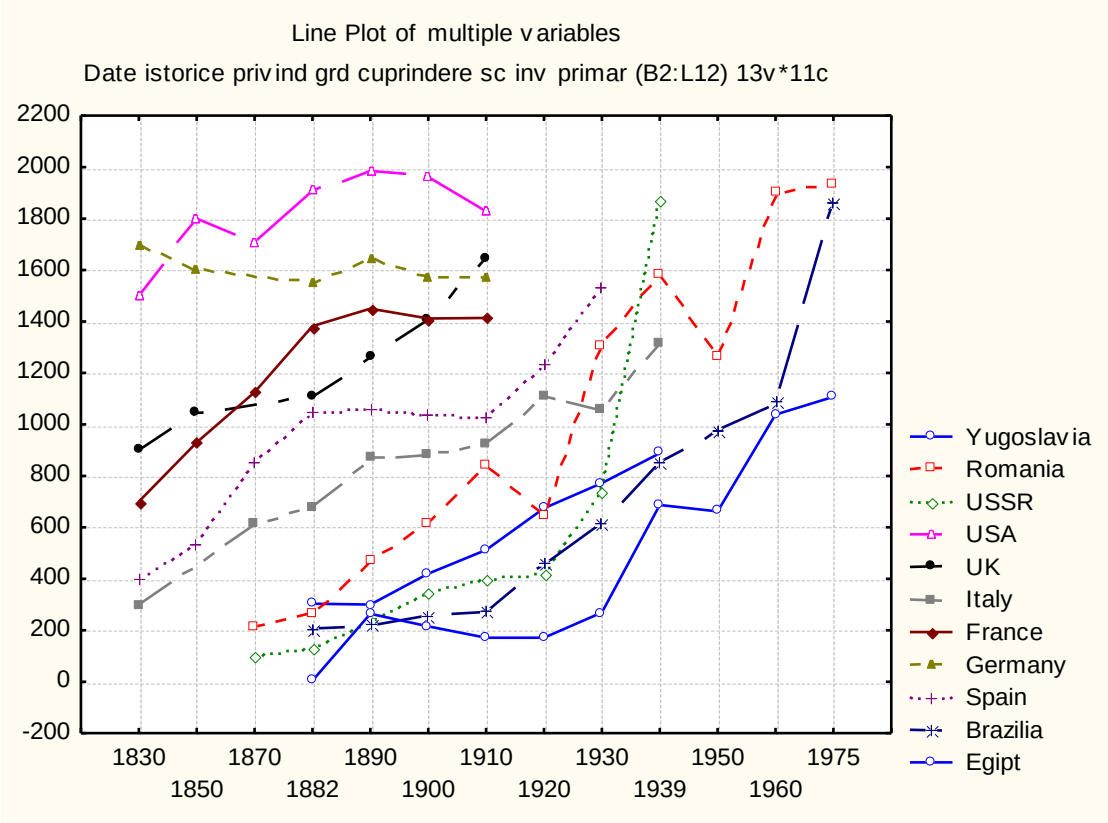
To explain this situation, we must go far back in time in order to understand the deep historical roots of economic and social development in our country, in comparison with other European states. The industrial revolution and sustainable economic growth as well as the impact on education should also be analyzed.

It is worth mentioning that statistical data, i.e. economic indicators, were for the first time analyzed in Europe in the second half of the 19th century. In 1850, and later on, in 1870, many European countries provided data on their GDP per capita, child mortality, analphabetism, and education quality. In short, the Romanian education system was established in 1831, i.e. the official primary education, in the Romanian Land and, subsequently, in Moldavia, where primary schools were built in major towns, between 1831 and 1842. Without getting into details, it is worth mentioning that this very difficult phase took place amid Romania's slow journey to modernization and progress, i.e. increasing the agricultural production, accessing the global markets, and so on. Starting primary education from scratch, in 1831, Romania opened the first schools in the autumn of 1838. Their number constantly increased, reaching 2.236 in 1848.

The enrolment rate is a key indicator for economic growth, according to recent British statistical surveys [3]. Thus, in Germany, in 1830 (at district levels, since the united nation was founded 40 years later), the number of people who graduated from schools reached 1.700 per 10,000 population, being followed by Great Britain – 900 people, France - 700, Spain - 400, and Italy (at district levels, since the united nation was founded in 1870) - 300. There was no reference to Romania in these documents.

Easterlin [3] noticed that, in 1850, official primary education almost did not exist in countries which were not located in North-Western Europe and North America. In 1940, low enrolment rates were reported in Africa, Asia and Latin America. The development of official education systems has led to economic growth, modernization and progress. Moreover, Easterlin underlines the importance of the education system. Thus, in Spain, the Catholic Church assumed a leading role in the education system, centered on religion and manual skills. Therefore, the enrolment rate remained high. Esterlin claims that the growth experienced by the countries located in North-Western Europe was not triggered by progress in the economic field, but by advances in education promoted by the Catholic Church.

Graph 1. The evolution of official primary education in the 19th and 20th centuries



