

# **Global Trends on Education**

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## **1. Introduction**

Education of individuals has always been considered important in almost all the societies of the world. Quest for knowledge about nature helps humankind advance forward. Education formalizes the process of knowledge acquisition within an institutional framework. Educational institutions also complement the creation of new knowledge by making existing knowledge available in an intelligible format.

At the national level, there have been many literatures (e.g., OECD 2000) finding positive correlation between economic growth and educational achievement. Even without any rigorous empirical research, rich western countries with high literacy rates contrasted to the low literacy rates in many developing nations points to the validity of the above hypothesis.

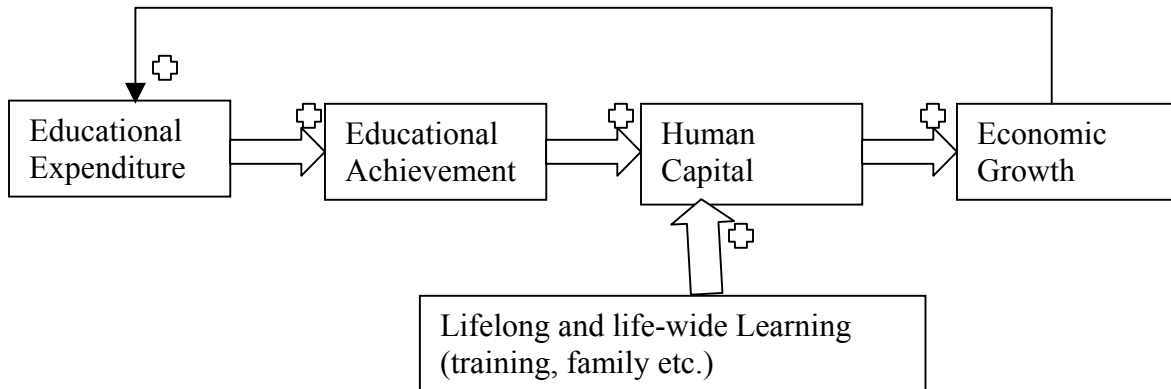
At the global level, despite the agreement on the notion of education as a driver of individual or social well being, there are variations across nations along the organization of, investment in, and outcomes from education. The variations across organization of formal education prompted international organizations like the UNESCO to classify National Education Systems. In terms of percentage of national income invested in education, as we shall see below, the developing world is still lagging behind the developed countries. The variations in outcome become evident when we look at former communist nations with high education but low national income. In this paper, I will ultimately try to identify the major trends and project the desirable futures in formal education across the world in the context of the demographic realities, political decision making and economic outcomes. But let me start out with the dominant global issues shaping or being shaped by educational activities.

## **2. Formal Education**

In the usual process of formal education, students proceed through a three level - primary, secondary, tertiary- national educational system, graduating, repeating or dropping out of the system in the journey. Each of the primary and the secondary level is further divided into five to seven grades. Children usually enter primary school at age 7 and enter the secondary (immediately) after graduating from the primary level. The average duration of study in the tertiary level is about 5 years awarding baccalaureate and master's diploma at the end. Students usually specialize in a certain discipline at the tertiary level.

It is the end product in the chain of formal education, or the graduates, who are expected to contribute most in the labor productivity. Thus, there is a lag time before the fruits of educational expenditure are visible in the national accounts. One way of taking care of this time lag could be explore the relationship of educational expenditure and growth via educational attainment. Graduates from the formal educational system add to the pool of human capital. However, trainings imparted to workers throughout their tenure as well as

things learned outside school or job, all add up to the pool of human capital embodied in individuals. There is thus a virtuous cycle of more educational investment leading to more growth and to further expenditure, especially in the case of developed countries.



*Fig 1: Virtuous Cycle of Human Capital Development*

This apparently positive feedback loop becomes a negative saturating one if we take into consideration the constraint on the educational achievement.

Education, as discussed in this paper, will only involve that imparted through a schooling system and will as such exclude the so-called ‘lifelong learning’<sup>1</sup> acquired outside the formal system. In addition to building a credential, formal education prepares the individual for the labor market where the potential human capital is utilized oftentimes with necessary modifications. There is no doubt that On-job trainings and other forms of lifelong learning are important links in this chain. However, for the sake of simplicity I decided to keep lifelong learning out of this discussion. I think it reasonable to assume that formal education, by itself, is important enough to produce significant conclusions.

### 3. Education as a Driver

In the terminology adopted and popularized by the World Bank, education is a form of ‘human capital’ capable of generating high returns for economic growth. The high literacy rates of western countries suggest that investments in human capital contribute to economic growth by increasing labor productivity, just as a direct augmentation of physical capital employed in other productive sectors would do. It is widely believed that the failure to understand the necessity and extent of social intervention required for educating the individual left many nations. However, the replacement of the skill shortages by growing unemployment among the educated disillusioned developing economies already started questioning the economic value of education developing economies about the economic value of education.

