# Human Capital and Population Development Pakistan and the "Cannon or Butter" Dilemma[1]

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*For this research effort, Asif Wazir received financial support from the Higher Education Commission of Pakistan. He and co-author Anne Goujon would like to thank Wolfgang Lutz and Samir K.C. for their useful comments.*

The challenge facing Pakistan is very clear. Either it manages to dramatically slow population growth–increasing from 33 million according to the first census taken in 1951 to 132 million in 1998 and estimated at 185 million in 2010–and educate its children, the country's future labor force, or it will have to deal increasingly with a large uneducated working age population that will increasingly put the country at risk of political unrest. Specifically, large youth cohorts have been associated with higher risks of political violence in developing countries, where young people have few alternatives besides unemployment and poverty (Collier 2000, Goldstone 2001, Urdal 2006). Pakistan is at risk of similar destabilization. The other danger is that the country will be stuck in a poverty trap, where low levels of education and high population growth rates prevent it from driving the road to higher development. Because education and population have such a large momentum, the window for action is actually not very wide. Any delay in investing in education now will have repercussions in the future. However, the investments in education have been too low in the distant and recent past. In 1980, the government was spending four times more on military expenditures than on education. In 2002, the ratio of military to education spending was still above two. In 2010, with 37 percent of its population below age 15 (UN 2008) and 44 percent

1. From the argument developed by Paul A. Samuelson, Nobel Prize winner, in *Economics: An introductory analysis* (1948) according to which an economy which produces slightly more of one good, for instance cannons, must necessarily give up some of other goods, like butter or in this particular case, education.

of the working-age population (20-64) having never been to school, the government spent less than 3 percent of its GDP on education, increasing from less than 2 percent for the period 2000-2005[2]. Women are particularly disadvantaged in accessing education; 64 percent of the working age population with no education is female and women barely make up one-third of the secondary and tertiary educated working age population. The country is nevertheless experiencing a decline in birth rates and population growth is beginning to level off as part of the demographic transition. Hence Pakistan will experience a demographic bonus—a period of time when the share of the working age population is prominent—in the next 30 to 40 years, as the majority of its population will be of working age with fewer younger and still few aged citizens. In this context, human capital will be central to the realization of this window of opportunity for rapid economic growth and further investments in education and infrastructure. The purpose of this chapter is to explore the present and future human capital of Pakistan. Human capital usually refers to the people who are in the labor force, differentiated by their health and their skill levels, conveniently approximated by levels of educational attainment (Crespo Cuaresma *et al.* 2009*)*. In the following analysis, we only focus on the educational attainment aspects of human capital by age and sex since data on health and labor force participation are difficult to obtain. Moreover, education is a marker at both the individual and societal level for better quality of life, including for greater autonomy among women (Jejeebhoy 1995). Besides, the educational composition of the population is one of the most important factors for economic development (Lutz *et al.* 1998). The chapter will assess the potential for the achievement of the United Nations' Millennium Development Goals (MDGs) and education for all in Pakistan, especially universal primary education and gender equality. It will also assess how realistic national goals on

2. The government plans to increase financial allocation to 7 percent of the GDP by 2018.

educational attainment are in view of the present speed of change in the education sector, using the population projections methodology.

## How the Past Structures the Present

### *Policy Development Regarding Education*

Any assessment of the education sector in Pakistan today is submerged by the abundance of negative aspects ranging from inadequate physical infrastructure, shortage of school facilities and qualified staff and poorer student performances than any other Asian developing country. In 1947, when Pakistan received independence from Great Britain after 100 years of colonial rule, one of the first aims of the government, following the recommendations of the 1947 education conference, was to provide free and compulsory elementary education. Again in 1973, under the leadership of Zulfikar Ali Bhutto, the newly adopted constitution included an article stipulating that "the State shall remove illiteracy and provide free and compulsory secondary education within minimum possible period." Indeed, human capital formation, the result of education, is essential in raising the efficiency and productivity of the labor force. This obvious link which should result in the prioritization of education in the development policy of a country is not always taken into account mostly because of the short and medium term time span in which politicians are thinking, whereas returns to investment in education will happen in the long term. Similar to many developing countries, the low levels of educational attainment in Pakistan are firstly attributable to extremely low levels of public investment in the education sector. Public expenditures on education remained less than 2 percent of GDP until 2005, when it started to increase. In 2008, although public expenditures accounted for almost 3 percent of the GDP, it is still less than what most other countries in the southern Asia region invested including authoritarian governments such as in Iran (4.8 percent) and Bhutan (5.1 percent). Birdsall *et al.*

