

**LISBON STRATEGY AND EU INNOVATION
POLICIES:
ACHIEVEMENTS AND RELEVANT
EXPERIENCE OF UKRAINE**

by

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Executive Summary

The research is aimed at studying the role of innovation in the growth of national economies and providing comparative analysis of innovation strategies and potential of EU Member States and Ukraine. The analysis is necessary for the improvement of national innovation strategies and consequent higher productivity. EU innovation development is analyzed on the basis of the Lisbon Agenda; Ukraine was chosen as the country with high intellectual and innovation potential which is of high importance for future European integration. The paper analyzed legal basis, defined main achievements, both positive and negative indicators of common EU innovation policies, and analyzed the obstacles for successful implementation of the Lisbon strategy and future ways of their elimination. Dynamics and problems of innovation development in Ukraine were studied as well. On the basis of the studies recommendations for future involvement of Ukraine into European scientific space were developed.

Research findings testify that increased employment and productivity growth demand comprehensive reforms on the state level with the inclusion of society, business and public agencies.

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Introduction

Scientific and technical progress is considered to be one of the most important factors for economic development of any country. Already in 18th and 19th centuries economists understood clear connection between economic and technological development. In 20th and 21st centuries the emphasis shifted from individual innovators and inventors to innovations in professional research and development laboratories and later to corporate laboratories with the participation of big companies. Another characteristic feature of current world innovation trends is active participation of universities and government sponsorship.

Special importance for innovation as the driving force for country's economic growth was given after 1990s which is attested both by the increase in the number of researches and by the shift in national economic strategies. United Kingdom puts "Knowledge Economy" as the core policy for economic growth; USA defines 'Digital Economy', the 'New Economy' or the 'Innovation Economy' and Australia established "National Office for the Information Economy" as an agency to stimulate economic growth.

In modern economic studies technical progress is connected with the notion of "innovation" and is linked to the growth process embracing science, technologies, economy, entrepreneurship and management. The notion of innovation itself relates to introduction and practical application of the new idea in new products, processes, organizational management and is aimed at increased productivity, profit or wealth. Thus, innovation means "the process of developing and commercializing something new, usually a product, service or manufacturing process and....successful coordination of business activities give competitive opportunities to firms and managers"¹.

Innovation development is a comparatively new notion and it includes a number of elements that should be analyzed together – scientific, intellectual, technical, business and creativity

¹ Bannock G., Davis E., Trott P., Uncles M. Dictionary of Business. Penguin Books, 2003

potential. Analyzing theoretical foundation promoting importance of innovation for country's economy, we may state without any doubt that Joseph Schumpeter was the first economist to speak of innovation as the center of economic model. He is considered to be the founder of the new trend of economics, which is now called "innovation economics" (similar trends include new institutional economics, new growth economics, evolutionary theory, knowledge-based economy, etc.). According to Schumpeter ("Theory of Economic Development: an Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle", 1982) the investments into innovation were the driving forces of any economy. He also emphasized the role of individual entrepreneurs and big companies as major innovators and leaders in bringing technological change and progress. Economic development in Joseph Schumpeter's view included production of new good, creation of new method of production, appearance of new market and new source of product supply and new organization of industry as a result.

Werner Sombart, prominent German economist in his book "Economic Life in the Modern Age" (2001) emphasized the role of entrepreneurs as bearers of innovation and believed that the aim of any enterprise is to push technical innovation on the market. Though this idea can be questioned, some countries, for example Ukraine, focus their innovation policy on individual enterprises rather than on research and development centers.

In more recent scientific publication (Democratizing Innovation, 2005) Schumpeter's and Sombart's ideas were supported by the scholar Eric von Hippel with more emphasis on individuals as the creators of "lead user innovations".

The arguments by the authors studying innovation serve as the stimulus for national governments to create favorable conditions for inclusion of society and business into the shaping of innovative economic system of the country.

Successful innovation policy of the state (i.e. any economic policy aimed at supporting individuals, enterprises, organizations to apply their scientific, research and technical

achievements) takes into account all elements in order to create favorable conditions and market for research and development (R&D) and its further application within the country and abroad. National innovation policy includes economic, legal, organizational and social methods of planning, promoting, supporting, regulating and controlling innovation activities. Relevant state policies in leading innovation countries are aimed at promoting research and development, increasing enterprise competitiveness and national security. It goes without saying the well thought and effectively applied legislation framework serve as the most important tool of achieving positive economic performance.

Taking into account country specifics in economic growth and current globalization trends national governments develop individual innovation strategies which are implemented on the state level, on the level of enterprises and individual innovators, as well as in close cooperation with other countries in order to spread and share the best practices. However, as it is rightfully noted by Richard B. Nelson in his work “National Innovation Systems: a Comparative Analysis” (1993) “national innovation systems are not neatly divided by national borders” and it will be clearly shown in further analysis of modern innovation strategies on the level of of European Union (EU).

The research is aimed at studying the role of innovation in the growth of national economies and providing comparative analysis of innovation strategies and potential of EU Member States and Ukraine. On the basis of studies recommendations are to be formed relating to the improvement of Community general innovation framework and national policies of EU Member States in particular, as well as inclusion of Ukraine to European innovation dimension. For this the following tasks were set:

- ✓ analysis of main components, indicators and outcomes of innovation system on the Community level over 2000-2009;
- ✓ studying main goals, trends and patterns of implementation of innovation regulation

in EU and Ukraine;

- ✓ comparative analysis of legal basis, dynamics and peculiarities of innovative processes within the chosen regional dimension;
- ✓ defining peculiarities of innovation potential and impact of current European programs and initiatives functioning in Ukraine;
- ✓ elaboration of recommendations and prognosis for improvement of state innovation policy in Ukraine on the basis of EU experience (the latter constitutes the main novelty introduced in the research).

The Lisbon Strategy as one of the main innovation-driven programs developed by EU was aimed at achieving “the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and social cohesion”². The Strategy was approved for 2000-2009, when EU was experiencing comparative fast economic growth regardless the fact that it was lagging behind the USA and Japan in terms of innovation growth, it. The strategy aimed to bridge the gap, to create coherent internal market and favorable conditions for R&D, improve structural and employment mobility of Europe, support innovative entrepreneurship and enhance competition by harmonization of economic goals and national legislation of Member States.

As of 2010 it is clear that the most tasks of the strategy were not achieved, however, there is clear evidence of technological and R&D growth in most EU Member States (which will be discussed further). Post Lisbon strategy Europe 2020 was approved during the latest crisis and that is why certain technological breakthrough should be expected in order to negative outcomes of financial crisis.

Results of Lisbon strategy, as shown further in the given research, are rather controversial and diverse when comparing different Members States. At the same time it is clear the emphasis

² Lisbon European Council 23-24.03,2000: Conclusions of the Presidency
http://www.europarl.europa.eu/summits/lis1_en.htm

on innovation and R&D in terms of economic growth cannot be underestimated. Most important EU programs, including Lisbon strategy, emphasize the necessity of innovation, R&D, educational stimulus for higher economic growth of national economies, while in Ukraine comprehensive national strategy is only under elaboration and the country lacks independent innovative projects.

Comparative research of Ukrainian and European innovation is urgently needed in order to help Ukraine in developing its adequate state program taking into account positive results and examples of EU Member States and improve its participation in EU programs which are already functioning in Ukraine.

Specifics of innovative conditions in Ukraine is poorly studied both inside the country and within EU due to constraints imposed by bureaucracy of Ukrainian institutions responsible for innovative policy; obscure legal base in this sphere and poor promotion of Ukrainian scientific successes. That is why the research tries to draw comparisons of best practices applied in EU and promote them in Ukraine as there is a need for raising awareness about European innovative opportunities for individual researchers and innovative enterprises from Ukraine.

Cooperation in the sphere of R&D, higher technologies, and educational dimension between Ukraine and European Union should be one of the main elements of European integration of Ukraine, in particular for its integration into world scientific community. That is why it is crucial to focus on relevant attempts and achievement made by Ukraine on its way to creating innovative economy and raise awareness among Member States so that Ukrainian scientists and project leaders will have the possibility to contribute to the development of modern European innovative projects and programs, as well as have access to modern IT equipment, scientific databases, libraries, research unions, etc. On the other hand, it will enhance EU presence and investment possibilities in terms of Ukrainian researches.

Theoretical basis of the research includes analysis of general innovation trends and EU innovation progress gathered in the works of famous scholars, in particular: articles by Jewkes, Freeman, Dossi, Drucker, Mensch, books by Archibugi and Michie, Maria João Rodrigues, Feldman, Llerena and Matt, Fischer, Curzio and Fortis and others. Ukrainian researchers made considerable contribution to the studies of innovation impact on economic progress, namely Dlugopolskyy, Kokurin, Chukhray, Savchuk, Golik and others. Normative basis lists legislative and regulatory acts approved at the level of EU and relevant legislation base of Ukraine, as well as EU innovation strategies, national innovation programs of Member States and Ukrainian state innovation concepts. Indicators analysis was possible due to data available from Eurostat, National Statistics Committee of Ukraine, European Innovation Scoreboard, Regional Innovation Scoreboard; Community and national reports on innovation strategy and program implementations.

The thesis is composed of executive summary, introduction, three Chapters which are divided into the subchapters, conclusion and reference list. The main areas for research include: Lisbon Strategy 2000-2009 (Chapter 1), Innovation in Ukraine (Chapter 2) and Future Innovation Trends in Europe and Ukraine (Chapter 3).

Chapter 1. Lisbon Strategy 2000-2009:

1.1. Review of key goals, trends and patterns of implementation harmonized in national strategies.

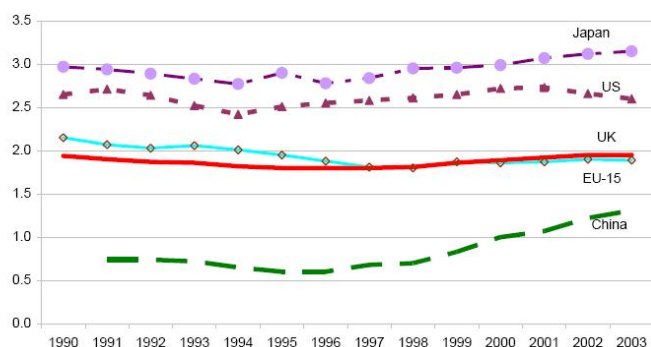
Due to the fact that economic and communication borders are being eliminated all over the world, different states reconsider their growth strategies and are focused on innovation and efficiency as the key success factors. The states are simultaneously developing the strategies for new knowledge economy and mechanisms for their implementation. Such mechanisms are incorporated into economic, legal and social systems of country development.

The concept of “national systems of innovation” was first introduced by Christopher Freeman (“Technology Policy and Economic Performance: a Lesson from Japan”, 1987) defining them as the network of public and private institutions interacting and diffusing technologies. Leading world countries, for example, the USA, Japan, and EU have already formed their national innovation systems. Due to globalization and integration ties and enhanced competition it has become possible to launch interstate cooperation in the innovation sphere.

Traditionally the USA has been the leader in innovation introduction and implementation which is testified by the number of registered patents, R&D spending, and innovation start ups. After WW II and up till the 1990s Europe was trying to catch up with the USA in terms of production level, technical advances and scientific level, however, production growth was mostly higher in the USA even after EU enlargements.

Table 1 analyzes expenditures on R&D and demonstrates differences in leading countries in terms of innovation development speed: EU is lagging behind Japan and the USA according to the ratio of R&D and GDP which in the case of the USA never went below 2% and was approaching Lisbon goal of 3% (to be discussed below), while Japan practically stayed at the level of R&D expenditures of above 3% of GDP over 1998-2003. We can see that China is quickly catching up with innovation leaders and EU in particular.

Table 1. Government spending on R&D (ratio of GDP)



Source: OECD Science, Technology and Industry Scoreboard, 2005

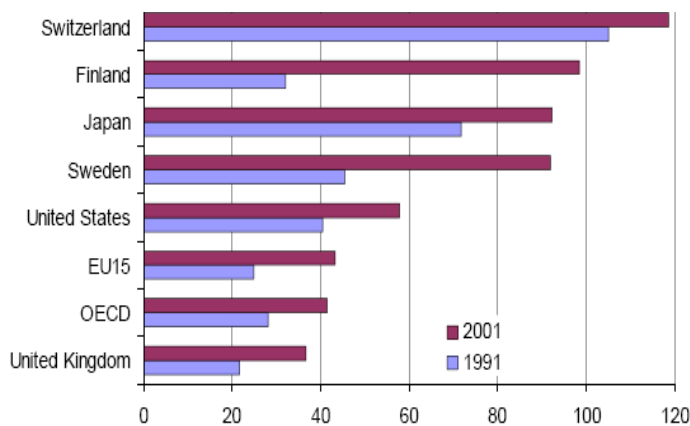
During the 1990's EU policy makers initiated a number of processes aimed at economic reforms: the Luxembourg process introduced employment guidelines; the Cardiff process was aimed at internal market integration and structural reforms; the Cologne process dealt with social dialogue. In practice, however, these initiatives did not prove to be effective and EU economic performance in terms of competition was lower comparing to the USA and some Asian countries.

Another comparative disadvantage is the cost of patenting in Europe. It is almost ten times higher than the relevant cost in the USA. In addition, according to the studies held by the EU Commission the opportunities, wages and benefits for researchers and inventors are more attractive in the USA, leading to the phenomenon of "brain drain" from EU Member States³. At the same time, it is still easier to obtain patents in EU Member States than in Ukraine which will be discussed in Chapter 2.

Comparisons according to the number of issued patents are quite interesting. Table 2 shows the number of issued patents per one million of population as an indicator of innovation outcomes. For EU the patents issued by European Patent Office are given. EU generally lags behind Japan and the USA, however between 1991 and 2001 Finland and Sweden left behind Japan and the USA.

³ http://ec.europa.eu/research/leaflets/young/page_77_en.html

Table 2. Number of issued patents



Source: OECD Science, Technology and Industry Scoreboard, 2005

However, more recent figures presented by European Patenting Office show a worrying tendency of a decrease in granted patents – from 59809 in 2008 to 51969 in 2009⁴.

Nevertheless, Europe is making successful attempts to improve its economic performance and competitiveness level by focusing on R&D support, restructuring labour market, increasing state investments into innovative projects and providing tax support schemes for innovative enterprises. International globalization processes and common economic policy of European Economic Community provided grounds for joint scientific researches and enterprises support, stimulation of research and development and launching of common EU innovation policy.