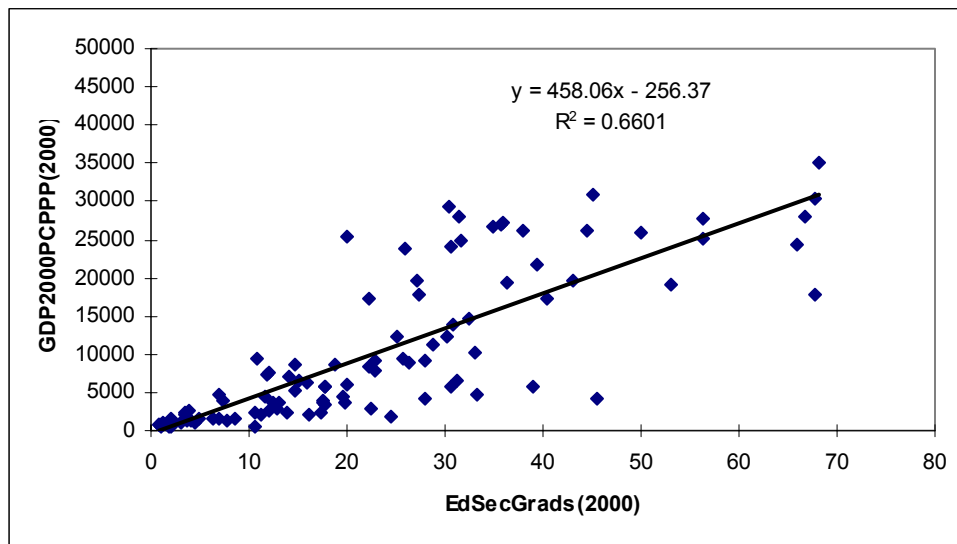
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<sup>1</sup> OECD, 2001a

Though the exact measure and polarity of the linkage between economic growth and education is yet to be confirmed, researchers found positive contributions from education in many areas of socioeconomic development some of which are mentioned below.

#### 4. Evidence on Benefits of Education

Human capital and formal education relate closely to rates of economic growth. Using cross-country data, Barro (1991) found the growth rate of per capita GDP positively related to initial levels of enrolment rates. , Hicks (1980) examined the relationship between growth and literacy and life expectancy in eighty-three developing countries for the period 1960-77 and found the countries with fastest growth rates to have above average literacy and life expectancy. To check the reverse causality, Wheeler (1980) devised a simultaneous model for eighty-eight developing countries and found that a 20 to 30 percent increase in literacy causes an 8 to 16 percent increase in GDP. More rigorous theoretical analyses like the endogenous growth models yield the result that the steady-state growth rate partly depends on the *level* of human capital. The Solow residual or the multi-factor productivity was further decomposed in the Lucas (1988) model into human capital as a factor of production. Implicit in the endogenous models is the assumption that human capital is a key input in the production of new ideas (Romer, 1990). North (1990) and others emphasized the role of education from an institutional perspective. The following graph obtained from the International Futures System global model shows a clear upward trend in national income as more and more of the working age population gets secondary education.



*Fig2: GDP per capita across the World as a function of percentage of Adult Population with secondary Education for the year 2000*

More indirect benefits<sup>2</sup> are the human-development gains generated through education especially for the people of poorer countries. These benefits sum up to empowerment, or the capacity of poor people to influence institutions, processes, and policies that affect their lives. Educated women and their children enjoy better health than their uneducated counterparts, partly because they have better access to information; but also because they are more confident and assertive in demanding services. Figure 3, reproduced from the Oxfam Education Report (2001), shows the decline in infant mortality as a result of the increased educational achievement of the mother. Falling infant mortality rates lead to lower fertility rates, because families aim for net child-survival rates. For disadvantaged societies with low income households, female education doubles the return by providing an in-house teacher for the children.

