

# Chapter 1

## Comparative Analysis of International Education Systems

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### ABSTRACT

*International comparisons of educational systems are commonly practiced using subjective methods available in literature. The use of subjective methods can lead to non-standard ranking; each individual investigator inputs his or her own subjective judgment when assigning weights to measurements in each class. The compiled results differ with large variations. A mathematical evaluation method based on concept of Pareto-optimal organization is proposed for this study. This method is easy to apply and uses linear programming model. The weights for various measurements are determined through an objective method. We illustrate our methodology in a comparison of the educational systems of twenty-one industrialized countries.*

### INTRODUCTION

In 1983, the *National Commission on Excellence in Education* released “A Nation at Risk.” In this document, they warned the United States, “If only to keep and improve on the slim competitive edge we still retain in world markets, we must dedicate ourselves to the reform of our educational system

for the benefit of all—old and young alike, affluent and poor, majority and minority” (Hanushek, Jamison, Jamison, & Woessmann, 2008, p.62). In this statement, the commission suggests that education plays a significant foundation in the economic success of a country. It also states that the investment and time devoted to education will not only increase the employment rate but also increase the graduation rate.

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In 2002, the United States passed the *No Child Left Behind Act* (NCLB), which focuses on improving the performance of U.S. primary and secondary schools. Through this act, the number of federal programs was reassessed. Education in the U.S. is primarily a State and local responsibility. With NCLB, the Department of Education (federal program) contributes a budget of \$68.6 billion a year (U.S. Department of Education, 2008). However, the amount of educational investment varies from country to country.

Generally speaking, employment rates normally rise with educational attainment. For the most part, this is principally due to larger investment in human capital made by higher-educated individuals and the need for these individuals to recoup this investment. In our current global market, the level of skills demanded by industry is rising. The demand for increased skill comes not only from the changes in the employment share between occupations, but also the changing skill demands within occupations (OECD, 2007). For example, a mechanic can no longer succeed with only experience. He/She must know how to read, write, as well as know how to use computerized testing equipment. By recognizing these trends in globalization, countries face greater pressure to improve education and keep their competitive edge in the global economy. Globalization, together with skill-biased technology change, is shifting the composition of jobs in advanced economies. This has increased the importance of educating a larger proportion of the population to much higher standards than in the past (Hammod, 2008). In fact, illiteracy has declined worldwide over the past few decades. The percentage of the population without any schooling decreased from 36 percent in 1960 to 25 percent in 2000 (Wieczorek, 2008).

Higher education graduation rates have grown significantly in recent decades yet the question arises of whether the increasing supply of well-educated labor has been matched by the creation of an equivalent number of high-paying jobs? Governments in various countries including France,

Germany and Japan, who are pursuing an expansion of tertiary education, have acknowledged the fact that more high-level skills are needed in an advanced knowledge economy. This requires a greater proportion of the workforce than in the past to be educated beyond the secondary school level. Dustmann, Fitzenberger, and Machin (2007) state that many countries have seen significant growth in the number of jobs and industries that are dependent on a having a skilled workforce. However, the question remains—what will be the effect increasing the supply of the well-educated on the labor market? Dustmann, Fitzenberger, and Machin (2006) note that one negative impact of increasing the supply of well-educated workers is a relative rise in unemployment among people with low qualifications (as high-qualified workers take their jobs); they also note the potential for a reduction in the pay premium associated with tertiary qualifications (as a rise in graduate supply outstrips any rise in demand for graduate skills).

Chan, Leung, and Wang (2006) found that the difference in unemployment rates between those with an upper secondary education and those with tertiary education decreased marginally, from 2.8% to 2.2% between 1995 and 2005. On the other hand, the difference between upper secondary and lower secondary unemployment rates increased from 3.4% to 5%. Since most countries started to attain upper secondary and tertiary schooling during this period, it suggests that these increases have been matched by demand for higher skills.

The purpose of this paper is to evaluate the international education system among 21 industrialized countries. As students are the future employees as well as the future customers of educational systems, this paper takes a look at how educational investment and the learning environment impacts graduation and employment rates. Educational investment is not only looked at by the annual expenditure per student but also the annual expenditure per student relative to GDP.

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