

EDUCATION AS KEY ELEMENT OF INNOVATION AND INCLUSIVE ECONOMIC GROWTH

Associated Professor, Tatiana PÎȘCHINA

*Academy of Economic Studies of Moldova,
Republic of Moldova, Chisinau, 61 Mitropolitul Banulescu-Bodoni street
Phone: (+373 22) 22 41 28, web site: www.ase.md*

Abstract

Education is one of the most powerful tools for creation of qualitative economic growth, or growth which comes from within an economy. This article discusses the role of education in economic growth, and presents a case study of the Republic of Moldova, which is used to demonstrate how important it is to create education supporting innovative share of the economy. Education creates knowledge, thus innovation, thus entrepreneurship, thus competitiveness, resulting into long-term socio-economic prosperity. Addressing national policies related to education becomes very important in this regard, because wise approach can establish prerequisites for further economic growth. In this way, countries like Moldova should be successful in meeting the challenges of globalization and succeeding by using own competitive advantages and becoming a hub for innovations. This article is interesting for businesses, including entrepreneurs and potential investors, as well as for the governmental organizations and public authorities

Key words: *education, economic growth, entrepreneurship, innovation, investments, technology*

JEL CLASSIFICATION: 011, 012, 038

1. Introduction

This particular paper discusses education as one of the key building blocks of economy and society, which forms the basis for qualitative, or inclusive, economic growth. Inclusive growth, or growth that happens within the economy using its own resources, is a fundamental prerequisite for long-term prosperity. The focus of this paper is on the link between education and inclusive economic growth. “Our future growth relies on competitiveness and innovation, skills and productivity... and these in turn rely on the education of our people,” notes Julia Gillard, the Prime Minister of Australia. Education is the backbone to growth because it puts creativity in context of marketable innovation, and as Prof. Theodore Levitt of Harvard University put it, “Creativity comes up with new things. Innovation makes new things happen.” Education spurs innovation, which gives rise to entrepreneurship that ultimately results into economic wealth, given appropriate conditions are created. Ultimately, inclusive growth helps to curb the escalating levels of inequality (Stiglitz, 2012) where over two thirds of the global GNP (gross national product) per capita is generated per high-income economies (World Bank, 2014; Lenzner, 2011).

In this context, developing economies, Moldova in particular, must find their competitive edge. Moldova is an interesting case-study for several reasons. It is the only post-Soviet country that in 26 years of independence did not reach the level of economic development (GDP per capita) that it had in 1991 (EGPRSP, 2004). Table 1 below summarizes the decline in recent years, including Moldova’s GDP, in 2016 valued at \$6,79 billion, and \$2062 per capita, with trade openness at 91,9% (World Bank and United Nations Statistics, Birdsall, 2006, NBSM, 2016).

Table 1: The Share of Moldovan GDP in the world economy, in the European economy, in the Eastern European economy, %

<i>Share of Moldovan GDP in the</i>	1990	2015	deviation
Global economy	0,017	0,011	- 0,006
European economy	0,046	0,037	-0,009
Eastern European economy	0,44	0,22	-0, 22

Source: Based on data from Quandl (2016)

Structure of an economy is one of the key factors in its potential for growth. Technology share within the industry and the share of businesses in an economy are particularly important. Innovation-driven sectors are supplied mostly by intangible resources. Moldova’s GDP structure dynamics reflects global development trends, as presented in Table 2 below, with high share of the Services sector (compared to the global share of GDP of 64%) with simultaneous decrease of the share of industry and agriculture.

Table 2: The Dynamics of the Structure of GDP of Moldova

GDP Structure, %	2000	2001	2002	2003	2004	2014
Gross value added	87,5	88,0	87,3	85,6	85,0	84,3
Agriculture	25,4	22,4	21,0	19,3	17,1	12,8
Industry	16,3	18,7	17,3	17,8	18,2	14,1
Services	48,2	49,2	51,0	50,8	52,2	59,4
Fin. intermediation services, indirect	-2,4	-2,3	-2,1	-2,3	-2,5	-2,0
Net products tax (taxes less subsidies)	12,5	12,0	12,7	14,4	15,0	15,7

Source: Based on National Bureau of Statistics of Moldova (2016)

However, digging deeper into the Services sector allows to caution that the main contribution in this sector – through finance and trade – is merely a ‘formal’ value added, reflecting wage increase of individuals engaged in relevant business dimensions, and not of the economy as a whole. Moldova’s present state is a combination of factors persisting since 1991, when Moldova lost most large enterprises (electronics, machinery/instruments, heavy and other industries), along with productivity decreases and problems in major areas such as education and R&D, resulting into dropping shares of scientific and technological component in the economy, which is now less than 0,35% of GDP (EU average is 2 to 3% of GDP). Moldova scores low in key economic indicators summarized in Table 3.