(1993) looked at the cost of low schooling and large gender gap. They found that, in 1985, Pakistan's income would have been 25 percent higher had they achieved Indonesia's 1960 primary enrolment rate and about 16 percent higher if female enrolment rates had been at the same level as for boys. Therefore, if Pakistan had invested more in education in 1960, it would have much higher economic growth rates today. As well, Nasir and Nazli (2000) showed also that "the allocation of government funds is skewed towards higher education so that the benefits of public subsidy on education are largely reaped by the upper income class." Special efforts by the government to promote education started mainly in the 1980s but were very unsuccessful due to political instability. At the beginning of the 1990s, Pakistan achieved a reasonable level of economic growth, but failed to raise human development. For this reason the government launched the Social Action Program (SAP) in 1992, with the support mainly of the World Bank and other international donors. This was an open-ended action plan, carried in several phases, which was aimed at increasing the quality and quantity of social services such as the education sector, wherein the objectives were to increase enrolment and school quality as well as eliminate gender and regional disparities. The SAP yielded unsatisfactory education outcomes, with almost no increase in primary enrolment rates, and little reduction of the gender and regional gap. As can be seen from Figure 1, education expenditures have been increasing since 2002, mainly as part of the National Plan of Action (NAP 2001 to 2015) whose basis for planning was the UNESCO Education for All goals, aiming mostly at achieving universal primary education by 2015 for both girls and boys. Other governmental objectives are set in terms of increasing participation at lower secondary level and producing more higher education graduates.

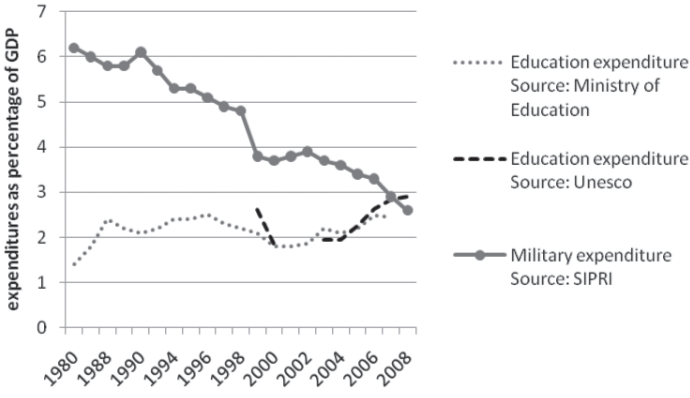


**Figure 1. Education and military expenditures as percentage of GDP.**
Source: Ministry of Education, UNESCO, and SIPRI database

Until the end of the 1990s, Pakistan was doing worse than the average of least developing countries across the indicators of enrolment and budget allocation, e.g. the primary school enrolment rate in Pakistan was 62 percent compared to the 76 percent average for low income countries (UNDP 2003). In 2010 (Figure 2), Pakistan scores less than the South Asia[3] regional averages in terms of indicators related to the generation of human capacity, such as access (enrolment of both girls and boys at primary and secondary levels), investment, performance (measured by literacy and primary completion rates), and quality of education, dependent for instance upon grade repetition and pupil to teacher ratio.

3. Consisting of eight countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka

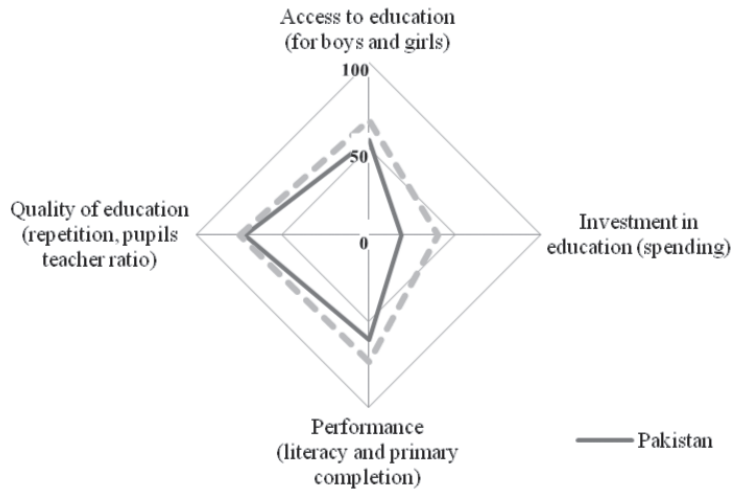


**Figure 2. Generation of Human Capacity in Pakistan compared to countries in South Asia.**
Source: Adapted from the Global Education Database (UNESCO)

***Education Development in Last Decades***

The "problem" with education is that it takes time to influence society. Levels of educational attainment are acquired mostly during childhood. Hence any improvements in enrolment and completion rates will not have diffused through the entire working population until some 50 years later[4], meaning that any lack of improvement in educational policies in Pakistan will plague the human capital characteristics of the labor force for many decades. Educational momentum is visible in the evolution of three types of indicators: (1) literacy rates; (2) the share of the population distributed between levels of educational attainment,

4. Education occurs mostly in schools, adult education being marginal. Any change, for instance in the intake level of primary education, will take a few decades before it has reached the whole working age population by the process of generation replacement, the old and less educated generations being replaced by the new generations who have benefitted from increased education.

meaning the translation of past investments (or lack thereof); and (3) enrolment ratios that reflect present education flows and which later translate into human capital stocks.

