

## STATISTICAL WAVES OF THE BUDGETARY FINANCING OF EDUCATION AND SCIENCE IN UKRAINE

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### **Abstract:**

*In the article an author analysed the indexes of profits, charges and deficit of the State budget of Ukraine for 2002–2011. The prognosis model of the budgetary financing of Ukrainian education and science is built. The dynamics of particles of the government spending on education and science in profits and charges of country is determined. The name of statistical waves of the budgetary financing of education and science in Ukraine is given to these indexes.*

**Keywords:** statistical waves, dynamics, prognosis model, education and science, the State budget of Ukraine, profits and charges.

**JEL Classification:** C53, H52, I22

### **INTRODUCTION**

In obedience to Law of Ukraine "On education", education is basis of intellectual, cultural, spiritual, social, economic development of society and state. Its purpose consists in comprehensive development of man as personality and the greatest value of society, development of its talents, mental and physical abilities, education of high moral qualities, forming of citizens, apt at a conscious public choice, enriching on this basis of intellectual, creative, cultural potential of people, increase of educational level of people, providing of national economy skilled specialists [1]. In Ukraine education is acknowledged the priority sphere of socio-economic, spiritual and cultural development of society. Accordingly it needs large financial investments from the side of the state.

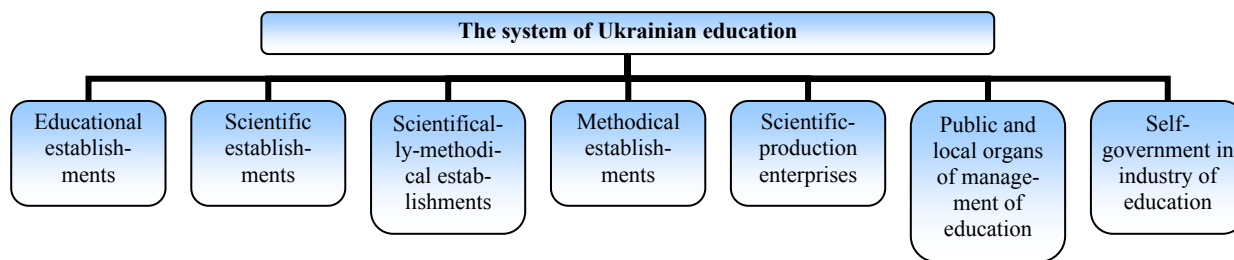
Y. Benedik, T. Bogolib, N. Volkova, O. Robak, L. Yaremenko [2–6] and other economists-theorists devoted the scientific labours research of financial activity in the field of Ukrainian education. In particular, they analysed consisting and tendencies of financing of higher school of Ukraine [2], system and methods of financial analysis of financially-economic activity of higher educational establishments (HEE) [3], efficiency of the use of facilities of HEE [4], treasury maintenance of educational establishments [5], conducted the design of the system of effective management of financial streams of Department of education and science (DES) of Ukraine [6] and others like that. But in these publications the charges of the State budget of Ukraine on education were not probed, prognosis models were not built.

The purpose of writing of this article is an analysis of the state financing of education and science in Ukraine. For its realization it is needed to untie such tasks:

- 1) to build a table with the indexes of the State budget of Ukraine for 2002–2011;
- 2) to calculate the particles of charges of the State budget of Ukraine on Department of education and science of Ukraine in profits and charges of the State budget of Ukraine accordingly;
- 3) to build the prognosis model of the budgetary financing of Ukrainian education and science;
- 4) to define the dynamics of particle of the government spending on education and science in profits and charges of country.

