

*Economic Theory*

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**PUBLIC-PRIVATE PARTNERSHIP
IN SCIENCE AND EDUCATION –
GUARANTEE OF INTERNATIONAL
COMPETITIVENESS****Abstract**

The paper is dedicated to the task of generalization of the theory and international experience of public-private partnerships in the field of science and education (further- PPPSE), which is lacking in domestic scientific periodicals, in order to create preconditions for its vitalization in Ukraine. The PPPSE's leading role is determined as a mechanism for the convergence of interests of the state, scientific and educational institutions, and enterprises that comply with the concept of triple helix. For this purpose author identified the main directions, forms, conditions, factors, types, risks, models of PPPSE and the arguments arising from international experience, in which special attention is paid to the EU countries. The PPPSE should be regarded as one of the mechanisms for mobilization and sustainable financing of national scientific and educational potential development due to its commercialization within innovation systems and creation of competitive advantages for global and local leadership of businesses and economy. The PPPSE is identified as a basis for the development of cities in the global knowledge economy. The experience and peculiarities of the EU have shown the existence of significant national differences between the levels of ac-

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tivity in PPPSE. The main instrument of convergence of the EU in the PPPSE field is defining uniform requirements for public procurement. Opening the PPPSE Ukraine should rely on the results of the study of worldwide international experience.

Key words:

University, international experience, intellectual resource, public-private partnerships, scientific and educational space, international competitiveness.

JEL: I24, I25, F55.

The global economic crisis led to a decline in the financial resources allocated to scientific and educational field in most countries. Although some of the most developed countries, including EU countries, have increased such financing, as they see this sector of economy as a guarantee to ensure a high competitive status. Development of global competition in scientific and educational space (SES) leads to concentration of significant amounts of resources within a limited range of subjects that will determine the leaders of the world economy in the coming decades. Therefore, the investigation of the PPPSE as a mechanism for mobilizing resources, preserving and creating competitive advantages should be regarded as actual.

Analysis of recent publications. In domestic scientific literature there is a number of works dedicated public-private partnership (further – PPP), but it lacks those dedicated to science and education, confirming the lack of understanding of their relevance in the face of the deteriorating international competitiveness in a global knowledge economy. PPP in terms of investment policy based on cooperation between the state and business had been analysed thoroughly by L. Hrytsenko, emphasised the field of infrastructure, although she offered 37% of the resources of the National program for development of social sphere in Ukraine to be directed into education (Hrytsenko, 2012; Hrytsenko, 2013). The advantages of PPP for higher education and the private sector were summarized by Khusainov (Khusainov, 2014). Hurynenko devoted his papers to the study of experience of PPPs as of special form of international economic cooperation, but he also did not pay attention to education, although correctly defined conces-

sions as the most common form of PPP (Hurynenko, 2012). Similar weakness we find in Avksyentyev who focused on considering PPP as a modern mechanism for attracting investment in the Ukraine's infrastructure sector (Avksyentyev, 2010).

Foreign authors put forward the concept of the triple helix which highlights the necessity of PPP in scientific and educational spheres (Etzkowitz and Leydesdorff, 2000). The experts of World Economic Forum determined PPP as a voluntary alliance between equal participants from different areas in which they agree to cooperate to achieve a common purpose or specific needs, providing shared risks, responsibilities, resources and competencies (weforum.org). Within the European Investment Bank there was European PPP Expertise Centre created, which regularly conducts research and offers their results for the use of scientists and practitioners. The results of research by Latama and Patrinos are worth attention because they participated in systematisation and stratification of forms and types of PPP (Latham, 2009; Patrinos, 2009). Some other researches based on international experience identify the advantages and disadvantages of PPP in education (further- PPPE) for their participants (Draxler, 2008).

Unsolved aspects of the problem. Despite the fact that PPPSE in Ukraine is indeed the case, but we lack the evidence of its existence, problem analysis and successful development. Other countries also meet the problems of lack of accountability and information disclosure, and analysis of their experience may encourage the development of PPPSE in Ukraine. So far, there is no single vision of the role and place of PPPSE within the system of socio-economic development of Ukraine, a lack of theoretical background. The study of international experience, EU countries could enrich national scientists, experts and policy-makers on the feasibility of ideas for PPPSE initiatives.

The task. The article aims at updating of views and synthesis of those aspects of world experience that are missing in domestic scientific periodicals, creating conditions for activation of PPPSE in Ukraine in terms of the global economic crisis, decline in financial resources and aggravation of global competition in the SES. For this paper is to identify the main directions, forms, conditions, factors, types, risks, models of PPPSE and name the arguments deriving from international experience with special attention to the EU countries.

The theoretical background. The global knowledge economy and modern global trends in higher education highlight the need for countries to respond to the challenge of forming significant amounts of intellectual capital to ensure their high competitive status. The main burden of this challenge lies on the system of science and education. Transformation into an open (massive) higher education system requires broad partnerships with all social and economic institutions (Andre Kraak, 2000, pp. 12–16).

The growing importance of innovations, which is caused by the intensification of scientific and technological research, development of appropriate compe-

tencies in total today create «new rules» that will determine the winners in global economy of tomorrow. The key components of the formulation and implementation of policies in these conditions are defined as following (Cozzens et al., 2007):

- support, develop and obtain business results of R&D;
- support the transformation of knowledge into goods (commodification of knowledge), e. g. transformation of knowledge into economic utilities, such as patents;
- stimulate growth of private R&D, enabling PPP and private companies access to public R&D.

