
The Role of Human Capital in Long-term Economic Growth

Barry McGaw

Introduction

Korea is a very interesting country from the point of view of human capital development because of the evident commitment of its people and governments to education. While Korea ranks 23rd in wealth among the 30 OECD countries as measured by GDP per capita, it ranks 2nd in its commitment of national wealth to education. Korea allocates just over 7 percent of its GDP to expenditure on educational institutions – 4 percent comes from public sources and 3 percent from private sources. In the allocation from public sources, Korea ranks 25th among OECD countries. It is the substantial private investment that raises it to 2nd rank (OECD, 2001a).

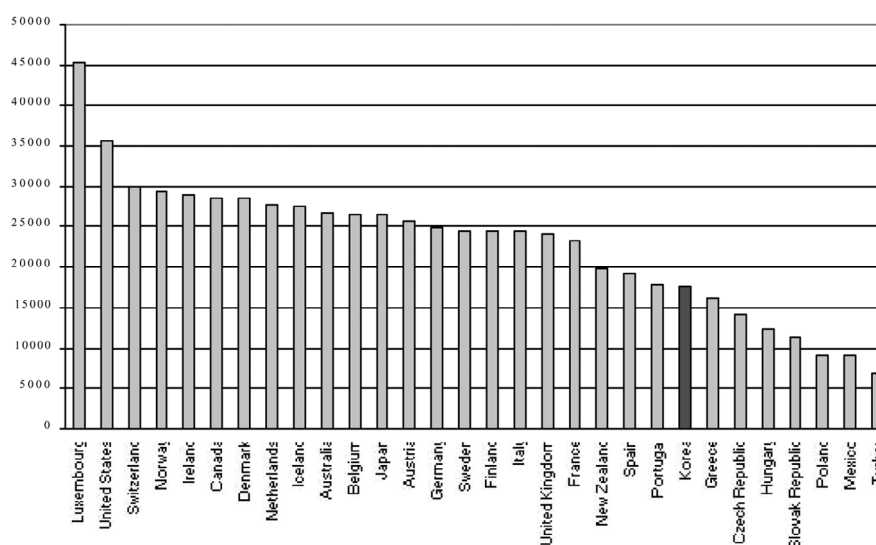
Korea's economic development over the last four decades has been remarkable. In the early 1960s, Korea's per capita income was lower than that of any Latin American country and only mar-

ginally higher than Afghanistan's (Maddison, 2001). Today, as Figure 1 shows, Korea's per capita income is above those of seven of the other 29 OECD countries and close to those of Portugal, Spain and New Zealand.

Undoubtedly many factors have contributed to Korea's spectacular economic growth, but it is clear that more and better education has been a crucial one. Until recently, the debate had focused on physical capital and new technology – in particular information and communications technology. There is now, however, increasing recognition that, in the absence of the adequate human competencies, the growth effects of physical investments are likely to be small. This seems to be well understood in Korea.

The key questions for future policy development are in just what ways education contributes to contemporary economies and what education policies might secure and enhance those contributions.

Figure 1. Living Standards in OECD Countries
GDP per capita, current U.S. dollars, based on current PPP (Purchasing Power Parity), 2000. (Source: OECD)



Human Capital as a Productive Factor

Recent empirical research confirms the significant impact of investment in human capital on economic growth. Work at the OECD by the Economics Department and the Directorate for Education, Employment, Labor and Social Affairs estimated that an increase of one year in the average educational attainment of a country would raise per capita GDP by between 4 and 7 percent. Analyses of the changes in economic performance in OECD countries between the 1980s and the 1990s show human capital investment to be one of the most powerful engines of economic growth. Interestingly, on average, its impact has been larger than that of physical investment.

There are three key growth-enhancing effects of human capital. First, it contributes to economic efficiency. Second, it provides the labor resources on which growth depends. Third, it can reduce social inequalities and, potentially, make growth more sustainable.

The contribution of education to economic efficiency lies in the very nature of the current growth process, that is that new technology and skilled labor complement each other. Economies are increasingly based on knowledge and less on physical capital or natural resources, and knowledge is characterized by strong network effects. In other words, the more people have access to knowledge, the greater are the likely economic benefits of knowledge. This is why it is more important than ever to ensure that no groups in our societies are left isolated by their inability to access education opportunities.

