

Higher Education as a Determinant of Sustainable Economic Development of Ukraine: Financial Aspects

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Abstract

Higher education is of the foremost impact on the personality as the carrier of the knowledge-based capital. That is why the creation of knowledge-based capital is possible through the investment in higher education, the results of which are scientific investigations and innovations, which in total are in the heart of knowledge economy and the promoter of long term growth of the country. This thesis is confirmed by the expenditures for higher education, the most developed countries of the world spend a lot of financial resources for higher education and their expenditure for education can be treated as the strategic investments in nation economy of their country. It shows the relationship between the cost of education and the size of their GDP. Also the actual problems of financial support of higher education in Ukraine are examined, which hinder the development of education and the economy at all. There are recommendations for solving financial problems of higher education in Ukraine.

Keywords: higher education, economic growth, knowledge-based economy, knowledge-based capital

Introduction

Nowadays the world faces difficult problems; the results of “economic woe” being available for some years since the crises have began. As it is clear the economic situation and welfare of the society can not be improved taking advantage of traditional methods, using general types of economic resources. Some countries experienced it, but in spite of the global economic crisis they demonstrate economic growth. Thus, economic growth can be possible thanks to qualitatively new kind of capital—knowledge-based capital. The basis of the knowledge-based capital (KBC) is a person, who is able to acquire knowledge and to apply it into practice. Education is of the foremost impact on the personality as the carrier of the knowledge-based capital. That is why the creation of knowledge-based capital is possible through the investment in education, the results of which are scientific investigations and innovations, which in total are in the heart of knowledge-based economy and the promoter of long term growth. The investment in education, investigations and innovations generate the capital, which is based on knowledge, which contributes to the efficiency and rivalry of nations

The main objective of this article is to examine the contribution of education to economic growth and welfare of the country. Methodological basis of the research is annual ranking of national systems of higher education undertaken by the leading world group of universities Universitas 21 initiated by the University of Melbourne, Melbourne Institute for applied Economic and Social investigations. The core research lies in hypothesis about expansion of opportunities to increase the financial resources of higher education through independence, financial on particular, for higher educational institutions.

1 Higher education of Ukraine in the ranking of national systems of higher education

The latest annual ranking of national systems of higher education undertaken by the leading world group of universities Universitas 21 was reported, within which general estimation of universities, advantages and disadvantages were investigated (this is a unique international platform for ranking countries according to the stages of development of higher schools, initiated by the University of Melbourne, Melbourne Institute for applied Economic and Social investigations).

Tab. 1. The 2014 Universitas 21 ranking of national system of higher education (10 tops)

Rank	Country
1	USA
2	Sweden
3	Canada
4	Denmark
5	Finland
6	Switzerland
7	Netherlands
8	Great Britain
9	Australia
10	Singapore

Source: U21 Ranking of National Higher Education Systems 2014, report available at <http://www.universitas21.com/news/details/147/u21-ranking-of-national-higher-education-systems-2014>

The highest ranked countries in the 2014 Universitas 21 ranking are USA, Sweden, Canada, Denmark, Finland (correspondingly from 1st till 5th places among some 50 investigated countries). 24 different indicators were compared worldwide and grouped in four areas:

- resources of higher educational institutions, which cover data on total and government expenditures for higher education, investigation and developments
- environment of higher education, which comprises complex estimation of the governmental policy and regulations in the sphere of higher education
- connectivity of higher educational institutions with the public relations, international education-scientific community
- output and weights of higher educational institutions

2 Expenditure for higher education — main investments for development of national systems of higher education and national economics

Very interesting regularity is worthy being admitted, the first 5 top countries in the ranking of national systems of higher education are those, which are in the first 5 top adequately resourced. Resources of higher educational institutions according to the ranking includes: government expenditure on higher education as a percentage of GDP; total expenditure on higher education as a percentage of GDP; annual expenditure per student by the higher educational institution; expenditure for research as a percentage of GDP and expenditure of higher educational institution per 1 person. In the 2014 Universitas 21 ranking Ukraine is in the 42th place. As it is seen, the Resources component or financing affect directly the development, quality and competeability of the higher education. That is why let's compare the expenditure of countries, which are in the first 10 top of national systems of higher education. As it is seen from table 2, the results of analysis of the higher education in Ukraine are to some extent contradictory: if initial data is relative data (portion of expenditure on higher education as a percentage of GDP), the data in Ukraine is similar to that in the developed countries, but if the absolute values are compared the expenditure for higher education is sufficiently less than in other countries.

