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HUMAN CAPITAL PROJECTIONS FOR THE PHILIPPINES: ISSUES AND CHALLENGES FOR THE 21ST CENTURY

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ABSTRACT

As the Philippine population continues to grow through the middle of the 21st century, the development of human capital will be crucial to its sustainable development efforts. Priority focus of national and local human capital development and management efforts should be in the conversion of sufficient "quantity to quality" as technology becomes more complex and processes become more technologically oriented. Human capital development requires investments on education and health. Focusing on education, three alternative scenarios for the projected Philippine population by education from 2000 to 2040 were estimated. The constant scenario was based on the current education transition rates. Universal primary education by 2015 and universal secondary education by 2030 were used as alternative scenarios. The fertility, mortality and migration assumptions for the derivation of the medium series component-based official population projections of the Philippines were adopted in the study. Results suggest that improvement in government investments in education is very important, even under the constant scenario, if only to maintain its competitive advantage in the global labor market.

KEYWORDS: *human capital, population projections, Philippines, universal primary education, millennium development goals*

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INTRODUCTION

WITH globalization, many societies all over the world are approaching a "knowledge society" with inexorable certainty. In this emerging economic order, workforce optimization through efficient combination of people, processes and technologies would be necessary to attain maximum productivity. In many countries of the world today, the lack of human capital is increasingly seen as an obstacle for higher economic growth (Carey & Ernst 2006; Guichard & Larre 2006; O'Brien & Paczynski, 2006). Hence, development and management of human capital are crucial as technology becomes more complex and processes become more technologically oriented.

Like any other capital ("investment in resources with expected returns in the market place") (Lin, 2001: 3) for economic production, human capital is the "added value embedded in the laborers themselves" (Lin, 2001: 9). Human capital is often operationalized and measured as education, training and experience. Since "labor is an asset of the poor, making it productive is the best way to reduce poverty" (World Bank, 2006: 2). Hence, the bottom line of poverty alleviation strategies is how to develop human capital to enhance opportunities for earning and to empower individuals for negotiating through available options in times of uncertainty. Human capital development requires investments in education and health to convert sufficient "quantity to quality" for sustainable development. Developing countries like China, India and the Philippines with large and increasing population sizes have our people as our most important asset. Therefore, human capital development (HCD) should be the cornerstone of long-term development strategies if HCD could ensure conversion of labor potential to economic productivity and poverty alleviation.

This paper estimates the projected population of the Philippines from 2000-2040 by education as basis for examining the extent of future human capital investments needed in the coming years. Social and economic challenges resulting from the expected demographic changes during the projection period are also discussed.

Population and Development

The Philippine population is still young with a median age of 21 years, indicating that half of the 76.5 million Filipinos were below the age of 21 based on the 2000 population census (National Statistics Office, 2008). The young-age dependents (below 15 years old) comprised 37% while senior citizens (60 years and older) comprised 6% of the population. The population in productive ages (i.e., 15-59 years) was 57% in 2000. The Philippine population size is expected to continue to grow annually from 2.36% in 1995-2000 to 1.94 in 2005-2010 (National Statistical Coordination Board, 2006).

In comparison with its neighboring Asian countries the Philippine population growth rate (PGR) per World Bank (2006) estimate is still high. The variation in PGR among Asian countries could be attributed to the differential pace and timing of fertility transition by country. Significant fertility reductions have been attained in Singapore, Thailand and Indonesia while the Philippines has yet to transit to replacement-level fertility hopefully within the next 25 years. In particular, the Philippines had about 20 million more people than Thailand in 2005 considering that they started off at nearly similar level in the 1960s, which may be credited to the successful family planning program in the latter (Table 1).

In the early 1960s, real per capita gross domestic product (GDP) was higher in the Philippines than in any of its East Asian neighbors, and the Philippines also had the best human development indicators—longest life expectancy, lowest infant mortality rate, highest primary school enrollment ratio, and lowest illiteracy rate (Balisacan, 2001). However, its neighbors recorded higher income growth, more dynamic structural transformation, and much more impressive poverty reduction in the subsequent decades. According to Balisacan (2001), there was a strong link between agricultural growth and overall economic performance of emerging Asian market economies as agriculture and agriculture-dependent manufacturing and service sectors had a relatively large fraction of their economic experience during the early stages of development, which induced rural non-farm growth and substantially reduced poverty in rural areas. However, this did not happen in the Philippines even during the height of the "Green Revolution" in the 1960s and 1970s when agricultural growth in the

Philippines was high by Asian standards (Balisacan, 2001). He attributed the weak rural supply response which resulted in a rather poor rural welfare outcome to misguided policies and institutional factors that constrained the responses of rural areas to the stimulus provided by agricultural growth and stifled economic development (Balisacan, 2001).

