Economy and Education: Achievements in education on an international comparison

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Abstract: the paper reviews the correlation between National Expenditure on Education and the Human Development Index and between the achievement levels in TIMSS international tests in Math in the 8th grade age group in an international comparison.

Keywords: TIMSS -Trends in International Mathematics and Science Studies, GDP – Gross Domestic Product**,** DHI-Development Index, Human, HDI- Human Developmental Index, PPP-Purchasing Power Parities, OECD.

In this paper, I choose to examine the correlation between the HDI (Human Development Index) of various countries and the outputs of education (achievements).

I shall begin with clarifying the key terms of this paper: what is a TIMSS study? What is the Human Development Index (HDI)? What is Gross Domestic Product (GDP)? What is the (DHI) Development Index, Human? Following this, a comparison would be conducted between the variables, correlations would be isolated and conclusions.

Social Indicators

National expenditure on education is calculated as a percentage of GDP and may indicate a state attaches importance to education.

Measure of human welfare and the examiner relies on social indicators.

Human Development Index (DHI-Development Index, Human) is a measure comparing the level of development of different countries.

Index is a means for measuring quality of life.

Index weighted three parameters in life: life expectancy, education (achievements in education) and standard of living (per capita income GDP) and a means for measuring welfare.

Index values range from 0 (lowest level of development) to 1 (highest level of development).

Table below is based on a UN report from -2010, which was published in 2011 and updated in September 02/07/2012 in ranking of 169 countries.

Unlike the CPI GDP (Gross Domestic Product per capita) ranking the countries according to

economic activity.

UN ranks the various states of human development into three levels: high, medium and low (A Publication of The World Bank and Oxford University, Equity and Development World Development Report 2011; EUROPA OECD publishing, Going for Growth 2011) [1], [2], [3].

Figure no.1 - Comparative table - Human Development Index (HDI) and GDP of -169 countries (Ben-David, 2010, 2011) [7].

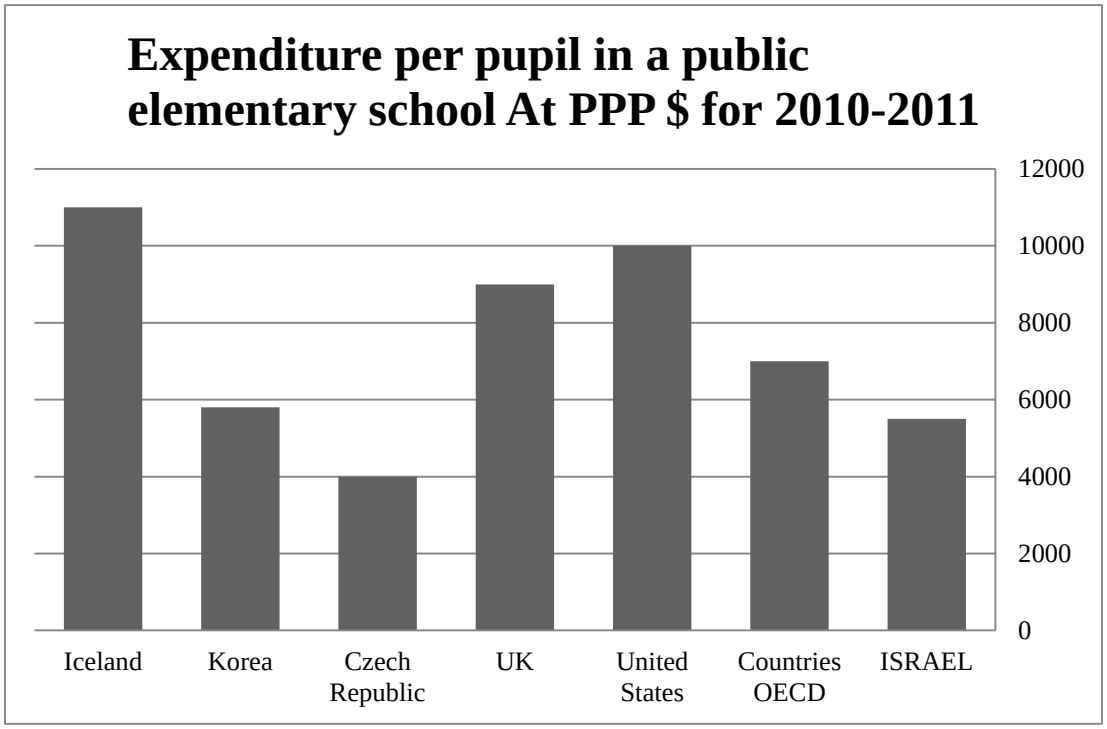
A country	Rating **GDP** – Gross Domestic Product	GDP per capita (in U.S. $)		Rating **HDI** Development Index, Human	**HDI** Development Index, Human
Norwegian	3	52,561		1	0.938
Australia	10	38,911		2	0.937
New Zealand	33	26,708		3	0.907
United States	6	46,381		4	0.902
Switzerland	7	43,007		13	0.874
France	21	33,679		14	0.872
Israel	29	28,393		15	0.872
Finland	22	33,556		16	0.871
Greece	25	29,882		22	0.855
Italy	27	29,109		23	0.854
Luxembourg	2	83,841		24	0.852
Britain	19	34,619		26	0.849
Cutter	1	78,395		38	0.803
Rumania	67	11,917		50	0.767
Moldova	129	2,843		99	0.623