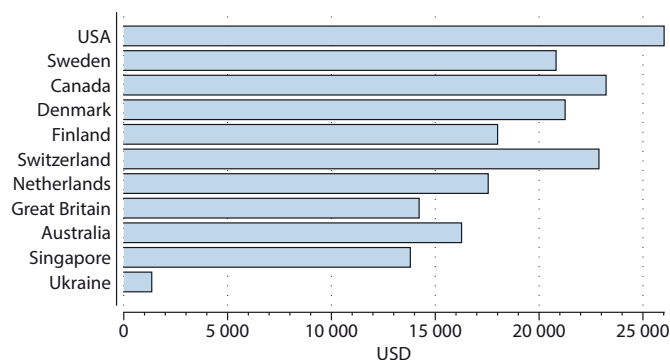
Tab. 2. Expenditure for education in absolute values in 2013

Number in the ranking of national higher education systems	Country	Expenditure for education as a percentage of GDP (%)		Expenditure for education in absolute values (billions of USD)		Expenses for education in absolute values, per 10 thousand of population (thousands of USD)	
		All education	Higher education	All education	Higher education	All education	Higher education
1	USA	7,3	2,6	1 094,3	389,8	34 867	12 420
2	Sweden	6,7	1,8	36,11	9,7	39 665	10 655
3	Canada	6,1	2,5	109,96	43,43	32 058	12 662
4	Denmark	7,9	1,9	26,23	6,31	47 317	11 383
5	Finland	6,4	1,9	16,83	5,0	31 978	9 500
6	Switzerland	5,5	1,4	38,28	9,7	48 382	12 310
7	Netherlands	6,2	1,7	55,43	15,2	33 206	9 097
8	Great Britain	6,0	1,3	145,74	31,6	23 116	5 012
9	Australia	6,0	1,6	90,9	24,24	41 289	11 010
10	Singapore	3,07	1,1	8,4	3,01	15 560	5 557
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
42	Ukraine	8,1	1,16	13,04	1,87	2 862	410

Source: Compiled by the author based on Education at a Glance 2014. OECD Indicators. [a:] http://www.oecd-ilibrary.org/education/education-at-a-glance-2014_eag-2014-en

Note: [In the journal European practice of number notation is followed—for example, 36 333,33 (European style) = 36 333.33 (Canadian style) = 36,333.33 (US and British style).—Ed.]

If the expenditure for education per 10 000 of population is analyzed, the situation in Ukraine is not consolatory. Expenditure for all education in Ukraine is USD 2 862 thousand, USD 410 thousand for higher education in particular. For comparison, expenditure of Denmark, Australia, Canada, Sweden, USA for education per 10 000 of population is in 15–20 times higher. They are the countries to lead in the world in the economic and social development and their expenditure for education can be treated as the strategic investments in nation economy of their country. Expenditure per 1 student is compared for the investigation of the higher education scope in every country. It makes possible to estimate funds invested in every single user of the “educational services” in the country. Let’s analyze the cost of education of 1 student in the countries, which are ranked as the first 10 top of the national system of higher education. Thus, in 2013 the expenditure for education of 1 student in Ukraine was in 10 times lower, than average in the OECD countries and almost in 20 times lower, than that of the top ranked leader—USA. The level of expenditure is modified by the teaching staff salary, number of students per 1 teacher (instructor), total number of students enrolled and structure of the educational system in whole. Expenditure for scientific developments and investigations is the substantial component of all expenditure for education, which in the Western countries amounts in average one fourth of all expenditure. On the contrary,

**Fig. 1.** Expenditure for education per 1 student in 2013

in Ukraine this data is insufficient and in 2013 the expenditure for science at higher educational institutions was 0,6% of all expenditure for higher education. Higher educational institutions in Ukraine are likely not to be able to fund scientific investigations, which would be of interest for the contemporary world science and would promote the raising of education quality. While estimating the funding of the higher education it is worth investigating investment sources: government, private sector, enterprises. In figure 2 the structure of expenditure for higher education in some countries is presented.