Literacy has been expanding since the beginning of the 1970s. In 1972, only 22 percent of the population was literate compared to 54 percent in 2008. Still Table 1 shows that it is only in 2006 that the population became majority literate. The overall literacy rate for 2008 was estimated at 54 percent: 67 percent for males and 40 percent for females. These rates are among the 10 lowest in the world for the countries with data available in 2008—data was not available for Afghanistan where rates of illiteracy are presumably higher than in Pakistan—and Pakistan is the only country in the bottom 10 outside sub-Saharan Africa. The difference in literacy levels of the 15+ population and the 15-24 population is striking and show that literacy is gaining ground in the population; still Pakistan is among the 10 countries with the lowest scores in terms of literacy of the 15-24 population, meaning that the pace of change for the youngest age group is not any faster than in the other least-literate countries. Since the overall population of Pakistan is large, the absolute number of illiterate men and women is very large as well, 51 million in 2008—about the whole population of South Africa for the same year. Table 1 also shows that the increase in literacy rates is not keeping up with the population growth rates as the total illiterate population is more or less staying constant at about 50 million.

Not surprisingly, the persistent high levels of illiteracy are visible in the levels of educational attainment of the working age population—the age group 20-64—which is dominated by a large proportion with no education (Table 2). Still the share of men who have at least completed a lower secondary education has increased from 19 percent in 1972 to 46 percent in 2005, pointing at imbalances in the development of the education sector with a barrier restricting access to primary education; however, once this level has been accessed, there are fewer obstacles to higher levels. Still, the percentage of the working age population that is highly educated is very low, and as of 2005 only 9 percent

**Table 1. Literacy indicators.**

| Age group | Year | Literacy rate (percent) | | | Illiterate population (in millions) | | | Illiterate Population |
|---|---|---|---|---|---|---|---|---|
| | | Total | Male | Female | Total | Male | Female | % female |
| 15+ | 1972* | 22 | 30 | 12 | 31 | 14 | 17 | 54 |
| | 1981 | 26 | 35 | 15 | 36 | 17 | 19 | 54 |
| | 1998 | 43 | 55 | 29 | 47 | 19 | 28 | 60 |
| | 2005 | 50 | 64 | 35 | 51 | 19 | 32 | 63 |
| | 2006 | 54 | 68 | 40 | 48 | 18 | 31 | 64 |
| | 2008 | 54 | 67 | 40 | 51 | 19 | 32 | 63 |
| 15-24 | 1981 | 35 | 45 | 24 | 10 | 4 | 6 | 56 |
| | 1998 | 55 | 67 | 43 | 12 | 5 | 7 | 62 |
| | 2005 | 65 | 77 | 53 | 12 | 4 | 8 | 65 |
| | 2006 | 69 | 79 | 58 | 11 | 4 | 7 | 65 |
| | 2008 | 69 | 79 | 59 | 12 | 4 | 7 | 64 |

* Data for 1972 is for age-group 10+
Source: UNESCO and Choudhry (2005)

of men have a university equivalent education. The situation is far worse for women where the barrier to primary education has been impervious in many settings, especially in rural areas. Only 33 percent of the working age female population had completed a primary education in 2005—increasing from 8 percent in 1972—and only 9 percent had an upper secondary or tertiary education, as compare to 2 percent in 1972.

**Table 2. Educational attainment of the working age population (20-64), in percent.**

| Census | Sex | No Education | Primary Incomplete | Primary Complete | Lower Secondary | Upper Secondary | Higher Education |
|---|---|---|---|---|---|---|---|
| 1972 | Male | 68 | 3 | 10 | 14 | 3 | 2 |
| | Female | 92 | 1 | 3 | 3 | 1 | 1 |
| 1981 | Male | 66 | ... | 12 | 16 | 3 | 3 |
| | Female | 88 | ... | 5 | 5 | 1 | 1 |
| 1998 | Male | 48 | 6 | 12 | 24 | 5 | 6 |
| | Female | 74 | 4 | 7 | 10 | 3 | 3 |
| 2005 | Male | 34 | 5 | 15 | 29 | 8 | 9 |
| | Female | 64 | 3 | 11 | 13 | 4 | 5 |

Source: IPUMS and DHS

Levels of enrolment (Table 3) point to an increase in the number of students at all levels and hence future progress in the education of the labor force, although these gross enrolment rates do not automatically translate into levels of educational attainment because of dropouts and grade repetition. It is noticeable that most of the increase is happening at the level of lower secondary education for both sexes, whereas fewer pupils seem to be able to progress to upper secondary education, limiting therefore the scope for increases at the tertiary level.