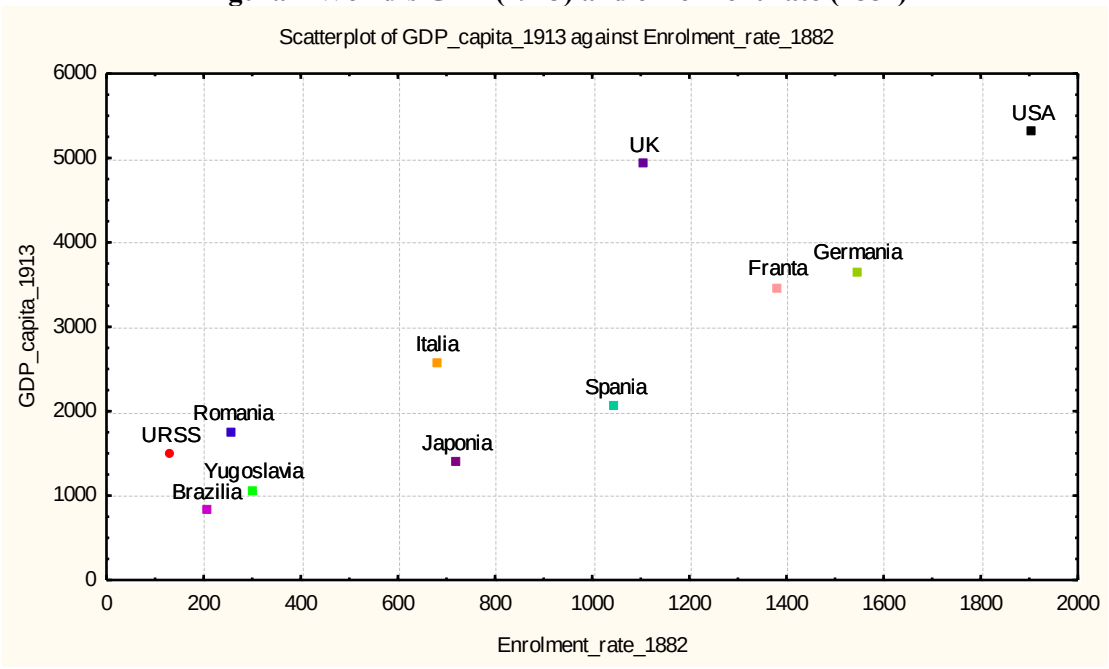
Sursa: Easterlin (1981) și INS

Graph 1 shows the evolution of official primary education, per 10,000 population. However, this indicator does not refer to education quality, due to the lack of historical data available. In the 19th century, countries located in North-Western Europe were on top of the list.

.As for the impact of education on economic growth, during the above mentioned period, historical data were scarce. Graph 2 is based on data on GDP per capita, in 1913, as well as on Maddison's [6] survey on primary education in 1882. It clearly reveals that high GDP rates were reported amid high enrolment rates recorded 30 years earlier.

Great Britain is an outlier, with the highest GDP growth against enrolment rates. Despite this close connection, the graph does not clarify whether high enrolment rates have triggered high GDP rates in France, Germany and Great Britain. The need to solve this issue has posed a major challenge to experts approaching the relationship between education and economic growth.

Figura 2 World's GDP (1913) and enrolment rate (1882)



Source: Maddison [6] and National Institute of Statistics

Although it is impossible to draw a good conclusion from the graph, if we use regression, we can analyze the data and compare them. Thus, we obtain the following results (including the standard errors of the regression model in Table 1):

$$\ln GDP/capita = 0{,}5611 lnEnrolment\_rate + 4{,}082 \quad (1)$$

Tabel 1. Regression Summary for equation (1)

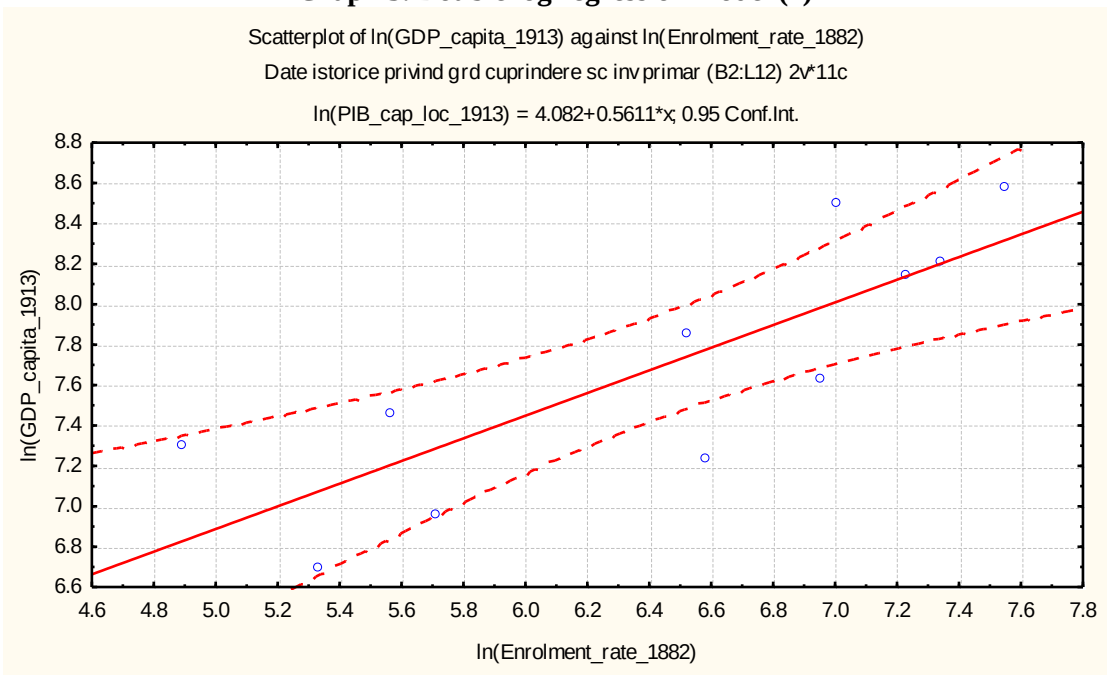
Regression Summary for Dependent Variable: ln(GDP_capita_1913) R= .81849963 R²= .66994165 Adjusted R²= .63326849 F(1,9)=18.268 p<.00207 Std.Error of estimate: .37638						
	Beta	**Std.Err. - of Beta**	**B**	**Std.Err. - of B**	**t(9)**	**p-level**
Intercept			4.081957	0.851314	4.794890	0.000981
ln(Gr_sc_1882)	0.818500	0.191502	0.561058	0.131269	4.274097	0.002068

We have the following *interpretation*: the equation shows that *a 1% increase in school enrolment could lead to a 0.56% GDP growth per capita, during the analyzed period*. On the long term, a 20% increase in the above-mentioned rate, from 5 to 6 years, in the future, can trigger a 10.7% GDP growth. It is a log linear equation.