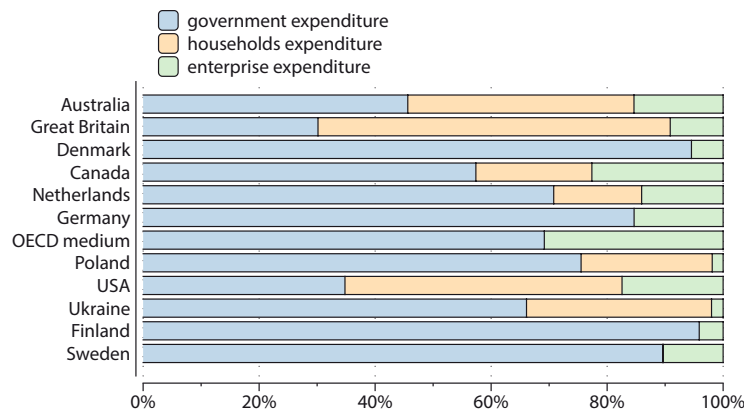


Fig. 2. Structure of expenditure for higher education

Education fees of Ukrainian households cover the greatest portion in the structure of expenditure for higher education. In whole, non-government funding of education in Ukraine corresponds private sector expenditure—the portion of the private sector expenditure is minimal and amounts 2%, while in the Western countries private sector for expenditure amounts 4%–5%, in some countries (Australia, Austria, Canada, Netherlands, Germany, USA, Sweden) it is more, than 10%. Investments in the sphere of education have proved to be proper, because the reversible effect is seen. These are those countries, which are the leaders in the amount of GDP in the world. That is, the investments in education are justified for both the country and the individual, and the rates of profit are different for different countries, which are testified by the data on table 3. While analyzing the data from table 3 it should be stressed, that the profit rate from the investments in education is high enough for both the country and the individual. In some cases it exceeds the

Tab. 3. Profit rate for a person with University degree (in %)

Country	Profit rate, when a person took University degree after completion of the secondary school		Profit rate, when a person took University degree at the age of 40	
	For the state	For the person	For the state	For the person
Belgium	15,0	12,98	10,0	24,08
United Kingdom	14,9	18,21	7,4	13,16
Denmark	7,4	8,21	2,2	11,30
Korea	15,5	13,56	12,3	21,34
Norway	9,7	13,89	4,4	15,77
USA	13,6	13,73	7,8	11,33
Hungary	15,9	18,79	12,5	22,23
Finland	12,4	16,33	9,7	14,74
Switzerland	6,1	9,90	−0,4	15,77
Sweden	6,9	8,57	2,7	9,33

Source: Compiled by the author based on Education at a Glance 2014. OECD Indicators.

[@:] http://www.oecd-ilibrary.org/education/education-at-a-glance-2014_eag-2014-en

average profit rate for the industrial enterprises. Such type of investments is reasonable in all aspects, as they always contribute to economic and social advantages.

3 The most urgent problems the Ukraine universities

But on the contrary to the tendencies in the world, higher education in Ukraine faces difficulties and for its further development it needs the support of the government. There are some most urgent problems the Ukraine universities face now, which affect directly their funding. Some most specific of them, the Ukraine Universities face, are listed.