**Table 3. Gross enrolment ratios in percent, 1970-2008.**

| Level | Sex | 1970 | 1980 | 1990 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Primary | Male | 46 | 51 | 52 | 82 | 83 | 84 | 85 | 91 | 94 | 89 | 93 | 93 |
| | Female | 13 | 19 | 27 | 56 | 56 | 57 | 62 | 66 | 71 | 69 | 76 | 77 |
| Lower secondary | Male | 18 | 20 | 20 | ... | ... | ... | 38 | 41 | 43 | 47 | 51 | 50 |
| | Female | 3 | 5 | 8 | ... | ... | ... | 26 | 29 | 32 | 35 | 38 | 38 |
| Upper secondary | Male | 2 | 3 | - | ... | ... | ... | 24 | 27 | 24 | 24 | 26 | 28 |
| | Female | 0 | 1 | - | ... | ... | ... | 21 | 23 | 20 | 19 | 20 | 21 |

Source: UNESCO

## Future Challenges

We have clearly shown the Pakistani education system has thus far failed to increase the instructional levels that would be necessary to produce associated benefits such as better health, reduced population growth rates and higher economic growth rates. In this second part, we would like to look into the future levels of educational attainment to investigate two scenarios to determine if the pace of change in levels of educational attainment will be enough to reach the goals set by governmental and international organizations for this sector

### *The Methodology in Short: Projecting Future Levels of Education*

The projections are done using the PDE (Population-Development-Environment) multistate population projection software[5]. The model requires the base year population in 2005 by four levels of educational attainment—no education, primary education, secondary education and tertiary education—as shown in Figure 3, by age and by sex.

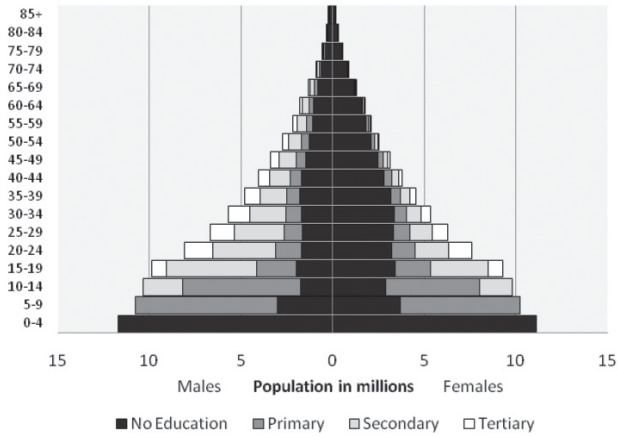


**Figure 3. Population pyramid of Pakistan in 2005, by four levels of education.**
Source: DHS (2006-2007)

The projections require further fertility rates by women's level of education. In 2005, the differential in fertility rates was quite high, with women with no education having more than twice the fertility of those with a tertiary education, who already have achieved below-replacement fertility rates of 1.9 children (on average) per woman. This low fertility level of tertiary educated women means that although few women have a tertiary education, the opportunities of higher education act as a disincentive to "investing" in having many children. Thus, if the education of women was to increase, important declines in fertility

5. Software developed at International Institute for Applied Systems Analysis, downloadable free of charge from: www.iiasa.ac.at/Research/POP/pub/software.html (accessed December 14, 2010).

and consequently in population growth would potentially follow (see Abadian 1996, Jejeebhoy 1995, Castro Martin and Juarez 1995, on the link between women's education and fertility). We assume that the quite ambitious national fertility goals are reached by 2025 with the total fertility rate, basically the average number of children born to each woman, reaching the replacement fertility level of 2.1. This would be quite hard to achieve without drastic improvements in women's level of education, as in the case of Iran where the fertility declined from 5.6 to 2.1 children in just 20 years (Abbasi-Shavazi *et al.* 2008). Further inputs are required about mortality and migration rates by level of educational attainment that will not be detailed here but follow the medium assumption of the UN (2008). Mortality differentials by education follow the findings of Lutz *et al.* (2007)[6] and migration differentials by education follow the study of Docquier and Marfouk (2006).

The last input required for the projections are transition probabilities between levels of education, which model the flows of the population of schooling age—here between 5 and 24 years of age—from the no education category to the primary education category, from primary to secondary, and from secondary to tertiary. We are here considering two scenarios (Table 4) to answer the following question: *Based on the trend in educational improvement in the last 15 years* (Scenario "Trend"), *does Pakistan have the right pace of educational improvement to reach the goals set by the national*[7] *and international*[8] *agenda* (Scenario "Goal"), *and more importantly what will be the consequences in terms of the future educational attainment of the working age population?*

6. According to their research, the life expectancy at age 15 of the population in the no-educational category is on average one year less than that of the primary educated category, three years less than that of the secondary educated category, and 5 years less than that of the tertiary educated category.