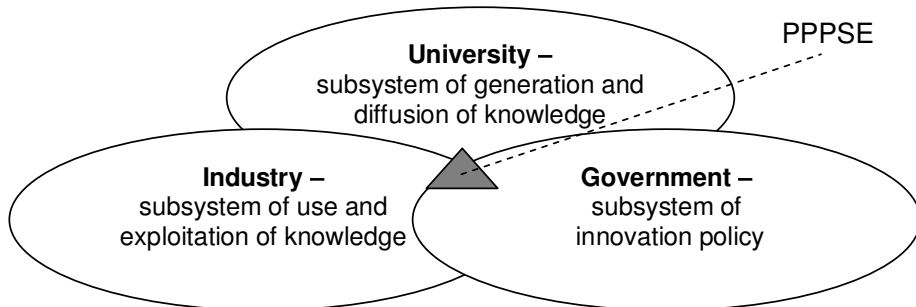
With the growth of education level, from primary, secondary to vocational and higher education, there is a gradual shift of balance between the fulfilments of social to economic functions. The better education performs the economic function, the less the need to involve it into development of the country, as intellectual capital formed at universities is able to independently reproduce itself and generate income or other socio-economic effects for its creators. At the same time developed countries often use funding of universities (particularly when it comes to applied research and vocational training) to subsidize the final recipients of competitive advantages – companies.

PPPSE should be regarded as one of the mechanisms that ensure the unity of institutions outlined in the triple helix concept – government, businesses (industry) and universities (Fig. 1). From neoinstitutional point of view are three basic configurations¹ in positioning of universities, industry and government agencies: (I) **the state configuration**, where the government plays leading role, managing the relations between scientific and educational institutions and industry, as well as limiting their ability to initiate and develop innovative transformations (e. g., Russia, China and some Latin American and Eastern European countries); (II) **the configuration of non-interference**, characterized by limited state intervention in the economy (such as the US, some Western European countries) with industry as the driving force, and other subjects act as auxiliary structures and have a limited role in innovation: university operates mainly as a supplier of skilled human capital and intellectual resources, and the government – the regulator of social and economic mechanisms; and (III) **a balanced configuration**, typical for the transition to a knowledge society where university and other knowledge institutions are even taking the initiative in joint projects, acting in partnership with industry and government. (Etzkowitz and Leydesdorff, 2000) Given the process of knowledge sharing between the leaders of global production networks and local partners, the PPPSE also is one of the channels of movement of knowledge and sharing mechanism (Ernst and Kim, 2002). We note that PPPSE partners can serve as concessionaire, supplier, participant, donor, and investor or advocate (weforum.org).

¹ Depending on the configuration the cross-sectional area of interest in the picture will change.

Figure 1

The visualization of the PPPSE place within the concept of the triple helix



Therefore, in developed countries the concept of entrepreneurial university was introduced, which is a key concept in the triple helix, which occupies proactive position in applying knowledge and creating new knowledge and acts interactively, unlike linear models of relationships (Pavlenko et al., 2014). Firms when increasing their technological level attract a higher level of education and knowledge sharing, and governments in addition to the traditional role of the regulator act as public entrepreneurs and venture capitalists. Universities developing ties unite disparate intellectual property rights and other intellectual resources and use them together with partners. Innovations as a process are no longer a matter of internal corporate nature and start to attract external partners, including universities, which traditionally were not attributed to the innovators. «The third» mission of the university to contribute to local, regional socio-economic development as a permanent process, is the most notable in comparison with the traditional missions of education and research². Students of entrepreneurial university are not only the next generation of professionals, but are also preparing to become entrepreneurs and founders of companies. Entrepreneurial university is also one of the subjects that create new technologies and transfer them, turning from the source of new ideas for existing firms into a source of new firms.

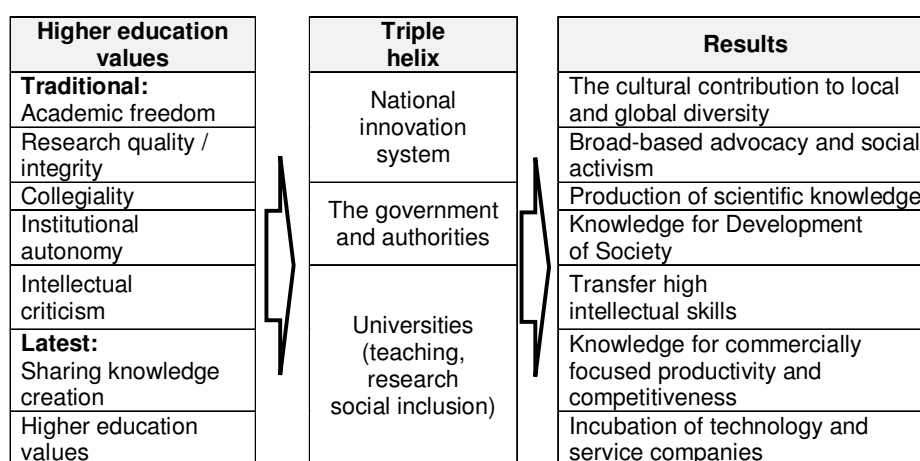
Researchers of a knowledge economy in BRICS countries show that the values of universities since Aristotle remain the key factor that makes possible for universities the creation of results that in today's conditions have a high price

² It is believed that the university third mission was outlined as a result of the second academic revolution of the 1970-s in the USA and 1980-s in Western Europe. The first academic revolution is considered to be in identification of the research functions of the university in addition to teaching. Now world-class universities inextricably combine all three functions.