TABLE 1. Population indicators in selected Asian countries

	Population			Population age composition
	Millions	Average annual %. growth	Density people sq. km	Ages 0–14
Countries	***2005***	***2000–2005***	***2005***	***2005***
Indonesia	221	1.3	122	28
Malaysia	25	2.0	77	32
Philippines	**83[85]**	**1.9**	**279**	**35**
Singapore	4	1.4	6,495	20
Thailand	64	0.9	126	24
Vietnam	83	1.1	255	30

NOTE: Data for the Philippines in brackets came from the official Philippine Population Projection (Medium Series: NRR=1 by 2030) released by the National Statistical Coordination Board in 2005.

SOURCE: World Bank (2006).

Pernia (2005), another Filipino economist, noted that the inward-looking and protectionist policies adopted by the government did not promote exports and foreign direct investments from 1960s through 1980s, which were rather inappropriate as most markets were moving toward trade liberalization. He further argued that the rapid increase in population, which in turn resulted in heavy dependency burden, created low savings and investments and eventually a sluggish economic performance.

As PGR in the Philippines appears to have stalled at about 2.3% in the past two decades, Thailand and Indonesia's PGR, which were about the

same as the Philippines' in the early 1970s, have dropped to 1.4 and 1.5% respectively. Hence, while poverty incidence in the Philippines remains high at 34%, Thailand's poverty incidence has fallen to 9.8% and Indonesia's to 18.2% (Pernia, 2005). World Bank (2006) data revealed that while 15.5% of the Philippine population lives on $1 per day in 2000, only 7.5% in Indonesia and less than 2% in Malaysia and Thailand were in such a similar situation.

Economic growth is necessary but not sufficient in reducing the incidence of poverty. Thailand's experience suggests that good population policy combined with good governance results in rapid economic growth and poverty reduction. On the other hand, the experience of Indonesia, where governance rating is similar to and corruption rating is worse than the ratings of the Philippines (Transparency International as cited in Senate Economic Planning Office, 2004: 25-26), implies that good population policy by itself can contribute to significant poverty reduction and that significant population growth slowdown can happen not only in countries with high income levels. Indonesia had lower per capita income and lower literacy rate and yet it was able to reduce population growth faster than the Philippines as similar experiences of Bangladesh, Sri Lanka, and India's Kerala state had shown (Pernia, 2005).

Demographic Transition

The fertility decline in the Philippines pales when compared to its neighboring countries Thailand and Indonesia (PCPD, 2004). The three countries each started with a total fertility rate (TFR) of more than five children per woman before 1960. In 2000, Indonesia's TFR was down to 2.5; Thailand's was 1.9 inching closer to Japan, which started at a much lower fertility in the 1960s. The Philippines, while it registered an impressive 50% reduction in TFR, still had the highest rate (3.6). Reported infant mortality rates were consistently slightly higher in the Philippines than in Thailand. Hence, life expectancy at birth for Thailand and the Philippines were closer but their advantage over Indonesia has nearly disappeared by the end of the 20th century as it registered a more dramatic decline in infant mortality than the other two countries. From 1960 to 2000, Japan was able to close the gap between its crude birth rate (CBR) and crude death rate (CDR), thereby attaining replacement level by the end of the 20th century. Next to

Japan, Thailand and Indonesia were more successful than the Philippines in closing the gap between CBR and CDR.