The first group of problems the sphere of education face is: great number of higher educational institutions, misrepresented rivalry, relative assessment criteria, demographic crisis, lack of students and transfer-students to neighboring countries, etc. There are more than 800 higher educational institutions in Ukraine, 250 of which are Universities. The number of higher educational institutions of the III–IV level of accreditation has increased from 149 (1990/1991) to 345 (2011/2012). Ukraine does not need to have such number of educational institutions that is why it is reasonable for the system of higher education and improvement of the quality of education to decrease the number of such institutions. On the contrary, in spite of the increase of the number of institutions, the enrollment in them decreases from year to year. It is confirmed by the figures presented on table 4. As it is seen from table 4 since academic year 2008/2009 the number of graduates from the higher educational institutions has exceeded greatly the number of those enrolled in the first year of study. It could not be expected in Ukraine earlier. Since that year the drop of number of students per 10 000 of population can be noticed. This phenomenon is caused by the demographic crises. Demographic crises in Ukraine, which was the result of sharp drop of newborns, results now in small number of school-leavers, who are the applicants of the higher educational institutions. In figure 3 the dynamics of newborns number in 1990–2010 is presented, the direct dependence between the number of newborns and the number of school-leavers in 17 years is clearly seen. If we take into account, that today in 2015, the University enters those born in 1998, the dramatic situation can not be considered the worst. It can be expected not earlier than in 2017. Besides demographic crises the disadvantages consequences for the higher educational institutions of Ukraine are caused by the fact, that neighboring countries attract our school-leavers. According to the results of 2012/2013 the leaders are: Poland, Germany, Russia, USA and others. As it is seen from table 5 the number of Ukrainian students abroad increases annually. The main task of the higher educational institutions today is teaching students and training highly-qualified specialists, which are in great demand in the labor market. Thus, Ukraine loses its human capital and the

Tab. 4. Number of students enrolled in higher III–IV level of accreditation educational institutions of Ukraine

Academic year	Number of students enrolled	Number of students admitted	Number of graduates	Number of students per 10 000 of population
1995/1996	1 541 000	396 000	339 000	300
2000/2001	1 931 000	536 000	422 000	392
2005/2006	2 709 000	672 000	515 000	578
2007/2008	2 814 000	633 000	603 000	606
2008/2009	2 764 000	539 000	623 000	599
2009/2010	2 599 000	464 000	642 000	566
2010/2011	2 491 000	521 000	655 000	544
2011/2012	2 312 000	420 000	627 000	507
2012/2013	2 170 000	441 000	613 000	502
2013/2014	2 053 000	442 000	576 000	476
2014/2015 ^a	1 689 300	361 000	–	393

^aIn these years the autonomous republic Crimea and Sevastopol and territory of the anti-terroristic operation are not taken into account.

system of higher education has less funds in the form of education fee, which our students would pay, if they studied in Ukraine.

The second group of problems the sphere of education faces now is the branch of science—lack of investigation commercialization, the gap between fundamental and applied investigations, lack of offers because of undeveloped innovation activity. Nowadays there is a great gap between the science and real industrial process at the enterprises, which is testified by the data on table 6. As it is seen from Table 6, only 13,6% of national enterprises were applying innovations for last two years, during previous years this portion was smaller. Thus, national science has large potential consuming market for application of scientific development and it covers 86,4% of national enterprises.

The next group of problems the higher educational institutions face is the bureaucracy of administration and the variety of possibilities to influence on the universities while manipulating by the restricting and regulation procedures. The higher educational institutions of Ukraine are special subjects of management. Most Ukrainian educational institutions possess great land re-

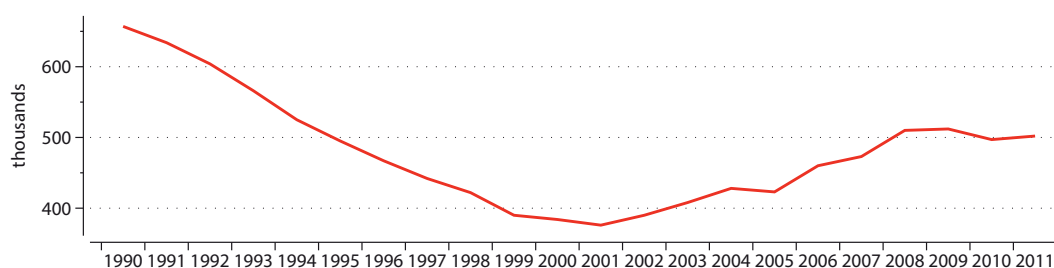


Fig. 3. Changes of number of births in 1990–2010 in Ukraine

Tab. 5. Number of Ukrainian students abroad (full-time studies)