(Abrahams and FitzGerald, 2012). All parties should base on the values and most importantly – universities, as a subject of the triple helix whose function is precisely the education (Fig. 2).

Figure 2

Transformation of values into results in higher education



Source: Compiled by the author after (Abrahams and FitzGerald, 2012).

The level of development of partnership within triple helix is used to analyse the knowledge economy, for instance, the research of global cities' development based on knowledge (Yigitcanlar, 2014). The research of Monterey (Mexico) innovation system shows that the range of subjects that define the institutional framework of cooperation within the triple helix is extremely wide and each of the three components of the helix is widely considered (Garcia and Chavez, 2014). Local policies targeted on creation of innovative cities, knowledge cities rely primarily on PPPSE with active role of universities in it (Youtie and Shapira, 2008). Frankfurt-on-Main and Helsinki demonstrate successful examples (Schipper, 2014; Yigitcanlar and Lönnqvist, 2013).

The researchers identify two key **organizational forms** of PPPSE – institutional and contractual, widely confirmed by European practice (Arkhypov and 2013; eur-lex.europa.eu). **Institutional** forms include mechanisms of endowment and trust funds, institutions of public participation (public, management (control),

trustees and other boards), technology parks, technology transfer centres, resource centres, joint educational facilities, centres of collective use. Meanwhile, in the EU identify that the state and private business can create almost any joint ventures. (ec.europa.eu) Contract or program/project forms can take such forms as scholarship programs, grants, concessions, leasing, investment contracts, educational vouchers, educational loans, student internships within enterprises with future employment. Latham identifies 7 main areas of PPP in education (Latham, 2009):

- adoption and improvement of educational programs;
- private charity, including with elements of commerce;
- development of state capacity at the expense of the private sector;
- outsourcing of administrative functions;
- application of public procurement;
- voucher programs;
- partnerships for infrastructure development in educational institutions.

The main aspects of PPPE, which are worth paying attention to, are referred to the issue of access to education and participation in projects and institutions, quality, financing, capacity building and management, sustainable development, flexibility and innovation (Latham, 2009). It is obvious that in the early stages of development of PPPSE initiatives parties should clearly define the questions of aims, ownership, including intellectual analysis of real needs, influence and it is especially important to pay attention to accountability and disclosure of necessary information, reporting. The experts of World Bank offer to start from two key aspects in the choice of PPPE – the financing and the terms of service (Table 1).

Contracting is focusing mainly on services, which may include professional, support and related services, operational and financial services, human resources management, educational services and education for specific students. A special place is occupied by contracts for the support and development of infrastructure, buildings and structures, as well as a combination of infrastructure with services (access to education and infrastructure) (World Bank, 2006). The main forms of PPPSE in infrastructure are such as: design and construction, maintenance and operation of facilities, turnkey construction and operation, leasing and acquisition, development facilities, concessions (Patrinos, 2009). The ownership may range from purely state to purely private, but with certain obligations of parties. International experience suggests there are different models of PPPSE used depending on the level of economic development and the priorities identified in the country (Table 2).

Table 1


Matrix of terms of service in public-private partnerships in education

conditions		granting	
		private	public
funding	private	<ul style="list-style-type: none"> • private educational institutions (schools, universities) • home-schooling • tutoring 	<ul style="list-style-type: none"> • charging the users • student loans
	public	<ul style="list-style-type: none"> • vouchers • contractual schools • charter schools • contracts 	<ul style="list-style-type: none"> • public educational institutions (schools, universities)

Source: compiled by author after (Patrinos, 2009).

Table 2

Typology of levels of PPPSE development

The state share	Characteristic	The level of PPPSE
100% state  100% private	Exclusively state system (regulation, financing, delivery).	absence
	There are some private institutions.	nascent
	Subsidizing the cost of private institutions.	emerging
	Contractual terms of delivery of education by private institutions.	moderate
	Private management of public institutions.	engaged
	Vouchers. Funding goes after the student.	integrated

Source: compiled by author after (Patrinos, 2009).

The private sector, civil society and the state are the main institutional actors that may be involved in PPPSE, each with certain inherent advantages and disadvantages (Latham, 2009), which should be considered when deciding on the definition of forms and tools of PPPSE. Universities turn into independent active player in this area when rely on autonomy and entrepreneurship (Pavlenko et al., 2014).

The positive characteristics of PPPE include such as: stimulating the development of competitive relations in education, particularly in higher education; contracts can be more flexible than those of the public sector; increase the level of risk allocation between the public and private sectors (Patrinos, 2009). However, participating parties should distinguish possible negative outcomes of PPPE, namely: reducing the state control over educational institutions as a result of privatization and monopolization of partnerships; growth of differentiation of educational opportunities and as a consequence the deepening of social inequalities; loss by public educational institutions of parent support of children enrolled in private institutions.