The official population projections (medium series) recently released by the National Statistical Coordination Board estimated the country's population in 2005 to be about 85.3 million and it is expected to further increase to 141.7 million in 2040 (National Statistics Office, 2006). Utilized in the 2000 census-based population projections was the cohort-component method, which specified assumptions on how levels and trends of fertility, mortality, and migration change during the projection period (National Statistical Coordination Board, 2006). For fertility, the projection assumed that the net reproduction rate (NRR) of 1.0 will be attained by 2030 for the low series, 2040 for the medium series, and 2050 for the high series. Constructed were life tables for males and females that used the 2000 census population as base after adjusting for data completeness. The life expectancy at birth (e^0) values used for the projection periods (2005-2040) were derived by applying on the base e^0 estimates the middle assumption of the United Nations Working Model for quinquennial gains in life expectancy (United Nations, 1989). The migration assumption was set to zero since international migration was likely to have very little effect on the national total population. The 2.36% annual Philippine population growth rate for 1995-2000 is expected to slow down but given this rate of growth the number of Filipinos would double in less than 30 years.

With fertility assumed to attain replacement level by 2040, the Philippines is expected to experience an age structural shift between 2000 and 2040 (Ogena, 2006b). The "youth" bulge would continue to the end of the projection period but the working-age population and the number of senior citizens would increase much faster (Ogena, 2006a). The dependency burden would decline; however, the share of senior citizens would increase (Ogena, 2006b).

Demographic Dividend

A window of opportunity opens up when a country enters a phase when its fertility declines and a large share of the workforce have fewer children and elderly to support (World Bank, 2006: 4). Countries in East and Southeast Asia have experienced sharp reductions in poverty as a

consequence of rapid and sustained economic growth and have benefited from a "demographic bonus" resulting from marked increases in the share of workers (population ages 15-64) relative to young dependents (ages 0-14), while the Philippines continues to bear a "demographic onus"—a large share of young dependents relative to workers and savers. Hence, while research and the debate on the population issue in the developing world began to taper off in the 1990s, it still is a crucial issue in the Philippines. How do we convert a demographic onus to a demographic bonus? This paper argues that strategic human capital development along with social capital formation could be the long lost key for Philippine sustainable development.

Highly Mobile Population

Let me describe at this point another important demographic process: migration. The Philippine population is in the top five highly mobile populations in the world today. Attesting to this are the Filipino diasporas that continue to spread out to more countries and to increase in membership. The traditional rural-urban labor migration streams in the Philippines that were often motivated by the search for better job options had since the 1970s shifted to overseas locations as the Philippine economy had not been able to provide sufficient employment for the growing number of labor participants. For the past 20 years, unemployment still ranged from 8 to 13% (Senate Economic Planning Office, 2004). However, job generation often falls short even for new labor entrants (Asian Development Bank, 2006).

In December 2007, about 8.7 million Filipinos were living overseas. This is roughly 10% of the total Philippine population. As economic and political uncertainties remain, an increasing proportion of Filipinos overseas have moved out permanently, with the share of irregular migration on the decline (Commission on Filipinos Overseas, 2008). With the less permanent type of migration appearing to move toward stronger regulation both in the sending and receiving countries in the last two decades, prospects for the more permanent type of moves of Filipinos could further rise as developed economies need more migrant workforce to heighten their dynamic economy.

Demography and Human Capital Planning

Demographic realities are directly affected by individual decisions, which in turn are influenced by economic, political and social circumstances as well as by institutions. The realization of the potential benefits associated with the demographic transition could depend on institutions and policies associated with productive employment of potential workers and savings that the transition generates (Bloom and Canning, 2005). With the changing Philippine demographics, it is argued that a policy that ensures matching increases in human capital investments particularly in education and health are necessary if only to maintain the country's current comparative labor advantage in the global labor market. According to Hong Kong's Political and Economic Risk Consultancy (PERC), the Philippines is the only Southeast Asian nation, besides Singapore, with a labor force having the potential to move beyond a manufacturing focus to a higher value-added level. PERC ranks the Philippines as 4th in Asia based on the quality of its labor force (trailing only Japan, Taiwan, and Singapore) (Henderson, 2002).

Education and health investments are important in empowering individuals to be productive agents in the economy, and ultimately, in society. Empowering individuals in itself provides an opportunity for wealth distribution because educated and healthy citizens could avail themselves of opportunities offered by economic progress. More importantly, the global wave of economic and technological change is demanding more from workers than just basic skills (World Bank, 2006: 6). Hence, early planning and preparation is important because once skills are built, they must be well deployed.