The second growth-enhancing effect of human capital lies in its provision of the labor resources on which growth depends. Better human capital is typically associated with higher employment and that, in turn, provides the labor resources needed to support growth.

This is especially important in view of the major demographic challenge of population ageing that most OECD countries, including Korea, will be facing. Reflecting falling birth rates, the number of people of working age is growing slowly, and it may even fall in some countries after 2005-2010. At the same time, people are living longer but also tending to retire earlier. Much has been said about the socio-economic risks entailed in these conflicting trends – notably regarding the viability of pension systems and indeed the sustainability of the growth process – but it is clear that adopting a lifelong learning perspective is central to meeting the ageing challenges.

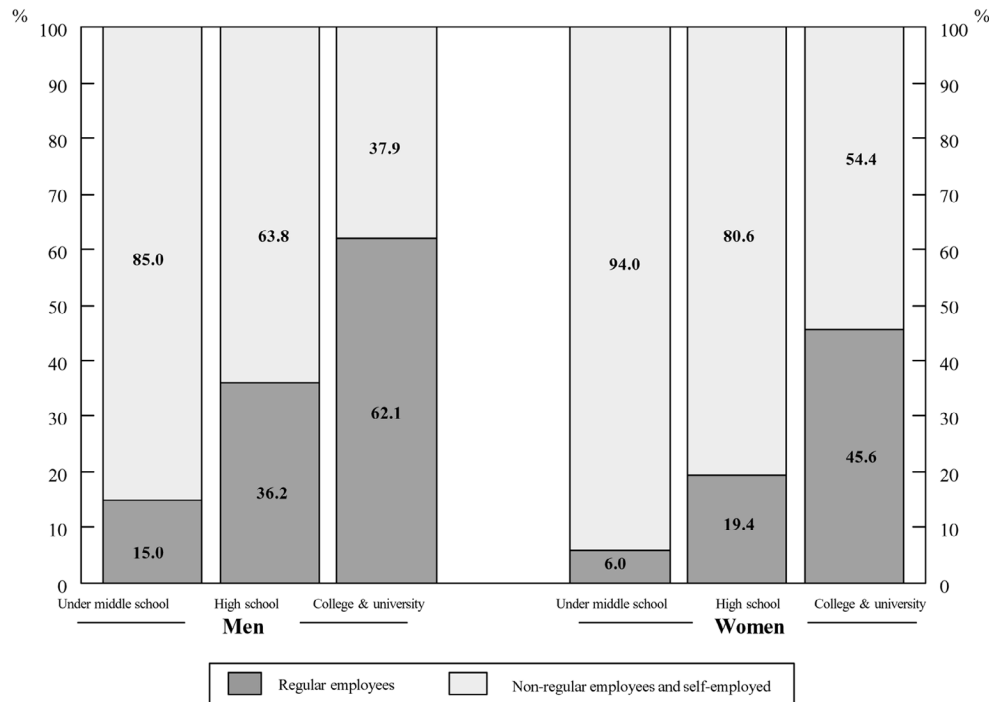
There is evidence that the structure of the Korean labor market may not support investments in lifelong learning. A recent OECD (2000) study shows that the incidence of atypical and low-quality jobs is high in Korea. Indeed, Korea has one of the most “dual” labor markets in the OECD area. In 1999, more than half of all employees had either a temporary or a daily contract, the remaining having a “regular” (*i.e.*, open-ended) contract. In international comparisons, Korea has the highest share of non-regular jobs in total employment. Many workers feel insecure about their jobs, which is problematic in and of itself. In addition, employers tend to be reluctant to train workers on temporary or daily jobs. As the Figure 2 shows, better-educated workers are less likely to be in non-regular jobs than their less well-educated counterparts. The problem may become smaller as new, better-educated cohorts enter the labor market though, as a study by Martin and Torres (2000) shows, action in the area of labor markets and social safety nets are also needed.

We come now to the third growth-enhancing effect of human capital, which is based on the political economy argument that better human capital can help reduce social inequalities, making the growth process more sustainable.

Though they often disagree among themselves,

Figure 2. Better Education for Better Jobs

Employment by status and by level of education in Korea, total=100.
(Source: Direct submission by the Republic of Korea authorities)



economists have consistently advocated a range of policies designed to speed up economic growth and raise living standards. Higher common levels of education can reduce social inequalities and improve social cohesion, thus making the growth strategy socially acceptable.