The failures in the implementation of some PPPSE projects are due to objective existence of risk and their awareness is the key to actions on their minimization. The following main groups of risks related to the implementation of PPPSE projects are being distinguished – in building and construction (related to the design, construction and condition of real estate), accessibility (resources, staff from non-state partners) and demand (associated with fluctuations in the demand for services resulting from projects) (www.eib.org; EIB, 2014). From our point of view one should also identify the risks associated with accountability of partners, the assignment of objects to certain assets and transparency in project implementation. In general PPPE projects can be seen as a tool for risk reduction, guaranteeing rights for businesses and universities, and for the state as a tool to reduce the risks of inefficiency in higher education and improve its business activity, scientific and technological progress.

The choice of PPP forms is often caused by goals of development of partnerships. For example, in PPPE parties often identify such as: increase in offer of educational services, access to education, management efficiency, improving education quality and accountability, outsourcing of certain functions (Table 3).

Table 3

**The combination of the components
of educational policy with PPPE initiatives**

Components	Types of PPPE programs	PPPE objectives
Educational services	subsidies	increasing accessibility
	public funding of private / independent / non- government institutions	increasing availability and im- proving quality of education
	voucher schemes	increasing availability and im- proving quality of education choices; support decentralization

Components	Types of PPPE programs	PPPE objectives
	assisted places schemes	increasing availability and supply of educational services
	contracts for the provision of educational services	increasing supply of educational services; increasing availability and improving quality of education
	scholarship programs	increasing accessibility and reducing abandonment of further education
	government grants to private / independent institution	increasing accessibility
	targeted individual entitlement	increasing availability and improving quality of education
	integrated school	increasing accessibility
Accompanying and support services	tutoring vouchers	improving quality of education and literacy
	corporate sponsorship of institutions	improving quality and efficiency of education management
	support by funds	improving quality of education, technical assistance
	support of computer education by major IT companies	improving quality of education and computer education using computers and software
	cluster initiatives in education	improving quality of education for existing clusters
	quality assurance resource center	improving quality of education
	additional educational services	improving quality of education and academic achievement of students with low scores
Services of the operation and management	functioning of religious communities	improving quality of education, especially for the poor
	charter / contract / independent institutions	improving quality of education, performance management and accountability
	corporate institutions	improving efficiency management
	program development institutions	improving quality of education
	national programs for quality assurance	improving quality of education

Components	Types of PPPE programs	PPPE objectives
	educational activity zone	improving quality of education, avoidance of social exclusion, promoting cooperation between educational institutions
	independent academy co-financing	improving management efficiency and quality of education
Infrastructure and educational services	building new institutions	outsourcing of design, construction and operation of new institutions
	private finance initiatives	outsourcing of design, construction and operation of new institutions
	concession of new institutions (15-25 years)	outsourcing of design, construction and operation of new institutions
	co-financing institutions	outsourcing of design, construction and operation of new institutions
	leasing of state institutions	outsourcing of design, construction and operation of institutions
	real estate development institutions	outsourcing of design, construction and operation of institutions

Source: compiled by the author after (Patrinos, 2009).

Most private partners expect to obtain a certain financial result or competitive advantage from initiatives of partnership with the state. Some options, such as the issue of targeted funding, project bonds which are often done in Germany, make it attractive for financial markets (www.eib.org). Expansion of PPPSE projects leads to non-financial consequences too, which include increasing the availability and improving the quality of education, performance management and accountability, expansion of choices, avoiding social exclusion, development of public image of partners, etc. (Table 3). Moreover, most PPPSE bring multiple results, for example, energy efficiency projects. It is necessary to name such a result as increased solidarity around educational institutions, making them the centre of civil attention, increasing the value of their intellectual heritage. Although not all outcomes can be measured, but partners can strive to identify strengths and weaknesses of PPPSE projects and further improve both the projects and public policy in this area. Assessments should be based on such objec-

tive components as defined purpose, use of results, implementation mechanisms, time and comparison criteria (www.eib.org).

Experience of some countries. The PPPSE scale varies greatly worldwide – from a global educational initiative of the World Economic Forum³ https://translate.googleusercontent.com/translate_f_-_ftn3to small local projects. In the US, where the PPP has been developing for more than 200 years, cities on average have 23 of the 65 major municipal services provided under the terms of PPP, and the highest priority is infrastructure development initiatives, including in education (www.ncppp.org).

The need to deepen the specialization of universities in major activities is a reaction to the challenges of internationalization and globalization of the knowledge economy, which requires transmission capabilities of related activities to other social partners. Inspired by the experience of France, where student cafes, hostels, libraries, and even sometimes institutions of recreation and sports or career centres are not part of the university, China in late 1999 launched activities to enhance the socialization of services in logistics (logistics socialization as a process of involvement of all social partners to support university activities) (Xu Yongfan, 2012). This alignment of forces enables universities to focus on educational and research activities simultaneously being in the active interaction and cooperation with the social partners on market principles, demonstrating the opportunities created by universities.

The experience of other EU countries is important for us, as about third of PPP is implemented in the EU in the field of education; particularly the practice is common in the UK (Table. 4) (Bezbakh). At the University of Cambridge researchers offer PPPSE to treat as a tool to reduce poverty and social marginalization of society, meanwhile they are actively using capacities of endowment funds (Fennell, 2010). A special place in the world of PPPE experience is occupied by Netherlands, where from 1850 to 2000 the share of private schools gradually increased from 0 to 70%, and most private schools demonstrate the possibility of building of a certain model that provides access to quality in education (Patrinos, 2009). In Austria PPPSE development indicators are used by universities in the preparation of knowledge balance sheets (Habersam et al., 2013).