Country	Academic year				
	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Germany	8 557	8 818	8 830	8 929	9 044
Russia	4 236	4 055	4 919	4 644	4 644
Poland	2 831	3 499	4 879	6 321	9 620
USA	1 716	1 727	1 583	1 535	1 490
France	1 349	1 388	1 447	1 482	1 282
Czech Republic	1 046	1 364	1 456	1 647	1 782
Hungary	829	896	862	763	803
Italy	800	1 043	1 314	1 556	1 727
Austria	739	855	926	1 055	1 249
Australia	614	636	721	692	636
Spain	558	641	840	1 114	1 323
United Kingdom	535	605	670	825	905
Canada	470	606	655	760	1 097
Bulgaria	275	296	333	367	411
Switzerland	292	318	336	358	371
Sweden	259	254	430	419	291
Turkey	209	198	208	232	282
Latvia	61	259	214	183	188
Finland	114	123	145	180	178
Moldova	271	235	202	157	165
Belarus	186	182	180	181	152
Netherlands	89	83	99	100	106
Total	26 036	28 081	31 249	33 500	37 746

Tab. 6. Application of innovations at the industrial enterprises of Ukraine

Year	Value of enterprises, which applied innovations ^a (%)	New technological processes applied	In small-waste process, resource-saving process	Innovation products put into production	Among them new type of machinery	Value of sold innovation products in the industrial volume (%)
2003	11,5	1 482	606	7 416	710	5,6
2004	10,0	1 727	645	3 978	769	5,8
2005	8,2	1 808	690	3 152	657	6,5
2006	10,0	1 145	424	2 408	786	6,7
2007	11,5	1 419	634	2 526	881	6,7
2008	10,8	1 647	680	2 446	758	5,9
2009	10,7	1 893	753	2 685	641	4,8
2010	11,5	2 043	479	2 408	663	3,8
2011	12,8	2 510	517	3 238	897	3,8
2012	13,6	2 188	554	3 403	942	3,3
2013	13,6	1 576	502	3 138	809	3,3

^ain the industrial volume

sources, hostels, machinery, recreation institutions, etc. But most of them are of the state property that is why all their assets are of the state property too, that is why there are some restrictions as to their management by the government. The administration of the institutions is not allowed to make arrangements.

All groups of problems mentioned above, which the higher educational institutions face, cause the worsening of their financial situation and result in the disadvantage of the national science and education.

4 The financial autonomy of higher educational institutions in Ukraine is needed

It makes us look for the alternative ways and sources of funding of the higher education of Ukraine. The problem seemed to be solved, when a new Act of Ukraine “On higher education” was adopted on July 1, 2014 and all higher education institutions have become independent. According to this Act the autonomy of the higher educational institution is treated as independence, self-dependence and responsibility in academic independence, management of educational process, scientific investigations, economic and other activities, being corporate institution in selection and employment of personnel according to this Act.

The regularities on the financial independence of higher educational institutions from the central governmental bodies are of special importance. According to Paragraph 2, Article 32, Act of Ukraine “On higher education” the higher educational institution is entitled to have its own ways to stimulate the material interest, to be in charge of its incomes, especially those obtained from the educational fee, having current and deposit bank accounts. That is, decision making in the funds distribution and accumulation is up to the university, not the government. But we experience another situation. We have got revolutionary Act, according to which universities are independent, financially in particular, but all money earned by the universities are transferred to the State Treasury accounts and it is in charge of all transactions and expenditure. In fact, the state universities are deprived of financial independence and can not spend money earned by them.

Nowadays we have got some legislative Acts, which appeared to be principle as compared with that adopted on July 1, 2014 Act of Ukraine “On higher education” and financial independence is practically violated. Foremost, it is the Budget Code of Ukraine June 8, 2010, according to which the incomes of budget institutions (to which educational institutions belong) are obtained additionally to the funds of the general budget are included to the special fund of the budget and their expenditure must be clearly regulated in the higher educational institution estimate. Besides, creation of non-budget funds is banned by the Budget Code. Nevertheless, Article 13

of the Budget Code, promotes expenditures from own incomes of budget institutions for support, maintenance, remodeling and purchasing facilities of the budget institutions, updating or purchasing of new circulating assets and material resources. The Order of the Cabinet of Ministers no. 65 on March 1, 2014 “On saving government funds and preventing the budget wastes,” which is the principle of the State Treasury while funding the higher educational institutions, limits sufficiently any financial independence. Besides, we have got the Act of Ukraine “On the Public purchases,” which specifies legal and economic regulations for purchasing goods and services by the government expenditure. According to it the higher institutions income from private sector is treated as the government income. This Act is the amendment to the Order of the Cabinet of Ministers “On the limit expenditure for purchasing cars, furniture and other facilities, mobile phones, computers by the governmental bodies and institutions supported by the national and local budgets”, which strictly specifies the prices of the higher educational institutions purchases. Thus, financial independence of Ukraine Universities is theoretical issue, included into the Act “On higher education,” which does not exist in reality.