Economic history demonstrates that freer trade will improve living standards for a nation as a whole. Even so, trade liberalization may be resisted by groups that fear for their jobs and incomes. This is so especially when trade liberalization provokes structural change, thereby requiring a degree of labor mobility. But when workers are equipped with the right skills, they will be in a better position to cope with, and accept, structural change.

In addition, more equal access to education has the potential to reduce income inequalities, which may help improve the social sustainability of growth

policies. Indeed, some argue that inequalities in income distribution may cause social and political unrest which would discourage investment and slow growth.

Building Human Capital in Korea

I turn now to the issue of building human capital and, in particular, to the education and training system in Korea. The key question is how well it is adapted to these changing economic requirements.

Building a Sound Basis in Compulsory Education

The compulsory school system plays a critical role in human capital formation. Schools do this both directly, by building individuals' substantive competencies through the range of subjects offered,

and indirectly in building individuals' capacity and motivation for future learning.

The OECD has recently introduced a new dimension to its work on education indicators to provide some direct measures of the yield of the compulsory education system. The OECD Programmed for International Student Assessment (PISA) will survey students' performance levels in reading, mathematics and science every three years in all OECD countries, and in a growing number of other countries as well. The first survey was conducted in 2000, with assessments of more than 260,000 15-year-olds at school in 32 countries, and the results were published recently (OECD, 2001b). Most attention was given to reading in PISA 2000. Mathematics will be the major domain in PISA 2003, science in PISA 2006, and then reading again in PISA 2009.

The PISA assessments are not concerned primarily with knowledge acquisition. The focus is on what students can do with what they have learned. To reflect this orientation, the main domains of assessment are referred to as "reading literacy", "mathematical literacy" and "scientific literacy." Information was also obtained from students on the techniques they use to manage and monitor their own learning and on their motivation towards learning in general and the subject domains assessed. Background information on the students and the schools was obtained through questionnaires completed by the students and the principals of their schools.

Since reading was the major domain in PISA 2000, it was possible to develop assessments for three separate scales – one for retrieving information in text, a second for interpreting text and a third for reflecting on text in relation to one's own knowledge and evaluating and arguing about the issues raised in text. While these three scales differ in complexity – with complexity increasing from retrieval to reflection and evaluation – tasks

over the full range from simple to difficult for 15-year-olds were developed for each scale. Overall performances are also summarized on a combined reading literacy scale.

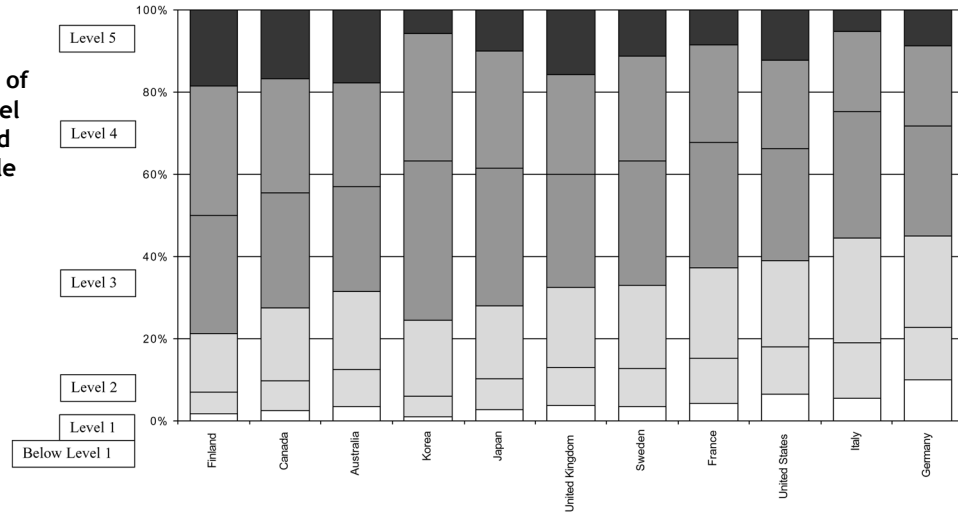
On each of the reading literacy scales, five levels of performance were distinguished. They provide a means by which the distribution of performances as well as the average performance within countries can be described. In fact, the distribution is more interesting than the average for the analysis of between country differences.