As Table 4 shows (unfortunately not all the data available, which limits the possibility of econometric analysis) in most EU countries PPPSE initiatives provide educational institutions with very significant amounts of financial support. In some countries they even exceed or equal the volume of expenditure allocated to R&D.

³ World Economic Forum's Global Education Initiative

Table 4

Government obligations in PPP projects in EU countries, % of GDP

Country	2011	2012	2013	Public expenditures on education, 2011	R&D expenditures, 2013
Belgium	0,03	0,07	0,15	6,55	2,28
Croatia	0,15	0,14	0,13	4,21	0,81
Denmark	–	–	0,13	8,75	3,05
Estonia	–	–	0,23	5,16	1,74
Finland	0	0	0,03	6,76	3,32
Great Britain	2,1	1,99	1,89	5,98	1,63
Greece	0	0,01	0,01	–	0,78
Hungary	2,44	2,34	2,18	4,71	1,41
Ireland	–	–	2,83	6,15	1,58
Italy	0,02	0,02	0,02	4,29	1,25
Latvia	0,04	0,03	0,03	4,96	0,6
Netherlands	0,2	0,26	0,39	5,93	1,98
Portugal	5,32	5,35	5,12	5,27	1,36
Slovakia	–	–	1,44	4,06	0,83
Spain	–	–	0,28	4,82	1,24

Source: compiled by the author (Eurostat Database).

In the EU implementation of PPPSE initiatives is closely related to public procurement procedures (www.eib.org). Depending on the resources used and the results obtained procedures may differ (open, restricted or competitive bidding) which have different levels of flexibility for participants and transparency of procedures and the results obtained, as well as financial resources and intellectual property or intellectual capital should be treated in different manner. It should also be understood that the PPPSE can be used for abuse of dominant position, which occurs this way, and this is why the EU has made restrictions in the relevant directives on public procurement, including scientific and educational services (Directive 2004/18/EC). Despite the existence of certain legislative shortcomings, the EU started practical implementation of the PPPSE idea. So, research partnerships often occur within the framework programs, but at the national level it depends on the level of development of the country. The 7-th Framework Programme launched joint technology initiatives as a kind of institution partnerships of different partners. As a result, it has shaped out a number of individual initiatives, namely: innovative medicines; aeronautics and air transport

(Clean Sky); fuel cells and hydrogen; embedded computing systems; technology of nanoelectronics. Within Horizon 2020 program a number of initiatives received a second life, some transformed and new established⁴, such as (europa.eu):

- Innovative Medicines – 2 (EU budget and private partners €3.2 bln in common);
- Fuel Cells and Hydrogen – 2 (€1.3 bln);
- Clean Sky- 2 (€4 bln);
- Biotechnology Industries (€3.7 bln);
- Electronic Components and Systems (€5 bln).

At the same time the European Commission in the Horizon 2020 framework launched a number of contractual partnerships where distribution of €6 bln will take place on competitive basis, namely: the factory of the future (€1.15 bln), energy-efficient buildings (€0.6 bln), the European initiative for green vehicles (€1 bln), sustainable process industry (0.9 bln), photonics (€0.7 bln), robotics (€0.7 bln), high-performance computing (€0.7 bln) and development of 5G future Internet network (0.75 bln) (europa.eu). The EU quite clearly sends a signal that PPP uses science and education to ensure economic competitiveness for the future (eur-lex.europa.eu). The experience of biotechnology argues that scientists, who work outside the main vocational fields, are extremely critical to establishing of external partnerships in R&D and finance, but with the increasing number of partnerships in the industry and their institutionalization their criticality decreases, particularly on financial aspects (Luo et al., 2009).

In the least developed countries and depressive regions of more developed countries PPPE is often considered the only capacity to provide basic and secondary education for the general public. In developed countries PPPSE is considered as a form of cooperation between the government, educational institutions and enterprises to supplement their integration within the innovation system, the formation and operation of national intellectual capital, bilateral partnerships (state – enterprises, enterprises – universities, state – universities), more effective implementation by the parties of their missions.

In the Gulf countries (Qatar, Saudi Arabia and United Arab Emirates) and countries of North Africa and the Middle East, which have tight relations with European and American universities, since the early 1990s education is used for such basic purposes as overcoming illiteracy, diversification of economy, which are oil-based and the preservation of cultural unity (Weber, 2011). Their quite common view is that the production of knowledge and its distribution require ex-

⁴ This distribution of funds between the EU budget and private sources will be 50/50, although in some cases additional funding will be given to interested EU countries. So out of 22 bln.euro EU budget provides 8 bln.euro, enterprises 10 – and EU countries 4 bln.euro.

change of ideas, which in turn are based on certain cultural traditions, conditions, including rights, trust, sharing of responsibilities between different knowledge partners, institutional regimes, strategies and all other «social baggage», which necessitates the adaptation of values of the knowledge economy in each country (Peters, 2008).