METHODS

Ogena (2006b) estimated the Philippine population for 2000-2040 by age, sex and education for strategic human capital planning. The projections made use of a method that is a combination of the cohort-component projection method for single-state populations, and an adapted form of the multi-state population projection method. The Population-Development-Environment (PDE) population projection software (free at http://www.iiasa.ac.at/Research/POP/pub/software.html), developed at the International Institute for Applied Systems Analysis (IIASA), is the multi-

state population projection software that incorporates the methodology mentioned above and used in deriving the projections. This methodology has been used at IIASA in recent years for projects on several countries.

The PDE Population Projection software required four types of input that are standard to cohort-component projections: 1) base-year data on population by age, sex, and state extracted from the 2000 census of the Philippines, 2) fertility by age and state, 3) mortality by age, sex, and state, and 4) migration by age, sex, and state. One input that is specific to multi-state population projections is the transition between states by age and sex. In this study, states are educational categories. Four education categories were used in the Philippine human capital projections:

- No schooling: Applies to those who have never entered any level of formal schooling or who have completed less than one year of formal schooling,
- Elementary education: Includes all of those who have entered the first level (primary) but did not go on to secondary level studies,
- Secondary education: consists of those who moved to the second level of education, whether or not they completed the full course, but did not proceed to studies at the tertiary level, and
- Tertiary education: All those who undertook third level studies, whether or not they completed the full course.

Ogena (2006b) applied the assumptions on how levels and trends of fertility, mortality, and migration change were used in deriving the medium series of the official population projections of the Philippines (National Statistical Coordination Board, 2006). For fertility, the official projection assumed that NRR=1.0 will be attained by 2030 for the low series, 2040 for the medium series, and 2050 for the high series. The 2000 census population was the basis for the constructed male and female life tables after adjusting for data completeness. For life expectancy at birth (e^0) values used for the projection periods (2005-2030), the base e^0 estimates for the middle assumption of the United Nations Working Model for quinquennial gains in life expectancy (United Nations, 1989) were applied. The migration assumption was set to zero since international migration was likely to have very little effect on the national total population.

TABLE 2. Estimated education transition rates by education scenario

Education		Age groups			
A. Constant scenario: 2000-2030					
From	To	5-9	10-14	15-19	20-24
No education	Elementary	0.503	0.947	0.000	0.000
Elementary	Secondary	0.000	0.345	0.753	0.000
Secondary	Tertiary	0.000	0.000	0.707	0.361
B. Universal primary education by 2015					
From	To	5-9	10-14	15-19	20-24
No education	Elementary	0.662	1.000	0.000	0.000
Elementary	Secondary	0.000	0.345	0.753	0.000
Secondary	Tertiary	0.000	0.000	0.707	0.361
C. Universal secondary education by 2030					
From	To	5-9	10-14	15-19	20-24
No education	Elementary	0.900	1.000	0.000	0.000
Elementary	Secondary	0.000	0.753	1.000	0.000
Secondary	Tertiary	0.000	0.000	0.707	0.361

The age- and sex-specific educational transition rates were the key parameters of the model. These are the age-specific intensities for young men or women to move, e.g., from primary to secondary education. Data on these rates are seldom available, and have to be estimated. The set of necessary transition rates is very limited because education is hierarchical. Persons can only move to the next higher category. Transitions also occur over a short period of time and only for the few age groups that are in school (usually from five to at most 24 years of age), as the phenomenon of adult education is rather minimal. The best data that would allow the

calculation of precise transition rates would be levels of enrollment detailed by age, level of schooling, and sex. Given these data, the calculation of transition rates would be very simple. However, most of the time the age structure is not available and needs to be estimated from the levels of educational attainment at each age and education levels, translating cohort data in age groups 5-9, 10-14, 15-19, 20-24 into period data.

Three education transition scenarios were examined. The first scenario, referred to as constant scenario, utilized a similar set of age, sex and education transition probabilities for the whole projection period. The universal primary education (UPE) scenario applied transition probabilities that would reflect attainment of the Milennium Development Goal (MDG) by 2015. The last scenario is for universal secondary education (USE) by 2030. The estimated transition rates applied for the three scenarios are shown in Table 2.