Table 3: Moldova’s Business Environment, Key Indexes, 2015, 2016

Key Index Rating	2015	2016
Global Competitiveness Index	82	84
Index of Economic Freedom	111	117
Global Innovation Index	46	44
Logistics Performance Index	93	96
Global Enabling Trade Index	92	79
Doing Business	63	44

Source: UNDP (2016), IMF (2016), Heritage Foundation (2015,2016), WEF (2014,2015), WIPO (2015,2016) World Bank (2015,2016,2017), WB/IBRD (2014)

According to classification of the World Bank, the increase of well-being and growth of an economy takes place through three consecutive stages, from the first factor-driven to the second efficiency-driven, to the third innovation-driven stage (Schwab, 2015, Pischina, 2007). Moldova is stuck between the first and the second stages (for detailed analysis see Pischina, 2007, Pischina, 2007a, Pyshkina, 2002), at ‘low-to-medium levels of economic development (Human Development Index) declining from the ‘efficiency - driven’ status it had in 1991, meaning the economy degrades rather than developing upwards. Among other things, Moldova is in desperate need of an increase in high technology share in its infrastructure and its economy.

2. Approach to Value-Creating Education

With all its challenges, Moldova has advantages that may support its ambitions for long-term inclusive growth, such as geographic location attractive to entrepreneurs interested in the dynamic of Eastern and Western European markets, as well as competence in microelectronics and

semiconductors accumulated in previous decades through cooperation of its specialists with American, Russian and other partners, in production of semiconductor materials and devices. Laser technologies are present and knowledge is well developed. IT specialists of Moldova are considered to be among the best in Eastern Europe. This means that the country has the prerequisites for creating knowledge-based economy. We address education as the key enabler for that purpose, and several actions can be put in place.

The relationship between education and science, and competitiveness and technological activity, has been explored through various angles. Education is the first pillar of economic growth with development, as shown in the Table 4 below.

Table 4: Pillars of Inclusive Growth (Qualitative Economic Growth)

Pillar 1: Education & Skills	Pillar 2: Employment & Labour Compensation	Pillar 3: Asset building & Entrepreneur ship	Pillar 4: Financial Intermediation of Real Economy Investment	Pillar 5: Corruption & Rents	Pillar 6: Basic Services & Infrastructure	Pillar 7: Fiscal Transfers
-Access -Quality -Equity	-Productive Employment -Wage & non- wage labour compensation	-Small business, -Home & financial asset ownership	-Financial system inclusion -Intermediation of business investment	-Business & political ethics. Concentration of rents	-Basic & digital infrastructure -Health-related services and infrastructure	-Tax code -Social protection

Source: WEF (2017)

Statistics of investments do not sufficiently explain competitiveness, but the scientific potential of a firm, or of an economy, statistically has a substantial impact on competitiveness. Scientific, and technological, activity builds on education, which increases production of knowledge through diversification of sources of information, circulation of new information and exchange of technologies, media and services, development of new industries and new business ideas, as university curricula provides with theoretical and practical tools to turn idea into practice. Education is the top source to enter labor market. Even though, presently, prerequisites for the number of the developing countries, including Moldova, to enter the innovative stage of development are not sufficient, it is absolutely necessary to start building core elements of innovation-driven growth into the structural ladder. Tailored approach to University Curriculum with widespread access to, and steady improvement in, education boosts students' capacity to create businesses, thus jobs, and stop brain drain, thus strengthen the economy from within.

There are six priorities underlined in relation to the Education & Skills Development Pillar that we draw particular attention to:

- Developing high-quality skills through learning
- Promoting inclusive education, equality and non-discrimination
- Open and innovative education
- Support for teachers
- Transparency of skills and qualification
- Sustainable investment, quality and efficiency