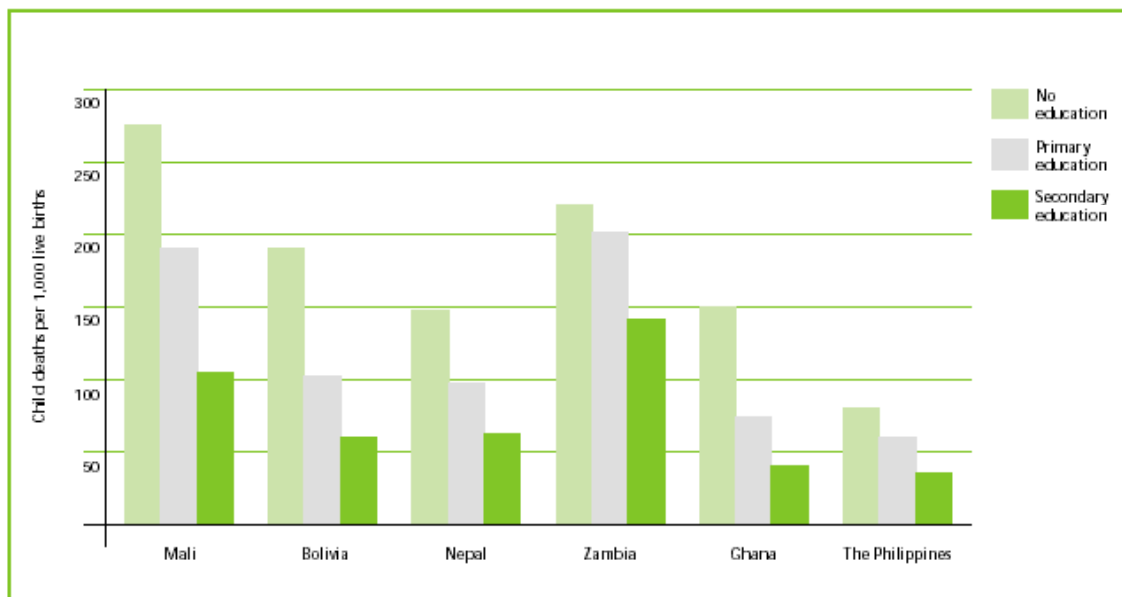


Figure 3: Child-mortality rates by maternal education levels: selected countries (1995)  
 Source: G. Bicego and A. Ahmad, *Infant and Child Mortality, emographic and Health Survey No.20, Macro International, 1996*

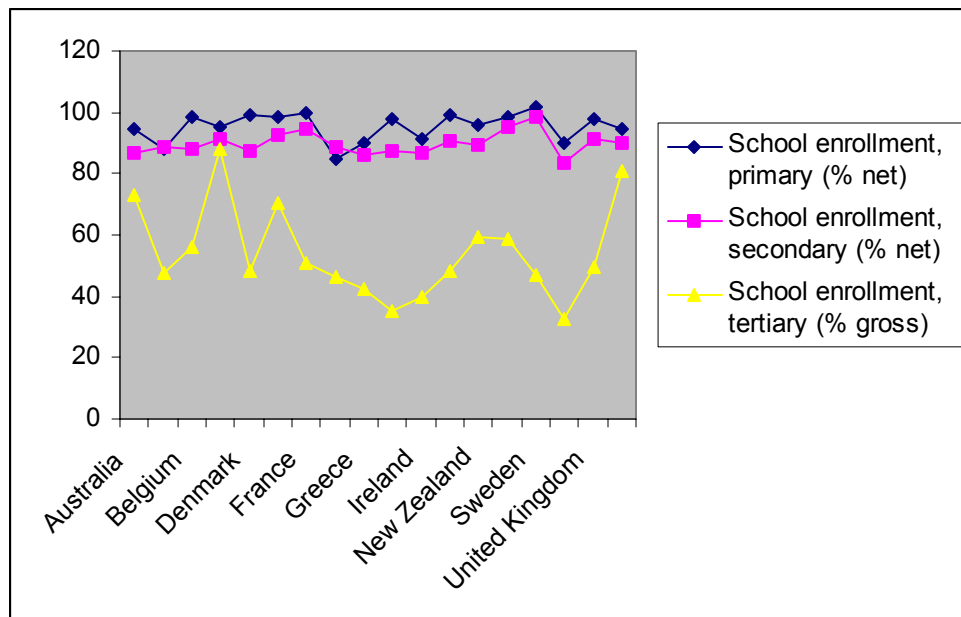
*\*\* Reproduced from The Oxfam Education Report (2001), Chapter 1*

Education prepares poor to participate in markets on more equitable terms, improving the distribution of income in the process. Globalization, and the associated emergence of increasingly knowledge-based systems of production, is strengthening the links between education and poverty reduction, both nationally and internationally.

## 5. Participation

<sup>2</sup> Sen(1999) and others consider these as direct benefits where education is an end in itself rather than being a means for growth