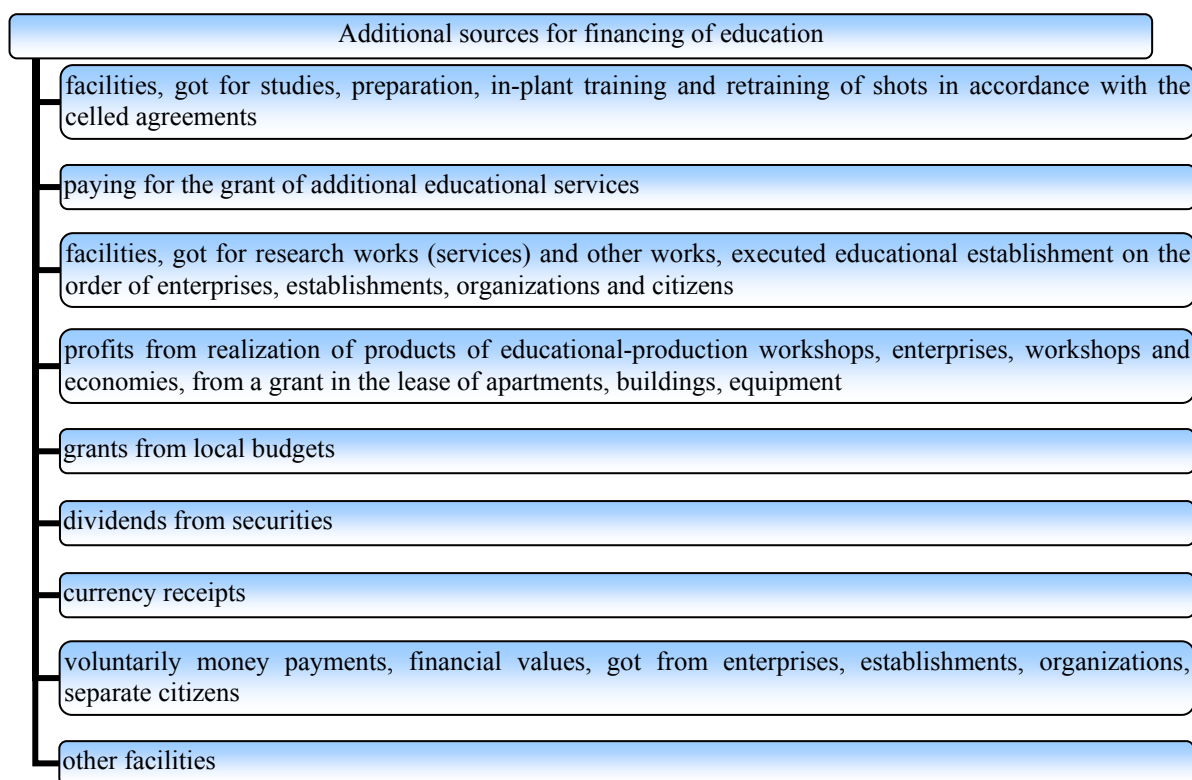
### **EXPOSITION OF BASIC MATERIAL**

The system of Ukrainian education is represented on fig. nr. 1.



**Figure no. 1. The system of Ukrainian education**

As see, it includes not only educational establishments but also scientific establishments. Knowingly one of basic principles of education in Ukraine there is its integration with science and production. Financing of all of constituents of the system of education is carried out due to facilities of the proper budgets, facilities of industries of national economy, state enterprises and organizations, and also additional sourcings (see fig. nr. 2).



**Figure no. 2. Additional sources for financing of education**

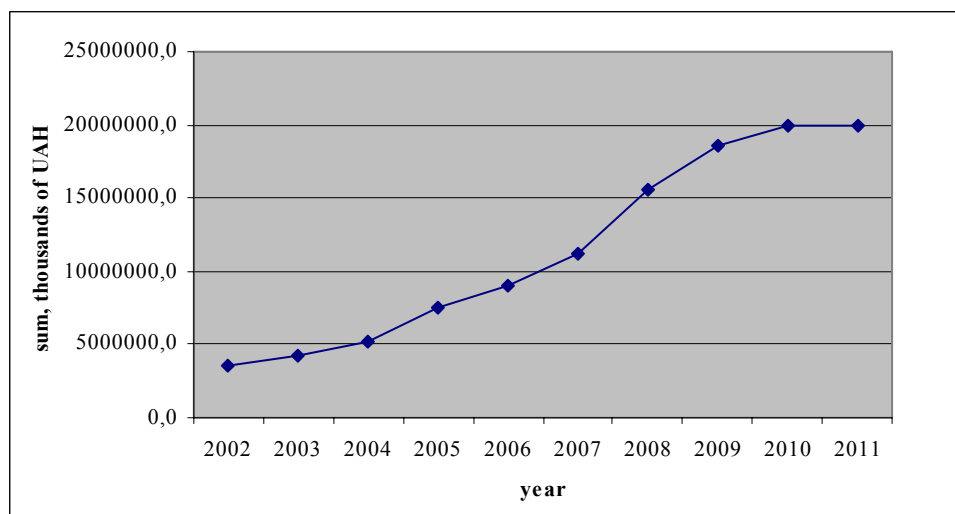
A Department of education and science, young people and sport of Ukraine is central executive public of Ukraine, which carries out guidance in the field of education authority. In 1998–1999 years it carried the name of Department of education of Ukraine, and in 2000–2010 years – Department of education and science of Ukraine. Charges on his financing, and also other indexes of the State budget of Ukraine are given at table nr. 1.