PPPSE development in Ukraine. The EU insists on the creation within state agencies of individual departments addressing the issues of PPP, including tasks of monitoring, analysis of results and needs, financing, recruitment, localization, management of stakeholder interests and individual projects, policy development, exchange of experience, development of standard documents and guidelines (EIB, 2014). For example, in Ukraine the issue of PPP assigned only to the Department of investment-innovative policy and development of public-private partnership within the Ministry of Economic Development and Trade. However, it should be recognized and international experience proves that these functions can be assigned to individual performers depending on their level. It is clear that the Ministry of Education should also have such a department. Simultaneously, coordination of PPP at the national level is still to find the proper usage for the benefit of social and economic development of the country and individual regions.

Unfortunately the profile law does not directly determine that PPPs can take place in education, but still outlines spheres that may be of interest to educational institutions, namely: culture and sport, property management and other spheres of public-private partnership (education, science, IT) (Law of Ukraine from 09/08/2010). Although Ukraine makes the first steps in this direction, but they can rely on extensive research of international experience.

In foreign practice development of PPPSE forms evolved from dominance of market based contracts to institutionally integrated forms, which at the beginning of the XXI century amounted to 97% (Holovinov and Dmytrychenko, 2013). However, Ukraine in modern conditions of public administration and finance, rejection of corruption should emphasize the diversification that is possible primarily through the contract form, while institutional forms are long-term and promising. Diversification of forms and partners will help us to overcome one of the main domestic deficiencies, which is preference of the state to deal with big businesses (Holovinov and Dmytrychenko, 2013). The state guarantees for protection of the partners' rights on the basis of accountability could be the factor which accompanied with the expansion of university autonomy will encourage PPPSE initiatives and effective use of intellectual resources of national universities.

Experts distinguish several factors for successful PPPSE, namely: a common vision of the mission and goals, of attracting proactive leaders, ability to negotiate with non-traditional partners, political will and public support, transparency and accountability, supporting the results and consistent indicators for measurement of the results (www.weforum.org). One of the examples is the attempt to

establish PPPSE communication forums of stakeholders, such as carried out in Kyiv National Economic University⁵.

Institute of Legislation of the Verkhovna Rada of Ukraine jointly with the National University of Life and Environmental Sciences of Ukraine yet in 2012 conducted a round table to promote the use of mechanisms of partnership between public universities and private investors (instzak.rada.gov.ua). It discussed the relationship between public and private interests in higher education, forms, types and risks, the prospects of PPP development in Ukraine, as well as proposals for amending the law of Ukraine «On Public Private Partnership» to create legislative conditions for PPPSE deployment. Universities still call the insufficiency of the legal framework that would ensure private sector participation in provision of the funds for public universities, confirming the lack of autonomy in managing financial resources, limited initiatives and creativity. However, the new law «On education» (2014) settles the principle of state support for implementation of PPP in higher education, so it looks like that there is a need for proactive partners.

Implementation of potential of PPPSE development in Ukraine currently could be possible due to a) identification of existing PPPSE, that are often out of legal certainty; b) research of problems for PPPSE development; c) taking measures to motivate PPPSE. Examples of PPPE include informally known facts that parents pay for teaching children in high school or entry to university and study. Enterprises often cooperate with vocational education institutions on a contractual basis, but not calling it a form of PPPSE. Therefore, generalization and identification of hidden partnerships can be an impetus for the development of new mutually beneficial relationship.

Conclusions. PPPSE should be viewed as a general concept of PPP initiatives in the fields of science, education and associated with them. The development of PPP in the fields of science, research, and primary, secondary, vocational and higher education have their own specifics and require in-depth research. Supporting the development of PPPSE state relies primarily on the mobilization of national resources which creates the preconditions for sustainable socio-economic development. It is one of the channels for application for domestic capital, especially as an alternative of capital exports. Usage of the competitive advantages of domestic companies within the country strengthens their competitive position in global markets and shapes international competitiveness of the national economy.

The PPPSE experience in EU regions and countries needs a more detailed investigation, which can bring ideas for its revitalization in Ukraine, which as a European country has considerable potential to use PPPSE to meet national interests within European integration processes. We observe the existence of

⁵ The Second International business forum «Science – Business – Education: strategic partnership» took place in KNEU in 2014.

very significant differences in terms of PPPSE intensity in the EU countries, which are integrated by common legislation regulating public procurement.

In school education PPPE is limited mainly by projects with a significant social burden. Extremely high interest in PPPSE development is to come from enterprises and local authorities at the level of vocational education and training. Speaking of higher education partners should both identify opportunities for the development of educational and scientific-research initiatives, and combine them in the interests of the parties. Activities for the commercialization of university research are impossible without cooperation between educational and corporate sectors in terms defined by the state, although there could be possible exceptions for which entrepreneurial universities need capital, autonomy and entrepreneurial competencies.

Effective use of PPPSE in strategies in socio-economic development enables the creation not only of knowledge cities, but also of companies with a high national and international competitive status, turning into advanced economy and society.