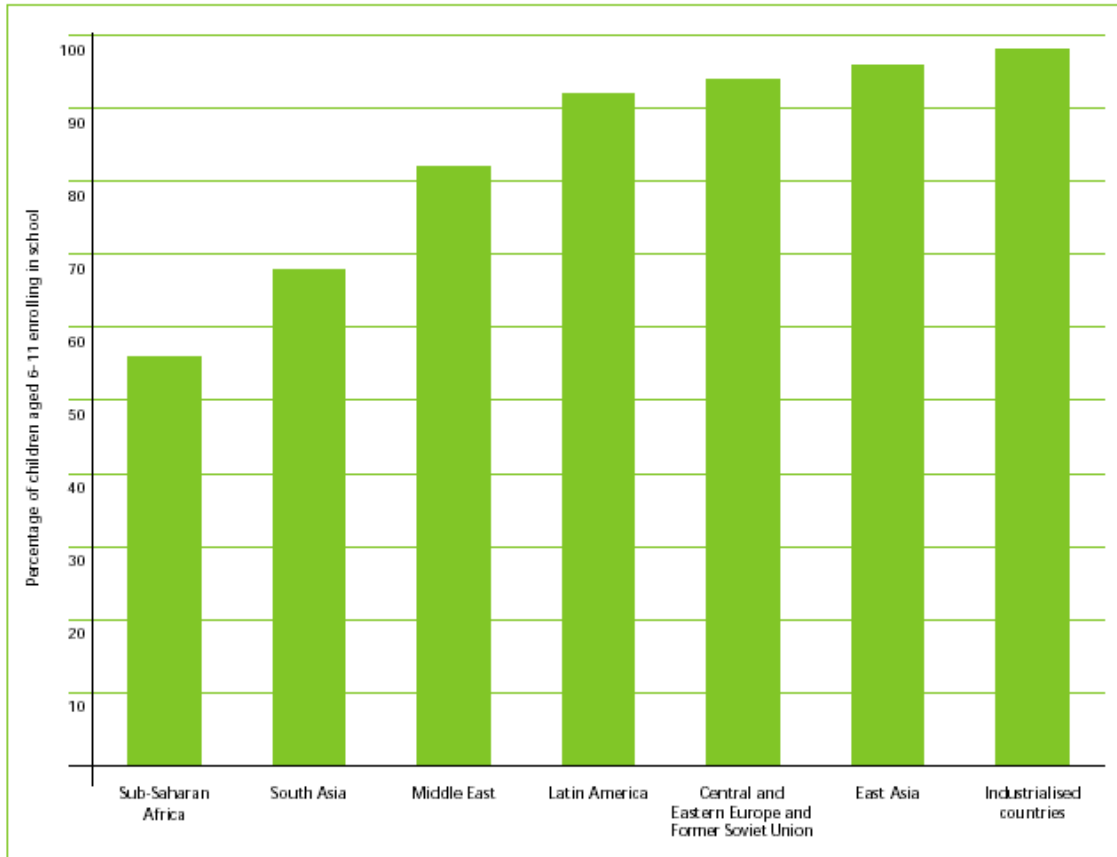
Elementary and secondary education, considered as the backbone of every nation's educational system, is available free of cost and attendance is mandatory for all children of certain ages (usually 6 to 16 years) in many of the developed nations (e.g., in all the OECD countries). The early childhood and the tertiary level programs are not always free in these countries. Many of these countries achieved a close to perfect level of net primary enrolment already. According to the OECD Education at a Glance report of the year 2001, the variation in enrollment, in the case of OECD nations come from those at the (upper) secondary level<sup>3</sup>. There are variations also at the tertiary level, but the cohort size becomes significantly smaller by then. However, the following result obtained from the World Bank World Development Indicator Database does not corroborate the conclusion:



*Fig 4: Enrollment in some of the OECD countries for the year 1995.  
Data source: World Bank, World Development Indicators 2001*

Developing regions, on the other hand, still lag behind even in terms of primary enrollment rates as shown in the following graph.

<sup>3</sup> OECD, (EAG) 2001, p.122



*Figure 5. Primary net enrolment rates*

*Source: UNICEF, The State of the World's Children, New York, 1998*

*\*\* Reproduced from The Oxfam Education Report (2001), Chapter 2*

## **6. Educational Achievement**

The graduates of the formal education system add to the percentage of working age people (15 to 65 years) with different level of education completed. Even in the cases of near perfect enrollment rates it will take some time to reach an adult population with 100% education. The following area graph for global percentage of primary, secondary and tertiary educated adult population during the period of last 40 years is obtained from the International Futures System, IFs, (data source: Barro and Lee (1991)).

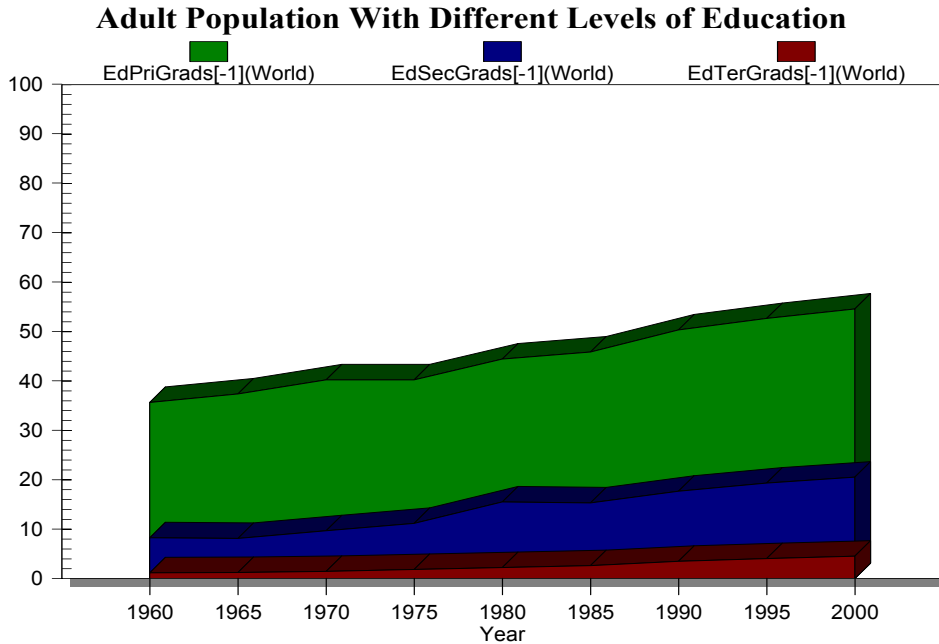


Figure 6: Percentage of world adult population (15 to 65 years) with different levels of education (1960-2000) Source: International Futures System

A base case projection through 2050 from IFs does not produce a very hopeful picture.