Realizing the necessity for “radical transformation of the European economy”⁵ during the Council Session in Lisbon on March 23rd -24th, 2000 European Union launched ten year Lisbon Strategy – the strategy for economic policy of all EU Member states aimed at creating “the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and social cohesion and respect for

⁴[http://documents.epo.org/projects/babylon/eponet.nsf/0/334842B832FA62B7C125755B005E1702/\\$File/patents_granted_2000-2009_per_residence_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/334842B832FA62B7C125755B005E1702/$File/patents_granted_2000-2009_per_residence_en.pdf)

⁵ Lisbon European Council 23-24.03,2000: Conclusions of the Presidency
http://www.europarl.europa.eu/summits/lis1_en.htm

environment”⁶. Though the year of 2000 was the time of comparative rapid economic growth of EU-15 with the “best macro-economic outlook for a generation”⁷, the idea of achieving economic growth which will be on the same level for all Member States seemed too optimistic as huge discrepancies were noted, for example, such countries as Spain, Italy, Portugal and Greece were not allocating sufficient funds for innovative projects and enterprises at that time and their relevant rankings remained poor in 2004 (as Table 3 demonstrates). Table 3 also explicitly shows that EU-15 in general (except for Finland, Denmark and Sweden – countries which are innovation leaders in Europe and have higher indicators comparing to USA overall) lag behind the USA in terms of development of information society, support of innovation and R&D, innovation liberalization, maintenance of network industries and financial services.

Table 3. Ranking and Scores of EU countries

Country/Group	Final Index		Subindexes				
	Rank	Score	Information Society	Innovation and R&D	Liberalization	Network Industries	Financial Services
EU 15							
Finland	1	5.80	5.78	5.87	5.36	6.33	6.13
Denmark	2	5.63	5.68	4.87	5.14	6.51	5.96
Sweden	3	5.62	5.71	5.57	4.91	6.37	5.80
United Kingdom	4	5.30	4.96	4.67	5.11	5.78	6.10
Netherlands	5	5.21	4.99	4.46	4.94	6.04	5.67
Germany	6	5.18	4.95	4.90	4.64	6.36	5.62
Luxembourg	7	5.14	4.98	3.57	4.96	6.22	5.72
France	8	5.03	4.52	4.68	4.65	6.10	5.68
Austria	9	4.94	4.69	4.27	4.54	5.76	5.48
Belgium	10	4.88	4.08	4.45	4.63	5.74	5.39
Ireland	11	4.69	4.14	4.18	4.47	4.89	5.59
Spain	12	4.47	3.71	3.93	4.50	5.34	5.14
Italy	13	4.38	3.94	3.87	4.40	5.30	4.92
Portugal	14	4.25	3.88	3.44	4.10	5.35	4.90
Greece	15	4.00	3.16	3.44	3.96	4.99	4.74
United States		5.55	5.86	6.08	5.11	5.85	5.82

Source: World Economic Forum. The Lisbon Review 2004. Assessment of Policies and Reforms in Europe

⁶ Ibidem

⁷ Ibidem

During the Spring Council meetings over the next two years Lisbon strategy was supplemented by inclusion of environmental dimension (in Stockholm) and increase of state financing spent on R&D to the level of 3% from GDP by 2010 (Barcelona aim). It is important to mention that Lisbon Strategy was launched on the basis of scientific works developed by contemporary leading researchers of innovation trends: Daniele Archibugi and Jonathan Michie, Manuel Castells, Giovanni Dosi, Christopher Freeman, Bengt-Ake Lundvall, Richard Nelson, Carlota Perez, Maria João Rodrigues and Luc Soete. For example, Archibugi and Michie believe that “while R&D activity is not the only prerequisite for a country to develop its technological capabilities, clearly investment in R&D and the present of manpower with sufficient training to engage in R&D are important components of this task” (Trade, Growth and Technical Change, 1998).

The Commission set stimulation of innovation and R&D as the main tool for knowledge economy growth. Thus it can be stated that the separate goals of Luxembourg, Cardiff and Cologne processes were framed into one sustainable program which included concrete aims and implementation tools. Lisbon Agenda was aimed to address the challenges of globalization and technological growth. In addition, EU planned to implement institutional reforms in order to improve regulation of social models, competition growth, education systems and international trade while preserving cultural divergences and national economic framework.

The main strategic areas include general macroeconomic indicators, R&D, social policy and cohesion, education (in particular higher education), lifelong learning, employment rate, healthy environment. Combination of efficient regulations in all these spheres should improve standards of living of EU citizens, public services, e-commerce, urban management, create communication networks, establish Community patent, promote economic reforms; coordinate effective resource distribution; provide fiscal sustainability, etc. It is quite clear

that combination of such diverse aims in general lowers reform potential, and Lisbon strategy should have been focused on more specific aims rather than include wide range of issues.

Analyzing specific targets it should be outlined, that apart from the main “new strategic goal for the new decade” and general unclear rhetoric of the document (for example, the plan for every citizen to be “equipped with the skills needed to live and work in this new information society”⁸ not stating the tools for achieving such scheme), the strategy included more concrete, though somewhat unclear aims of transition to the knowledge based economy and society, modernization of social model and sustaining healthy economic outlook. The strategy also lists a number of specific targets which have not been fulfilled according to the general implementation results:

- ✓ An overall employment rate of 70% by 2010;
- ✓ An employment rate of 50% among older workers;
- ✓ An employment rate for women of over 60%;
- ✓ Annual economic growth at the level of about 3%;
- ✓ State expenditures on R&D at the level of 3% of GDP (including innovation financing on behalf of business at the level of two thirds from the total).

On the other hand, certain rather realistic goals should be mentioned, for example, Internet connection for all schools within EU, digital training for teachers; consequent reduction of Internet connection cost; creation of favorable conditions for e-commerce and e-Government; economic reforms in the sphere of common venture capital support, common communication markets (postal, railway, port, public services, transportation); decreasing bureaucracy in the sphere of innovative entrepreneurship and increasing transparency of public procurement and state orders.

⁸ Ibidem

As was noted by Jérôme Creel, Éloi Laurent and Jacques Le Cacheux in the article “The “Lisbon strategy” Record as an Institutional Failure” (2005) already during the midterm review it became obvious the Lisbon Agenda needs to be simplified, as it included 28 main objectives and 120 secondary objectives comprising 117 indicators. That is why during the Spring Session in 2004 a much shorter list consisting of 14 “structural indicators” called the “Lisbon Road Map” was set in order to evaluate the progress of strategy implementation⁹.

Summarizing the goals of Lisbon agenda, it can be stated that in its Recommendation 2005/601/EC of 12 July 2005 on the broad economic policy guidelines of the Member States and the Community (2005-2008) the Council grouped them according to three main areas: macroeconomic (better conditions for growth and jobs); microeconomic (investments, knowledge creation and innovation); and institutional (social protection, flexibility of labour markets, better education, and training). The Council again restated the unattainable Barcelona aim of raising R&D investment at the level of 3% of GDP with two thirds of investments from private sector and highly indefinite goals of supporting environmentally sustainable development; fostering partnerships between universities and firms; establishing new technologies and markets, with the development of regional and local clusters. However, one of the positive outcomes was the “establishment of a European Research Area (ERA) in which EU institutions and member states are expected to strengthen coherence of their activities in a variety of innovation related policy areas”¹⁰.

It is quite obvious that Lisbon Agenda was set as a rather ambitious project and it required substantial institutional potential both on behalf of EU and Member States. Maria Joao Rodrigues (Europe, Globalization and the Lisbon Agenda, 2009) found that Lisbon process involved the following institutions: the European Council and its special annual meetings, the

⁹ <http://www.ofce.sciences-po.fr/pdf/dtravail/WP2005-07.pdf>

¹⁰ Council Recommendation 2005/601/EC of 12 July 2005 on the broad economic policy guidelines of the Member States and the Community (2005-2008) [Official Journal L 205, 6.8.2005] http://europa.eu/legislation_summaries/economic_and_monetary_affairs/stability_and_growth_pact/125078_en.htm

Council and its 7 special formations on General Affairs, Finance, Competitiveness, Employment, Education, Environment, Energy and Telecommunication issues, Council Committees; European Commission with the involvement of 15 commissioners and 17 directorates-general; European Parliament and its 6 committees, national parliaments; European Economic and Social Committee, Committee of Regions; European confederation of social partners; national governments; and later, after 2005 relaunch - horizontal network on the national level – Lisbon Coordinator, top reporting official, as well as civil society network of organizations. Without any doubt, such enhanced framework was set to improve Lisbon process implementation, though at the same time, exceeding number of different agencies leads to less efficient coordination and creates bureaucratic obstacles for reform realization.

Analysis of institutional framework goes together with the review of legal base for Lisbon agenda. One of the most important peculiarities in terms of Community law was the introduction and the extensive application of Open Method of Coordination (OMC). OMC was designed because policies, covered by Lisbon Agenda belonged both to the competence of EU and Member States and that is why general guidelines, as well as exchange of experience were the necessary preconditions for successful policy implementation.

Due to the fact that Lisbon Strategy areas include mostly employment, social models, education and innovation industrial reforms, where EU powers is not strong, in order to provide harmonization of Lisbon Agenda implementation, OMC was applied, including:

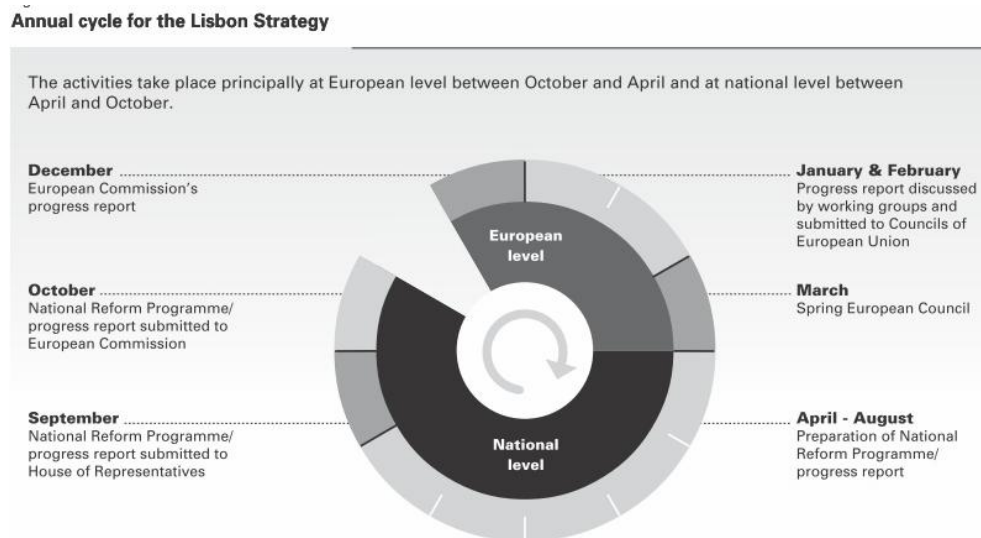
- ✓ Cooperation on the voluntary basis and defining goals and priorities within Member States as the first stage of implementation;
- ✓ actual implementation of general EU Lisbon goals by national governments;
- ✓ regular monitoring, peer review (defining best practices among the states) and evaluation;

After the midterm review in 2004, in order to simplify reporting process and improve the process of best practice information exchange, the following essential elements were added:

- ✓ reports from each Member State discussed during the Spring Session of EU Council every year;
- ✓ introduction of National Reform Programmes (NRP) by every Member State every three years (and appointment of Mr. or Ms. Lisbon – official who will be responsible for reform implementation on the national level and maintaining cooperation in the sphere on the EU level);
- ✓ country specific recommendations from the Commission developed on the basis of each NRP review.

Regardless structural alterations the Member States managed to apply such schemes of Lisbon strategy implementation only formally. Figure 1. serves as an illustration for the new yearly scheme of Lisbon Strategy implementation.

Figure 1.



Source: Lisbon Strategy for Sustainable Economic Growth and Jobs in Europe, 2005

One of the important elements for development of NRP was the dialogue of national governments with social partners in terms of “bottom up” approach. It is rather disappointing

that in many Member States social dialogue was not held during the work on regional policies, as such requirement was never listed as binding.

According to Maria Joao Rodrigues (2009; 38), from the legal point of view the Lisbon Strategy “constituted a unique attempt to deal with what we can call an institutional failure in the formation of the European Union”, as before EU “dominated national powers institutionally only in terms of competition and monetary policy”.

One of the main criticisms of Lisbon Strategy as well as reasons listed for its failure is the fact that it has not been incorporated as part of EU law. Lisbon agenda was not developed either as EU Regulation or Directive and that is why Member States were free to interpret its goals and define level of national harmonization in order to achieve the aims. As a result, divergences between Member States only deepened.

On the other hand, the Stability and Growth Pact (SGP) which is the essential element of Lisbon Strategy was approved as the law and it gives institutional powers for EU within innovation policy. Another part of Lisbon Agenda, where Commission was authorized to introduce sanctions and define policy directions, included the spheres of internal market, competition and trade policy within the so-called ‘Community Lisbon Programme’.

Though the aim of OMC was to encourage low performing countries to make more efforts in order to catch up with innovation leaders, it is clear that since OMC is not legally binding and the countries that were substantially lagging behind were not sanctioned, consequently they were not stimulated to improve their innovation indicators. Besides, it is clear that peer pressure did not turn into efficient stimulation tool as Member States avoided criticizing each other’s performance under “naming, shaming and faming” principle. Thus, policy heterogeneity turned into one of the most important obstacles for Lisbon Strategy success.

It is true that EU tried to review legal approach towards Lisbon agenda implementation in 2004 being aware of implementation complexity and unclear regulations. Consequently the

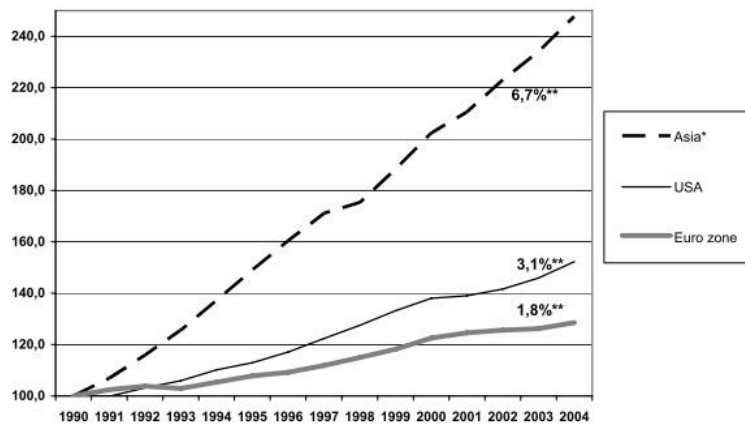
clear distinction between responsibilities on the national level (NRP) and EU (Community Lisbon Program) was made. NRP became a binding requirement and listed measures to be taken by the State in terms of its macroeconomic and microeconomic areas and in employment policy in order to improve economic performance for the next three years. Introduction of binding NRP can be regarded as a positive step, though numerous implementation reports only added up to the red tape burden in terms of Lisbon Agenda realization.