However, the results should be carefully analyzed, since developed countries with strong GDP growth and quality education services have significant assets; thus, education is not the main driver of economic progress, but the asccumulation of capital stock.

As for historical returns, before the First World War, Romania reported significant progress of its key modernization efforts, despite the lack of developed economy status as compared to West and North European countries. Thus, although Romania had important oil and grain reserves, in the early 20th century, it failed to capitalize on its resources, due to the inability of the political elite to draft opportune moment strategies for economic development.

Graph 3. Double log regression model (1)



Sursa: Maddison (1991) and National Institute of Statistics

According to Vasile Axenciuc [1], national wealth significantly improved between 1860 and 1914, due to transportation and communication investments, i.e. leading to a 66.41% increase during this period, strong industrial output – a 10.34% growth, major agricultural production – a 3.06% increase, and high monetary base – a 4.12% increase. However, Romania was ranked the 12th on the list of 14 European countries by real GDP growth rate, with 476 dollars per capita, as compared to Great Britain, France, Germany and Switzerland – 1,590 – 1,025 dollars, Italy and Austria-Hungary – 640, and, respectively, 605 dollars. Serbia and Russia were two countries near the bottom of the list, i.e. 462 dollars and, respectively, 425 dollars.

As previously mentioned, there is a strong connection between education and income. In the second half of the 19th century, many European countries introduced new education laws, increased investments in this sector, and undertook coordinated efforts to improve the education system. As a result, the number of primary and secondary schools significantly increased and the literacy levels improved in the modern society, the education system producing a more skilled and productive workforce. The Romanian elite also paid great attention to the education system, the law on primary education being adopted in 1864. However, the government lacked the financial resources or the political will to meet citizens' educational needs, especially in small towns and villages. The next decades preceding the education reform achieved by Spiru Haret were marked by conflicts between the growing number of teachers dedicated to making knowledge accessible to all students and local authorities accused of negligence.

Following a debate that lasted almost 20 years, at the end of the 19th century, public figures such as Petru Poni[29], Take Ionescu[30] and especially Spiru Haret[31], brought their significant contribution to the drafting of a coherent law on education, in compliance with European standards. At the same time, amid population boom, organizational and logistical issues were solved, the number of primary schools increased along with that of teachers, and literacy levels significantly improved. This hardly could have been anticipated. For

[29] Petru Poni (1841-1925) – a Romanian chemist, physicist, professor, mineralogist and politician, Liberal Party member, who established the Romanian chemistry school. He was a professor at the University of Iasi, and a titular member of the Romanian Academy.

[30] Take Ionescu (1858-1922) - a Romanian centrist politician, lawyer and journalist, he was prime minister between 1921 and 1922.

[31] Spiru Haret (1851-1912) - a Romanian mathematician, astronomer, professor, and politician, he held 3 mandates as education minister, during which he promoted and implemented the education reform. He was a titular member of the Romanian Academy

example, in 30 years, the number of literates grew from 261 per 10,000 in 1882 to 467 per 10,000 in 1890, and respectively, to 839 in 1910. Thus, enrolment rate almost tripled. Refined statistical data show that in the early 1900, before Spiru Haret's education reform, 67.2% and, respectively, 89.1% of females and males did not attend school, while 78% were non literates, in comparison with countries such as Denmark and Germany - 4%, Switzerland, Sweden and Norway – 2%, which successfully completed this process. However, the situation was worse in Serbia, where 79.7% were non literates.

In the early 1910s, 0.5% of the people aged 10-19 graduated from primary and secondary schools or colleges in Romania, which ranked low in Europe, below Portugal - 1%, Hungary – 1.8%, and, of course, Switzerland - 10%.

Therefore, in comparison with previous years, interwar period, i.e. 1920-1940, was marked, on the one hand, by population boom and, on the other hand, by economic decline. Europe accounted for 26% of the world's population, decreasing to 21% in 1950, while its GDP declined from 44% in 1913 down to 38% in 1950.

Despite the relative prosperity in the interwar period in Romania, i.e. significant economic progress, reaching climax in 1938, new assumptions emerged, showing that the gap between Romania and other European countries remained and even deepened after the Great Union. Thus, the country's GDP per capita reached 1.237 dollars in 1937, i.e. 0.34% of Great Britain's GDP, while the Czech Republic recorded a 0.54% GDP growth, Hungary – 0.44%, and Poland – 0.35%. Bulgaria was the only country where GDP per capita was lowest, i.e. 1.148 dollars, accounting for 0.32% of Great Britain's GDP. In 1938, real GDP per capita decreased to 76 dollars, as compared to Great Britain - 378 dollars, and Germany - 338 dollars. In Bulgaria and the former Yugoslavia, GDP per capita reached 68 dollars, the lowest in Europe. GDP per capita in Europe averaged 222 dollars. In conclusion, even during this so-called prosperous period, Romanian agricultural and industrial sectors did not experience strong growth, but moderate growth. However, enrolment rate significantly improved during the interwar period. Thus, the number of non literates decreased from 61% during Spiru Haret's mandate down to 43% in 1930. According to other surveys conducted 8 years later in Romania, the number of non literates reached 54.3%, while life expectancy was 40 years – males, and, respectively, 41 years – females, and child mortality rate was the highest in Europe, i.e. 1.825 per 1.000. A fair assessment shows that, despite the progress achieved by our country, the enrolment rate dropped in the 1920s-1930s as compared to the beginning of the century. However, except for Belgium and France, which successfully completed this process, other European countries, such as Romania's neighbors, for example Hungary, experienced high literacy levels, i.e. only 6% of non literates. As for secondary education, despite the progress achieved, the indicator was below the European average in Romania, i.e. by 3-5%. Real progress was however achieved in tertiary education, i.e. 1.3 per 1.000, as compared to 1.8 in Denmark. Three quarters of them were university students, 11.4% attended high schools of economics, and 4.9% - polytechnic high schools. As for professional schools, the gap remained, taking into account that only 2% primary school graduates enrolled to such schools in Romania, as compared to Denmark - 12%, and the former Yugoslavia – 6%. Therefore, one could draw the conclusion that, despite relative progress, the gap between Romania and North-West European countries remained, and not even the existence of skilled workforce could improve the situation in Eastern Europe.