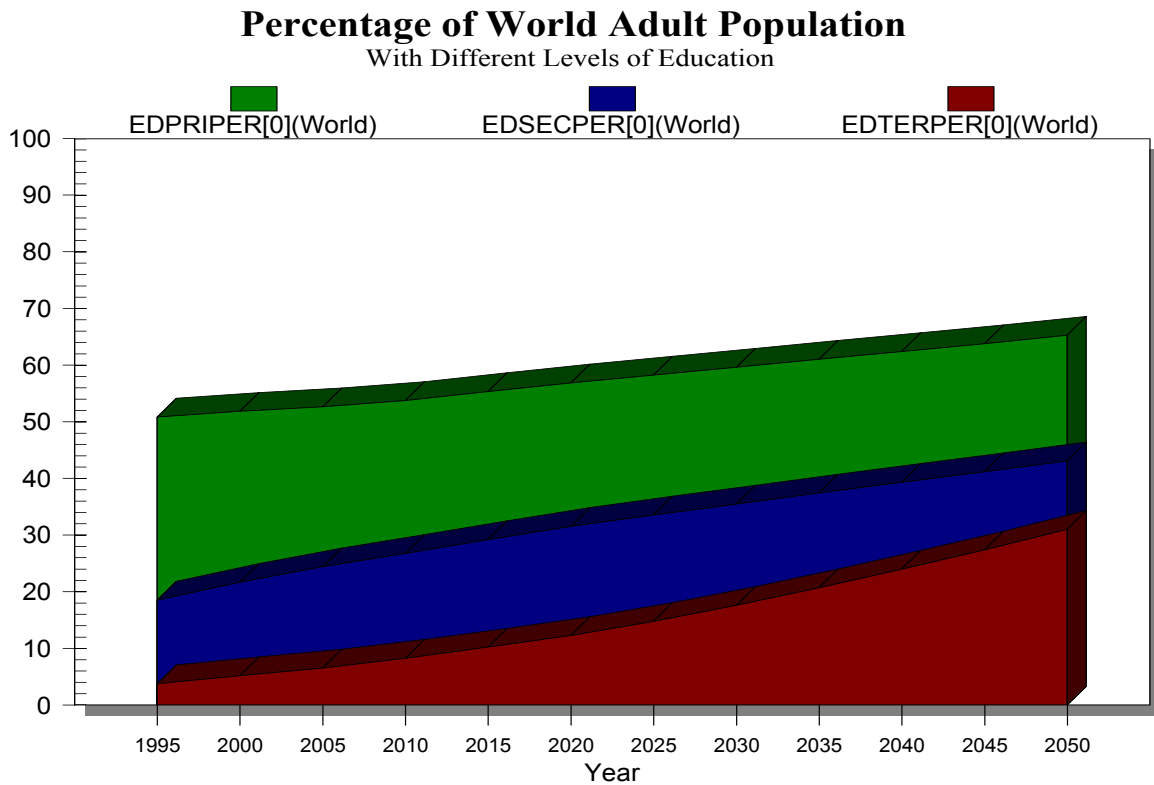


Figure 7: Projected percentage of world adult population (15 to 65 years) with different levels of education (1995-2050) Source: International Futures System

## 7. Financing the Education

Educational achievement is obtained by educational investment- a major portion of which has to come from public sources considering the high direct and opportunity cost on the part of the individual. Without proper government actions to facilitate the diffusion of knowledge through the provision of, at least, the basic level of education, the newly created knowledge cannot add enough value to generate the required incentive. Investment in education is thus a critical decision that helps the nations in the long run. International comparisons of expenditures for education show considerable variation across countries in the share of national resources devoted to education. The following table drawn from the WDI 2001 database clearly marks the high priority of education in the developed economies. The non-OECD high income group, with a low percentage expenditure in education, contains some of the oil rich middle-eastern economies like the United Arab Emirates (1.79%).

<b>Group of Countries</b>	<b>1995</b>
Low income	3.51
Lower middle income	4.14
Middle income	4.66
Upper middle income	5.07
High income	5.33
High income nonOECD	2.98
High income OECD	5.43

*Table 1: Public spending on education (% of GNI), 1995*

Source: World Bank, WDI 2001

Series Note: Public spending on education, total (% of GNI, UNESCO) : Public expenditure on education (total) is the percentage of GNI accounted for by public spending on public education plus subsidies to private education at the primary, secondary, and tertiary levels. For more information, see WDI table 2.10.

The global percentage expenditure on education increased by a percent and close to another half over the last one and a half decade (Fig 8). The investment crawled to a peak during the early nineties, due possibly to the growth in the East Asia and some parts of Latin America, falling somewhat back in 1994.