In average performance on the combined reading literacy scale, Korea ranks between fourth and ninth. The three countries with mean scores significantly ahead of Korea are Finland, Canada and New Zealand. The five countries with mean performance levels not significantly different from Korea are Australia, Ireland, the United Kingdom, Japan and Sweden. Korea's position relative to other countries is marginally higher on the retrieving information scale than on the interpreting texts and on the reflection and evaluation scale.

National mean scores, however, tell only a very limited part of the story. The differences in spread of scores over the five levels on the combined literacy scale, shown in Figure 3 for eleven of the OECD countries, tell a more complex and interesting story.

Finland achieves a high mean with almost 20 percent of its 15-year-olds at Level 5 and less than 7 percent at Level 1 or below. Korea stands out as a country with a high mean but with relatively few students at the highest level. Even the United States, which ranks between 10th and 20th in mean score, has a considerably larger percentage at Level 5 than Korea (12 percent compared with 6 percent). What keeps the Korean mean high is that there is less than 6 percent at Level 1 or below – the smallest percentage of low achievers in any country. By contrast, what drags the mean for the United States down is the 18 percent of students at Level 1 or below.

Figure 3. Percentage of Students at Each Level on the PISA Combined Reading Literacy Scale
(Source: OECD)



Korea's results in reading literacy show a remarkable degree of equality that has been achieved without sacrificing quality. Indeed, Korea, Finland and Japan all provide clear evidence that it is possible to achieve both quality and equality in educational outcomes. For Korea itself, however, there could well be some dissatisfaction with the relatively low numbers of students performing at the highest level. If these numbers could be increased, the mean would rise further. Even if the lower performing students were not raised much, there would still be a degree of equality in outcomes greater than in virtually all other countries. Raising the performance levels of the best-performing students may not be easy but it will be easier than the task of raising the performance levels of the poorest-performing students, which, as Figure 3 makes clear, is the challenge for Germany, Italy, the United States and France.

In mathematical literacy and scientific literacy, Korea performs even better than in reading literacy. In mathematical literacy, Korea ranks second or third, behind only Japan and ahead of all others but New Zealand. In scientific literacy, Korea ranks first or second, essentially tying with Japan at the head of the list. Again, the high means are achieved with substantially more equality among students than in most other countries.

So is it all good news for Korea? Most of it is, but there are some issues of concern. There is the point already made about the relatively low proportion of students performing at the highest level in reading literacy. There are also gender differences in Korea that are different from those in other countries. Females significantly outperform males in reading literacy in all OECD countries, males significantly outperform females in about half the countries in math, and in science there are mostly no significant gender differences. In Korea, the advantage for females in reading literacy, while significant, is the lowest in the OECD, the advantage for males in mathematical literacy is equal highest in the OECD, and in scientific literacy Korea is one of only three countries in which males perform significantly better than females and it is the one in which the difference is greatest. So, females in Korea do not perform as well, relative to males, as they do in other OECD countries.

Of course, PISA also provides a measure only at 15 years of age. There is much formal education to come, particularly in a country like Korea where participation rates remain so high right through university-level education. Competition for places in preferred university courses and the high-stakes examinations on which selection is based impose considerable constraints on students. It can narrow

learning to the content and style that is seen to be rewarded in the examinations and it can impose enormous time demands on young people in their final years of schooling, not only at school but also in additional coaching outside school. Those, I know, are issues of concern in Korea. They are in Japan also, where the current reform is attempting to reduce the scope of the curriculum to provide more time for students to engage in analytical work as opposed to knowledge acquisition.

It should be emphasized, however, that the PISA assessments on which Korean 15-year-olds have performed so well do not assess recall of information presented in a specific curriculum but rather on students' capacity to use what they have learned in real-life situations.

PISA 2000 gives us only a snapshot of current national performances though we can add the pictures provided by earlier international surveys of student achievement in which quite a few OECD countries have participated. With its ongoing three-year cycle of assessments, PISA will build a good picture of trends across countries. And it will not simply show any shifts in country rankings. Results will be mapped onto the same performance scales so that real movement, and not just relative movement, will be made clear.