7. NEP: National Education Policy (1998-2010) – see here: www.moe.gov.pk/edupolicy.htm

8. Such as that of the United Nations Millennium Development Goals (MDGs) for education – see here www.un.org/millenniumgoals and the UNESCO Education For All (EFA) initiative – see link here www.unesco.org/en/efa/

The objectives in terms of education set on the national and international agenda are the following:

- All children will be able to complete primary education by 2015 (MDGs, UNESCO Education For All (EFA) initiative, National Education Policy (NEP))

- All gender disparities will be eliminated from all levels by 2015 (MDGs, EFA, NEP)

- Increase in enrolment in secondary and tertiary education – freely interpreted[9] by the authors as meaning that 80 percent of 10-14 year-olds would be enrolled in secondary and 50 percent of 20-24 year olds would be enrolled in tertiary by 2050 (NEP)

**Table 4. Projection parameters for fertility and education.**

| Component: | Fertility | | Education transition | | | | |
|---|---|---|---|---|---|---|---|
| | Base-period 2005-2010 | Scenario 2025-2030 | Base year (2005) Male | Female | Scenario Goal Both sexes | Scenario Trend Male | Female |
| **No education** | 4.4 children | 2.6 children | 17%* | 30%* | 0%* by 2015 | 10%* by 2050 | 13%* by 2050 |
| **Primary** | 3.6 children | 2.2 children | 83%* | 70%* | 100%* by 2015 | 90%* by 2050 | 87%* by 2050 |
| **Secondary** | 2.7 children | 1.7 children | 58%* | 43%* | 80%* by 2050 | 59%* by 2050 | 45%* by 2050 |
| **Tertiary** | 1.9 children | 1.4 children | 20%* | 13%* | 50% * by 2050 | 19% by 2050 | 22% by 2050 |
| **Total** | 3.6 children | 2.1 children | -- | -- | - - | - - | -- |

* Transitions are set in age groups 5 to 9 years for primary education, 10 to 14 years for secondary education, and 15 to 19 years for tertiary education.
Source: Authors' calculations

9. Actually the government has not formulated specific numerical goals for secondary and tertiary. The targets are interpretations of the wish of the government to increase participation in higher level studies.

***Results***

Even though we assume that Pakistan will manage to achieve replacement fertility levels by 2025, the Pakistani population would still almost double by the middle of the century, from 166 million inhabitants in 2005 to about 300 million in 2050. This population momentum would lead to further increase in the school age population (0-19) until 2025—from 83 million in 2005 to 91 million—meaning that more children will need to be enrolled in schools, more schools will need to be built and more teachers will need to be trained, especially in rural areas. The working age population, 20-64, will more than double during the projection period—from 76 million in 2005 to 183 in 2050. Rapid fertility decline would accelerate ageing of the society and the 65+ population would quintuple from 6 million in 2005 to 34 million in 2050 (Figure 4 and Figure 5).

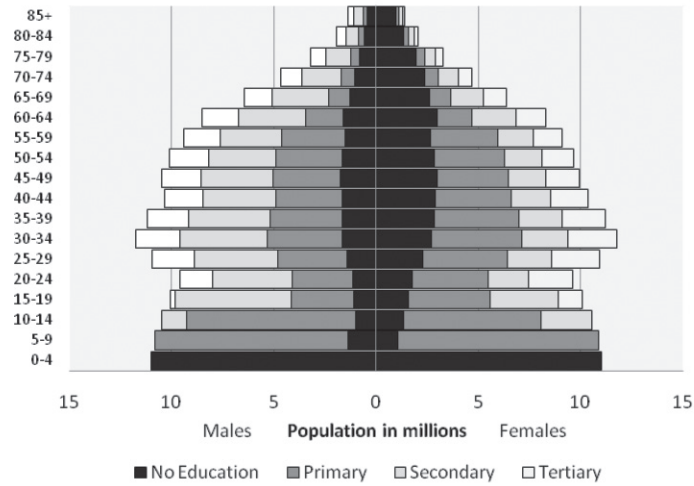


**Figure 4. Population pyramid by levels of education, Trend scenario, 2050, Pakistan.**
Source: Authors' calculations

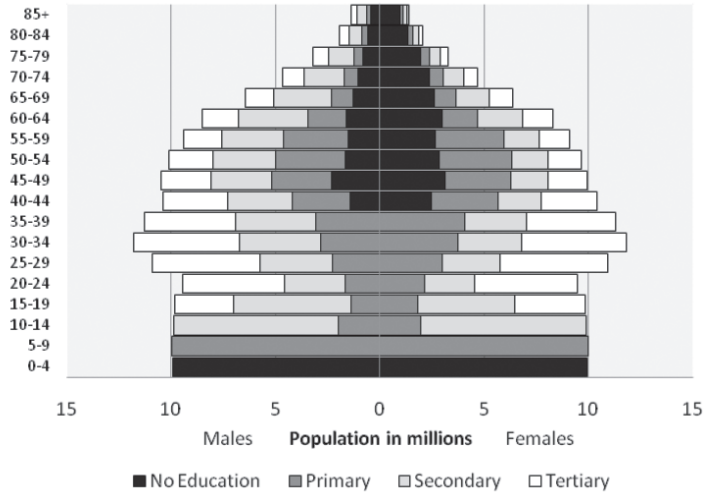


**Figure 5. Population pyramid by levels of education, Goal scenario, 2050, Pakistan.**
Source: Authors' calculations

In 2005, 34 percent of the male and 64 percent of the female working age population had received no education in Pakistan. According to the trend scenario, this would decline to respectively 15 percent and 26 percent in 2050 (Figure 6). This is far from the 9 percent and 15 percent that would be achieved under the goal scenario. The fact that this optimistic scenario does not lead to a fully educated working age population is due to population inertia. Actually as can be seen from Figure 5, the uneducated portion of the population would be above 40 years of age in 2050.