As it has been mentioned, already in 2004 when Member States were halfway in their Lisbon implementation, it became obvious that Lisbon goals could not be achieved. In order to create the clear image of main implementation obstacles European Commission set up High Level Group of experts chaired by Mr. Wim Kok, a former Dutch Minister, who evaluated the progress made and relevant problems and developed official EU report under the title “Facing the Challenge: The Lisbon Strategy for Growth and Employment” (“Kok report”). In 2005 European Council held midterm review and relaunched the Strategy making extensive use of the Kok report findings and recommendations.

The report restated the necessity for continuation of the Agenda: “the Lisbon strategy is even more urgent today as the growth gap with North America and Asia has widened, while Europe must meet the combined challenges of low population growth and ageing”¹¹. Graph 1 shows the difference between annual growth rate of real GDP during 1999-2004 for Asia, EU and the USA.

¹¹ “Facing the Challenge: The Lisbon Strategy for Growth and Employment”. Report from the High Level Group of chaired by Wim Kok, November 2004, http://www.umic.pt/images/stories/publicacoes200801/kok_report_en.pdf

Graph 1: The dismal decade



*: Asia is composed of China, India, South Korea, Hong Kong, Taiwan and Singapore.

** : Mean annual growth rate of real GDP between 1990 (index 100) and 2004.

Source: Fitoussi and Le Cacheux (2005).

The Kok report acknowledged certain positive developments over 2000-2003. According to the report, the employment rate increased from 62.5 % in 1999 to 64.3 % in 2003, the overall female employment rate rose to 56 % in 2003. Some countries have been successful in implementing policies targeted at raising the employment rates of older workers, now reaching 41.7 %¹². In addition, already in 2004 the report noted progress in the sphere of ICT and Internet use (in educational establishments (though digital training for teachers was not maintained on the adequate level), administration and households – 12 out of 15 Member States reached the relevant Lisbon target). Besides, EU strengths include higher number of graduates in the sphere of science and engineering comparing to the USA, positive developments in such industries as civil aerospace, mobile phones, power engineering. On the other hand, the report presents numbers of top 300 IT companies and firms engaged in R&D in the USA which amount for 74% and 46% respectively, urging EU to “radically to improve its knowledge economy and underlying economic performance if it is to respond to the challenges”¹³. As seen on the Table 4 EU-25 has lower average performance than the USA

¹² Ibidem

¹³ Ibidem

and East Asia, apart from the telecommunications and social protection fields (comparing to the USA) and sustainable development (comparing to Asia).

Table 4. Lisbon Scores. Comparing the EU, the USA and East Asia

	EU25 average	United States	East Asia	EU average relative to the US	EU average relative to East Asia
An Information Society for All	4.58	5.63	5.41	-1.05	-0.83
Innovation, Research and Development	4.24	6.01	5.23	-1.78	-0.99
Liberalization	4.92	5.21	5.13	-0.29	-0.21
Network Industries	5.36	5.72	5.96	-0.36	-0.59
Telecommunications	5.59	5.48	5.81	0.10	-0.22
Utilities and Transportation	5.14	5.96	6.11	-0.81	-0.96
Efficient and Integrated Financial Services	5.60	5.97	5.54	-0.37	0.06
Enterprise Environment	4.59	5.21	5.11	-0.63	-0.52
Business Start-up Environment	4.96	5.94	5.11	-0.98	-0.15
Regulatory Environment	4.21	4.49	5.11	-0.28	-0.89
Social Inclusion	4.40	4.58	4.87	-0.18	-0.47
Returning People to the Workforce	4.35	4.77	5.08	-0.41	-0.73
Upgrading Skills	4.61	5.17	5.23	-0.56	-0.62
Modernizing Social Protection	4.23	3.81	4.29	0.43	-0.05
Sustainable Development	5.05	5.26	5.02	-0.21	0.03
Overall Lisbon Score	4.84	5.45	5.28	-0.61	-0.44

Source: World Economic Forum. *The Lisbon Review 2006*

The report confirmed that Member States do not have sufficient political will to implement reforms necessary for reaching Lisbon targets. Kok report outlined such major drawbacks as “overloaded agenda and... conflicting priorities”¹⁴. The authors of report admit that most important Lisbon targets (R&D spending, general employment rate and employment for older population) will not be reached by 2010 and such prognosis was correct which will be shown in Chapter 1.2. The report underlined increasing gap between EU, Asian and US economic performance in 2004. Though the focus of Lisbon program was slightly shifted in 2005, still the expected consolidation of Member States in order to close the gap did not take place.

The report listed policy recommendations for strategy improvement in the following main areas: Creation of the knowledge society; Completion of the internal market and promotion of

¹⁴ Ibidem

competition (accelerating transposition and implementation of EC legislation; free movement of services within EU, liberalizing market and specific network structures – railroad, postal, gas, electricity, airspace; fair and equal rules for competition, avoiding protectionism and state aid, regulating public procurement); Favourable climate to enterprise; Flexible and integrated labour market (higher employment rate, involvement of female and older workers, social dialogue and social cohesion); Environmental protection and sustainable development.

One of the most important practical outcomes of the Kok report was the separation of responsibilities between national governments and EU institutions in further EU policy recommendations. At the same time the report still includes some recommendations which are not quite clear – for example, the necessity to deliver Lisbon goals with the participation of all actors – EU institutions, national governments, and EU citizens in particular without listing concrete possibilities for civil engagement. It was obvious that EU enlargements will create new challenges for Lisbon, as final EU-25 and EU-27 indicators are rather lower than average EU-15.

However, Lisbon results in 2009 affirmed the main Kok report criticism that “Lisbon is about everything and thus about nothing. Everybody is responsible and thus no one. The end result of the strategy has sometimes been lost”¹⁵. Taking into account the Kok report and the report of the Commission, in 2005 Lisbon Strategy was relaunched with the shift to mid-term aims. Fundamental principles and goals remained the same, though the emphasis was put on growth and employment (“Partnership for Growth and Jobs”) - “delivering stronger, lasting growth and create more and better jobs”. One of the most important changes relates more to legal basis of the Agenda, as coordination was improved by specific guidelines and implementation scheme approved by Member States.

¹⁵ Ibidem

Two reports of the Commission of 2006 defined four priorities for more action (investment in knowledge and R&D, support for SMEs (less administrative barriers), improved employment due to modernized labour market, and the new agenda item – common EU energy policy) and analyzed progress already made. The report the following year “Keeping up the pace of change” listed positive outcomes of the implementation as well as renewed, more specific goals: 100% of Internet connection in all schools; improvement of school training; more accessible and quality childcare, supporting growth of SMEs by less red tape by 20% in 2012 (for example, regulation of the possibility to start up a business in a week within any EU Member State), introduction of a single patent; completion of internal market.

It is quite obvious that Lisbon Strategy implementation was on the right track, as the goals mentioned above are more specific, realistic and better fitted to everyday life. At the same time, poor outcomes of the Agenda prove existing contradictions between Member States, as well as lack of efficient instruments doubled by outcomes of the financial crisis.

Criticism relates to internal market completion, labour market segmentation, imbalance of general economic performance and discrepancies in terms of competition, weak links between the Lisbon Strategy and other EU initiatives (Stability and Growth Pact, the Sustainable Development Strategy or the Social Agenda); abundance of different targets which are not attainable by certain countries. At the same time, cooperation within common EU innovation initiatives - European Research Area (ERA), Joint Technology Initiatives removed barriers for movement of scientists benefiting to exchange of achievements and experience.

One of the most obvious failed targets is the R&D spending: though all Member States were encouraged to reach the spending level at 3% of GDP, differences between the countries are rather illustrative (Finland’s indicator steadily reaches 3,5, while Malta managed to reach the level of only 0.3%.

Nevertheless, positive impact of Strategy launch includes creation of equal opportunities and better environment for innovation development, R&D investment and new start-ups in EU Member States, increased competitiveness between them due to introduction of new technologies, shorter innovation cycles and enhanced chances for introduction of radical innovations, in particular due to the improved scheme of Community patenting and, most importantly, increasing the mobility and productivity of researchers. As for legislative measures it should be mentioned that despite known criticism, Member States have implemented most of the aims announced by the Commission. For example, since all states tried implementing the reforms OMC was working as the tool for exchanging best practices. It should be outlined that global financial crisis made it obvious, that new solutions to typical economic problems are needed as well that there is a need for new model of global economy. That is why main aims of the Lisbon Strategy will still be relevant in future Community endeavours to implement structural reforms.

1.2. Analysis of main innovation indicators and outcomes in EU Member States.

Broad innovation policies should be assessed not according to political declarations but on the basis of clear economic results. Certainly, comparative analysis of overall economic growth can be drawn on the basis of national statistics, though the problem of different or even missing data arises. That is why specific tools were created on the Community level in order to track the progress in implementation of the Lisbon goals by individual Member States and EU on average. Innovation indicators should serve as stimulus for countries to improve their performance on the basis of best practices applied in other states.

Analyzing general innovation indicators of Europe it should be mentioned that European Innovation Scoreboard – EIS includes all 27 EU Members, Croatia, Serbia, Turkey, Iceland, Norway and Switzerland), as well as USA and Japan. EIS operates since 2001 as the most

illustrative tool to measure innovation performance of all EU Member States, and analyze the implementation of Lisbon Strategy. EIS is composed of the data from Eurostat, Community Innovation Survey and international statistics data. With the help of structural indicators provided by Eurostat European Commission was assessing the progress in the sphere of Lisbon goals implementation on the general EU level and national level as well. Just as Lisbon strategy was changed and supplemented with time, innovation indicators were also reconsidered. For example, there were as many as 42 indicators till 2003. Obviously, such abundance did not create distinct picture of each country performance and that is why in 2003 the list of indicators shorted to 14 in order to correspond to the main priority aims of the Lisbon Strategy. Yearly statistics in terms of EIS is the main source of information when policy makers aim to improve or compare national innovation policies.

In order to track processes and results obtained in research and innovation spheres comparing to the USA and Japan, European Commission launched edition of “Innovation Scoreboard”. In 2008 the methodology for calculating country performance was revised and as a result 3 performance blocks include 7 dimensions¹⁶:

- *enablers*, which are the main sources and drivers for innovation activities (human resources (high skilled and educated people), finance and support (financing innovation projects, government support for innovation activities));
- *outputs* (innovators (firms which introduced innovations on the market), economic effects (success of innovation and impact on employment, exports and sales));
- *firm activities* measuring innovation efforts of the firm (investments, linkages and entrepreneurship (cooperation between innovating firms and with public organizations), throughputs (intellectual property rights and technology balance of payments in the innovation process)).

¹⁶ European Innovation Scoreboard
<http://www.proinno-europe.eu/page/thematic-papers-0>

The data provided by EIS demonstrate that the average EU growth rate equals to 1.8% over the last 5 years, the most positive number being 2,3% in Human resources, 3,8% in Throughputs and 6,5% in Finance and support. Indicators in the sphere of firm investments and linkages and entrepreneurship are most negative ones – 0,4% and -0,6% respectively.

EIS-2009 takes into account 29 indicators, consequently in Summary Innovation Index (SII, Table 1) which is based on national performance the countries presented can be divided into 4 blocks:

- Sweden, Finland, Denmark, Germany and UK are *Innovation leaders* with much higher EIS ranking than EU-27 and other countries. It is worth mentioning that Germany and Finland are the countries with steady increase in innovation performance, while innovation activities of other countries, for example, Denmark and the UK remained on the same level this year.

- Ireland, France, the Netherlands, Austria, Belgium, Cyprus, Estonia, Luxembourg and Slovenia are *Innovation followers* with SII ranking higher than EU-27 but lower than innovative leaders. Cyprus, Estonia and Slovenia demonstrated successful implementation of innovation strategies and that is why their progress is obvious, since they moved from the group of Moderate innovators since 2008 (going from below average to above average).

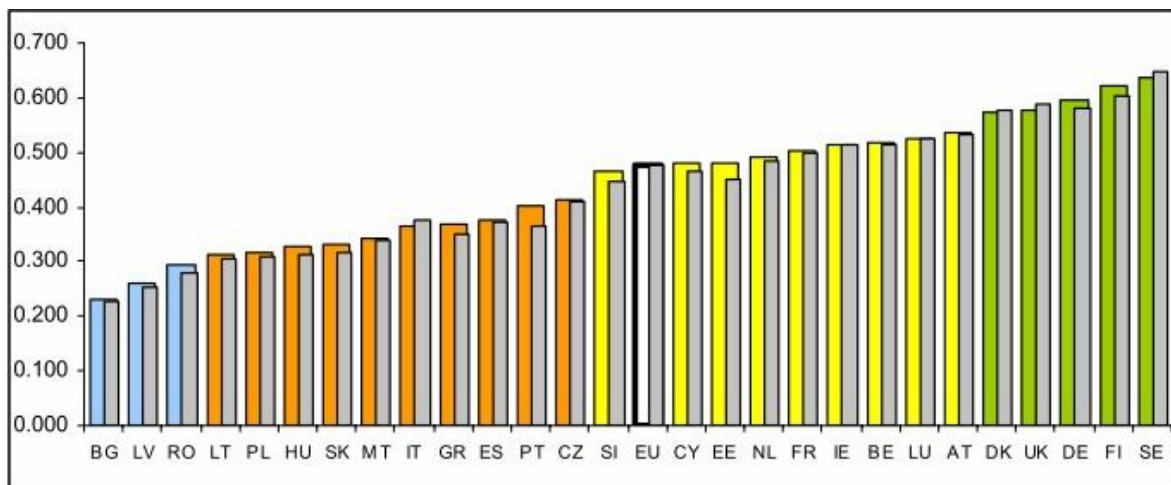
- Czech Republic, Greece, Hungary, Italy, Lithuania, Malta, Portugal, Poland, Slovakia and Spain form the group of countries which are *Moderate innovators* and their EIS evaluation is much lower than EU-27, however they have high pace of innovation indicator improvement. 5 of the countries in this category were still in the “catching up” category in 2008. Czech Republic, Portugal, Greece and Malta are the leaders within this group in terms of growth.

- Bulgaria, Latvia and Romania have the lowest EIS evaluation and are *the Catching up countries* as their innovation performance is on the much lower level than EU-27 average. At the same time, these countries have improved their performance at the fastest pace of all

Member States; Bulgaria and Romania's growth speed is the highest comparing to EU in general.

It should be emphasized that though there is performance gap between Innovation leaders and the Catching up countries, the latter group experiences faster growth rate. In general Germany, Cyprus, Malta and Romania achieved largest improvement comparing to other countries within their relevant groups.