The postwar period, marked by the end of World War II and the fall of Communist regimes in Eastern Europe, witnessed 30 years of prosperity, the so-called Golden Age of Capitalism, between 1945 and 1974, followed by recession and democratic transition in Eastern Europe.

The first interval, i.e. 1945-1973, was a period of unprecedented economic expansion which removed all gaps. The two economic crises experienced in 1974-1975 and, respectively, in 1981-1983 had no major impact on Europe's GDP. However, their social and economic impact was strong, amid rising oil prices which led to inflation, low industrial productivity, high unemployment, public debt, and budget deficit. From the statistical point of view, the 7 most developed countries in Europe accounted for 86% of the gross world product between 1913 and 1950, in the Golden Age of Capitalism, i.e. the average GDP growth reached 4.86%. Between 1973 and 2000, GDP was 1.01%.

For 45 years, Romania was a Communist state and now, a quarter of century after the fall of Communism, a fair assessment should be done.

Without getting into details, it is worth mentioning that the reforms implemented by Communists shortly after taking power were the largest property rights and centralization reforms in Romania. According to one of the most favorite slogans of the Communist ruling elite, the regime was superior to that of the other countries in the region, because it achieved significant economic growth, claiming that dictatorship

outperformed democracy in growth and economic development. But the respective growth was based on forced industrialization and collectivization, i.e. great share of investment.

At the same time, the number of occupied population increased significantly, which was a key driver of economic growth. After 40 years of Communism, one cannot ignore this outcome nor challenge it. The industrialization process was successfully completed in Romania, however too late as compared to the West, where the industrial revolution ended and the attention was focused instead on service development and environmental protection. Unfortunately, the forced industrialization that led to accelerated growth was based on measures imposed by the political elite and was not sustainable on the long term. The same goes for the education sector, where significant progress was made. Average literacy was excellent, secondary education improved, the number of colleges increased from 281 in 1948 to 981 in 1989 along with that of university students - from 48,000 in 1948 to almost 160,000 in 1989. However, after the 1960s, especially in the 1970s and 1980s, the number of students dropped. As a result, the education system which fueled economic and social development in the early days of Communism experienced a deep crisis, whose effects led to the fall of the Communism, in 1989. A separate debate should be started to analyze the situation in the 1990s, which requires a thorough assessment on investment policies, human resources, social cohesion, productivity and institutional efficiency. Let it suffice to say that my conclusion is one of optimism, namely that the future of our society is open.

The above-mentioned historical facts show that the gap between our country and the West is deeply rooted and that potential economic growth will not automatically translate into benefits. In fact, sustainable development depends on various factors which are not always objective and specific conditions should be met to achieve success. On the other hand, the relatively slow educational progress, despite Spiru Haret's successful efforts to comply with European standards and the high literacy level during the first 20 years of Communism, has led to the conclusion that the impact of education on economic and social development was strong only under exceptional circumstances.

Back to present day, the government has recently adopted the national youth strategy 2015-2020, which aims to improve coordination and establishes top priorities in the field, based on Europe 2020 integrated guidelines.

The strategy addresses the challenge of delivering long-term and sustainable development, including change of general economic, labor market and entrepreneurship, i.e. encouraging high youth employment and people for prolonged economic activity, reducing the number of unemployed among youth and improving training, raising the employment rate of women and vulnerable youth. The strategy approaches labor problems, such as high informal sector employment in Romania, subsistence living, job insecurity, poor access to specialized training, and labor exclusion. In the field of formal, non formal and cultural education, the document stipulates that relevant governmental and non governmental institutions should undertake sustained efforts to improve the quality and efficiency of formal and non formal education. Measures to develop programmes of non-formal education as well as to improve formal education shall be simultaneously taken.

Posting this comprehensive and coherent education strategy for the next 4 years on the official website of the Education Ministry gives us hope that improvements will be made. Force ideas emerged in the comments published by various users, such as equal opportunities in school, in rural and urban areas, major investments in professional schools, qualified, good teachers, coordination with economic agents, and so on. To achieve success, these measures should be applied, necessary funds should be earmarked, and school management should be improved.

3. Conclusions

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References

[1] [Axenciuc V. (1992-2000), "*Evoluția economică a României. Cercetări statistic-istorice. 1859-1947*", 3 volume, Editura Academiei Române, Bucuresti;

[2] Barro R.J., *Education and economic growth* (2001), Harvard University

[3] Easterlin A. R. (1981), *Why isn't the whole world developed?,* The Journal of Economic History, Vol 41, No 1, The tasks of Economic History (March, 1981), 1-19;

[4] Hanushek E.A., Woessmann L. (2008), *The role of cognitive skills în economic development*, Journal of Economic Literature 46(3), pg 607-668;

[5] Hanushek E.A., Woessmann L. (2010), *Education and economic growth*, Economics of Education Elsevier, pg 60-67;

[6] Maddison A. (1991), *Dynamic forces of capitalist development*, Oxford University Press

[7] Murgescu B. (2010), "*România și Europa. Acumularea decalajelor economice (1500-2010)*, Editura Polirom, Iasi;

[8] Vasile V, Balan M., *L'education, facteur de l'utilization efficace des ressources humaines. Le development durable dans des conditions de crise*, Revista Română de Statistică, nr 3/2011

[9] Weale M, Stevens P, *Education and economic growth*, International Handbook on the Economics of Education, Edward Elgar Publishing LTD, 2004, pg.164-189;