In our opinion, all standard-legal basis of the higher educational institutions functioning should be brought to conformity and they must be financially independent, getting rid of all contractions. Higher educational institutions of Ukraine feel the lack of financial resources and it results in looking for alternative ways and resources for funding higher education in Ukraine, which can not be provided without independence, financial on particular. If the government today is not able to provide financial funding of higher educational institutions, it should make it possible at least to earn money themselves and to make expenditures on their own. While providing financial autonomy for higher educational institutions the following issues should be paid special attention to:

- broadening of the variety of the financial economic activity of higher educational institutions
- providing fair competition of higher educational institutions basing on the qualitative education, not protection by the Ministry of education and science
- commercialization of scientific investigation
- broadening and improvement of the marketing activity
- removal of limits for the assets management
- delimitation of academic and financial-management activity
- improvement of management structure of higher educational institutions and raising the role of financial management
- management of the university funds as any other subject of market relations by the experienced financial manager

Besides, such social-ethic aspects of the financial autonomy should be specified:

- financial independence must be incorporated with responsibility and transparency;
- financial motivation of the scientific-teaching staff for the purpose to raise their professionalism, giving bonuses for achievements;
- financial independence must contribute to the main goal of higher education.

Conclusions

Higher educational institutions of Ukraine feel the lack of financial resources and it results in looking for alternative ways and resources for funding higher education in Ukraine, which can not be provided without independence, financial on particular. If the government today is not able to provide financial funding of higher educational institutions, it should make it possible at least to earn money themselves and to make expenditures on their own. The investment in education, investigations and innovations generate the capital, which is based on knowledge, which contributes to the efficiency and rivalry of nations. That is why the government of Ukraine must take into account these facts while forming the government financial policy for its economic growth, to promote the development of education, which results in scientific investigations and innovations, as well as to support human resources, which are carriers of the knowledge-based capital.

References

- KONSTANTIUK, N., and V. KOZYUK. 2014. Importance of Financial Diversification of Higher Educational Establishments in Ukraine in the Modern Economy. Paper read at 2nd EUA Funding Forum Strategies for Efficient Funding of Universities, 9–10.10.2014, at Bergamo, Italy.
- KONSTANTIUK, N., and T. VYNNYK. 2015. „Significance of Educational Outcomes for Society.” Соціально-економічні проблеми і держава [Socio-Economic Problems and the State] no. 1 (12):67–73.

Official documents

- Бюджетний Кодекс України (Відомості Верховної Ради України (ВВР), 2010, № 50–51, ст. 572) [Budget Code Of Ukraine from July 8, 2010].
- Закон України. Про вищу освіту. Відомості Верховної Ради (ВВР), 2014, № 37–38, ст.2004 [Act of Ukraine on higher education].
- Закон України. Про здійснення державних закупівель. Відомості Верховної Ради (ВВР), 2014, № 24, ст.883 [Act of Ukraine on the Public purchases].
- Кабінет Міністрів України. Постанова. від 1 березня 2014 р. № 65. Київ. Про економію державних коштів та недопущення втрат бюджету [The Order of the Cabinet of Ministers on saving government funds and preventing the budget wastes].
- Кабінет Міністрів України. Постанова. від 4 квітня 2001 р. N 332. Київ. Про граничні суми витрат на придбання автомобілів, меблів, іншого обладнання та устаткування, мобільних телефонів, комп'ютерів державними органами, а також установами та організаціями, які утримуються за рахунок державного і місцевих бюджетів [The Order of the Cabinet of Ministers on the limit expenditure for purchasing cars, furniture and other facilities, mobile phones, computers by the governmental bodies and institutions supported by the national and local budgets].