Figure 1. Summary Innovation Performance of EU-27 Member States (SII-2009)



Source. *European Innovation Scoreboard 2009. Comparative Analysis of Innovation Performance.*

Figure 1. illustrates comparison of innovation performance of all EU Member States. Ranking is from 0 to 1, 0 being the lowest. Grey color reflects the relevant country indicators in SII-2008, country groups are defined by colours.

As we can see there is a big difference between innovation leaders (highest indicator of 0,6%) and the catching up countries (ranging from 0,2% and not reaching 0,3%). One of the most important illustrations for the Lisbon Strategy necessity is the fact the new Member States made considerable progress in implementing the Strategy, as certain countries belong to moderate innovators with high results (Czech Republic – more than 0,3%) and even are listed in the group of innovation followers (Estonia – more than 0,4%). At the same time the

performance of some countries belonging to EU-15 which approved the Lisbon Agenda is rather disappointing, for example – Greece, Spain and Italy (little over than 0,3%). On the other hand, since the approval of the Lisbon Strategy Portugal has made considerable progress creating favorable environment for business and investment.

The results per dimension are also quite interesting. For example, Czech Republic is the leader in innovators, throughputs and human resources dimensions, while Nordic countries take the lead in the sphere of innovators, finance and support, linkages and entrepreneurship and economic effects.

When we mention discrepancies between EU Member States, it is rather striking that Latvia is lagging at the level of almost 40 years comparing to other countries in terms of applying scientific achievements in the economy. According to European Innovation Scoreboard, the reason for such situation is the low level of state financing of scientific developments and private R&D expenditures which is by 90% less than European average. One of the possible reasons may be the fact that country still follows the Soviet style of scientific development (supporting state research centers while not providing enough support for business innovations both on the national and regional level). As a result, a low number of scientists are employed at the enterprises eliminating the added value of technical education. At the same time such low country performance is rather surprising, since comparing to the country of the same geopolitical group (Lithuania and Estonia) Latvia fails in applying innovative strategy. Latvia should increase the number of graduations majoring in technical engineering, as the country is at the bottom of the innovation leaders ranking (Malta being at the last position) as well as make the procedures of starting the business more simple. In terms of economic effects and innovators Latvia is the last, not even reaching 0.01 according to the number of innovative companies and firms. However, it is quite interesting that Malta has developed information

society and Internet penetration level testified by relatively higher finance and support dimension indicator.

Success of Nordic countries is often explained by the fact they they have transposed about 90-97% of all Lisbon directives¹⁷ and promote innovation as the main driving force for sustainable development of their economy aimed at introducing and applying new technologies, supporting R&D institutions and creating ties between universities, innovative companies and public agencies. High level of IPR protection should also be taken into account.

Among the new Member States Estonia is ranked first due to developed information society and favorable conditions for entrepreneurship. In addition, Internet penetration is also rather high in Estonia.

Positive developments of other new Member States, in particular Slovak Republic, Hungary are also explained by general structural reforms as countries reaching the average growth level of EU-15. However, performance of Poland, Bulgaria and Romania, for example, is still low due to high level bureaucratic burden for companies, insufficient level of new technology adaptation, poor R&D spending.

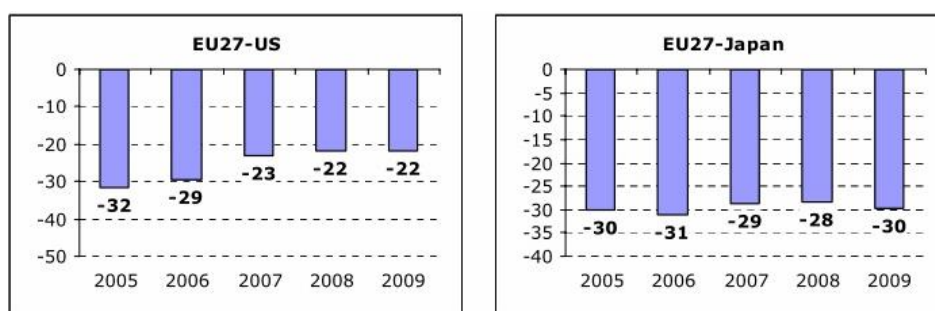
One of the drawbacks of Lisbon performance evaluation is the fact that goals were set taking into account the lowest performance among Member States and that is why highly innovative countries are not encouraged to improve their national innovation strategies. According to EIS-2009, general EU progress is reflected in the bigger numbers of graduates majoring in science, engineering, social sciences and humanities, supporting the development of such sectors as venture capital, private credit, broadband access, community trademarks, community designs, technology balance of payments flows and sales of new-to-market products. However, one should keep in mind that EIS-2009 does not take into account impact

¹⁷ World Economic Forum. The Lisbon Review 2006. Measuring Europe's Program in Reform www.weforum.org/pdf/gcr/lisbonreview/highlights.pdf

of world crisis at the end of 2009 (it includes data from 2007 and 2008), that is why the indicators in 2010 can be significantly different. In addition, it is obvious that countries won't be able to maintain the rapid innovation growth due to outcomes of financial crisis. It is not surprising that countries were focused more on solving the problems of currency fluctuations, bank solvency, crediting, real estate growth rather than focusing on innovation markets.

EIS devotes special attention to the analysis of innovation gap with the US and Japan. One of the most important results for the Lisbon strategy lobbyists is the fact that in 2009 this gap with the USA has been closing (for comparison with Japan positive numbers were noted in 2007 and 2008) due to the efforts of EU Member States (Table 1).

Table 1. Innovation gap towards US and Japan



Source. European Innovation Scoreboard 2009. Comparative Analysis of Innovation Performance.

Table 2 draws comparison between sustainable development and Lisbon scores for USA and EU during the midterm Lisbon review in 2004.

Table 2. Lisbon Scores: Comparing the EU to the US

	US Score	EU Average	EU Average relative to the US
An Information Society for All	5.86	4.61	-1.25
Innovation, Research and Development	6.08	4.41	-1.67
Liberalization	5.11	4.69	-0.42
Completing the single market	5.70	5.13	-0.57
State aid and competition policy	4.52	4.25	-0.27
Network Industries	5.85	5.81	-0.04
Telecommunications	5.60	5.96	0.36
Utilities and transportation	6.10	5.65	-0.45
Efficient and Integrated Financial Services	5.82	5.52	-0.29
Enterprise Environment	5.71	4.74	-0.97
Business start-up environment	5.83	4.52	-1.32
Regulatory environment	5.58	4.96	-0.62
Social Inclusion	5.04	4.81	-0.23
Returning people to the workforce	5.60	5.06	-0.54
Upgrading skills	5.31	4.96	-0.35
Modernizing social protection	4.20	4.40	0.21
Sustainable Development	4.96	5.16	0.20
Overall Lisbon Score	5.55	4.97	-0.58

Source: World Economic Forum. The Lisbon Review 2006: an assessment of the policies and reforms in Europe

We can see that EU outperforms USA only in the sphere of telecommunications (0.36), social protection modernization (0,20) and sustainable development (0.20%). However, according to the most important indicators of information society, innovation and R&D EU substantially lags behind – by -1,25 and -1,67 points accordingly. Consequently, overall Lisbon score is lower in the EU by -0.58 points.

At the same time EU takes leadership in the sphere of highly educated expert level preparation for the work in new science and technical branches, in the sphere of public investments in scientific researches and in terms of investments into informational communication technologies.

Though the differences still exist (mostly in the spheres of international patenting, higher education, Internet penetration, numbers of researchers, business R&D expenditures and public private linkages), but the improvement of innovation activities of EU-27 is growing. If we draw comparisons with Japan, we can see that EU is heading in terms of expenditures on researches in ICT. The indicators on Internet access are about the same. According to the level of private financing of scientific researches Japan has twice higher indicators.

Sweden, Finland and Denmark are traditional innovation leaders even in comparison with the USA, however on average EU is lagging behind both the USA and Japan due to considerably lower performance and huge discrepancies between Member States and.

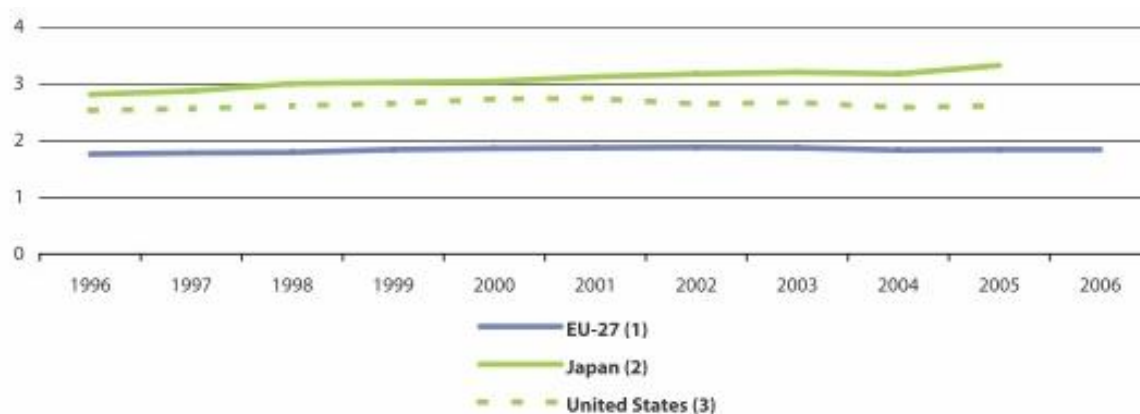
Analyzing performance on the market segmentation we should consider that the USA has been the leader in highly technological production over 1985-2005 though due to new EU policy and efforts aimed at enhancing its aerospace production, the USA lost its dominant position in this area. On the other hand, EU lost its leading positions on the markets of office, computer, telecommunication equipment and in the sphere of medical products, though it managed to enhance its market power in pharmaceutical industry.

Particular EU Member States are leaders in certain areas, being ahead of the USA and Japan. For example, Great Britain, Ireland and France are world leaders in scientific and technical education; Finland, Netherlands and Sweden are leaders in public financing of scientific researches, Sweden – leader in terms of private financing, Netherlands, Sweden and Denmark head the the 2009 e-readiness rankings, produced by the Economist Intelligence Unit in cooperation with The IBM Institute for Business Value¹⁸. It means that these countries are able to make most use of available electronic and technological resources for the benefit of individual consumers, businesses and country infrastructure in general. Such indicators show that there is enormous potential for exchanging experience between EU Member States.

¹⁸ <http://graphics.eiu.com/pdf/E-readiness%20rankings.pdf>

Another important illustrative tool in terms of EU innovation performance is the 2009 Regional Innovation Scoreboard (RIS). It uses EIS approach with the application of more enhanced regional data and defined regional focus. As a result, RIS analysis includes diversified innovation indicators and creates a clear picture of regional innovation performance though due to limitations of data availability the authors admit potential low level of data reliance in some regions. In addition to EIS indicators, RIS paid attention to non-R&D innovation expenditures. According to RIS results of EU innovation performance differ greatly not only within Member States, but also within the regions of a single country, Spain, Italy and Czech Republic being the most heterogeneous comparing to other European states. Review of main innovation indicators proves the necessity for analysis of public expenditures on R&D. Table 3 demonstrates differences between leading countries in R&D expenditures: EU is lagging behind Japan and the USA according to the ratio of R&D and GDP which was steadily at the level of 2%, never reaching the Lisbon target of 3%, while the USA was nearing 3% and Japan was approaching 4% already in 2005.

Table 3. Gross domestic expenditure on R&D (% share of GDP)



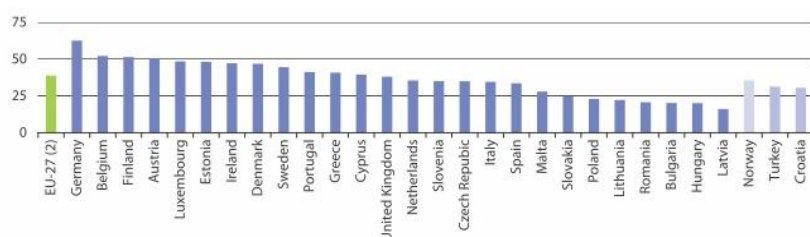
Source: Eurostat Yearbook 2009

EU showed general low level of government support for innovation (data available in 2006 record the average of 0,8%; calculated together with private expenditures – 1,84%. However, individual Member States reached the level above 3% - Sweden, Finland.

Analyzing entrepreneurship performance in EU-27 it should be outlined that majority of the firms involved into innovation make use of user innovation that entails introduction of new products and processes or services; such firms are referred to as “super innovators”. About 30% of companies are engaged into product and process innovation development and improvement of quality of goods and services (organizational innovation).

Table 4 draws the comparison in terms of the number of innovative enterprises within EU. We can see that Germany, Belgium, Finland, Austria and Estonia are the leaders (about 50% of all enterprises are innovative in these countries), while relevant indicators for Poland, Lithuania, Romania, Bulgaria, Hungary and Latvia are rather poor (less than 20%).

Table 4. Innovative Enterprises, 2006 (% of all enterprises)



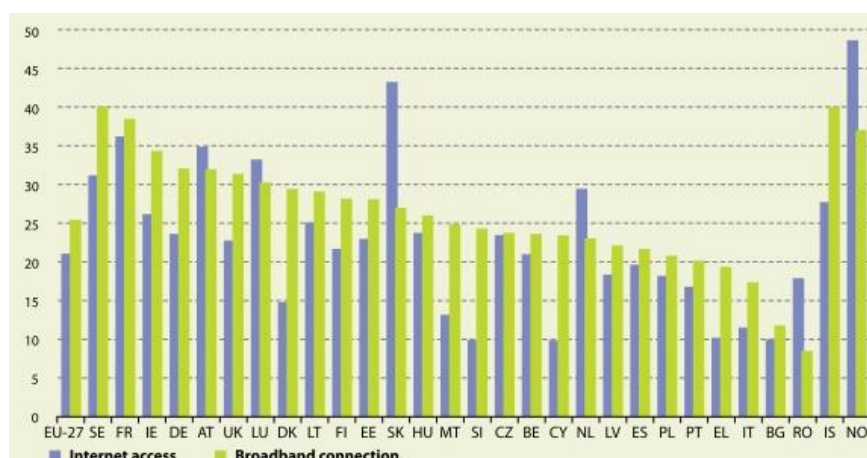
Source: Eurostat Yearbook 2009

Increasing the ratio of Internet usage was set as one of the target for the Lisbon strategy. It should be mentioned that performance in this sphere was one of the most positive ones, as already in 2008 about 70% of households had access to Internet from home and broadband access was available to 49% of households. On average, 86 % of households in Europe with members aged 16–74 years had access to the Internet at home and almost half (49 %) of households accessed the Internet via broadband in 2008. At the same time differences in terms of Internet access between different regions are still rather noticeable, especially if we compare 90% in certain regions of the Netherlands and 12% in Bulgaria.