[10] *** Anuarele statistice ale României din perioadele 1938-1978

[11] *** Sistemul național de indicatori pentru educație. Ghid metodologic. Bucuresti 2014

[12] *** Hotărâre de Guvern nr. 24/2015 pentru aprobarea *Strategiei nationale în domeniul politicii de tineret 2015-2020*, Monitorul Oficial, Partea I, nr 68 din 27 ian 2015

[13] *** Studiu *Costurile investitiei insuficiente în educație în România*, (2014) realizat de UNICEF în colabrare cu MEN

[14] *** Comisia Europeană, *Europa 2020 – O strategie europeană pentru o creștere inteligentă, ecologică și favorabilă incluziunii*, 2010

[15] *** Comisia Europeană, *Recommendation for a COUNCIL RECOMMENDATION on România's 2013 national reform programme and delivering a Council opinion on România's convergence programme for 2012-2016* {SWD(2013) 373 final}, pp. 4

[16] *** OECD, Education at a Glance 2011: OECD Indicators, OECD Publishing, Indicatorul A9, pp. 166, 2011

[17] *** soft Statistica

BOOK REVIEW

Technology And Growth: The End Of History As We Know It Or Just A New Beginning ?

(The Rise and Fall of American Growth: The US Standard of Living since the Civil War. By Robert J. Gordon, 784 pages, Princeton University Press, 2016)

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The prospective look into the future, be it a literary fantasy (like the novels of Jules Verne) or a scientific approach (like those of Bertrand de Jouvenel who coined the term ***futuribles - les futurs possibles*** (B. de Jouvenel, 1965) or those of Herman Kahn (H. Kahn, 1967) who wrote in 1967 about year 2000) has always been probabilistic but very often interesting and intriguing and sometimes even amazingly accurate (like the forecast of RAND Corporation made in 1946 (Bilal M. Ayyub, 2001) that estimated the first launch of a space satellite in mid 1957 – prediction validated by the launch of the Soviet Sputnik on October 4, 1957).

The prospective look into the future has always been fascinating to people, but this fascination was even more intense in periods of perceived discontinuity in the representation of the world and in daily life, as well as and when uncertainty about tomorrow or the day after grew beyond a certain point. Particularly after the crisis that started in 2008, and to a large extent not as a direct consequence of it, the world economy entered a period of uncertainty, fuzziness and unexpected developments that may vary (at least and particularly in the developed countries) from uncertainty about the retirement financial stability for a majority of people to insecurity of walking in the streets of Paris, Brussels or Munich and from the implications of the decline of oil and raw materials prices (contrary to the decades long expectations of prohibitive growth) to the instability of long established geopolitical partnerships. In this context, from a very broad perspective, the world of today may be represented as a race between two very different and apparently unconnected processes. The race is not between the two processes per se, but rather in the sense that humankind may look very different function of which of these two process wins the race.

On the one hand, there is the historical process of redefining the balances of power and the spheres of influence. This is the classical process involving states, diplomacy, real politick, negotiations and wars of all sorts. This process seemed to be part of a distant past that apparently ended once with the World War II, but, after all, 71 years (the 1945 – 2016 period) is not such a long time and history proves us time and again that it is not linear but it moves rather in the infinite spirals of dialectics. This process includes (as of mid 2016) many things from the existential issues of European Union to the events in Turkey and from the political implications of globalization and inequality (manifested in Great Britain's result to the EU membership referendum or in the unfolding events of the US elections) to the disputes in the South China Sea. Depending on how the cards will be played by the global actors or depending just on fate or mere probabilities, this historical process may lead to cold or hot conflicts and anyway to a redrawing of the world order.

On the other hand, apparently in a different universe, there is the process of technological change that has been called many names, such as the 4th industrial revolution or the digital revolution, process that seems to bring with it the rise of the robots and of artificial intelligence and also a new architecture of the world economy quite aptly described by Parang Khana as ***connectography***, meaning both connected geography or connected reality (Parag Khana, 2016). This process of technological change has been considered important enough to represent the key topic of the Davos meeting of January 2016 when Klaus Schwab, founder and executive chairman of World Economic Forum stated that this 4th industrial revolution will alter all dimensions of human existence, being more comprehensive and complex than anything we have seen before (Schwab, 2016). Under this generous umbrella of the 4th industrial revolution a large number of people, reunited under the denomination of techno-enthusiasts, believe that science and technology will solve in a couple of decades all the issues that are confronting humankind today, including those referring to food, water, a clean and

sustainable environment, energy and resources and even the peace that represents the basis for any conceivable future.

Somehow between these two processes comes the massive book of 784 pages written by professor Robert J. Gordon, ***"The Rise and Fall of American Growth: The US Standard of Living since the Civil War"***, published in January 2016, that stays away from the first process described above but deals in an original manner with the second one. In a nutshell Robert Gordon claims and to a certain extent demonstrates that the innovations that stayed at the basis of modern life determined a unique moment in the history of humanity ***("one time only changes"***, p. 126) that can not be repeated, at least as long as our professional and personal life remain the way we know today. Also in a nutshell, with reference to the current inventions, Robert Gordon is asking in a very pertinent manner a simple even if disconcerting question: the internet revolution, or the digital revolution or the 4th industrial revolution are they real revolutions? This question can be further reformulated in order to clarify its content: Are these revolutions (which are specific to the last two or three decades) really changing fundamental aspects of the life of the American people and, by extension, the life of the majority of the people on planet Earth? And speculating further: are they able to generate the same type of economic growth and welfare as the innovations of the period 1870–1940?

By its content ***"The Rise and Fall of American Growth: The US Standard of Living since the Civil War"*** is situated at the cross-roads of history, technology and economics and is structured in three large parts: **the first** deals with the period 1870–1940 and analyzes the innovations that revolutionized the inside and outside of American homes**; the second** refers to the period 1940 – 2015 which is actually divided into two sub-parts: period 1940 – 1970 that concludes what represents in the author's vision the Golden Age of high growth and progress and the period 1970 – 2015 which marks the transition to slower growth; **the third** part of the book is both an analysis and a synthesis of the first two as it is dedicated to the sources of fast and slower growth. There is also a Postscript where the author presents some possible approaches and policies that may improve and make more sustainable the US economy and society.