There are several patterns of change (Figure 6) in the level of educational attainment in the future that reflect the emphasis of the education development policy in recent years. In 2005, the share of primary level to the working age population was 15 percent for male and 12 percent for female. Under the trend scenario this would increase to 31 percent for male in 2050, and with almost no difference for female, at 35 percent in 2050. The changes of the past 15

years in secondary and tertiary education for males do not translate into much progress in the 50 years, as shown from the stability of the share of the working age population with a secondary or tertiary education. The same is true for females at the secondary level but since women have benefited from an increased access in tertiary studies in the last few years, this would mean a doubling of the share of women in that education category—from 9 percent in 2005 to 19 percent in 2050.

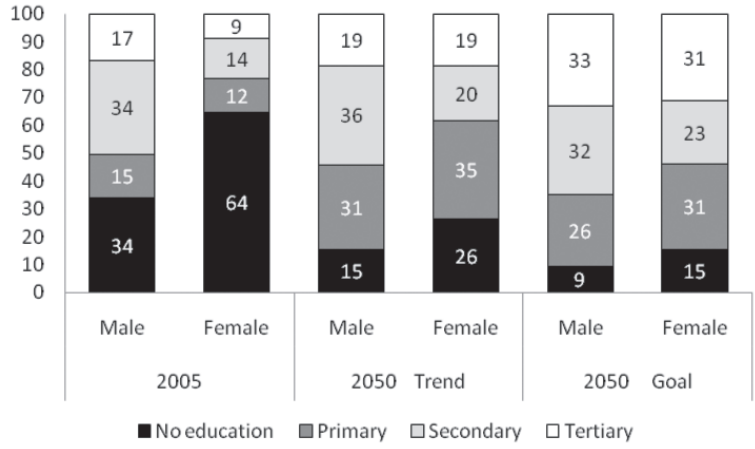


**Figure 6. Share of the working age population (20-64) by levels of education in 2005 and 2050, Trend and Goal scenarios.**
Source: Authors' calculations

## Meeting the Education National and International Goals

It does not really come as a surprise that Pakistan will not be able to reach the international education development goals nor its national educational targets if it extends the pace of change witnessed in the recent past until mid-century. Table 5 shows that according to the trend scenario, there would still be 23 percent of the 5-9 age group who

would not go to school by 2015, far from the full intake envisioned by the education MDGs and EFA targets. Actually, this international goal would not even be reached by 2050, which calls for further investments in the education sector. Furthermore, gender disparities will be far from eliminated at both levels of primary and secondary education in 2015 where girls would still have 15 percent less chance than boys to reach a primary education and 30 percent less to enroll into secondary education in 2015. Although improvements are noticeable by 2050, the opportunities for a girl are still respectively 3 percent and 25 percent lower than a boy at primary and secondary level. Interestingly, gender disparities would be eliminated at one level—tertiary education, where the increases in the last few years have been tremendous and even more so for girls than for boys. Hence, by 2015 female students would still have 17 percent less chance to have a tertiary education but the relationship would be reversed by 2040 when more women would enter tertiary studies compared to men. Even though, the forecast also shows that the rapid increases at secondary and tertiary levels foreseen by the national goals would also be quasi-impossible to be reached by 2050, where 50 percent of children would have access to a secondary education and 20 percent to a tertiary education.

**Table 5. Access to education of male and female, in percent, Trend scenario, 2015 and 2050.**

| | 2015 | | | 2050 | | |
|---|---|---|---|---|---|---|
| | Male | Female | Both sexes | Male | Female | Both sexes |
| No education | 17 | 30 | 23 | 10 | 13 | 11 |
| Primary | 83 | 70 | 77 | 90 | 87 | 89 |
| Secondary | 51 | 34 | 43 | 59 | 45 | 52 |
| Tertiary | 20 | 17 | 19 | 19 | 22 | 20 |

Note: Access is based on the proportion of the relevant schooling age group achieving the relevant education level.
Source: Authors' calculations

If we make the hypothesis that the 'no education' category in the projection is a good approximation of the proportion of illiterate in the total population[10], then the projections show that the EFA goal to achieve 50 percent improvement in levels of adult literacy will not be reached by 2015, and not even by 2050. The proportion of literates of both sexes in the 15+ population would increase from 53 percent in 2005 to 62 percent in 2015 and to 77 percent in 2050 according to the trend scenario. The goal scenario indicates that some of the objectives set for countries by international organizations are unrealistic and show a lack of understanding about the spread of education. Indeed, the 50 percent improvements in adult literacy would only be realized after 2040 if all girls and boys become literate by 2015. It would be difficult to imagine the scale of the adult literacy campaign needed to halve the number of illiterates from the 50 million persons above 15 living in Pakistan at the moment.