In relation to those priorities, we suggest to include a separate academic discipline titled 'Social Entrepreneurship as a Form of Doing Business' into the graduate-level economic education curricula. This program will explain the mechanism of operation of smaller enterprises and their effects on economic and social systems. The purpose is to create multidimensional thinking, intellectually and emotionally guiding the students through theoretical, but mostly practical work that helps think beyond standards. Suggested curriculum is based on the study of entrepreneurship that is practical and engaging. The approach is project-based teaching to employ various tactics in 'real-life' projects on economic growth of different countries, going through the basics of entrepreneurship, labor market analysis, and implementation of ideas to market. Focus is on opportunities and challenges explained through role play and examples. Special attention is devoted to practical exercises encouraging audience to act as entrepreneurs. 'Multi-practical' approach of games and case studies is actively employed. Main characteristics are engagement and freedom of expression of ideas by students that are given the

initiative to contribute with creation of knowledge during class, and its practical application. After testing the course with a number of students, we received the following feedback:

“...creativity and ingenuity were valued high. Guided by the professor we have done research on real issues that affect us every day. It was collaborative work in a great team, which will help us to adapt more easily to a real collective in the future. I could express myself freely and develop my thinking. Also we used new technologies. These practices have been useful for me and helped me to understand better the subject and achieve a new level of knowledge.”

“This was the first time in my life I learned a subject by playing a game for several hours. And it doesn’t matter who you are, when it comes to games, everyone wants to win. We had to understand what was really necessary. In my opinion, this has more impact than just reading a book or going through theory.”

“Project-based learning offered to us more opportunities for personalization, because it allowed us to draw on our own passions, skills and interests in order to create work that is meaningful for us. Such methods of studying help assess the theories that we need to know, so we can use all the resources that are available to us and develop creativity.”

3. Education, Investments and Qualitative Economic Growth

Education is the First Pillar of inclusive growth contributing with knowledge capital but also by making an economy an attractive place to invest in. Since low national savings and low GDP usually decrease attractiveness for investments, many developing economies are devoid of foreign resources for growth. Without investments, both national and foreign, an economy will be drained out of resources and will be unable to recreate itself under normal market conditions. Education that creates incentives for entrepreneurship and business growth will attract investment, necessary for long-term economic prosperity.

Of course, investments must be made into infrastructure, which will help boost growth in aggregate demand, and secure production capacity of various sectors of the economy. Preferably, it should be based on partnerships uniting formal actors and large corporations and businesses with smaller firms, as well as venture capital funds and ‘angel’ investors, securing the evolution of innovations from the first stages through commercialization. Investments should also cover education that can induce innovation-based type of economic growth, based on creation and consumption of information-technology goods and services, in other words, high-technology products. As innovations impact the change in the sources, types and quality of economic growth, the creation of the basis for innovation comprises the true, or material, base of economic growth.

In conditions of globalization, the activities of international corporations penetrate national markets and economic structures, regardless of the structural stage of that given economy. Successful economies of today are able to either create own innovations, usually the case for the industrialized nations, or to import innovations and integrate them in own economies, which is the approach that gives the window of opportunities to the developing countries such as Moldova (Pischina, 2007). Creation of knowledge base through education gives the possibility to jump through a few stages of technological ladder at once (Lenzner, 2011, Murphy, 2001). An obvious example is the implementation of mobile networks in late-industrializing countries that were able to jump over various inferior, more costly and less efficient, technologies by using latest technologies already developed by the ‘first movers’. The effectiveness of this approach is proven by a number of global economies, as Japan and China. Moldova can use the second approach, which is based on the concept of imitation and adaptation of the new technologies. This approach, however, should not be associated merely with consumption of already existing methods and technologies taking advantage of inventions of others. Moldova as a country with a lot of own potential in terms of qualified labour force in virtually all spheres from IT to physics and chemistry, can become a centre for outsourcing of the new products and therefore one of the economies that would be first to develop, improve and implement those innovations.

CONCLUSION

Global economy becomes less and less resource-intensive in the traditional sense, shifting from production to the intangible resources represented by the people as the ultimate source of competitiveness. This paper discusses the link between education and inclusive economic growth. It states that education, if approached correctly, spurs innovation, which in its turn gives rise to entrepreneurship and business creation that ultimately results into building economic wealth. Quality of economic growth is determined by the qualitative component of its economy: education and innovative activity. Therefore, for any country, including Moldova, it is important to build blocks for solid education and science base, from which it will be able to create favourable conditions for investments, both in core elements such as infrastructure, and into entrepreneurship and technology-driven part of the economy. Moldova is a country with strong potential through existing intangible capital, however, it is crucial to retain it by creating the opportunities for young professionals to prosper and to create businesses. The suggested course of ‘Social Entrepreneurship as a Form of Doing Business’ is one tool to use it, and form economic growth from within. In this way, education will create the base for investments, which will help induce necessary capital to turn-around negative trend in economic development by bringing ‘qualitative’ components into economic growth. Moldova is left, among many, with one of the most challenging issues, to integrate effectively into the global context, while preserving national interests.