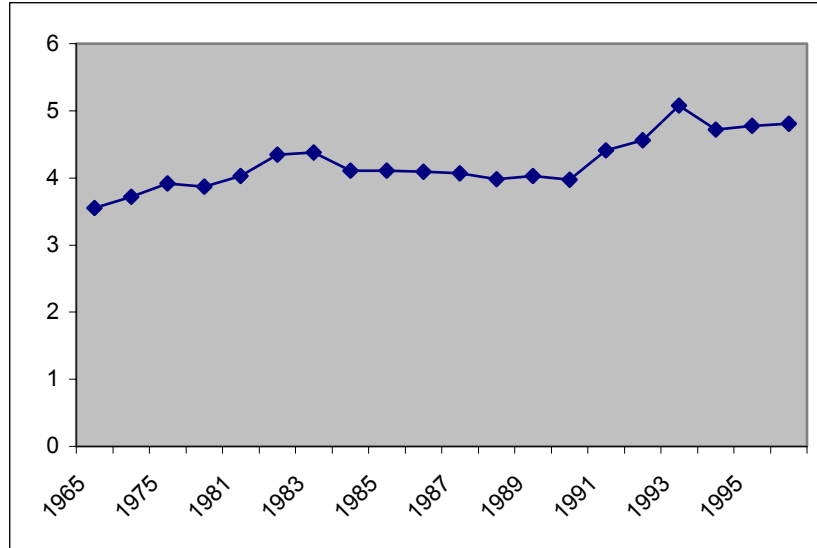


Fig. 8: World public spending on education % of GNI  
Data Source: WDI 2001

However, the cost of educating individuals compared to the per capita income reduced a lot in the last forty years (fig. 9). The reduced cost might be because of the increment in per capita income while the educational services remained the same or more and more students coming into the formal educational system producing ‘economy of scale.’