Some clarifications are necessary from the very beginning. The book is about the United States economy and the impact of science and technology on the lives of American people since 1870 till present time. But the topics addressed (how science and technology influence the professional and personal life of the majority of people and the consequences on economic growth) are universal and the implications are of interest for all countries and people of the Earth. The message of the book can be interpreted and indeed it has been interpreted by many reviewers (among them Paul Krugman and Tyler Cowen) as pointing to limits in the growth and development potential of science and technology (with a focus on United States and by extension to Western style economies and societies). But quite on the contrary, this is not at all a pessimistic book, a fact the author explains clearly in the Postscript: " … the rise and fall of growth are inevitable when we recognize that progress occurs more rapidly in some time intervals than in others" (p. 665). In order to receive the proper message we just have to take into account that the narrative is mostly from a historical perspective and history has by definition the habit of looking into the very long run.

Anyway, by comparing the glorious and hopeful past with the rather precarious present, the book gives an uneasy feeling that there is a sort of an end of history of progress (as we know it) that suggest a parallel with the end of history envisaged by Francis Fukuyama (Fukuyama, 1992), this time with reference not to socio-political systems but to the growth and development that science and technology can bring to us. Putting things in perspective (an in a more optimistic way) one can say that the main message of the book is that the existing growth and development models applied in the United States and in other developed countries in the past one hundred years have reached their limits and have to be replaced. Otherwise we have to assume low growth a serious social and economic disequilibria.

An explanation is still needed here. As a historian Robert Gordon is focusing on the human beings and the households. One may define its approach as anthropocentric as he speaks and analyzes economic growth but his main references regard the impact of science and technology (with all their economic implications) on human life at all levels. And from this perspective science and technology have already given us all the main benefits of modern life. In his own words, also in the Postscript, the idea mentioned above is clearly presented:" American growth slowed down after 1970 not because inventors had lost their spark or were devoid of new ideas, but because the basic elements of a modern standard of living had by then already been achieved along so many dimensions, including food, clothing, housing, transportation, entertainment, communication, health, and working conditions" (p. 665). These clarifications presented in the Postscript to the book seem to reflect the need of the author to double check how the readers understood his message. And the precaution is justified as many people still believe that the existing growth and development models are definitive, objective and

perpetual, while growth (in a quantitative sense) is a natural state of economy and society and may continue for an indefinite length of time.

The implicit idea to be found in the title of the book (***"The Rise and Fall of American Growth")*** and also in its content is that we already have the modern homes (with running water and sewage (defined by Robert Gordon: ***"water flows in and flows out: the greatest revolution of all",*** p. 134), electricity, air conditioning, refrigerators, television, and the rest of appliances), we already have modern factories and offices (with machine tools, computers and all sorts of tools and equipment), we already have modern means of transport (automobiles, railways, ships and planes) and modern education and health care, all brought about by the ***"great inventions"*** of the ***"special century"*** (pag.17) .

Robert Gordon's hypothesis is that as long as our way of life is organized according to the present paradigm any new innovations will just bring marginal benefits and marginal effects on economic growth. What he never states clearly in the book is that his predicted long term fall in growth is valid if and only if we as civilization do not change our life and work paradigm. But the terms of the hypothesis are very clear and even incites to ask yourself: in case of a different life and work paradigm, what will happen to growth? And after all, what growth will mean in the new context? The author is not giving an answer regarding new models or paradigms for growth and development, he just points out that high productivity increases and hence high economic growth are not to be expected in the foreseeable future, at least as long as economy and society are organized in the same way. Therefore, in its essence, the book is rather a copiously annotated history about the growth and development paradigm that characterized the Western world for the past almost two centuries, the paradigm that has been defined by the so-called linear growth model in which the future (be it at the time horizon of one year, ten years or one hundred years) is better than the past and better means more, bigger, newer and so on.

By pointing to the end of this model, Robert Gordon is, in fact, asking indirectly what model comes next, taking into account all technological and scientific changes that have accumulated in the past one hundred years. Looking ahead for the next 25 years Robert Gordon is contemplating solutions not for a revolutionary new model of economy and society, maybe not even for an evolutionary one. He proposes some amendments to the existing situation in US, with reference to "greater equality of outcomes" (p. 670), "greater equality of opportunity" (p. 674), "demographic and fiscal headwinds" (p. 678). What he is trying to achieve by his proposals is a more stable and equitable society that generates more wealth but also more welfare for its citizens. A simple enumeration of the measures proposed as a cure for unfavorable trends in economy and society as well as for low growth rates highlights a common denominator – all measures imply the intervention of state in the economy: Tax System Progressivity, Minimum Wage, Public School Financing, Income-Contingent College Loans, Immigration, Tax Reform. His proposals seem feasible but we can only expect they will not be well received by the supporters of full free market mechanisms that militate for the reduction of the size and role of state in economy and society.