Table 5 gives the clear picture of Internet broadband access according to different EU regions. We can see that among EU Member States the number of households having Internet access is the highest in Slovakia, France, Austria, Luxembourg, Sweden and the Netherlands, while

Cyprus, Slovenia, Bulgaria and Greece demonstrated poor performance in this sphere. Sweden, France, Ireland, Germany, Austria, the United Kingdom and Luxembourg are the leaders in broadband connection, while Greece Italy, Bulgaria and Romania belong to the group of countries with relevant low level.

Table 5. Development of Internet access and Broadband connections in households during 2006-2008. (Ratio between increase of connected households between 2006 and 2008 and not connected households in 2006)



Source: Eurostat Yearbook 2009

In conclusion it should be mentioned that though the goals of the Lisbon Strategy were not reached by EU-27 in general, overall success is recorded in the sphere of reform implementation, as all Member States were aiming for Lisbon goals. Lisbon strategy also stimulated growth of new Member States that joined EU in 2004 and 2007 and many of them demonstrated better results than some countries of EU-15.

Legal issue is rather important, as we see from the data obtained, countries with high level of EU law implementation and transposition demonstrate high ranking in the sphere of innovation growth. Low level of “Lisbon” directives implementation served as an obstacle for reforms and showed lack of stimulation.

Chapter 2. Innovation in Ukraine

2.1. Legal basis for innovation policy and level of its implementation in Ukraine

Innovation strategy of Ukraine should be analyzed in the European context as the country declared its aspirations to join EU both on the national legislative level and during the negotiation process with the Community which is still ongoing. Cooperation is being maintained on different level and under different programs and strategies: under current Agreement on Partnership and Cooperation, Eastern Partnership initiative, specific economic and educational projects, etc. In addition Ukraine is a member of World Trade Organization since 2008 and consequent investment and trade possibilities of this new market economy are rather broad and important both for the country and EU Member States. However, insufficient level of legislative reforms has always been the obstacle for closer integration to European Community and the sphere of innovation and R&D is not an exception. Obstacles on the way to creating innovative entrepreneurship are confirmed by scientific studies. As it is rightfully pointed by Nina Isakova “in the transition to a market economy, which was one of the most important objectives of transformation the biggest challenge was developing an efficient private business sector and innovative capacity”¹⁹.

Legal preconditions for innovation policy are laid down in the Constitution of Ukraine, namely in Article 54, guaranteeing the freedom of scientific, technical and other types of creative activities, protection for intellectual property and property rights. Main legislative acts on innovation include laws “On Investment Activities” (1991), “On Scientific and Technical Expertise” (1995), “On Special Regime of Technological Park Activities” (1999, amended in 2006)²⁰ “On Innovation Activities” (2002), “On Priority Directions for Innovation Activities in Ukraine” (2003), “On State Regulation in the Sphere of Technology Transfer”

¹⁹ Article by Isakova N. is published in “Innovation and Entrepreneurship: Successful Start-ups and Business in Emerging Economies” (2008)

²⁰ Activities of technological parks in Ukraine require separate research and that is why this subject will not be reviewed in the thesis

(2006) and others. These laws define innovation activities as activities aimed at usage and commercialization of the results obtained from scientific research projects and developments and which presuppose new competitive products and services on the market²¹.

Currently there is a significant gap between technological development and certain industries in Ukraine (apart from airplane, ship and spaceship construction), as national innovative infrastructure needs improvement, even though it is well defined on the legislative level. According to the law of Ukraine “On Innovation Activities”, innovative infrastructure consists of enterprises, organizations, institutions, unions of institutions, associations of any type, which provide service on innovation activities maintenance, for example, financial, consulting, marketing, informational, communication, legal, educational services. State innovative financing and credit institutions, venture companies and foundations, zones of intensive technical development, technological parks, innovative centers can be considered as elements of innovative infrastructure as well. As it will be shown below, the connection and efficient cooperation between these institutions constitutes the infrastructural problem.

The first systematic attempt aimed at improving investment and innovation activities on the regulatory level in Ukraine was laid down in the relevant Presidential Decree dated July 19, 2005 # 1116/2005 and in the Decree on Creation of State Agency for Investments and Innovations dated December 30th, 2005 #1873/2005. The Agency is executive body responsible for overall control of innovation activities in Ukraine. In addition, State Ukrainian Innovation Company which was functioning since 2000 according to the Decree of the Cabinet of Ministers became a part of the Agency. Further Presidential Decrees provide for state financial support for strategic enterprises involved in innovation activities. Decisions approved by the State Council for National Security and Defence are equally important, namely “On the State of Scientific and Technologic Sphere and Measures aimed at

²¹ Law of Ukraine “On Innovation Activities”, Article 1 (ukr.) <http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=40-15> English translation provided by thesis author

Maintaining Innovation Development of Ukraine” (2006), defining priority tasks for executive authorities in supporting national security in technical and scientific spheres.

Provisions approved by the Cabinet of Ministers of Ukraine enable single state registry of innovative projects starting from 2003 and financial state support for innovative and investment projects since 2007. In addition, first national competition for innovative projects was held in 2004, the latest (named “Technological Breakthrough”) in – 2009. Latest official act (dated February 3rd, 2010) on innovation is the draft Decree of Cabinet of Ministers defining measures on creating National Innovation System in Ukraine for 2010-2012 which is to be reviewed by Ukrainian parliament. The State Agency for Innovations and Investments also developed the Strategy of Innovational Development of Ukraine for 2009-2018 with further developments up till 2039. Such long term strategy is the first attempt to define main directions for systematic economic development on the basis of innovation; however it has not been approved yet.

In 2008 Cabinet of Ministers of Ukraine approved the state program “Creation of Innovative Structure in Ukraine” in order to provide efficient involvement of national scientific and technical potential, raise innovation and productivity level. The main tasks of such program are to support small innovative enterprises, attract investments and commercialize innovative products.

In general there are about 70 legal and regulatory acts aimed at supporting the development of innovation activities, however, such excessively complex legal basis is too general and obscure, it does not provide solutions to practical implementation. In addition, regardless the fact that legislation presupposes regular monitoring of innovation economic growth, due to the existence of numerous state regional centers for innovative development (13), monitoring procedures may be too complicated, scattered and bureaucratic.

After a thorough analysis of legislative basis in the sphere of innovation of Ukraine, the following problems may be defined: innovation activities are limited due to numerous reasons: lack of approved unique legislative strategy, which causes obstacles for innovative enterprises, for example, complex patent and license procedures; state regulations are inefficient in the sphere of technical production renewal; there is a lack of economic benefits and stimulation for innovative enterprises. Current legislation presupposes only one 50% tax benefit on innovation realization by state innovative centers, i.e. commercial innovative enterprises are exempt from such benefit if they are not registered as state centers.

In general, officially the main aim of state innovation policy is to create social, economic, organizational and legal conditions for efficient development of national scientific potential in order to produce new modern, energy saving, ecologically safe goods and services. Regardless this positive ideas and previously implemented state measures the share of industrial enterprises involved in innovation activities in 2009 decreased from 26% out of general number in 1994 to 12,8% and the share of innovation products equaled to only 6,4%²².

Certain positive changes should be mentioned as well. The state is trying to improve its policy; one of the positive tendencies in order to improve coordination of innovation strategy. Competent Ministries and state agencies were given clear and separate functions in the sphere of innovation. The State Agency for Investments and Innovations is the main institution responsible for forming and maintaining state policy on innovation activities, as well as creating national innovation system and coordinating the work of relevant authorities and centers. Taking into account outdated infrastructure of funds and enterprises the Cabinet of Ministers of Ukraine introduced the principle of “innovation restructuring of national economy”. This principle presupposes measures in changing tax, budget, fiscal, institutional

²² State Statistics Committee of Ukraine, <http://www.ukrstat.gov.ua/>

and external spheres. State authorities expect that such measures will increase the share of highly technological products in GDP structure, which equaled to 0,7% in 2004 having dropped down from 3,1% in 1998.

Vague legal structure and frequent absence of rule of law and profit-driving principles do not contribute to higher economic development of Ukraine and innovation growth in particular.

2.2. Dynamics and peculiarities of innovative processes in Ukraine over 1991-2009

As world practice shows sometimes the country lacking substantial financial and structural resources, may progress in its economic development and even reach technological breakthrough if it makes reasonable use of its national intellectual potential and human capital.

Recent negative developments in Ukrainian economy and negative effect of economic crisis proves that there is a need for thorough research and further improvement of innovation strategy and potential of Ukraine on the state level, taking into account relevant experience of other countries, in particular EU Member States. In order to overcome negative economic outcomes and catch up with developed countries effective innovation policy should be developed and it should be one of the prerequisites for the new model of national economy. Such strategy should include economic, legal, institutional, social, ecological and organizational changes.

The most important fact to be noticed is that innovative entrepreneurship in Ukraine is significantly different from innovative patterns of EU Member States. First and foremost, Ukraine lacks high world standards of competitiveness due to the fact that new quality production and enterprise restructuring is either very costly or slow. Consequently, innovations and products introduced in Ukraine may be not new comparing to the world experience.

As an example, poor infrastructure of online payment services may be given. Only 10 banks in Ukraine (out of about 200) apply the system of internet banking and its introduction is usually advertised as innovative method applied in Ukraine, while similar service were introduced in other countries since 1980s. Electronic payment and online order practice is underdeveloped in Ukraine, as the companies are reluctant to invest in expensive software and on the other hand, users still have the trust barrier towards new technologies. In addition, state regulations complicate the procedure of obtaining registration for online payment services.

Cooperation level between different types of enterprises, educational establishments and research institutions is very weak as well. Certain local improvement of innovation centers activities does not increase general adaptation of national economy to innovation tendencies. Attempts of “technological breakthroughs” in one industry have proven to be poorly applied, as inefficient institutional structure of national economy affects other industrial branches – highly technological products face no demand or market niche in other economic branches due to technological gap. As a result the general effect of innovations is eliminated.

Peculiarities of innovation development in Ukraine are explained by the fact that Ukrainian economy existed as a subsystem of single Soviet agricultural and industrial complex (2nd most important economy in USSR), was involved only in 20% of production of final economic output and was focused on providing services for industries of other Republics. At the same time Ukrainian development during Soviet times cannot be underestimated as the country managed to accumulate high intellectual potential, establish traditions of scientific schools and introduce numerous process and product innovations. The experience of Ukraine can be quite useful for EU taking into account the need for highly educated scientists, new opportunities for cooperation between innovative enterprises.

After the declaration of Ukrainian independence in 1991 the state faced the task of creating independent economic system functioning under market conditions. In 1991 Verkhovna Rada

(Parliament of Ukraine) approved the first law in the sphere of innovation “On Basics of State Policy in the Scientific Sphere and Scientific and Technical Activities”. Several years later, in 1999 the approved “Concept of Scientific, Technological and Innovation Development of Ukraine” defined the main priorities of the state economic policy in Ukraine, among them emphasis on the development in the following spheres: fundamental sciences, practical researches, higher education, new technologies, innovation structures, competitive enterprises, investment projects, etc. Like EU Lisbon Strategy, the Ukrainian Concept presupposed inclusion of innovative factors to the process of state social and economic development, preserving green environment and adequate usage of natural resources, as well as creating new vacancies. Renewed innovation concept was approved in 2004 in the form of State Strategy for economic and social development for 2004-2015 entitled “Following the Way of European Integration” which stipulates consolidation of Ukraine as a highly competitive state following the relevant strategic course.

Priority areas for innovative production include aircraft construction, rocket and space engineering, shipbuilding, and mechanical engineering (device, energy equipment and heavy machinery manufacturing). Nevertheless, Ukraine is still not significantly active in bringing radical (basic) innovations to the market, its enterprises lack high level of innovation activities both on the national level and abroad and innovation outputs are few. For example, in 2007 new technical solutions were applied in the process of creating only 9% of new technical samples.

Low level of innovation involvement in economic development is attested by traditionally weak position of Ukraine in the world rating of competitive countries. For example, according to the Global Competitiveness Index 2009-2010 compiled by World Economic Forum, Ukraine takes 82nd position (having dropped by ten positions comparing to the previous year)

out of 133 countries²³. In 2007 Ukraine was 84th out of 125 countries surveyed in terms of Growth Competitiveness Index, 89th in terms of Technology Index, 81st in terms of information and communication technology usage and 34th in terms of innovation capacities²⁴. At the same time Integral Index of Economic Innovation potential which is calculated on the basis of four components – education, innovation, information infrastructure and institutional basis, equals to 3,2 (7 being the highest). The results presented by IMD World Competitiveness Scoreboard in 2010 are even more striking as Ukraine occupies 57th place out of 58 surveyed economies²⁵.

The figures mentioned above show that Ukrainian innovation growth is rather modest. Taking into account high innovation potential of the country (human capital, high level of education, traditional science schools) there is a need for structural reforms, as due to Soviet traditions science is still separate from entrepreneurship, state finances individual enterprises and not industries, innovation activities are either heavy, artificially and inefficiently regulated or are unnoticed on the state level.

Analysis of innovation trends in Ukraine differ from the approach taken up in terms of European scheme, as it is obvious that innovation activities in Ukraine lie within entrepreneurship development, that's is why thorough analysis of enterprises involvement is needed. Table 1. below provides comparative data for 2005-2006:

Table 1. Number of Enterprises involved in innovative activities

	2005	2006	2007
Total	1193	1118	1472
<i>out of those</i>			
Spent funds on innovative activities	936	848	1175
Introduced innovations	810	999	1186
<i>out of those</i>			

²³ World Economic Forum, Growth Competitiveness Report 2009-2010, <http://www.weforum.org/pdf/GCR09/GCR20092010fullreport.pdf>

²⁴ Ibidem

²⁵ <http://www.imd.ch/research/publications/wcy/upload/scoreboard.pdf>

Introduced innovative product types	630	466	564
Introduced new technological processes	402	272	515
Realized innovative products which were re introduced or changed over the last three years	1022	918	1035

Source: The State Agency for Investments and Innovations,
<http://www.in.gov.ua/index.php?get=211>

Thus, we see that according to most indicators 2006 was the year when innovation activities slowed down in general (except for introduced innovations).

According to national statistics committee in 2009 1340 enterprises were involved into innovation activities (as we can see, this number is lower than 2007 indicator); this indicator constitutes 12,8% of the total number. For comparison in 2000 relevant indicators equaled to 18%. However, there has been a slight growth in the sphere of scientific activities: in 2004 the number of research organizations involved in technological processes increased comparing to 2002: from 1477 to 1505 and number of new technological processes introduced from 1142 to 1727 respectively.