**Table no. 1. Indexes of the State budget of Ukraine, thousands of UAH**

<b>Index</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Profits of the State budget of Ukraine	45390509,5	53272580,8	65215662,8	106124985,5	127516631,0	157287046,0	231931966,7	245309356,4	254995704,1	281464879,4
Charges of the State budget of Ukraine	49498467,3	55907506,0	72215687,6	117394610,1	140199363,7	174631522,2	253207875,1	274156440,7	307748182,9	321920850,3
Maximum volume of deficit of the State budget of Ukraine	4107957,8	2634925,2	7420233,9	11128858,3	13245666,9	15715729,0	25020179,1	31563026,1	54095369,9	38843000,0
Charges of the State budget of Ukraine on Department of education and science of Ukraine	3544055,8	4205207,6	5216959,4	7504220,4	9034548,6	11263884,6	15612472,2	18612315,0	19997778,1	19877214,3
Particle of charges on Department of education and science of Ukraine in the profits of the State budget of Ukraine, %	7,81	7,89	8,00	7,07	7,08	7,16	6,73	7,59	7,84	7,06
Particle of charges on Department of education and science of Ukraine in the charges of the State budget of Ukraine, %	7,16	7,52	7,22	6,39	6,44	6,45	6,17	6,79	6,50	6,17

It is called an author on basis [7]–[16]

Analysis of table nr. 1 shows that profits and charges of the State budget of Ukraine are annually increased. The maximum volume of deficit of the State budget of Ukraine grew during all of years, except 2003 and 2011. The dynamics of the government spending on Ukrainian education and science is well illustrated by fig. nr. 3.



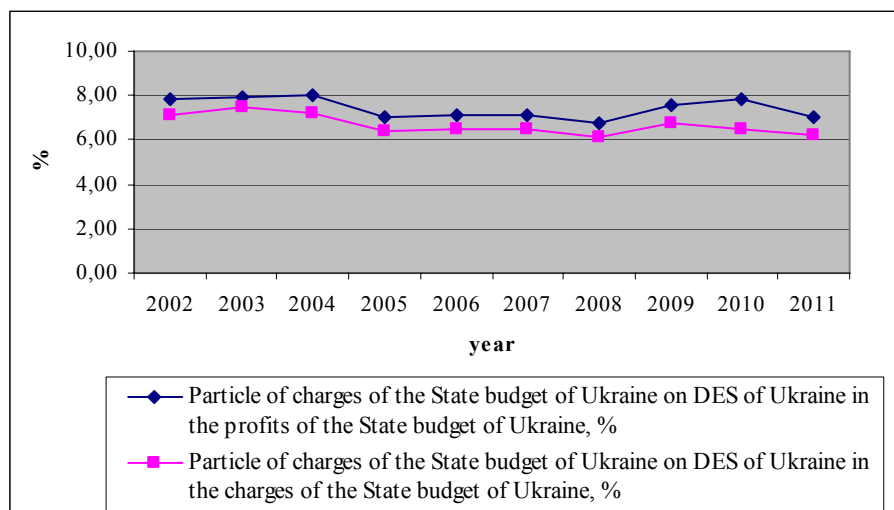
**Figure no. 3. Charges of the State budget of Ukraine on Department of education and science of Ukraine**

From fig. nr. 3 evidently, that during 2002–2010 there was an annual increase of charges on Ukrainian education and science, but in 2011 year, unfortunately, their diminishing took a place on 120563,8 thousands of UAH. Line, which represents the charges of the State budget of Ukraine on Department of education and science of Ukraine has the appearance of S-curve. In an order to hold the prognosis values of this index on next three years, will build trend prognosis model as S-curve  $y = e^{a_0 + a_1/t}$  by the programmatic package of Statgraphics 2.1 (Statistical Graphics System). Will get in the total, that a prognosis model will look like  $y = e^{16,657 - 1,96872/t}$ , and prognosis information is on 2012 – 14332500 thousands of UAH, 2013 – 14547900 thousands of UAH, 2014 – 14732600 thousands of UAH. They testify that financing of education and science of Ukraine from the state budget in next three years will be approximately at the level of 2008 year.