Bibliography

1. Avksyentyev M. Yu. Public-private partnerships as a modern mechanism for attracting investment in the infrastructure sector in Ukraine: Author. Thesis. ... Candidate. Econ. Sciences: 08.00.03 / M. Yu. Avksyentyev / NDEI Ministry of Economy of Ukraine. – K., 2010. – 22 p.
2. Arkhypov A. Yu., Shevchuk E. V. Public-private partnership as an institution of the modernization of educational services: international and domestic experience: monograph / A. Yu. Arkhypov, E. V. Shevchuk. – M. : High school book, 2013. – 196 p.
3. Bezbakh N. V. The usage of foreign experience in the development of public-private partnership in Ukraine [Electronic resource]. – Retrieved from : <http://www.academy.gov.ua/ej/ej14/txts/Bezbach.pdf>.
4. Holovinov O. M., Dmytrychenko L. A. Scientific and practical aspects of public-private partnerships in education // Economics and Law: Labour economics, social economics and politics. – 2013. – № 1. – P. 84–89.
5. Hrytsenko L. L. Public-private partnership in the context of stabilization policy / L. L. Hrytsenko // Economy and Location: Science Bulletin of Poltava National Technical University. – 2012. – № 2 (33). – P. 19–24.
6. Hrytsenko L. L. Development of investment policy based on cooperation between the state and business: methodology and practice: Author. Thesis. ...

- Dr. Sc. Sciences: 08.00.03 / L.L. Hrytsenko / SHEI «Ukrainian Academy of Banking of the National Bank» – Sumy, 2013. – 40 p. [Electronic resource]. – Retrieved from : http://uabs.edu.ua/images/stories/sc_autoref/2013/1249_hritcenko.pdf.
7. Hurynenko O. M. Development of special forms of international economic cooperation (for example concessions): Abstract. Thesis. ... Candidate. Econ. Sciences: 08.00.02 / O. M. Hurynenko / SHEI Vadym Hetman Kyiv National Economic University. – Kyiv : Kyiv National Economic University, 2012. – 20 p.
 8. Research universities: international experience and prospects in Ukraine: Monograph / [Pavlenko A. F., L. L. Antonyuk, N. V. Vasylova, Ilnytsky D. O. et al.]; for the Society. Ed. d. e. n., prof. A. F. Pavlenko and e. e. n., Prof. L. Antoniuk. – Kyiv : Kyiv National Economic University, 2014. – 550 [2] p.
 9. Law of Ukraine on Higher Education.
 10. Law of Ukraine on Public-Private Partnership // Official bulletin of Ukraine. 09.08.2010. – № 58. – p. 17.
 11. The partnership of public and private sectors. Institute of Legislation of the Verkhovna Rada [electronic resource]. – Access: <http://instzak.rada.gov.ua/instzak/doccatalog/document?Id=52958>.
 12. Khusainov R. V. Public-Private Partnerships in Higher Education of Ukraine / R. V. Khusainov // Bulletin of the Odessa National University. Economy. – 2014 – Vol 19 – Vol. 2/2. – P. 190–196.
 13. Abrahams L., FitzGerald P. (2012, September) Would «Good» Values Yield Good «Value»? Positioning Higher Education in an Emerging Knowledge Economy. *Journal of the Knowledge Economy*, 10/09, pp. 1–13.
 14. Building on the Monterrey Consensus: The Growing Role of Public-Private Partnerships in Mobilizing Resources for Development. (2005, September) WEFForum. UN High-level Plenary Meeting On Financing for Development, 108 p. [Electronic resource]. – Retrieved from : http://www.weforum.org/pdf/un_final_report.pdf.
 15. Changing Modes: New knowledge production and its implications for higher education in South Africa. / Andre Kraak (ed). HSRC Press, 2000, 199 p. Retrieved from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.201.1138&rep=rep1&type=pdf>.
 16. Commission interpretative communication on the application of Community law on Public Procurement and Concessions to institutionalised PPP (IPPP). (2008) Commission of the European Communities. Brussels, 05.02.2008.

- C(2007)6661, 9p. Retrieved from : http://ec.europa.eu/internal_market/publicprocurement/docs/ppp/comm_2007_6661_en.pdf.
17. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships. (2009) COM/2009/0615 final. Retrieved from : <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52009DC0615>.
 18. Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts. *OJ L 134*, 30.4.2004, p.114. Retrieved from : <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1398241451734&uri=CELEX:02004L0018-20090821>.
 19. Draxler A. (2008) New partnerships for EFA: Building on experience. UNESCO-IIEP/World Economic Forum, 113 p. Retrieved from : <http://www.weforum.org/pdf/GEI/Partnerships.pdf>.
 20. Ernst D., Kim L. (2002, December) Global production networks, knowledge diffusion, and local capability formation. *Research Policy*, 31 (8–9), pp. 1417–1429.
 21. Establishing and Reforming PPP Units: Analysis of EPEC Member PPP Units and lessons learnt. (2014) EIB: European PPP Expertise Centre, 09, 74 p. Retrieved from: http://www.eib.org/epec/resources/publications/epec_establishing_and_reforming_ppp_units_en.pdf.
 22. Etzkowitz, H., Leydesdorff, L. (2000). The Dynamics of Innovation: From National Systems and ‘Mode 2’ to a Triple Helix of University-Industry-Government Relations. *Research Policy*, 29(2), pp. 109–123.
 23. EU and industry join forces to invest €22 billion in research and innovation. European Commission. (2013, 10 July) Press release. Brussels. Retrieved from : http://europa.eu/rapid/press-release_IP-13-668_en.htm.
 24. EU industrial leadership gets boost through eight new research partnerships. European Commission. (2013, 17 December) Press release. Brussels. Retrieved from: http://europa.eu/rapid/press-release_IP-13-1261_en.pdf.
 25. Eurostat Database. Gross domestic expenditure on R&D. Retrieved from : http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_20&plugin=1.
 26. Eurostat Database. Liabilities related to private-public partnerships (PPPs) recorded off-balance sheet of government. Retrieved from : http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=gov_cl_ppp&lang=en.