Table 2. Number of industrial enterprises introducing innovations grouped according to the innovation types for 2005-2007

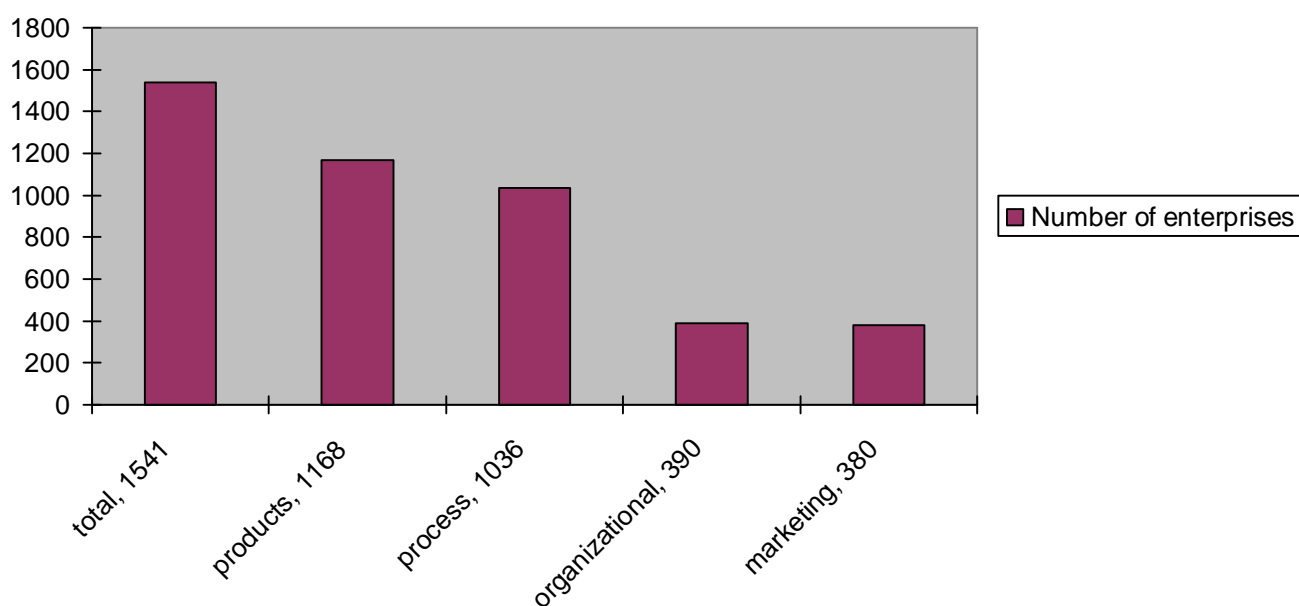


Table 2. (developed on the basis of data of the State Agency for Innovations and Investments) further analyses activities of innovative enterprises over 2005-2007 according to the innovation outcomes.

As we can see, innovations in the sphere of organization and marketing are still weakly introduced which proves the necessity for enterprise restructuring and the need for innovative top managers. Difference between product and process innovation is not as striking as comparisons with organizational and marketing innovation efforts.

At the same time striking decrease in the number of scientists is noticed: their number dropped by 220676 people in 2009 comparing to 1991. In addition, according to the data compiled in the Recommendations of Ukrainian Parliament approved in 2007, over the last 20 years the number of science researchers aged under 40 is constantly decreasing, currently equaling 14,5 %. Average level of researchers is higher – 48 years old. Over 1995-2005 while the general number of employees in research organizations decreased by 1,7 times (from 293,1 thousand to 173,9 thousand), the number of employees in the sphere of social sciences increased by 1,2 times, in natural sciences and humanities remained almost on the same level, while in the sphere of technical sciences it decreased by more than 2 times²⁶. These numbers confirm existence of constant “brain drain” from Ukraine or requalification of scientists which weakens innovation capacities of the country.

Not only human capital escapes to highly technologically developed countries, but also the inventions, since the procedures of obtaining patents and applying inventions are easier abroad. According to the research “Main Tendencies of Rationalization in Ukraine”, written by Ukrainian economist Galytsya I. the biggest increase was registered over 2001-2003 when

²⁶ Recommendations Parliamentary hearings on the subject of “National Innovation System of Ukraine: problems of formation and realization” approved on June 27th, 2007. Available at the web site of State Agency on Investment and Innovation http://www.invest.gov.ua/index.php?lang=ua&get=55&law_id=136 (ukr.)

the share of patents obtained by Ukrainian companies in foreign patenting agencies almost doubled (by 45%)²⁷.

On the other hand, according to Fedulova I., professor and deputy head of technological prognosis and innovation policy department of Ukrainian Institute for Economics and Prognosis it is rather illustrative that the share of Ukraine in the sphere of high technology production is strikingly small – 0.05-0.06%. Such weak participation in external high technology markets is caused by industrial orientation of Ukraine.

Besides, the data listed in official report “Investments and Innovation Development” of the State Agency for Investments and Innovations developed by a group of prominent Ukrainian scientists and researchers (# 3, 2008), innovative activities differ in the regional perspective, varying from 32,6 to 3,1 % of share of enterprises involved in innovative activities in 2008, with highest being Kyiv, Kharkiv, Odesa, Chernivtsi and Ivano-Frankivsk regions, lowest – Rivne, Sumy and Khmelnytsky regions. The report shows that the biggest share of invention applications was submitted by legal entities - enterprises and organizations and 70% of them were state owned. Traditionally representatives of Kyiv region submitted the biggest number of applications. National Academy of Sciences submitted about 7,5% of applications for inventions and models in 2007.

Innovation financing schemes constitute one of the factors that needs restructuring. Due to the lack of state support, most enterprises use their own funds, as well as bank credits and investments, however the share of credit financing is still small due to high interest rates and high credit risks of such projects. Table 3 demonstrates the complete picture of technological innovation financing over the last 10 years (2000-2009).

²⁷Note: Ukrainian, English translation provided by the author of the thesis
http://dspace.nbu.gov.ua:8080/dspace/bitstream/handle/123456789/4233/st_29_9.pdf?sequence=1

Table 3. Sources of financing for Technological Innovations

	Total expenditures	Out of total expenditures			
		Enterprises (own) funds	State budget	Foreign investments	Other sources
	UAH million.				
2000	1757,1	1399,3	7,7	133,1	217,0
2001	1971,4	1654,0	55,8	58,5	203,1
2002	3013,8	2141,8	45,5	264,1	562,4
2003	3059,8	2148,4	93,0	130,0	688,4
2004	4534,6	3501,5	63,4	112,4	857,3
2005	5751,6	5045,4	28,1	157,9	520,2
2006	6160,0	5211,4	114,4	176,2	658,0
2007	10850,9	7999,6	144,8	321,8	2384,7
2008	11994,2	7264,0	336,9	115,4	4277,9
2009	7949,9	5169,4	127,0	1512,9	1140,6

Source: National Statistics Committee, <http://www.ukrstat.gov.ua/>

The table shows that the biggest share still comes from enterprise resources and the share of state support is still the smallest, with a tendency to decrease. The table also shows the rapid decrease of all types of financing in 2009, apart from foreign investments which even increased by 10 times. We can see that the total amount of financing is significantly smaller in 2009 comparing to 2000, while 2007-2008 were the most active years in terms of innovation funding according to all types of financial sources.

The State Agency for Investments and Innovations provides the most detailed analysis of general expenditures on innovation. According to its data, in 2007 innovative expenditures equaled to 10.9 billion UAH and they usually comprised expenditures on new equipment and software (68,9%), implementation of research developments within enterprises (7,3%), buying new products and technologies from other organizations (4,8%). More than 90% of enterprises spent their own funds on innovations (8,0 billion UAH), 145 enterprises received credits equaling to 2,0 billion UAH and foreign funds were invested into 23 enterprises amounting to 0,3 billion UAH, which is only 3,0% of the general expenditures. State financing was received by 44 enterprises. State and local financing equaled to 152,1 million UAH (1,4%). It is obvious that improvement is needed in financing scheme in order to attract

FDI and state support. Innovative product turnover in the sphere of machine building, metallurgy, chemistry, oil refining equaled to 40,2 million UAH in 2007. 420 enterprises realized products which were new on Ukrainian market and every third enterprise was exporting its products. About 17,6% of enterprises have been on innovation market for three years. The share of innovative production has increased by 2,1 times since 2004 and equaled to 18.8 in 2007. In 2008 the share of expenditures on innovation equaled to about 12 billion UAH which is by 11% higher than in 2007. Innovations are still financed by enterprises themselves (60.6% of total expenditures), but in 2008 the share of credits increased up to 33.7% comparing to 18,5% in 2007.

From the figures given above we can see that innovation in Ukraine is internally motivated and financed by the enterprises themselves. External motivation by the government is practically absent, regardless numerous laws and state programs.

Innovation processes in Ukraine are not on the large scale and they do not influence GDP growth. According to Parliamentary recommendations “On Scientific and Scientific-Technological Activities” currently Ukraine spends about 0,4 % of GDP on financing research and development, while the laws provide for the share of 1,7%. Other legislative provisions are also not being implemented, for example directing 10% of funds from the state budget which were acquired due to privatization of state companies, to the support of innovative enterprises which are of strategic importance for economy and safety of the state.

Public procurement and state orders in the sphere of new technologies are significantly low and equal to about 1% of state financing of research areas. Venture financing hasn't developed in Ukraine as one of the most important activities for innovation development.

High education is one of the main components on EU innovation agenda. Speaking about the educational sphere in connection to innovation in Ukraine, it should be emphasized that current technical and laboratory equipment does not promote scientific research on the

national level or introduction of innovative educational technologies into educational process. Thus the competitiveness of university graduates may be lower on the labour market due to obstacles on the way of integration of Ukrainian education into world educational community. Another problem is that Ukrainian market of higher technologies is practically financed by foreign organizations and final products developed in Ukraine are later owned by other countries and Ukraine is not able to make relevant profits.

However, currently there is an innovation crisis in Ukrainian industries. Such situation is caused by the lack of centralized state financing of innovation enterprises and science researches, outdated scientific basis, decrease in the number of professionals who prefer to work abroad after graduation, creating a threat for professional potential of the country both in terms of aging and lack of experience.

Innovation potential of any country depends on adequate application of financial and organizational resources, connection between state and private institutions, high innovative stimulus for businesses and society in general. 20th and 21st centuries showed that countries which emerged as world economic leaders actively applied innovation technologies as one of the main components for economic growth. Innovation component usually includes highly developed infrastructure which encourages enterprises to raise their competitive advantages. That is why Ukrainian government should create necessary conditions in order to eliminate closed cycle of research institutes development and integrate them into the innovative strategy; provide favorable conditions in order to stimulate commercialization of scientific outcomes and promote innovative technology transfer and its practical application; involve foreign and national top managers into reforming innovative sector of the economy; and, most importantly attract foreign investments by demonstrating stable and unique state policy and create favourable conditions for business activities devoid of any bureaucratic burdens. Taking into account experience of developed countries, for example, USA, Sweden,

Germany, Japan, it is clear that transparent and determined state policy benefits to innovation development.

Majority of Ukrainian enterprises undergo the process of restructuring and raising competitiveness. In order for Ukrainian businesses to be able to compete with foreign companies a clear national strategy is needed which should stimulate production, export, and innovation activities and provide benefits for national innovative enterprises. In addition, regional discrepancies (as it has been shown, similar difference exist inside EU as well) caused by differences in investment climate, administrative regulations and financing should be eliminated. Regional innovation activities are higher when there is general dynamics of economic growth and local support for innovative projects. However, it only testifies the need for consolidated state approach taking into account European practice and experience of most developed regions of Ukraine. The state should apply direct (public procurement and contracts) and indirect (tax benefits, export support) measures in order to stimulate national innovative breakthrough. State marketing policy should also play an important role when Ukraine will promote its scientific and technological successes in the world.

Efficient state policy will result in supporting innovative business, enhancing employment opportunities, increasing the number of innovative projects and innovative activities, fastening innovative production, and attract foreign investment.

Regardless the negative tendencies innovation potential in Ukraine is still on the high level, as numerous researchers work in international companies, institutions. Besides, several practical achievements of Ukrainian inventors should be listed: Ukrainian inventors were awarded medals at by World Intellectual Property Organization; besides several technological breakthroughs can be listed: hypothermic surgery invented by Dr. Furmanov from National Institute of Surgery and Transplantology allowing to perform operations without stitches; Suslov tuberculosis test as an alternative Mantoux test; much discussed the so-called

“Kukharchuk-Radchenko-Sirman effect” (the scientists claim new applications for stem cells).

Summing up, it should be mentioned, that regardless existing problems in Ukraine, the country has potential to become one of the innovation leaders in Eastern Europe after the implementation of structural reforms, as its professionals are highly educated and experienced and the tradition of inventions and scientific research dates back to the time of world famous inventions developed by Ukrainians (X-ray ideas introduced by Pulyuy, invention of helicopter by Sikorsky, etc.) From the economic perspective, geopolitical location of the country, as well as its research resources enable emergence of strong market and export capacities for s customers in different countries. The table shows that the biggest share still comes from enterprise resources and the share of state support is still the smallest, with a tendency to decrease. The table also shows the rapid decrease of all types of financing in 2009, apart from foreign investments which even increased by 10 times. We can see that the total amount of financing is significantly smaller in 2009 comparing to 2000, while 2007-2008 were the most active years in terms of innovation funding according to all types of financial sources.

2.3. Impact of EU innovation projects on innovation development in Ukraine

Economic, technical, research and innovative cooperation between Ukraine and European Community is carried out within the framework of the Agreement between Ukraine and European Community on scientific and technological cooperation signed on July 4th, 2002 in Copenhagen during EU-Ukraine Summit and prolonged in 2003 during Yalta Summit.

Relevant Action Plan aimed at deepening cooperation between Ukraine and EU in this sphere includes promotion of scientific collaboration, expanding cooperation scope, participation of Ukrainian researchers in EU scientific programs (common research projects with EU are also

subject to certain tax benefits in Ukraine), common research projects, seminars and conferences and even creation of joint Committee on the matters of such cooperation in order to enhance Ukraine's integration into world scientific community. At the same time national research programs, as well as educational system, in particular, higher education are to be adapted according to European standards.

In general Ukraine demonstrates positive results in terms of participation in EU. The number of participating researchers and common projects is increasing and Ukrainian contribution into EU scientific sphere is highly evaluated both in terms of employment of Ukrainian researchers abroad and within common European projects.

Integration into European scientific community is one of the main components of European integration of Ukraine. That is why Ukraine devoted much attention to relevant reforms and even created National Information Centre for Ukraine-EU Science and Technology Cooperation in 2003. Mission of this center is to "promote Ukrainian scientific community integration to ERA (European Research Area) via the EU Framework Programmes and other R&D programmes funded by the EC"²⁸. National Information Point was successfully launched within the EU 6th Framework Program. Such Informcenter facilitated the access of Ukrainian scientists to the opportunities and calls within EU programs, raised awareness about important events and assists with project management, as in general Ukrainian experts lack project application. Regional network of Informcenter branches enhanced international ties and analyzed research potential of Ukrainian regions.