Expanding Post-compulsory Education

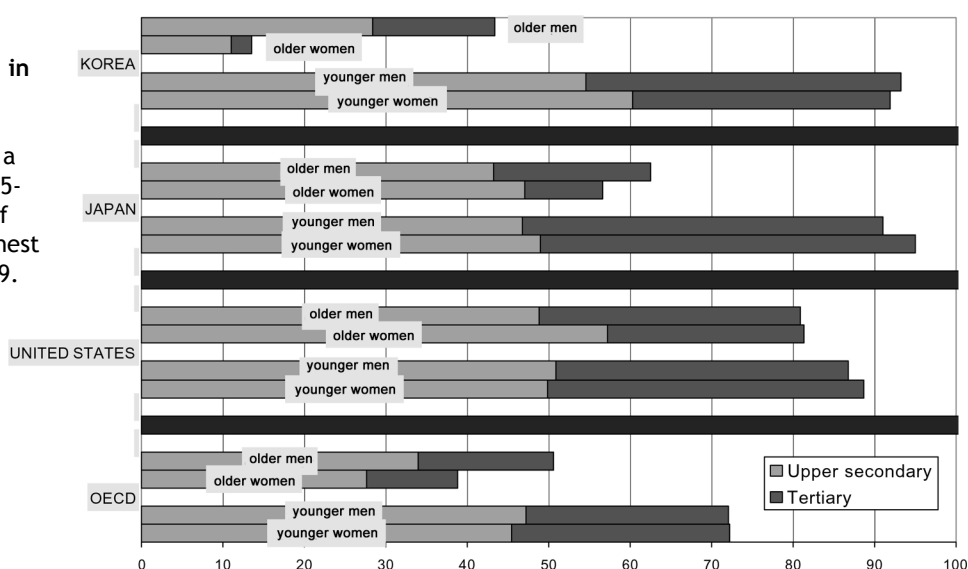
We have no PISA-style information on performance levels achieved in post-compulsory education. All we have are completion rates, but from them we can gain a picture of trends as well.

Trends can be explored by comparing the qualifications of an older cohort – say those aged 55-64 whose qualifications reflect the educational experience of young people a generation ago with the qualifications of today's young people – say those aged 25-34. Figure 4 gives this information for Korea, the US, Japan and the OECD average.

When similar data for the 30-year gap are examined for all countries, we see two things: first, a large increase over time in the proportion of people with both upper secondary and tertiary qualifications and second, a dramatic improvement in the position of women, with women having caught up with the qualification levels of men in most countries and surpassing them in some.

In Korea, both trends are not only visible, they are dramatic. Women have increased their participation in upper secondary education seven-fold and in tertiary education thirteen-fold. In key competitors, such as Japan and the United States, we see the same trends, but much less dramatic.

Figure 4. Growth in Human Capital
Comparison of an older (55-64) and a younger cohort (25-34). Percentage of the cohort by highest qualification, 1999.
(Source: OECD)



Challenges in Strengthening the Links and the Benefits

While the performance levels of 15-year-olds and the high levels of participation in post compulsory education in Korea are clearly success stories, there are challenges to be met in further strengthening human capital development and its links with economic development.

In identifying some of these challenges, I will draw on differences between Korea and other OECD countries. That leads to an entirely normative argument, of course, since it tends to result in the common practices of others being commended as though they are “right” simply because they are common. Culture and history must also be taken into account.

The first issue is the position of women in the labor market. Although the qualifications of young Korean women equal those of men, the proportion of women who work is lower than in many European countries and the United States – although about the same as in Japan. Figure 5 provides labor force participation for women by education level in Korea and the G7 countries.

The striking feature in Korea is that, unlike Western countries but to some extent like Japan, better education does not increase a woman’s chance of participating in the labor force. Of course, for women as indeed for men, the choice to work is a choice, and such choices are partly determined by cultural factors. It may be worth looking, however, at whether there are any particular barriers to the employment of women that could be removed for collective advantage.

A second issue is the economic returns from further investment in post-compulsory education. These returns for men could be more limited than in some other OECD countries, as Figure 6 shows.