RESULTS

Figures 1A-3D present the projected population by age, sex and education in the form of population pyramids. Table 3 presents a comparison of projection outcomes under varying scenarios. Suppose the age-, sex- and education-transition probabilities observed from the 2000 census data remain for the duration of the projection period (constant scenario), the proportion of the working population that would be deprived of education and therefore least trainable for more economically efficient work would nearly double from 2000 to 2030. In terms of projected head count, the 0.24 million population in working ages in 2000 who did not have education would be nearly six fold, i.e., 1.44 million, in 2030. Conversely, with UPE achieved in 2015, only about 0.54 million of the projected working-age population in 2030 would have no education, which is nearly one million shy of the projected population under the constant scenario. These results underscore the need to continue to invest in basic education to cultivate human agency for promoting social and economic equity.

Figure 1A

Population pyramids of Philippine population by levels of educational attainment: Constant scenario, 2000

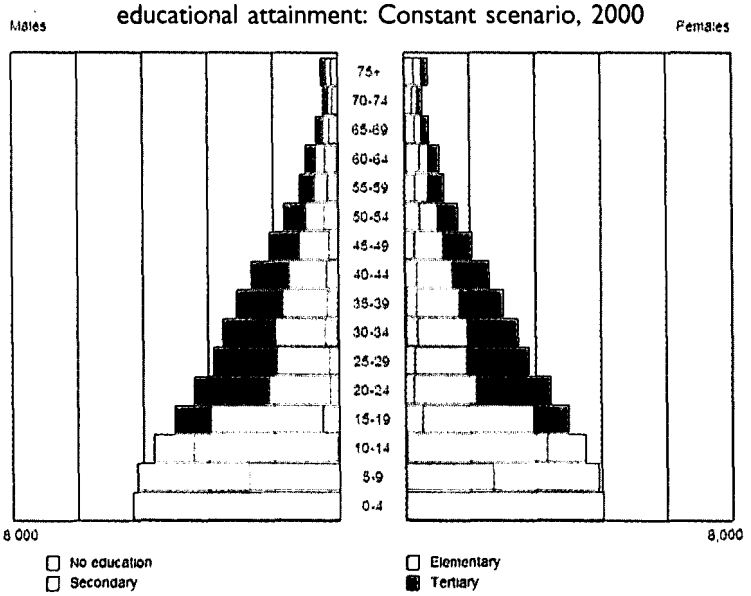


Figure 1B

Population pyramids of Philippine population by levels of educational attainment: Constant scenario, 2010

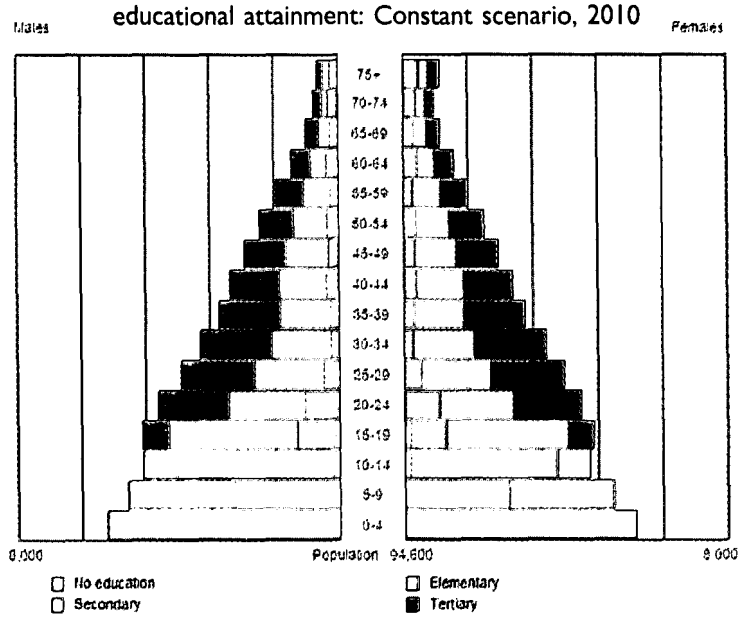


Figure 1C

Population pyramids of Philippine population by levels of educational attainment: Constant scenario, 2020