In trying to compare the impact of the inventions of the 1870–1940 period with the contemporary inventions Robert Gordon is using a yardstick which can be easily understood by anybody, namely the degree in which whatever technological changes are transforming our lives (presumably for the better). Using this yardstick he makes some very refined economic observations. **One of these observations** is that not all GDP increases are made equal in the sense that although the figures of GDP increase can be the same, the factors that determine them may influence human life in very different ways (Tyler Cowen, 2016). In this context, as an example, the increases of GDP determined by the introduction of automobiles, running water and sewage or antibiotics and vaccines (p. 507) influenced daily lives of millions of people (and even their life expectation) much more than the same increase of GDP determined by the sell of more luxury goods or by the generalization of color television. Another observation is that he refers in his analysis not only to the increase of the purchasing power but also to the decrease (almost to the point of elimination) of the difficult, hard and even dangerous work that most people had to do for earning a living since late 19th century until the end of World War II (Paul Krugman, 2016). By including in his analysis the work conditions both outside and inside the home Robert Gordon is consistent to his anthropocentric approach, he is looking not only at numbers (GDP, purchasing power or salary levels), but also to the quality and easiness of life (p.263).Taking such a perspective his demonstration is rather convincing. Because indeed the life of the majority of people was very different before and after the running water and sewage, combustion engine, cars, electricity, telephone, antibiotics and other discoveries that entered the lives of millions and millions of people after 1870. From daily rhythms of life to the way domestic activities were accomplished, from the meanings of distances and speeds to the ways in

which production and trade were carried out, everything changed for the American people and, later on, for the people of other countries on all continents.

These statements are supported by Robert Gordon with compelling evidence. To give just an example: the price of cars declined in United States by 63 % between 1912 and 1930, while in the same time interval the percentage of US households that had access to a car increased from 2 % to 89.8% (p. 172-173). At the same time, the magnitude of these changes taking place in the United States had no parallel in the other developed countries of that time: in 1900 the US had 4 times more phones than Great Britain, 6 times more than Germany and 20 times more than France (p. 196), while in 1930 United States owned 78 % of all world cars.

As Robert Gordon noted, for United States the 1930s represented the most fruitful period in terms of number of innovations compared to the size of economy. This trend was maintained to a certain extent and under different internal and international circumstances during the World War II period and particularly afterwards, during the 1950s and 1960s so that in the after war period all American people with at least high school education had a safe job, a house and a safe perspective on retirement. It is worth mentioning that the chance of person in United States to graduate high school raised from 6 % in 1900 to almost 70 % in 1970. As a synthesis of all this, in one hundred years (defined by the author as "the special century"), from 1870 to 1970 life expectancy increased in the United States from 45 years to 72 years (pag.224).The turning point in this glorious period that started in the last three decades of the 19th century took place, according to Robert Gordon, in the early 1970s, once with (but not necessarily determined by) the oil shocks, the growing competition from the part of other developed countries and especially once with the full maturity of the industrial age and the finalization of the main characteristics of modern professional and personal life.

After the 1990s and especially after 2000 the growing inequality manifested in the American society as well as other dysfunctions have lead to a less optimistic present in which large parts of the population are confronted with unsecure jobs and housing, high and in many cases unaffordable costs for education and health care, an unsecure retirement perspective (from a financial point of view). All these current characteristics of the contemporary American society have determine Robert Gordon to warn its readers on the possibility that the young generation of today can be the first in American history that will not exceed the living standards of their parents. From a different perspective, reading his message in a positive note, we can understand that the solutions to today's problems can not be found in the extrapolation of the trends and approaches of the 20th century and therefore the new generations should take the responsibility to find new solutions and put them together into a new growth and development paradigm.

While the first part of the book (chapters 2 to 9) presents a well documented interpretation of the way in which science and technology influenced and transformed for the better the life of the US people, the second part (chapters 10 to 15) deals in a rather unequal manner with the scientific and technological inventions after 1970s and especially after 2000 (The Economist, 2016). With reference to the contemporary period Robert Gordon is taking into account the implications of information technology, 3 D printing or internet. But his position is that these developments are not really transforming the life of the majority of people the way other technological breakthroughs did almost a hundred years ago. In this context it is difficult to argue to the fact that the capability to build self-driving cars is less important than the invention of cars in the first place, while the existence of modern housing however expensive and sophisticated is less relevant than the emergence of the "networked home" (p. 216), meaning the house connected to running water, sewage, gas, electricity and telephone.

And particularly Robert Gordon is not at all convinced that the current technological developments may restore the dynamics that made once United States great and provided a safe and fulfilling life for the majority of its citizens. Some critics pointed to the fact that present day technologies and their enormous potential were treated by Robert Gordon in a rather cursorily manner (Greenstein, 2016), not pondering enough about the exponential changes that interconnection of everything (like the Internet of Things) or artificial intelligence may bring to productivity, growth and human life itself.

What is interesting about Robert Gordon's book is that in an era of heated political debates on various topics he points out to the objective world of science and technology and its impact on economy and society as a whole. At the same time, somehow indirectly and not in an explicit way, he induces to the reader the perception of a choice: we can either continue to perceive and organize the economy and society as we did in the past one hundred years and, as a result, we have to accept low growth rates and a decline of the living standards, or, we can redesign our models and adopt a new paradigm, with new values and new rules of the game.

What Robert Gordon says is that the existing and emerging technologies are amazing and marvelous but by themselves they are not changing our lives the way house plumbing meaning running water and sewage, motor vehicles and air travel, electricity and all sorts of appliances, penicillin and the polio vaccine, telephony and television did half a century or more ago. At that time science and technology acted as engines of progress almost by themselves. Science and technology made discoveries and inventions and all we had to do in order to improve our lives and achieve economic growth was to apply them. Nowadays, in a very generous and dynamic scientific and technological environment the human factor is much more in charge than before for its destiny. Nowadays, from a scientific and technological point of view, it is more important what we do with what we have than what we have in the first place. We can only hope that better and more knowledge and information may lead to better decisions and to a better (meaning more sustainable and enriching) life for as many people as possible not only in United States but all over the world.

Analyzing the book ***"The Rise and Fall of American Growth: The US Standard of Living since the Civil War"*** and without diminishing in any way the brilliant historical account of the way in which science and technology influenced and shaped the American and, by extension, the Western economies and societies during the 1870 – 1970 period, one may find anyway some shortcomings of Robert Gordon's analysis and discourse.