An international comparison shows that the rate of government expenditure on education per pupil in Israel, as a percentage of GDP, higher than the rate in most developed countries. Educational services in the State of Israel constitute about a tenth of GDP and about one third of social expenditure,

Comparison of average expenditure per pupil between - Fixed national

PPP-Purchasing Power Parity, shows that in average expenditure per pupil in primary education is lower than the OECD

Figure no.2 -Expenditure per pupil in a public elementary school At PPP $ for 2010-2011



(Bank of Israel, 2011; OECD, Education a Glance, 2011) [1], [4].

In 2010: National expenditure on education amounted to NIS 66.5 billion,
Comprising 8.2% of the Gross Domestic Product.
National expenditure on education (at constant prices) increased by 2% compared to 2009.
The households financed 20% of the National expenditure on education.

TIMSS Tests-Trends in International Mathematics and Science Stud

The goal of TIMSS Tests provide a basis for policy makers, curriculum writers, experts and researchers to better understand the achievements of their school system. The research is a longitudinal research examining the change in product educational and learning context

variables, the tests are math and science.

In 2007, TIMSS research

(Trends in International Mathematics and Science Study) in 49 countries (and in 7 counties of certain states).

The research, which is the fourth in a series of TIMSS researchers, designed to test the achievement of pupils in science and mathematics, and is conducted on behalf of the International Organization for evaluating achievements, the IEA (International Association for the Evaluation of Educational Achievement).

The first research of this series of Research conducted in 1995 and then, once every four years, in 1999, in 2003 and 2007 and - 2011 which results will be published only in December 2012.

Low Achievements of Israeli pupils in international tests are Inverse Proportion to the fact that education levels, number of hours an Israeli pupil receives exceeds that of the pupil in developed countries. 15-year-old pupil, for example, receives 1065 hours in the OECD countries - 890 hours on average.

The number of teaching hours of an Israeli teacher at an elementary school and junior high higher than in developed countries, although he is staying fewer hours in school and earns less than many of his colleagues in developed countries.

Analysis of various factors affecting the costs of education shows that the costs of education are a function of four key parameters: wages teachers, number of hours of pupils', number of teaching hours of teachers and class size.

Different combination of these parameters in each country, can explain the differences in expenditure between countries.

Teachers' salaries in the low and large classrooms reduce costs, but the high number of teaching hours and the number of teachers working in the opposite direction and increase costs.

It follows, that the level of expenses, but efficient and effective use of existing resources, defines the amount and quality results.

The level of expenditure on education is not the only factor affects the results of education. Many other factors, such as the quality of teachers, Socio - economic characteristics of students, the organizational structure of the school, curriculum and teaching methods - are also factors that affect the results.