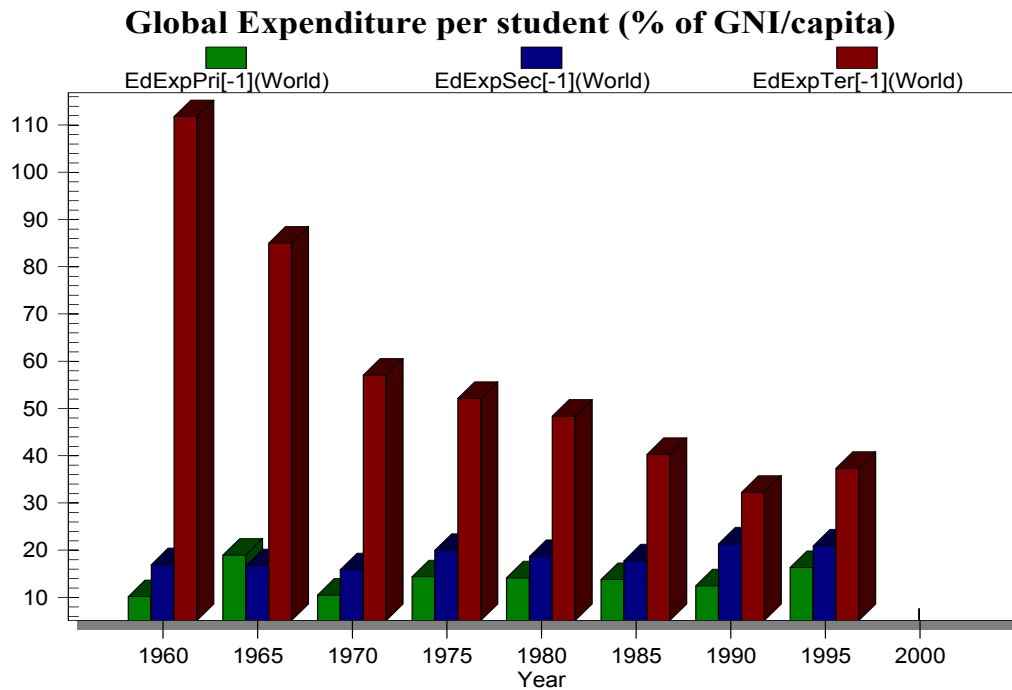


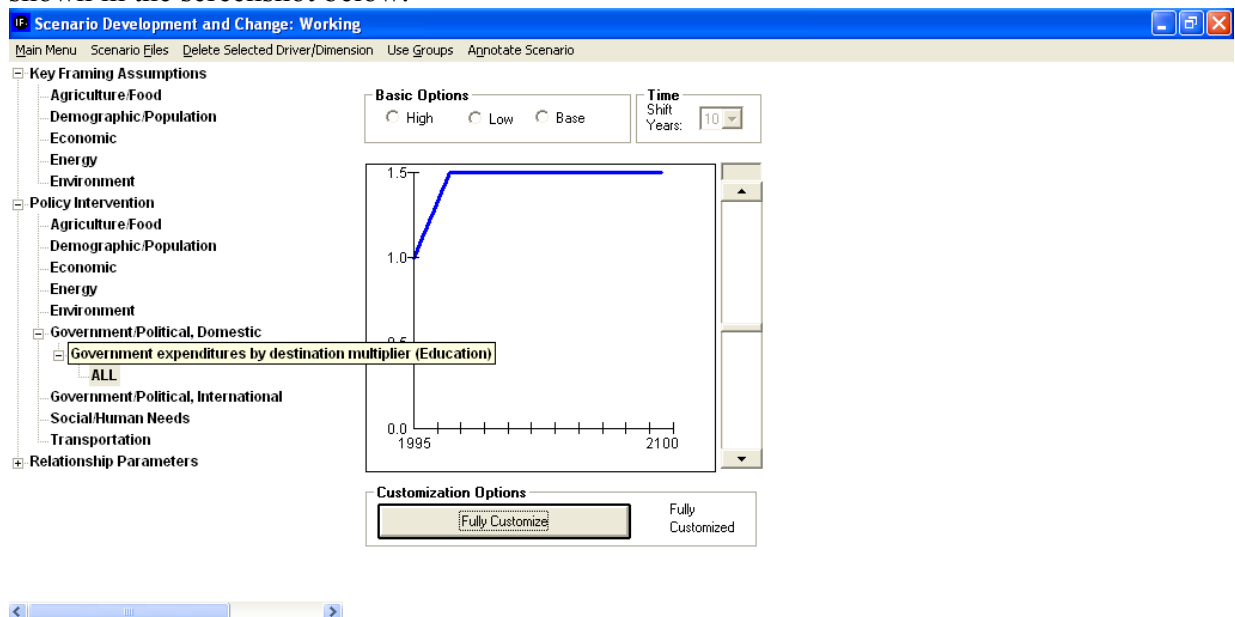
Fig. 9: World per student cost as % of GNI/Capita  
Source: IFs, Data Source: WDI 2001

## 8. Policy Targets

The importance of education is reflected in its inclusion in the international development Targets. At the World Conference on Education for All, held in Jomtien in 1990, international co-operation was a central theme. It was recognized that many of the world's poorest countries lacked the financing capacity that would be necessary to ensure more rapid progress towards universal primary education. At the Millennium Summit of the United Nations the goal to achieve universal primary education by 2015 was set alongside the target to remove the gender disparity in the secondary enrollment.

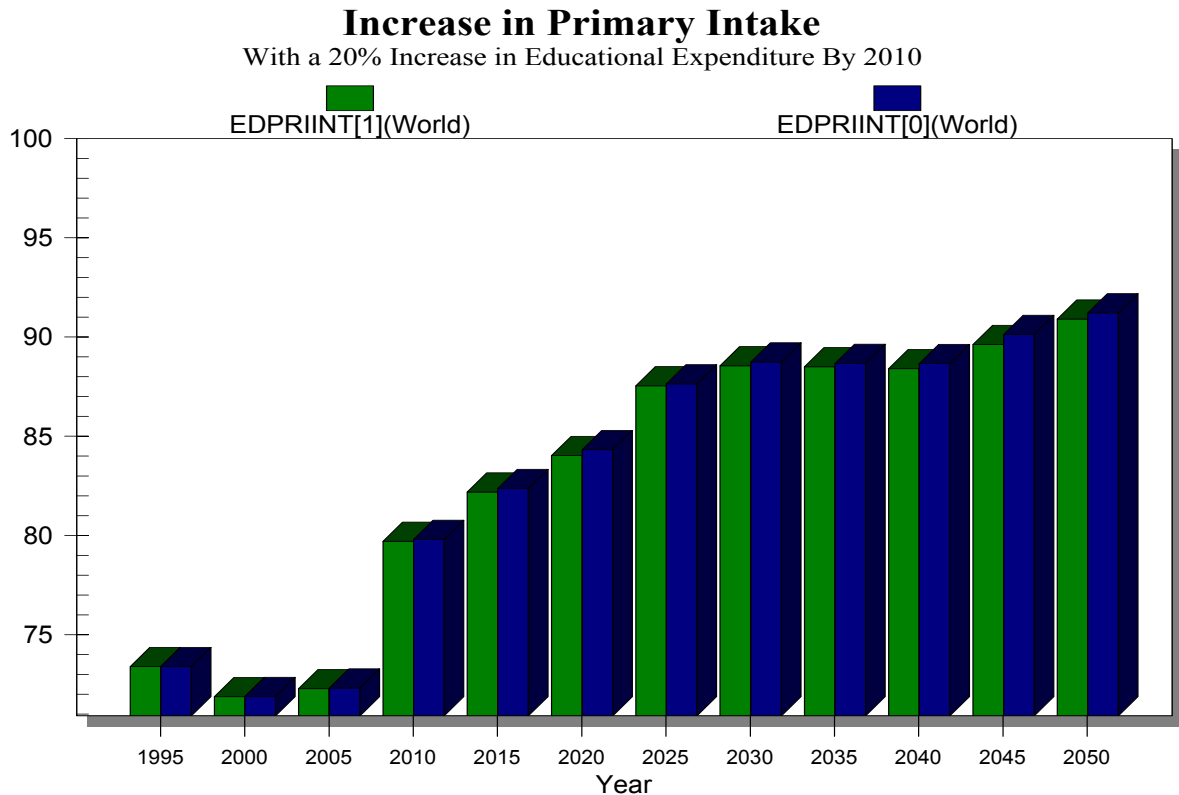
To understand what kinds of interventions are necessary to achieve the Millennium target I developed some scenarios with the help of the IFs modeling platform. IFs has two specific policy handles, namely multipliers on the government expenditure by destination (gdsm) and the government educational expenditure by the level of education (gdsedm).