One shortcoming of his approach refers to the overlooking of the second (Satell, 2016) and even third order effects of discoveries and inventions with reference to the contemporary ones. Second and multiple order effects are extremely important, particularly in case of complex systems like economies or societies, not to mention the globalized economy. As each action has one or several consequences, each of these consequences have, in their turn, other consequences (Kaufman, 2012). And these second or third or multiple order effects may generate in time dynamics that were not foreseen initially. To give just an example, the GPS, smartphones, Internet and social networks have had as a first order effect the ability to position oneself wherever on the planet and respectively the ability to communicate, access information and exchange messages on a massive scale. But as a second order effect all these inventions determined the creation of the ***sharing economy,*** which, in turn, allowed the emergence of "***unicorn***[32]" companies like Uber and Airbnb that exploded from zero in 2009 to over 68 billion US dollars (Uber) and 30 billion US dollars (Airbnb) in July 2016. It is true that up to now the Internet, social networks, big data, 3 D printing, smartphones or the sharing economy have not changed our lives and have not increased economic growth the way the inventions of 1870 – 1940 era did. But, on the one hand the time elapsed since their emergence is not that long and some of them are just coming of age and starting to bear fruits. And, on the other hand, as mentioned above, the second, third and multiple order effects generated by the interactions and trickle down effects of all these innovations can be multiple orders of magnitude larger than what we have seen up to now.

A second shortcoming refers to the overlooking of some present day scientific and technological breakthroughs that may change in a fundamental way the human existence. Among them, genomics, nanotechnology and robotics (Satell, 2016). One may argue that these technologies will represent quite soon turning points in humankind history because: **genomics** will allow the editing of DNA and therefore will allow the curing of all diseases and even creating new species while **nanotechnology** will allow the design of entirely new materials (like quantum dots and graphene). As for **robotics**, they can solve the problem of skilled labor in developed countries, including the aging problem, but also the salaries and pension funds problem while they will also create an even bigger problem that will imply the need to rethink the whole economic and social mechanism – how to distribute money to the people so that they will be able to buy the goods and services produced by the robots. And if these aspects are not frightening enough one can add the "Singularity" theory of Ray Kurzweil, now chief scientist at Google, that estimated that around 2045 the artificial intelligence will be infinitely more powerful than human intelligence and humans themselves will transform themselves into different beings by means of genetic alterations, nanotechnology and artificial intelligence (Kurzweil, 2006).

If one remains in the logic of Robert Gordon book and at the same time takes into account these current scientific and technological breakthroughs we may say that the "great inventions" of the "special century" (1870 -1970) liberated humankind from "painful manual labor, household drudgery, darkness, isolation, and early death" (p. 17). But the current innovations may allow humankind to play God by editing DNA and creating new species, curing all diseases, augmenting human senses and extending life (maybe to the point of immortality) as well as designing totally new materials. Such an evolution will not contradict Robert Gordon

[32] A "unicorn" is a start-up company, without a previous long term existence that has a market value of more than 1 billion US dollars. Investopedia at page http://www.investopedia.com/terms/u/unicorn.asp

because he indicated limits within the existing paradigm of social and economic life. An entirely new model will be definitely beyond the framework of analysis of his book.

For many reasons Robert Gordon's book is fascinating: because it offers a narrative of the birth and maturity of the Western style life, reminding us how life used to be before sewage, running water, electricity and household appliances, automobiles, telephony and antibiotics; because it demonstrates that for now (within the existing paradigm) we can just repair and maintain what have without expecting significant improvements; because opens the door of our imagination, directing our questions to "what next ?" and "what if …?"

A concise and illustrative opinion on Robert Gordon's book was formulated by Paul Krugman who said: "...this is a book worth reading - a magisterial combination of deep technological history, vivid portraits of daily life over the past six generations and careful economic analysis. ... This book will challenge your views about the future; it will definitely transform how you see the past" (Krugman, 2016).

At the very end, after reading the book "The Rise and Fall of American Growth: The US Standard of Living since the Civil War" the reader may experience several feelings: the feeling of pride and gratitude for the achievements of the human race, achievements that we so often take for granted, but also the feeling of responsibility. Humankind, especially in the Western world has come a long way from a life of hard work and little hope, depending a lot on nature's elements to a life full of possibilities but maybe less clear and less optimistic about the years to come

The book is a great lesson and a remainder that a huge knowledge heritage is available from our predecessors, but the time has come for the new generations to redefine what sustainable growth and development mean. And maybe to also define a new paradigm for the social and economic life of the late first half of the 21st century.

References

[1] Bilal M. Ayyub, Elicitation of Expert Opinions for Uncertainty and Risks, CRC Press, 2001, p. 99

[2] Francis Fukuyama, The End of History and the Last of Man, Free Press, 1992

[3] Robert, J. Gordon, The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War, Princeton University Press 2016

[4] Shane Greenstein, How America Grew. A definitive economic history—and a debatable, despairing forecast, Harvard Magazine, May-June 2016

[5] Bertrand de Jouvenel, Futuribles, Transcript of a lecture given by Bertrand de Jouvenel to RAND's Inter-departmental Seminar on November 30, 1964

[6] Herman Kahn, Anthony J. Wiener's, The Year 2000, MacMillan Co., 1967

[7] Josh Kaufman, The Personal MBA: Master the Art of Business, Portfolio, 2012

[8] Parag Khana, Connectography: Mapping the Future of Global Civilization, Random House, 2016

[9] Paul Krugman, Paul Krugman Reviews "The Rise and Fall of American Growth" by Robert J. Gordon, New York Times, 25 January, 2016

[10] Ray Kurzweil, The Singularity is near, Viking Press, 2006

[11] Greg Satell, The 3 Big Technologies To Watch Over The Next Decade -- Genomics, Nanotechnology and Robotics, Forbes, April 15, 2016

[12] Klaus Schwab, The Fourth Industrial Revolution: what it means, how to respond, Global Agenda, 14 January, 2016

[13] Tyler Cowen, Is Innovation Over ? The case against pessimism, Foreign Affairs, March/April 2016

[14] G force – Why economic growth soared in America in the early 20th century, and why it won't be soaring again any time soon. The Economist, January 9, 2016