REFERENCES

1. Birdsall, N. (2006). Rising inequality in the new global economy, *International Journal of Development Issues*, Vol. 5 Iss: 1, pp.1 – 9.
2. EGPRSP, (2004). *Quality of Growth – Changing Priorities*, Ministry of Economy/TACIS Seminar “EG-PRSP and Donor Coordination”, Sept. 28-29.
3. Goldemberg, J. (1998). Leapfrog Energy Technologies. *Energy Policy* Vol. 26 Iss. 10, pp. 729–741. ISSN: 0301-4215.
4. Heritage Foundation. Moldova: Economic Freedom Score. 2016&2015. (Retrieved Jan 2017): <http://www.heritage.org/index/pdf/2016/countries/moldova.pdf> & <http://www.heritage.org/index/pdf/2015/countries/moldova.pdf>
5. IMF. World Economic Outlook Database, 2016. (Retrieved in May 2017): <https://www.imf.org/en/Data>
6. Lenzner, R. (2011). In *Forbes*. (Retrieved November 2016): <http://www.forbes.com/sites/robertlenzner/2011/11/20/the-top-0-1-of-the-nation-earn-half-of-all-capital-gains/>
7. Murphy, J. (2001). Making the energy transition in rural East Africa: is leapfrogging an alternative? *Technological Forecasting and Social Change* nr. 68 (2), pp. 173–193. ISSN: 0040-1625.
8. MBSM, National Bureau of Statistics of the Republic of Moldova, 2016. (Retrieved in August 2017): <http://www.statistica.md/index.php?l=en>
9. Pischina, T. (2007). Structural Economic Priorities in Time of Globalization: Methodologies, Principles, Experience (Teza de Dr. Habilitat în Economie cu titlu de manuscript C.Z.U.: 339.9(043.2)), Chisinau, 260 p.
10. Pischina, T. (2007a). Problems And Mechanisms For Improving The Structure Of Foreign Trade In Context Of Strengthening Global Integration Processes. Chișinău, ASEM, Vol.1.pp.266-271. ISBN 978-9975-75-117-9.
11. Pyshkina, T. (2002). *Economic consequences of the migration of labor from the Republic of Moldova*, UNU-Wider International Conference 27-28 Sep., Finland
12. [Quandl. Financial and Economic Data](https://www.quandl.com/collections/economics/gdp-by-country). Online (Retrieved in August 2017): <https://www.quandl.com/collections/economics/gdp-by-country>
13. Schwab, K. (2015). *WEF. The Global Competitiveness Report 2015–2016*. (Retrieved in July 2017): http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf
14. **Stiglitz, J. E. (2012). *The Price of Inequality***, W. W. Norton & Company, 448 pp. ISBN 978-0-393-08869-4.
15. UNDP. The Index of Human Development, 2016. (Retrieved in January 2017): <http://hdr.undp.org/en/content/human-development-index-hdi>
16. WEF. The Inclusive Growth and Development Report 2017. (Retrieved in February 2017): http://www3.weforum.org/docs/WEF_Forum_IncGrwth_2017.pdf
17. WEF. The Global Competitiveness Report 2015-2016: 2015. (May 2016): http://www3.weforum.org/docs/gcr/20152016/Global_Competitiveness_Report_2015-2016.pdf
18. WEF. The Global Enabling Trade Report 2014. (Retrieved in August 2017): http://www3.weforum.org/docs/WEF_GlobalEnablingTrade_Report_2014.pdf
19. WIPO. The Global Innovation Index: 2016 & 2015. (Retrieved in July & August 2017): http://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2016.pdf & <https://www.globalinnovationindex.org/userfiles/file/reportpdf/GII-2015-v5.pdf>
20. World Bank. 2017. (Retrieved in September 2017): <http://www.doingbusiness.org/data/exploreconomies/moldova>
21. World Bank. Connecting to Compete. 2016. (Retrieved in August 2017): https://wb-lpi-media.s3.amazonaws.com/LPI_Report_2016.pdf
22. World Bank. The Global Economy in Transition, 2015: www.worldbank.org
23. World Bank, IBRD. The Logistics Performance Index, 2014. Online: <https://lpi.worldbank.org/> (Retrieved in August 2017)