As shows table nr. 1, calculated by the author particle of charges of the State budget of Ukraine on Department of education and science of Ukraine in the profits of the State budget of Ukraine during the last ten years made from 6,73 to 8,00 %. Such dynamics is inherent them: every three years there is an increase (2002–2004, 2005–2007, 2008–2010) after which a slump is on one year (from 2004 to 2005, from 2007 to 2008, from 2010 to 2011). Thus, this index can to interpret as a statistical wave of three-year growth of particle of the budgetary financing of Ukrainian education and science in the profits of country. As a wave repeated oneself already three times, it is possible to talk about large probability of its recreation in the future.

From table nr. 1 evidently, that calculated by the author particle of charges of the State budget of Ukraine on Department of education and science of Ukraine in the charges of the State budget of Ukraine during the last ten years made from 6,17 to 7,52 %. Such dynamics is inherent them: every three (two) years there is a slump (2003–2005, 2007–2008, 2009–2011) after which growth is on one (two) years (from 2005 to 2007, from 2008 to 2009). Thus, this index can to interpret as a statistical wave of three-year slump of particle of the budgetary financing of Ukrainian education and science in the charges of country. There is also large probability of its recreation in the future. It should be noted that comparatively with the first statistical wave, this wave takes a place with a delay on one year.

Both statistical waves of the budgetary financing of education and science in Ukraine well evidently on fig. nr. 4.



**Figure no. 4. Statistical waves of the budgetary financing of education and science in Ukraine (by O. Totska)**

## CONCLUSIONS

As a result of the conducted analysis it is possible to do such conclusions:

1) during 2002–2011 years there is an annual increase of financing of education and science of Ukraine from the state budget;

2) a prognosis model of the budgetary financing of Ukrainian education and science is a type of S-curve  $y = e^{16,657 - 1,96872/t}$ ;

3) dynamics of particle of the government spending on education and science in profits and charges of country it is possible to interpret as statistical waves of the budgetary financing of education and science in Ukraine.

## BIBLIOGRAPHY

1. Law of Ukraine "About education" from 23.05.1991 № 1060-XII // Access mode : <http://zakon.rada.gov.ua>
2. Benedik Y., *Consisting and tendencies of financing of higher education in Ukraine* / Y. Benedik // Scientific annoucer of Lesya Ukrainka Volyn National University. Series: economic sciences. – 2009. – № 7. – P. 11–17.
3. Bogolib T., *System and methods of financial analysis of financially-economic activity of HEE* / T. Bogolib // Finances of Ukraine. – 2006. – № 5. – P. 50–62.
4. Volkova N., *Efficiency of the use of facilities of HEE* / N. Volkova // Finances of Ukraine. – 2005. – № 5. – P. 66–71.
5. Yaremenko L., *Treasury maintenance of educational establishments* / L. Yaremenko // Finances of Ukraine. – 2005. – № 4. – P. 19–23.
6. Robak O., *Design of the system of effective management of financial streams of Department of education and science of Ukraine* : abstract of thesis of dissertation ... candidate of economic sciences : 08.00.11 / O. Robak : Donetsk national university. – Donetsk, 2007. – 18 p.
7. Law of Ukraine "About the State budget of Ukraine on 2002 year" from 20.12.2001 № 2905-III // Access mode : <http://zakon.rada.gov.ua>
8. Law of Ukraine "About the State budget of Ukraine on 2003 year" from 26.12.2002 № 380-IV // Access mode : <http://zakon.rada.gov.ua>

9. Law of Ukraine "About the State budget of Ukraine on 2004 year" from 27.11.2003 № 1344-IV // Access mode : <http://zakon.rada.gov.ua>
10. Law of Ukraine "About the State budget of Ukraine on 2005 year" from 23.12.2004 № 2285-IV // Access mode : <http://zakon.rada.gov.ua>
11. Law of Ukraine "About the State budget of Ukraine on 2006 year" from 20.12.2005 № 3235-IV // Access mode : <http://zakon.rada.gov.ua>
12. Law of Ukraine "About the State budget of Ukraine on 2007 year" from 19.12.2006 № 489-V // Access mode : <http://zakon.rada.gov.ua>
13. Law of Ukraine "About the State budget of Ukraine on 2008 year" from 28.12.2007 № 107-VI // Access mode : <http://zakon.rada.gov.ua>
14. Law of Ukraine "About the State budget of Ukraine on 2009 year" from 26.12.2008 № 835-VI // Access mode: <http://zakon.rada.gov.ua>
15. Law of Ukraine "About the State budget of Ukraine on 2010 year" from 27.04.2010 № 2154-VI // Access mode : <http://zakon.rada.gov.ua>
16. Law of Ukraine "About the State budget of Ukraine on 2011 year" from 23.12.2010 № 2857-VI // Access mode : <http://zakon.rada.gov.ua>