The following main findings: (TIMSS findings - site, the Chief Scientist, 2007)

• Subject mathematics Israel occupies the 24th place out of 49 participating countries. Achievements fall not only those of the leading countries in the world: rising Asian, European, New - Zealand, Australia and the United States but also countries like Thailand, Moldova, Romania, Cyprus, Italy and Lithuania. It costs only about ten accomplishments countries: Tunis, Macedonia, Turkey, Jordan, Iran, Indonesia, Chile, Filipino, Morocco and South Africa.

• Israel's low achievement in mathematics are reflected any of the five content areas tested.

• Israel (Jewish sector only) is one of the achievements in mathematics declined significantly between 1995 to 1999 and 2007.

• Israel (Jewish population only) decreased by 3% of achieve? - Embryos percentile - 90 and the increase in pupils' who do not reach the percentile - 25 lower than - 8% on 1995 to 18% on 1999 and 2007 .

• This rate of weak we were one of the highest rates
(get on the lessons Romania - 20%, Thailand - 19%, Iran - 27%, South Africa - 86%).

• Israel (Jewish sector only) is one of the two countries where there were drops from 1995 to 1999 and 2007. Mathematics achievement, even among girls, especially among boys, and by the reduction of non-equal in boys and in girls, little achievement gap between them.

Correlation between the level of achievement test and TIMSS 2007 International Human Development Index

Correlation analysis revealed a strong correlation between TIMSS achievement tests and economic development of countries,
Israel, the human development index (HDI-Human Developmental Index) is higher, but the level of achievement in mathematics and science international Test - 2007 TIMSS (Trends in International Mathematics and Science Studies)
Countries with relatively low human development index is similar.

Figure no. 3 -Achievements of the participating countries scaling

Countries that participated in the tests of the TIMSS in 1995,1999,2003,2007

A country	TIMSS 2007	TIMSS 2003	TIMSS 1999	TIMSS 1995
Britain	V	V	V	V
United States	V	V	V	V
Israel	V	V	V	V
Rumania	V	V	V	V
Moldova	X	V	V	X

For comparison with Moldova, we will:

Figure no. 4 -distribution of scores in mathematics of the countries participating in the Research TIMSS 2003 (Based on Average International report International 467)

A country	Rating	Rating HDI Development Index, Human	average
Britain	18	0.930	498
United States	15	0.937	504
Israel	19	0.905	496
Rumania	26	0.773	475
Moldova	28	0.700	460

Average achievement in mathematics of 49 countries participating on 2007 TIMSS, is 451. Like previous research cycles, shows that pupils in Asian countries are leading their achievements in mathematics.

Figure no. 5 -Average mathematics scores of countries that participated in TIMSS 2007 research.

A country	Rating	Rating HDI Development Index, Human	average
Britain	7	0.946	513
United States	9	0.951	508
Israel	24	0.932	463
Rumania	26	0.812	461
Moldova	Not tested		

Ultimately, the education system's achievements in Intermediate, but a high ranking, expenses are high, but pupils are very few resources, large classes, but also that the number of teachers, high cost but low teachers' salaries, pupils achievement on "Maritza" Bagrot "matriculation" Exams, Test GEMS ("mitzvah") - Growth and Effectiveness Metrics School, ("Bagrot") "matriculation" - High school graduation Tests exams is rising, but the gaps in between different layers grow.

The result is a system that is, not achieving its goals and fails to provide quality education to all its residents (TIMSS findings - site, the Chief Scientist, 2008) [5].

From all the above a criticism arises as to the fact of the comparison:

Bar-Ishay (2010) states that the level of expenditure on education is not the only factor affecting the results of education. [6]

Additional factors affect the results, such as the quality of teachers, socio-economic characteristics of pupils, the organizational structure of school, study programs and methods of teaching.

Tamir (2011) adds in this relation, that "the data do not prove that education has no contribution for economy, but that this contribution in very complex and it is impossible to translate in to simplified linear relations [8].

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