A Korean male tertiary graduate earns less than half as much again as someone with no upper secondary education. At the other extreme, in the United States, male graduates earn nearly three times as much as their counterparts with only lower secondary qualifications. More generally, in Japan and other OECD countries, better-educated men can expect much higher earnings as a result of better qualifications than can their counterparts in Korea. These limited returns to education in Korea are almost certainly linked to the general reduction

Figure 5. Participation of Women in Employment 1999

Labour force participation rates by education level for those aged 25-64. (Source: OECD)

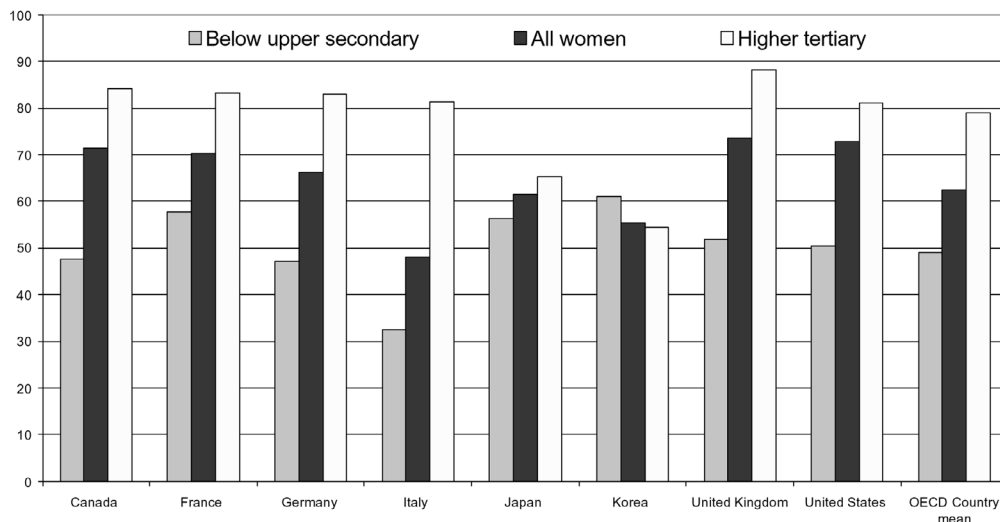
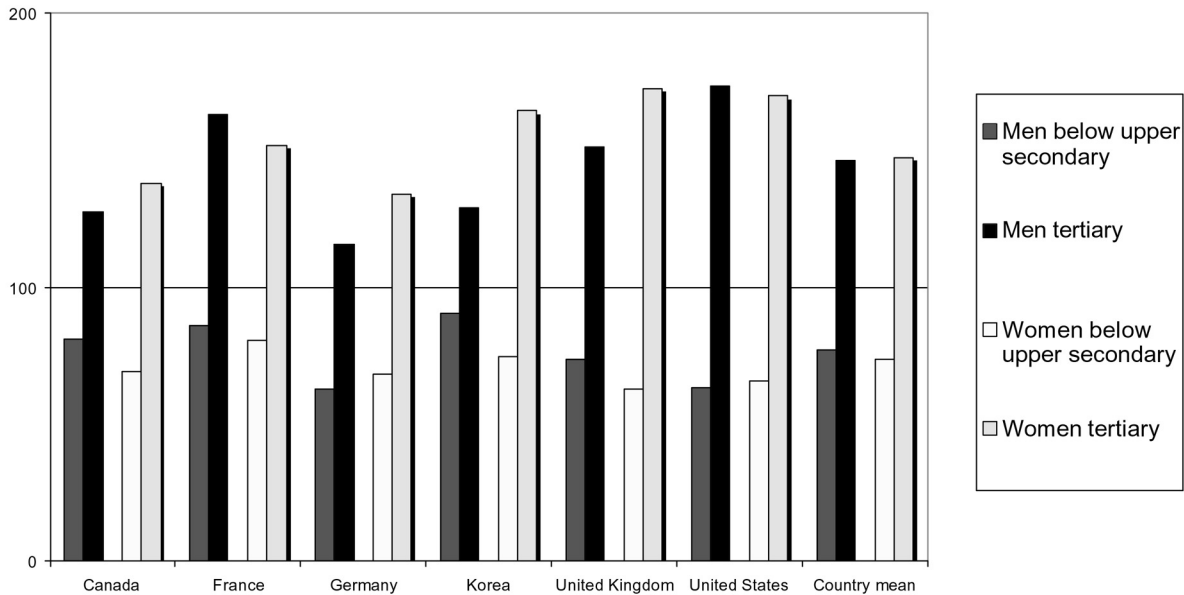


Figure 6. Wage Premia for Qualification 1997-99

Earnings as a percentage of the earnings of those with upper secondary education in the same gender-country group for those aged 30-44. (Source: OECD)



in wage differentials that has been observed in the Korean labor market over the past 20 years. Similarly, while in most OECD countries the risk of unemployment diminishes sharply with educational attainment, this is not the case for Korea.