The past lack of investment in female education will be hindering Pakistan far into the future unless adult educational campaigns are reinforced to at least render the many girls who come to adulthood without literacy skills, able to read and write. The lack of qualification of women is a handicap for the development of Pakistan as it prevents their full participation in the labor force. In 2008, according to the Labor Force Survey, women accounted for only 20 percent of the active labor force population aged 20-64. According to the trend scenario, at the pace of today's increase, in 2050 there would still be 29 percent of the 15+ female population, 9 percentage points more than under the goal scenario, of women with no education. Thus, though illiteracy of "future women" is eradicated early in the projection period, the problem of the many women without education who already exist is unaddressed. In absolute

10. The category 'no education' underestimates the number of literates on one hand because some children who enter school for a short period may not acquire all literacy skills. On the other hand, it concurrently overestimates since some children and adults can learn to read and write while not being in school.

terms, it means 35 million women with no education in 2050 under the trend scenario and 23 million under the goal scenario (see Table 6).

**Table 6. Share and absolute population of men, women, and total population aged 15+ with no education in 2000 and 2050, Trend and Goal scenarios.**

| Year | Men | | Women | | Total | |
|---|---|---|---|---|---|---|
| | Share | Absolute | Share | Absolute | Share | Absolute |
| **2005** | 33% | 18 million | 61% | 30 million | 47% | 48 million |
| **2050 – Trend scenario** | 16% | 19 million | 29% | 35 million | 23% | 54 million |
| **2050 – Goal scenario** | 11% | 13 million | 20% | 23 million | 15% | 36 million |

Source: Authors' calculations

## The Window of Opportunity

A demographic window of opportunity occurs when the ratio of the non-working age population (typically the children in school ages, usually measured as less than 15 years, and the elderly population aged 65+) to the working age population is low. The rising share of the working age population can translate into a subsequent rise in the rate of economic growth if the economy can employ effectively and productively the growing labor force. The demographic window of opportunity has a beginning and an end, closely associated with the start and the pace of the fertility decline, which influences the age structure. The United Nations defines it as the period when the proportion of children and youth under 15 years falls below 30 percent and the proportion of people 65 years and older is still below 15 per cent. According to this definition, the demographic window of opportunity would start in 2025 in Pakistan according to our projection—for both scenarios—and would end sometime after 2050. As stated earlier, this would mean a period with an important demographic po-

tential for high economic growth. However, the realization of this demographic window of opportunity is dependent on several factors. Levels of educational attainment are important as too low levels, for instance among women could limit participation in the labor force. As well, the economy should be able to absorb through employment the growing working age population. There again unemployment may limit the impact of those favorable age structures.

Unfortunately, the level of educational attainment of the working age population in 2025 is practically set already since educational change has such a large momentum. According to both the trend and goal scenarios (Figure 7), in 2025 the majority of the population would have a level of education equivalent to primary or less (56 percent) and the rest would have a secondary or higher education (44 percent). These numbers would be quite favorable if not for the fact that 32 percent of the working age population would not have received any education, as will be the case even if Pakistan succeeds in reaching its national education goals.

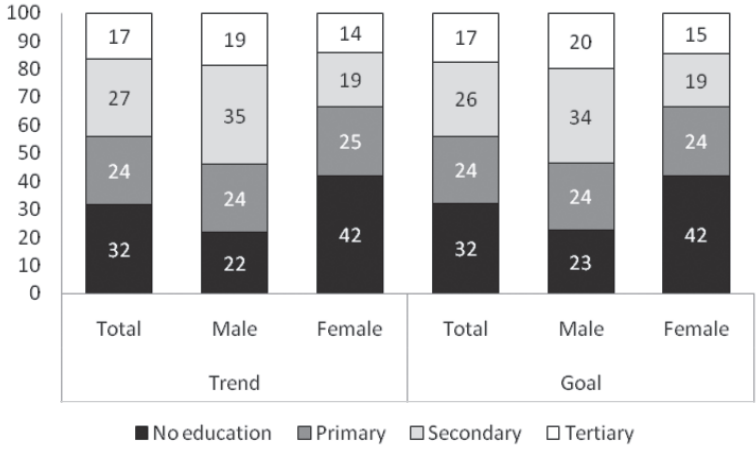


**Figure 7. Share of the working age population (20-64) by levels of educational attainment at the onset of the demographic window of opportunity in 2025, Trend and Goal scenarios.**
Source: Authors' calculations