At first, the total global educational expenditure was increased by 20% within a timeframe of 15 years (1995 to 2010). To achieve this, I used the scenario development interface of IFs, by changing gdsdm for education from 1 to 1.2 for all the IFs regions, as shown in the screenshot below.



*Fig.10: Scenario development in IFs, 20% increase in total global educational expenditure*

The result on global primary intake rate as a result of running the scenario is shown below:

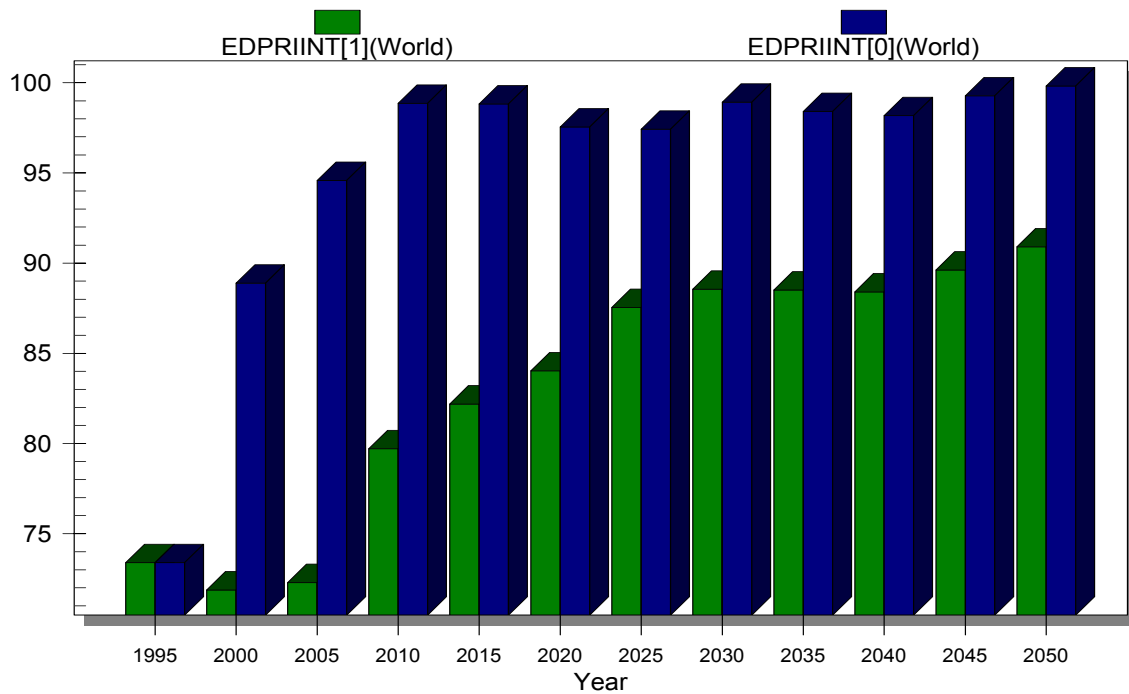


*Fig.11: Results from 20% increase in total global educational expenditure scenario (set o) compared with base projection (set 1)*

As the scenario did not meet the target of universal primary education by 2015, I kept on increasing gds<sub>m</sub> for education. Even after an increase of gds<sub>m</sub> (education) to 3 (the maximum allowed is 5 in IFs), or a 300% increase in expenditure the enrollment did not rise much above 93%.

As a second attempt, I tweaked both gds<sub>m</sub> and gds<sub>ed</sub> for primary simultaneously within the same policy horizon. Finally with a doubling of both gds<sub>m</sub> (education) and gds<sub>ed</sub> (primary) I obtained the desired result as shown below. In each case the model was run through the year 2050 and the expenditure was allowed to stabilize after the intervention period.

**Global Primary Intake With Doubling of Total Educational Expenditure  
And Doubling of Primary Level Expenditure (by 2010)**



*Fig.12: Reaching the Millennium Target of Universal Primary Education with a double doubling: Result from IFs scenario development*

**9. Conclusion**

One of the major contexts, which I did not discuss in a greater detail, is the demographic feature of education. Education, being contained and utilized by human beings, the patters of demographic transition will influence the investment, achievements and outcomes of education quite heavily. This influence will be more pronouce on the largely populated developing countries, like China or India, which are expected to pass through the demographic transition within the coming decades. Adult education might be more important for these countries to achieve an overall increase in the percentage of educated in the labor force.

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