27. Eurostat Database. Public expenditure on education. Retrieved from : <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tsdsc510&plugin=1>.
28. Eurostat Treatment of Public-Private Partnerships: Purposes, Methodology and Recent Trends. (2010). EIB: European PPP Expertise Centre, p. 11. Retrieved from : <http://www.eib.org/epec/resources/epec-eurostat-statistical-treatment-of-ppps.pdf>.
29. Fennell S. (2010, October) Public-Private Partnerships and Educational Outcomes: New Conceptual and Methodological Approaches / RECOUP Working Paper No.37, 25 p. Retrieved from: http://ceid.educ.cam.ac.uk/research-programmes/recoup/publications/workingpapers/WP37-PPP_and_Educational_Outcomes.pdf.
30. Financing PPPs with project bonds in Germany: An analysis of procurement issues. (2013, July). Freshfields Bruckhaus Deringer & EPEC, 19 p. Retrieved from : <http://www.eib.org/epec/resources/financing-ppps-project-bonds-in-germany-july-2013pdf1.pdf>.
31. Garcia B. C., Chavez D. (2014) Network-based innovation systems: A capital base for the Monterrey city-region, Mexico. *Expert Systems with Applications*, 41, pp. 5636–5646.
32. Habersam M., Piber M., Skoog M. (2013) Knowledge balance sheets in Austrian universities: The implementation, use, and re-shaping of measurement and management practices. *Critical Perspectives on Accounting*, 24, pp. 319–337.
33. Latham M. (2009, March) Public-Private Partnerships in Education., IFC: CfBT Education Trust, 11 p. Retrieved from : <https://www.nuffic.nl/en/library/public-private-partnerships-in-education.pdf>.
34. Luo X. R., Koput K. W., Powell W. W. (2009) Intellectual capital or signal? The effects of scientists on alliance formation in knowledge-intensive industries. *Research Policy*, 38, pp. 1313–1325.
35. Patrinos, Harry Anthony. (2009) The role and impact of public-private partnerships in education / Harry Anthony Patrinos, Felipe Barrera-Orsorio and Juliana Guáqueta. The International Bank for Reconstruction and Development / The World Bank, 100 p. Retrieved from : http://www.ungei.org/files/Role_Impact_PPP_Education.pdf.
36. Peters, M. A. (2008). «Education and the Knowledge Economy». In G. Hearn, and D. Rooney, (Eds). *Knowledge Policy: Challenges for the 21st Century*. Cheltenham: Edward Elgar, 277 p.
37. Problems of Inequality in Science, Technology, and Innovation Policy / Cozzens S.E., Kallerud E., Ackers L., Gill B., Harper J., Pereira T.S., Zarb-

- Adami N. – James Martin Institute Working Paper 5. Project Deliverable 2. April 2007, 35 p.
38. Procurement of PPP and the use of Competitive Dialogue in Europe: A review of public sector practices across the EU (2010). EIB: European PPP Expertise Centre, 11, 38 p. Retrieved from : <http://www.eib.org/epec/resources/epec-procurement-and-cd-public.pdf>.
 39. Risk Distribution and Balance Sheet Treatment: Practical Guide. (2014). EIB : European PPP Expertise Centre. Second Edition, 11, 40 p.
 40. Schipper S. (2014, January) The Financial Crisis and the Hegemony of Urban Neoliberalism: Lessons from Frankfurt am Main. *International Journal of Urban and Regional Research*, 38.1, pp. 236–255.
 41. The Non-Financial Benefits of PPPs: A Review of Concepts and Methodology (2011). EIB: European PPP Expertise Centre, 06, 26 p. Retrieved from : <http://www.eib.org/epec/resources/epec-non-financial-benefits-of-ppps-public.pdf>.
 42. Top ten facts about PPPs. Retrieved from : <http://www.ncppp.org/ppp-basics/top-ten-facts-about-ppps/>
 43. Weber A. S. (2011) The role of education in knowledge economies in developing countries. *Procedia Social and Behavioral Sciences*, Vol. 15, pp. 2589–2594.
 44. World Bank. (2006) Colombia Contracting Education Services. Report 31841-CO. Washington, DC, 69 p.
 45. World Economic Forum's Global Education Initiative. Retrieved from : <http://www.weforum.org/videos/global-education-initiative>.
 46. Xu Yongfan (2012) The Study on University Financial Management under Knowledge Economy. *Physics Procedia*. 2012 International Conference on Medical Physics and Biomedical Engineering, 33, pp. 1913–1919.
 47. Yigitcanlar T. (2014) Position paper: benchmarking the performance of global and emerging knowledge cities. *Expert Systems with Applications*, 35 p.
 48. Yigitcanlar T., Lönnqvist A. (2013) Benchmarking knowledge-based urban development performance: Results from the international comparison of Helsinki. *Cities*, 31, pp. 357–369.
 49. Youtie J., Shapira P. (2008) Building an innovation hub: A case study of the transformation of university roles in regional technological and economic development. *Research Policy*, 37, pp. 1188–1204.