There are also broader issues facing all OECD countries that Korea must also face.

First, countries need to find ways of making their educational resources go further, in order to expand opportunities for all to participate fully and appropriately in opportunities to learn throughout life. On the evidence of expenditure on schooling, Korea's investment is efficiently used. As Figure 7 shows, Korea achieves average results in PISA – on a combined result from reading literacy, mathematical literacy and scientific literacy – that exceeds what would be expected on the basis of its cumulative expenditure per student by the time the students are 15 years of age.

Second, countries will need to find additional resources to expand learning opportunities further. In 1996, OECD Ministers for Education agreed on

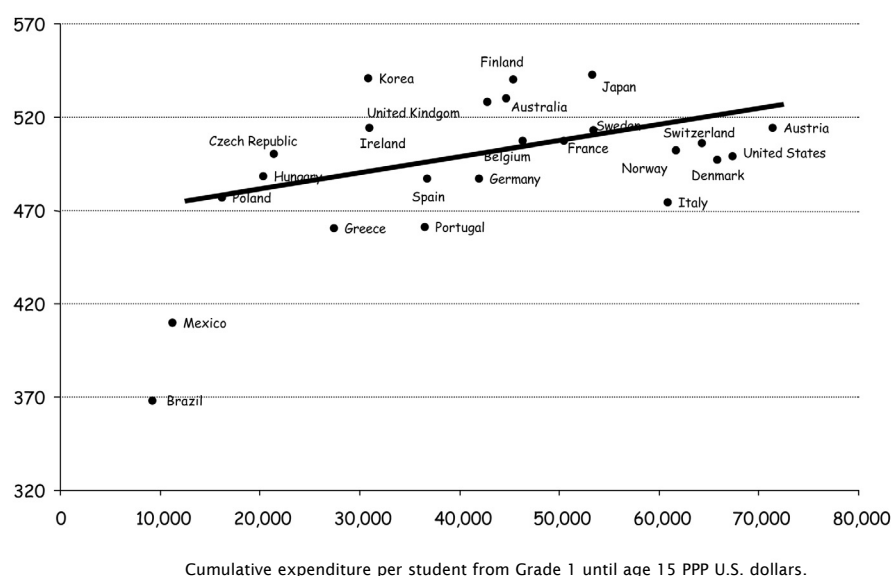
the common goal of lifelong learning for all in recognition of the importance and range of contexts in which learning continues beyond the initial stages of formal education.

Though there is broad agreement with the policy aim of lifelong learning for all, the thorny issue of who pays for it remains largely unresolved. It is essential to address this question; otherwise some of the policies advocated here may become pure rhetoric.

Also, across the OECD, the very economic success achieved in part due to improved human capital has made teacher recruitment more difficult. (This is true at university level as well as school level in many countries.) It is partly a matter of salary but also a matter of status and not unrelated to the relative decline in the status of the public sector. Many OECD countries also have an ageing teaching force, with imminent high retirement rates that will exacerbate the recruitment problems. The job of teaching is also becoming more difficult with social changes such as increased alienation of some young people and even violence in the classroom.

Figure 7. Relationship Between Average Performance (Reading, Maths, Science) and Average Spending Per Student

(Source: PISA report, OECD, 2001a, Figure 3.7b, p.91)



Teachers are an important key to success in our education systems. With this in mind, OECD Education Ministers recently asked us to launch a new programmed of work to investigate both the quantitative issues of teacher demand and likely supply, and qualitative issues related to recruitment and professional development.

Conclusion

The story of economic development in Korea is a strong one. So too is the story of national commitment to education and national achievement in education.

But the goal posts keep shifting so current success is no basis for relaxing. Just as the transformation of many economies to “knowledge economies” has increased the demand for higher levels of skills throughout the labor force, so demands are likely to continue to rise. Singapore seeks to become a “thinking island” in which economic success is built

upon creativity and seeks to transform an education system that is outstanding by all usual measures of student learning into one that nurtures creativity as well as high-level cognitive skills. Korea will need to pursue similar goals and, given its strong present position, is well placed to do so.

To achieve this with students will require the same of the education authorities and the schools – the courage and the capacity to be creative.

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Barry McGaw is deputy director for education at the Organization for Economic Cooperation and Development (OECD).