6th Framework Program was substituted by the 7th Research Framework Program (FP7) for 2007-2013. FP7 based on the economic analysis made by European Commission. The aim of the FP7 is to create knowledge based society, common European Research space, improve scientific and technological researches by cooperation (enhancing leadership in key industries

²⁸ Web site of NIP, http://www.fp6-nip.kiev.ua/index_e.php?p=about_e

and technologies); ideas (stimulating competitiveness and high professionalism in fundamental researches); people (increasing the mobility and career prospects for scientists) and potential (scientific and innovative development). Research projects in third countries, including Ukraine are coordinated by participation of EU Member States in research programs and by the ERA-NET instrument.

ERA-NET schemes are aimed at coordinating national and regional activities by enhancing project network for participants and giving the access to activities for scientists from third countries. Several important projects have been implemented under such scheme, in particular BS-ERA.NET which is aimed at integrating Black Sea region into European scientific space and is implemented by 13 countries.

Analyzing EU innovation programs it should be mentioned that Ukraine can take part of some of them, sometimes even if it is not the member of the program. For example, 15 scientific organizations from Ukraine took part in 12 Actions of program COST (European Cooperation in the field of Scientific and Technical research). In order to become a full fledged member of COST Program Ukraine needs to make at least little financial contribution to COST Fund in 2010. It will enable full compensation for the work of Ukrainian members in regional Domain Committees and future Actions. The importance of full fledged membership in COST program cannot be underestimated as this program is one of the oldest (founded in 1971) and most efficient programs for common scientific researches in Europe. Possibilities opened by COST program (conferences, seminars, short term researches, support for your scientists, exchange of experience, coordination between national research projects in Europe) can enhance the scope of scientific activities in Ukraine and access of individual professionals to fundamental researches on the European level.

Another EU project, Program EUREKA is one of the most important initiatives for Ukraine and it was the first European program which allowed full fledged membership of Ukraine in

2006 after 13 years of associate membership. Advantages of membership are obvious: Ukrainian scientists and developers gain access to new European technologies and world markets of scientific and technical production. National Informational Center functions in Ukraine. Program EUREKA is an example of scientific management for Ukraine which is highly needed in market economy. As Ukrainian experts lack such skills, EUREKA program helps to support scientific project development in Ukraine through involving bigger number of research organizations and enterprises in Ukraine to joint European projects aimed at creating competitive technological products; attracting investments to scientific projects; promoting Ukrainian projects abroad which enables presence of Ukrainian technical products on the European scientific market; involving foreign experts for guidance and recommendations during the implementation of research projects in Ukraine.

EUREKA was founded in 1985 and unlike COST it is aimed at practical application of studies. One of the most important principles within the program is the “bottom up approach” when the participants of the program are free to choose the subject for research projects. Participation in the program also facilitates access to partner database and financial support from other European countries (not only EU Member States). EUREKA program gives the possibility to implement three types of innovative projects:

- regular projects (independent from each other)
- umbrella projects (united by the subjects of spheres but with independent aims and tasks)
- cluster projects (strategic cooperation with common aim).

COST and EUREKA are considered to be the most important European intergovernmental networks aimed at raising cooperation and competitiveness. Ukraine could make efficient use of both programs, as COST mainly represents academic institutions and new knowledge, while EUREKA is focused mainly on industry and business development. In this way

transmission of knowledge elaborated within COST program can be transferred for practical application within the framework of EUREKA program.

European Technology Platforms (ETP) constitute another important EU initiative combining achievements of FP7 and EUREKA program and “providing a framework for stakeholders, led by industry, to define research and development priorities”²⁹. In general ETP play an important role in adapting EU research priorities to industrial needs, thus they transform new knowledge into market goods and services. Ukraine is a participant of individual ETP, for example ETP Food For Life.

Ukrainian enterprises can be more broadly engaged into the first Competitiveness and Innovation Program (CIP) for 2007-2013 (comprising the Entrepreneurship and Innovation Programme (EIP); the Information Communication Technologies Policy Support Programme (ICT-PSP); the Intelligent Energy Europe Programme (IEE)) as the regulations of the program allow third countries access to the financing if certain conditions are met.

Similar scheme is applied within EU EUROSTARS program aimed at stimulating and supporting international R&D projects implemented by SMEs.

Individual possibilities opened for individual Ukrainian scientists, young researches and students is the recruitment and research possibilities opened by European Institute of Technology (EIT), Erasmus Mundus exchange program and Marie Curie International Staff Exchange Scheme (IRSES). All these initiatives are aimed at providing the possibilities for gifted researches from third countries, including Ukraine, to enhance professional experience and be involved in leading European researches.

Educational sphere is one of the indivisible components of successful innovation reforms. Tempus project successfully functioning in Ukraine facilitates educational reforms in

²⁹ ETP web site, http://cordis.europa.eu/technology-platforms/home_en.html

Ukraine. National Tempus office in Ukraine is financed by European commission and it serves to help modernize higher education in Ukraine according to European standards.

National initiative which turned into common project with EU should also be mentioned. In 2009 the State Agency for Investments and Innovations launched the project “Supporting scientific and innovative enterprises and technology transfer into the business of Ukraine”. The project is aimed at stimulating innovative activities of Ukrainian enterprises by eliminating gaps between researches and practical implementation and promote integration of national economy into the global one with the help of technology transfer. Practical elements of such projects include development of research centers, technological parks and innovation clusters, creating innovative management infrastructure. The project is financed by European Union as a part of the program aimed at supporting economic development of Ukraine and will be realized till August 2011. Ukraine also plans to join European network of technology transfer in 2010. The Agency also realizes state target economic program “Creation of innovative infrastructure in Ukraine” for 2009-2013.

One of the most positive measures to be taken by the government resulted from the meeting with Mr. Courtois, who is the Director of Microsoft International. After the meeting Ukrainian authorities approved the decision to declare 2011 as the year of innovation in Ukraine. Cooperation between the Cabinet of Ministers and Microsoft International presupposes raising awareness on innovation issues and attracting investments into IT and communication spheres. New projects are to be launched which will improve the state of education and digital technologies in Ukraine.

Participation of non-governmental organizations in common European initiatives is also crucial, as a number of regional NGOs were active participants of 2009 European year of creativity and innovation. As a result numerous creative projects were launched, in particular in the sphere of innovation management.

One of the most important steps in the sphere of integration into European innovative space was taken when Ukrainian scientific and educational telecommunication network “URAN” was included into European GEANT network which allowed Ukrainian universities and research institutions improved their informational equipment.

In order to promote international cooperation of Ukraine with EU Member States in the sphere of innovation and scientific technologies, state authorities in Ukraine should take into account recommendations of European Commission, namely provide the openness of national research programs to other countries and improve the procedures of patenting, licensing and property rights protection.

Ukraine should be an active participant of European programs, technological platforms and initiatives, especially those aimed at raising competitiveness and innovation level of Ukrainian enterprises, as well as take into account organizational experience of EU Member States, for example, creation of transfer Innovation Relay Centers which promote practical implementation of scientific developments. Such centers stimulate innovative enterprises by special business services, in particular in the sphere of technology transfer to other countries. Taking into account the importance of European programs COST and EUREKA for development of Ukrainian science and innovation, it is recommended that relevant Ministries of Ukraine finance admission fee to COST program as well as increase state financing for projects within EUREKA program.

Ukraine should also aim for decreasing the rate of brain drain by finalizing the procedure of mutual recognition of diplomas within EU and other world countries, providing positions in national research institutions with adequate pay. On the other hand, raising awareness of the citizens about EU calls for individual research participation should enhance competitiveness of young Ukrainian researchers and students.

Another important solution for increasing innovation activities is eliminating complicated bureaucratic procedures in the sphere of licensing and patenting as well as improvement of legislature on property rights protection.

Common work with innovative institutions of EU will give the possibility for Ukraine to integrate with modern initiatives, acquire market experience, apply new research methods, adaptation and synchronization of national projects and programs according to European standards

Chapter 3. Future innovation trends in Europe and Ukraine.

3.1. Recommendations and prognosis for successful implementation of the Post-2010 Lisbon strategy.

Globalization tendencies demonstrate that integration in the sphere of innovation is inevitable – multinational corporations apply highly developed technologies, leading innovative countries benefit from R&D outcomes. Scholars confirm the necessity of improvement of national strategies. For example, Giovanni Dosi believes that “national (and regional) systems of innovation are there to stay even in a more globalized world and they will continue, albeit in different forms, to shape the growth possibilities of different geographical areas and institutional entities”³⁰. Though the article was written 10 years ago, at the time when Lisbon strategy was launched, the tendency of innovation policy development should be continued after 2010.

Results of the Lisbon Strategy Implementation since 2000 proved to be rather controversial. On the one hand, progress was achieved and some countries demonstrated rather high innovation performance, on the other hand, however, in general most of Lisbon goals were not achieved (discussed in Chapter 1). One can argue that poor performance and low level of innovation indicators can be justified by outcomes of world economic crisis. To some extent economic crisis affected innovation growth as many Member States were focused on solving other economic problems (currency fluctuations, stagnation in credit and real estate markets) devoting less attention and making fewer efforts in order to reach the Lisbon goals. In addition, innovative firms faced difficulties in keeping up their growth pace due to overall economic recession.

³⁰ The article of Giovanni Dosi can be found in the book “Innovation Policy in the Global Economy” (1999)

Nevertheless, low chances to reach Lisbon goals by then end of 2009 were already mentioned during the midterm review in 2004. This fact testifies that the Commission should revise the general approach and specific implementations goals in order to achieve better results by all Member States over the next decade.

During Council Spring Session on March 26th, 2010, 5 basic areas for the new post-Lisbon innovation strategy – “Europe 2020: a strategy for smart, sustainable and inclusive growth” – were approved on the basis of Commission’s proposal. Europe 2020 is to be approved in June 2010. According to one of the initiators of the new strategy, José Luis Rodríguez Zapatero, the President of the Spanish Government it is aimed at tackling “leading problems in order to maintain stable growth and increase our potential in education, research and the battle against climate change.”³¹ Increasing competitiveness of Member States and eliminating poverty are listed among the targets of Europe 2020.

Increasing the role of Commission in the sphere of economic coordination for successful implementation of the new strategy is a positive step ahead, as one of the most criticized drawbacks leading to failure of the Lisbon Strategy relates to OMC. For example, the 2009 Research compiled by the Deutsche Bank as part of the report on European integration admits that non-binding nature of the Lisbon Strategy and heavy reliance on “peer review” stimulation proved to be inefficient as “under the Open Method of Coordination the only sanctions available to the EU were “soft” options such as peer pressure. Whilst this did strengthen the hand of governments willing to reform, it was often an inadequate spur to those who had tired of the process”³².

New EU innovation strategy seems to take into account mistakes made as the idea of stronger centralization and enhanced coordination is announced as justification for changes at the beginning of the document: “Europe can succeed if it acts collectively, as a Union. We need a

³¹ http://www.eu2010.es/en/documentosynoticias/noticias/mar25_consejoprimavera.html

³² http://www.dbresearch.com/PROD/DBR_MOBILE_EN-PROD/PROD000000000250332.pdf

strategy to help us come out stronger from the crisis and turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion. Europe 2020 sets out a vision of Europe's social market economy for the 21st century”³³. Introduction of continuous monitoring by the Commission and regular public discussions and debates, as well as general reports from the European Council followed by publishing of European Systemic Risk Board is another advantage of the new strategy.

Certainly, significant progress has been made in shaping new structural dimension of the strategy, however determination of new priorities and goals remained similar (emphasis on knowledge and innovation, sustainable development, higher employment rates and social inclusion), if not even more optimistic. The 5 main general goals to be achieved both on the EU level and by national governments include: better employment, support for R&D, work in the sphere of climate change and energy, improvements in the educational sector, fighting poverty. Statements made by José Manuel Durão Barroso, President of the European Commission, at the final press conference of the European Council on March 26th, 2010 concerning the fact that the goals “are ambitious but attainable and...are backed up by concrete proposal to make sure they are delivered”³⁴ seem too optimistic and sound like a political declaration, taking into account a potential failure of the Lisbon Strategy. Disagreements concerning Europe 2020 as proposed by Barroso exist inside EU: during the Spring Summit German Chancellor Merkel questioned the attainability of the set goals within a few years³⁵.

Once again, the specific quantitative aim of 75% (it is worth mentioning that the previous target of 70% was not reached by the majority of Member States) employment rate for

³³ Europe 2020. A European Strategy for Smart, sustainable and inclusive growth
<http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

³⁴ Ibidem

³⁵ Foreign Policy Centre Briefing: The struggle to solve Europe’s economic woes: Are Europe’s leaders up to the challenge? <http://fpc.org.uk/fsblob/1212.pdf>

women and men aged 20-64; obscure improvement of R&D and leaving relevant spending target at the level of Barcelona aim – 3% of GDP; increasing the level of education and consequently the number of highly educated researchers; providing social inclusion by eliminating poverty. The latter is planned to be achieved by decreasing the number of people who are at risk of poverty by 20 million.

Several representatives of national governments already criticized some aspects of Europe 2020. For example, Czech Minister for European Affairs Juraj Chmiel pushed for more realistic objectives, avoiding too broad and at the same time number specific goals in order to avoid "potentially counterproductive commitments". Similar assessment enable the conclusion that most of these quantitative targets will not be reached due to existing discrepancies between EU Member States, severe outcomes of global economic crisis (especially affecting Greece, Romania, Spain, and Portugal) and lack of relevant political will on the level of national governments. It is not quite comprehensive why the Commission made the decision to pursue these aims again, though the final data of the Lisbon Strategy implementation illustrate that relevant indicators are rather poor in this sphere, with the exception of Nordic States. That is why it is quite advisable that the Commission adjusts the goals to the relevant national levels of growth and strategy implementation.

Europe 2020 takes into account national trajectories for EU goals. However, certain disagreements were noted before the approval of the Europe 2020 in spring 2010: Germany insisted on removing provisions enabling stronger EU involvement in the education sector as it threatened the competence of German federal government.

One of new and the most positive elements of the Europe 2020 strategy is the introduction of flagship initiatives which in fact include the most effective solutions for burning problems. For example, "Innovation Union" should improve the conditions for R&D activities so that innovative ideas are transformed into final products or services; "Youth on the Move" aims to

help young researchers to adjust to the labour market; “Resource efficient Europe” should diversify energy sources and maintain energy efficiency; business environment, in particular for SMEs, is to be improved by “An industrial policy for the globalisation era”; labour markets and labour mobility will be modernized within the framework of "An agenda for new skills and jobs"; however, the last initiative “European platform against poverty" aimed to maintain social cohesion and decrease social exclusion seems rather challenging.