This calls for a need to increase the scope of the adult educational campaign to bring literacy to almost all the working age population in the country, as has been successfully implemented in India, and to a lesser extent in Egypt. Historically, tackling adult literacy has not been a priority for the government of Pakistan although some initiatives have been launched. During the Ayub era (1959-1969), literacy programs were run under the community development program at village level. In the 1980s, the Literacy and Mass Education Commission (LAMEC) was set and started a new adult literacy campaign through the "*Nai Roshni School*". Under this initiative, many adult literacy schools were set up all around the country. Furthermore, under the slogan "each one teaches one" it was mandatory for those persons who had passed intermediate exams to convert one illiterate to literate. The *Nai Roshni* program taught a few thousands adults how to read and write but it was a mixed success, mainly because of corruption and was terminated in the 1990s during the first Bhutto regime. A benchmark effort was launched in 2002 during the Musharaf regime which established the National Commission for Human Development[11] (NCHD) at the federal and provincial level to set up adult literacy centers in local communities to provide basic literacy skills to individuals (especially women) between the ages of 11 and 45, who were either never enrolled before or dropped out of school before acquiring literacy skills. So far, the 120,000 adult literacy centers of the NCHD have provided 2.5 million adults, 90 percent of which are females, with literacy skills.

## The Regional Variation

The diversity of Pakistan is not only visible across the various landscapes but also across the differentials existing in levels of development. Already at the provincial level, the differences are quite marked as can be seen from Figure 8,

11. See link for more details: www.nchd.org.pk

which shows the share of the working age population by four levels of education in 2005 and 2050 according to a trend scenario[12] in the four main provinces—Baluchistan, Khyber-Pakhtunkhwa (KHP), Punjab, and Sindh—which accounted for 97 percent of the country's total population in 2005[13]. This shows that the two less populated provinces of Baluchistan (7 million) and KHP (18 million) were particularly lagging behind in terms of educational development in 2005, since 66 percent of the working age population in Baluchistan and 57 percent in KHP had never been to school, compared wth respectively 49 percent in Sindh and 46 percent in Punjab. In those two provinces, the pattern is close in terms of school progression, meaning that there are very few with a primary education, and most of those who have managed to go to school actually achieve either a secondary or a tertiary education. Sindh has the highest share of the working age population with a secondary education whereas Punjab has the highest share of the working age population with a tertiary education.

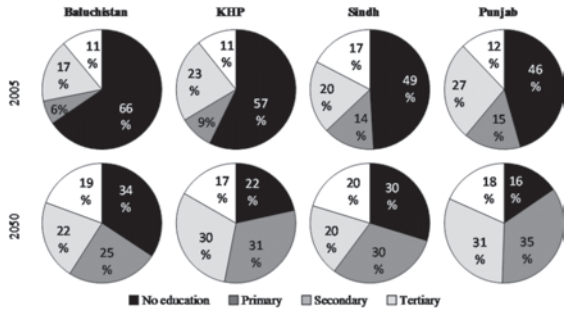


**Figure 8. Working age population share by levels of education in 2005 and 2050 for the four most populated provinces, Trend scenario.**
Source: Authors' calculations

12. Calculated in a similar way for each province as that for the whole country based on the trend observed in the last fifteen years.
13. We have excluded from the analysis the Federally Administered Tribal Area (FATA) where data on levels of educational is scarce. The FATA Multiple Indicator Cluster Survey (2009) found the 10+ literacy rate to be very low at 21.4%, and only 7.5% for female.

The speed of change is as well different if we look at the result of the trend scenario. The only similarity is the share of the working age population with a tertiary education that would become almost equal to 20 percent in all provinces. Reductions in terms of people with no education are clearly visible in all provinces, especially in KHP and Sindh. Although 34 percent of the working age population would still have received no education in Baluchistan in 2050, this would still be a tremendous decline from the 66 percent found in 2005. On the contrary, Sindh's decline in the next 40 years would be less impressive—from 49 percent to 30 percent with no education—showing that this province is not diligently pursuing the achievement of full intake into primary. Besides the persistence of a large population with no education, the fact that the working age population is more balanced between those with primary, secondary, and tertiary education is a good sign in that the labor force could fulfill the requirements of skills to work in all sectors of the economy necessary for the development of the country.

**Conclusion**

Faced with the future growth of its population and of its labor force, Pakistan will have to adopt a development model capable of absorbing the increase. If the country fails, it will be confronted with two main risks: political instability and a poverty trap, a self-reinforcing mechanism which causes a persistent and cyclical poverty unless measures are taken to break the cycle. At present, Pakistan seemed to be ruled by geopolitics, security, and natural disasters, affecting the lives and well-being of its inhabitants. Pakistan's development is highly dependent on the capacity of the country to educate its population so that the 300 million Pakistanis in 2050 can live prosperous lives in a nation economically, socially and politically successful. Education has mostly failed so far in terms of provision and quality, because of the poor involvement of the state in improving education. Because of that Pakistan will fail to achieve the Millennium Development Goals for education, in terms of universal

primary education for both sexes and other objectives on the national and international agenda. The scenarios that we looked at show that the speed of change in advancing education has to be dramatically increased if the country would like to achieve all these goals by mid-century. This is more urgent because the age structure will become more and more favorable and as of 2025, the large labor force, if well educated, could be a major asset in the government's hands. The study points at two areas of particular concern: illiterate adult population and female education, where investments will be highly needed.

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