In general there are several patterns that EU should follow in order to succeed in implementation of innovation strategies both on the Community and national levels. First of all, the goals should be realistic and should not deepen the differences between Member States. For example, performance gap between Nordic countries and accession countries in 2007 does not stimulate the innovation leaders to contribute to improvement of general EU performance, while the catching up countries are inclined to aim for lower targets, dragging down the average EU innovation indicators. Thus, innovation strategy should focus more on individual performance of Member States and stimulate continuous growth of innovation performance by centralized coordination, monitoring and regular assessment. Better coordination will help Member States to face the challenges of globalization. OMC should more effectively use the tools of “naming and shaming” as well as introduce stricter sanctions for non-compliance. Transposing of EU Directives in the sphere of innovation should serve as one of the most efficient tool for harmonization of national legislation.

It should be mentioned that the Commission should also introduce tools for assessing the reliability of the statistic information provided by Member States or develop new, more specific indicators and targets which would require more accuracy. On the other hand, centralization should not lead to more bureaucratization. On the contrary, red tape should be eliminated in organizational issues, in particular improving business environment for innovative enterprises and SMEs in particular.

One of the most important issues is raising the awareness level of the society concerning the strategy and creating knowledge society. This goal was mentioned in the Lisbon strategy, however, no concrete instruments for its achievement were provided, except for successful realization of the DRIVER project in 2009 (Digital Repository Infrastructure Vision for European Research) – “access the network of freely accessible digital repositories with content across academic disciplines with over 2,500,000 scientific publications³⁶. The project should be updated in 2010 as the idea of a single digital “pool” for publications from different is rather efficient, in addition, the list of participating countries should be amended.

Regular electronic and media communications, public debates and discussions, enhancing ICT, e-commerce and e-government should promote information society leading to citizens’ involvement into strategy implementation. In addition, favorable conditions for R&D, increased state support for innovative projects, better employment opportunities, and improved educational cooperation within Member States, and enhanced worker mobility will promote human capital, knowledge based society, boost employment level and decrease brain drain from EU. Special emphasis should be given to supporting ERA and EUREKA projects as well as other innovative initiatives of EU which are aimed at cooperation between Member States. Close cooperation between universities, research institutions and public agencies is also vital. Student mobility should also be enhanced, involving students not only from EU Member States, but also from countries with high intellectual potential.

One of the suggested initiatives put forward after the implementation of the Lisbon Strategy in 2010 should be considered: the introduction of the “fifth freedom’ - the free movement of knowledge that complements the four existing freedoms. The fifth freedom is asserted through increasing the cross-border mobility of researchers, students, scientists, and university professors. In order to achieve the actual movement of knowledge, it is necessary

³⁶ <http://www.driver-repository.eu/>

to facilitate and encourage optimal use of intellectual property, establish a new generation of first-class research infrastructure and promote mutual recognition of qualifications”³⁷.

One of the most important indicators for successful implementation of innovation strategy on the Community level is the completion of internal market facilitating free movement of goods, services and people. EU should also try to bridge the performance gap with the USA and Japan. One of the steps to be taken is harmonization of Community patent, decrease of patenting fees in order to encourage innovators to apply for patents. In such a way the level of competition and research activities will be increased.

Budget changes should include two levels: national governments should focus on supporting innovative projects financially, raising wages for researchers, (partially) subsidizing innovative enterprises, creating favorable tax schemes for companies involved in innovation activities; while the Community is to focus on higher level of financing common innovation initiatives, establish joint institutions working in the sphere of R&D.

The results of the Lisbon Strategy showed that though Barcelona goal of 3% GDP expenditures on R&D and considerable progress was achieved in this area, the target was missed by most Member States. That is why this goal should be revised according to national capacities of each country. NRP should include realistic goals as well and should be developed with the participation of social partners in discussion, for example, NGOs, trade unions etc. At the same time Member States should realize the importance of cooperation on the EU level and coordinated efforts in order to achieve common aims. Exchange of best practices and peer review should receive new impetus under Europe 2020. The Commission should thoroughly study examples of successful implementation of the Lisbon strategy by innovation leaders and promote relevant mechanisms in other Member States.

³⁷ Opinion of the European Economic and Social Committee on ‘Universities for Europe’, 2010/C 128/09 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:128:0048:0055:EN:PDF>

3.2. Innovative strategies and tools to be applied by Ukraine for its further engagement into common European innovation strategies and initiatives

Cooperation between Ukraine and EU started back in 1998 when the Partnership and Cooperation Agreement came into force. In 2005 Ukraine declared its aspiration to join EU community and the Action Plan between Ukraine and EU was signed. Though at the moment the negotiations concerning the Association Agreement are still being held, Ukraine already participates in the number of EU policies, strategies and initiatives (European Neighborhood Policy, Eastern Partnership Initiative, Agreement between Ukraine and European Community on scientific and technological cooperation, a number of economic programs and innovation projects – discussed in Chapter 2). In order to become a full fledged candidate country Ukraine needs to implement structural reforms in numerous spheres – first and foremost, legislative, economic, social, judicial, political, educational, etc. The reforms need to be enforced by the rule of law principle. General lack of such principle currently constitutes one of the biggest obstacles on the way to European integration of Ukraine.

It should be emphasized that Ukraine is a European country which is of great geopolitical and economic importance for European Union. First and foremost, country's location (it has borders on several EU Member States), natural resources, agricultural and industrial potential contribute to overall trade, export and import activities with EU. In addition, intellectual and innovation potential of Ukraine is not being effectively applied and that is why better cooperation is needed for the benefit of both countries.

Innovation efforts of Ukraine should be thoroughly studied in order to reveal the obstacles on the way to country's overall progress under globalization trends. Ukraine has chosen innovation model of economy development, though it has not been successful in building it in the most efficient way due to the abundance in legislative acts coupled with poor level of their

implementation. In addition, Ukraine should abandon Soviet traditions of segmented state support (funding exclusively strategic enterprises or those which are owned by state officials) and find a way to balance state and business interests aiming for long terms strategy rather than short term tactical support of several state innovative institutions.

For effective innovation system and economic growth in Ukraine apart from general economic changes (more foreign investments, adoption of new technologies, better integration possibilities, increased competitiveness, IT progress, improvement of existing products and services or creation of new ones, macroeconomic stability, favorable tax climate, transfer of knowledge and technologies and most importantly, legal enforcement of reforms), the following factors which have already being set as standards in EU, are important:

- ✓ Increased R&D expenditure (surely Barcelona goal cannot be applied in the case of Ukraine, however the country should aim for the target of at least 1% of GDP);
- ✓ National innovation strategy should take into account positive features of Lisbon strategy – sustainable development, employment targets, environmental dimension;
- ✓ Improvement of research environment – creating new research centers, promotion and support of cooperation between universities, enterprises and public agencies;
- ✓ Eliminating red tape barriers for SMEs and attracting more investors as a result;
- ✓ Property right protection – adoption of relevant legislation as well as improvement of patenting schemes. Ukraine is not listed neither as a member nor as a contracting part of EPO network and this fact significantly limits competitiveness of its intentions on the market. On the other hand, patenting costs in Ukraine are even higher than in EU as patenting procedures are rather complicated. Due to the problems connected with patenting revealed in previous chapters, it is advisable for Ukraine to follow the example of US patents, which are rather available for US inventors;

- ✓ Creation of user-friendly business practices – customers should have broader access to modern IT services which are time saving (for example, Internet-banking, online transportation booking, online payment for communal fees, etc);
- ✓ Common support for exchange programs for student and researchers from Ukraine (for example, Marie Curie, Erasmus programs) should create better access for Ukrainian citizens to information on grant applications; as a result Ukrainian scientists will contribute to European projects and apply their gained knowledge back at home which will be of benefit for both countries;
- ✓ Management innovation should be introduced more widely which will increase the level of performance of top managers in big companies in Ukraine;
- ✓ Raising awareness on new researches and technologies, patents, inventions, trademarks, as well as national and international competitions, procurement and orders is also important;
- ✓ Mechanisms in the sphere of public procurement and state orders concerning individual innovation projects should be more transparent and open;
- ✓ The market should be open for new technologies, IT products and international corporations working in the sphere of IT which may raise the competitiveness of domestic companies; Updated enterprise infrastructure is needed as well.

Creation of single research space in Ukraine is a very important issue. All national programs, academic, state and university researches should be linked in order to have access to previously elaborated ideas and achievements. Such cooperation will also solve another problem – the gap between researches and applications. Relevant Ministries should cooperate in order to eliminate lack of practical implementation of inventions and research outcomes.

The government should also devote attention to promoting four major industries – nanotechnologies, biotechnologies, energy saving technologies and alternative energy sources, as well as information technologies.

That is why close cooperation and experience exchange between Ukraine and EU is crucial for the development of effective innovation strategy in Ukraine. In such a way Ukraine will benefit both on the national level (increased competitiveness and closer collaboration) and individual level (more opportunities for private researchers and companies within common European projects).

Experience of Hungary, Czech Republic and Poland should be considered by Ukraine as these countries succeeded in achieving high level of IT and scientific industries development over the short period of time. For example, Hungary applies a wide range of state support tools for innovations: opening the market and lack of strict barriers for establishment of foreign highly technological companies, as well as stimulating research works in multinational corporations. In general, such tools as flexible tax schemes, improvement of export mechanisms, financing fundamental sciences, support of research enterprises and universities should be widely applied in Ukraine.

Deeper cooperation within the framework of ERA, COST and EUREKA project should be continued, in particular with increased state and investment support. Ukrainian enterprises should be more involved in European Technology Platforms initiative which proved to be rather successful within EU.

Special attention should be devoted to the reforms in higher education. The positive effect of higher level of university curriculum as well as of college graduates, especially in such spheres as IT, sciences and mathematics is undermined by incompliance of Ukrainian diplomas and grading system with European standards. Substantial reforms are needed in the sphere of university admissions and diploma recognition. Such reforms, as well as availability

of exchange and research programs for Ukrainian students will decrease the level of brain drain from Ukraine and enhance student mobility and level of academic performance.

As a result the demand for highly qualified professionals from Ukraine will increase, age structure of Ukrainian researchers will improve, brain drain will be prevented, new employment opportunities will be opened. If national strategy is implemented the following tendencies can be expected: increase in the number of scientists involved into innovation activities, increase of patented inventions in Ukraine, increase in the number of companies presenting new products on the market, higher competitiveness of Ukrainian enterprises, higher investments into innovation projects, decrease in the number of scientists who leave Ukraine to work abroad, increase in the number of management innovations, restructuring of enterprises.

Conclusion

A number of famous economists and scholars rightfully emphasized the importance of scientific and technical progress for economic development of any country. The analysis made in the research proved that countries need to coordinate their efforts aimed at increasing economic growth by developing state innovation policies. Such policies can only be successful if they support individuals, enterprises, institutional agencies in the application of scientific and R&D achievements; create favorable conditions for innovation market functioning and enhance competition, cohesion of international research endeavors and are effectively endorsed within the legal framework.

The research includes detailed studies of the role of innovation in the growth of national economies and provides comparative analysis of innovation strategies and potential of EU Member States and Ukraine. The tasks of the research were attained as the analysis of main components, indicators and outcomes of innovation system on the Community level over 2000-2009 was completed; main goals, trends and patterns of implementation of innovation regulation in EU and Ukraine were explored; comparative analysis of legal basis, dynamics and peculiarities of innovative processes within the chosen regional dimension was drawn; peculiarities of innovation potential and impact of current European programs and initiatives functioning in Ukraine were defined; set of recommendations and prognosis for improvement of state innovation policy in Ukraine on the basis of EU experience were elaborated which constitutes the added value of the research.

Great attention was devoted to the specific analysis of the EU Lisbon Strategy and its implementation over 2000-2009, relaunched strategy in 2005 on the basis of midterm review, as well as of the future innovation strategy Europe 2020. Goals of coordinated innovation policies of Member States were analyzed from the perspective of their attainability and necessity for increased productivity and growth on the national and EU level on average.

Positive tendencies for the implementation of future economic programs were considered, namely setting clear benchmarks (however, in many cases unattainable by most Member States), increasing level of intergovernmental cooperation as well as enhanced coordination on the Community level; well developed national reform plans, evaluation of economic performance on the basis of clear indicators. Positive outcomes list the increase of employment within EU, development of knowledge based society, enhanced penetration and access to Internet and IT technologies, successful structural reforms in most Member States and improved schemes of social protection. At the same time the main drawbacks were outlined, relating to legal aspect of Lisbon strategy - unclear division and overlap between EU and national responsibilities, lack of binding impetus, report complexity; economic reasons for potential failure of the strategy were explained by divergences between Member States and negative impact of world economic crisis.

Important chapter of the research was devoted to exploring of national innovation system of Ukraine as the country with great geopolitical and economic potential. Successful European integration of Ukraine may benefit to the general EU growth and in the area of practical innovation cooperation in particular due to the fact that Ukraine possesses high intellectual potential, tradition of scientific research schools, resources in the sphere of industry and energy. The research found that Ukraine has made attempts at developing cohering innovation strategy, however the obscure legislation and failures to implement it, as well as outdated infrastructure, administrative burden on innovative enterprises, lack of state support in the form of financing entrepreneurship and individual researches, low level of innovative projects initiation and patenting served as main obstacles on the way of Ukrainian integration into European scientific community. On the other hand, active participation in Ukrainian innovators in EU programs and membership in most important innovation initiatives is recorded in the research.

Specific recommendations are based on the study outcomes relating to the improvement of Community general innovation framework and national policies of EU Member States in particular, as well as inclusion of Ukraine to European innovation dimension.

The research results obtained can serve as contribution for future state policies - Ukrainian state officials will be able to refer to the research findings and build innovation policy in order to support innovators inside the state and decrease the level of brain drain from the country.

Research recommendations include specific solutions and define tools to be applied by Ukraine in order to integrate and adjust Ukrainian economy and science to global tendencies and fasten its economic growth. Theoretical implication of the research presupposes enhancing the information on innovation experience of particular countries through analysis of innovation dynamics; further research on economic growth issues with the emphasis on improved innovation strategy. Practical research results can be applied in further studies of innovation development. Recommendations on particular forms and mechanisms of further regulations can be implemented in state innovation strategies and legislation, while practical solutions for enhanced involvement of companies in world innovation market can be used by innovative enterprises for improvement of their activities on the basis of relevant EU experience.

In conclusion it is worth mentioning that the research findings testify that increased employment and productivity growth demand comprehensive reforms on the state level with the inclusion of society, business and public agencies. Taking into account current globalization trends and negative impact of global economic crisis close intergovernmental cooperation and sharing experience of developed countries are absolutely necessary for positive growth of national economies.

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