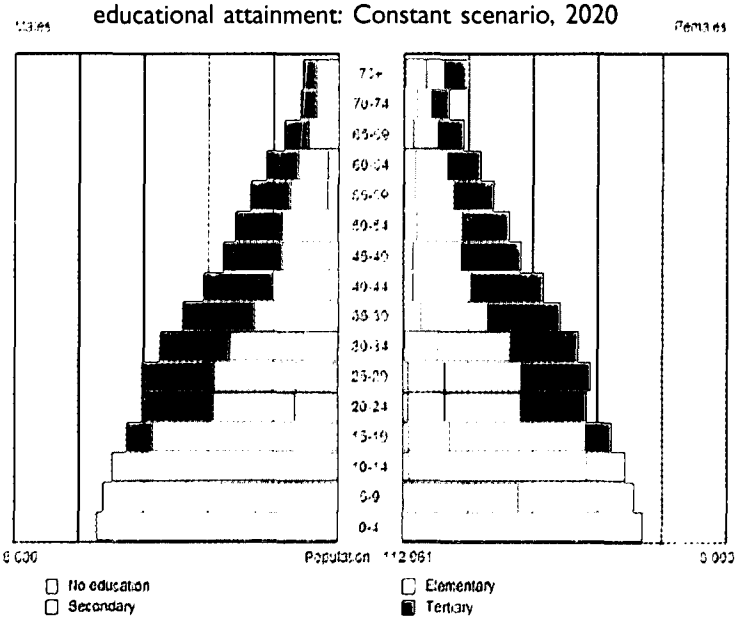


Figure 1D

Population pyramids of Philippine population by levels of educational attainment: Constant scenario, 2030

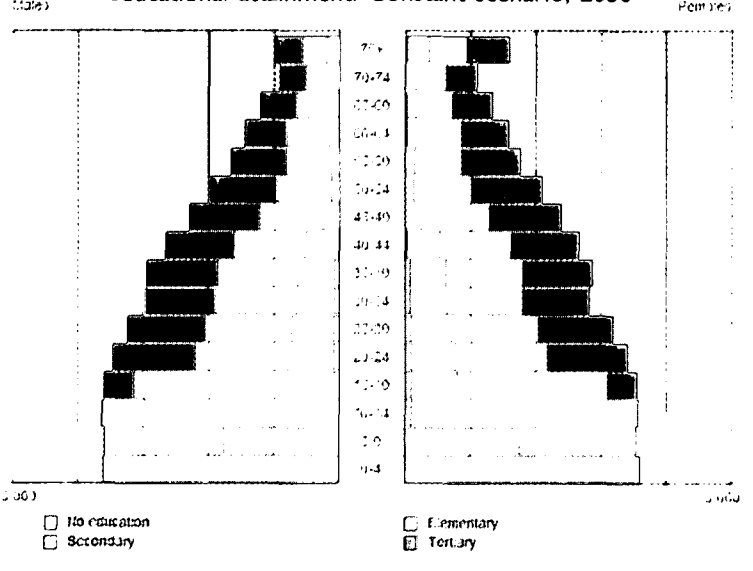


Figure 2A

Population pyramids of Philippine population by levels of educational attainment: Universal primary education scenario, 2000

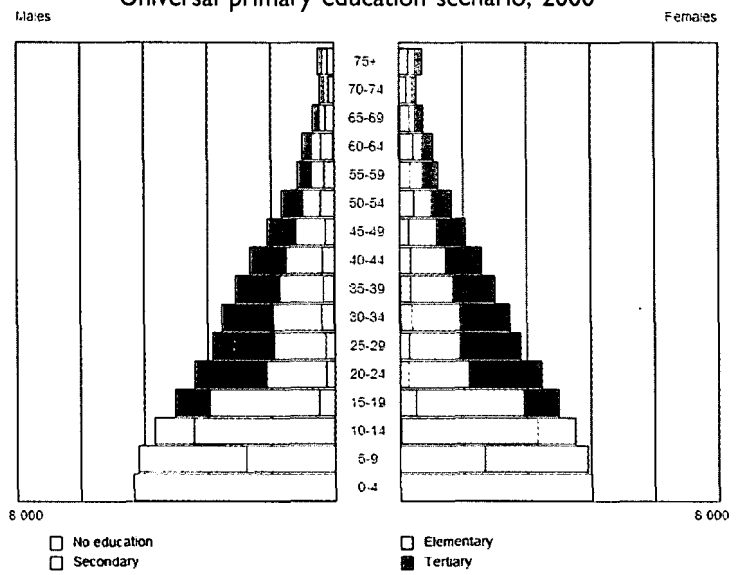
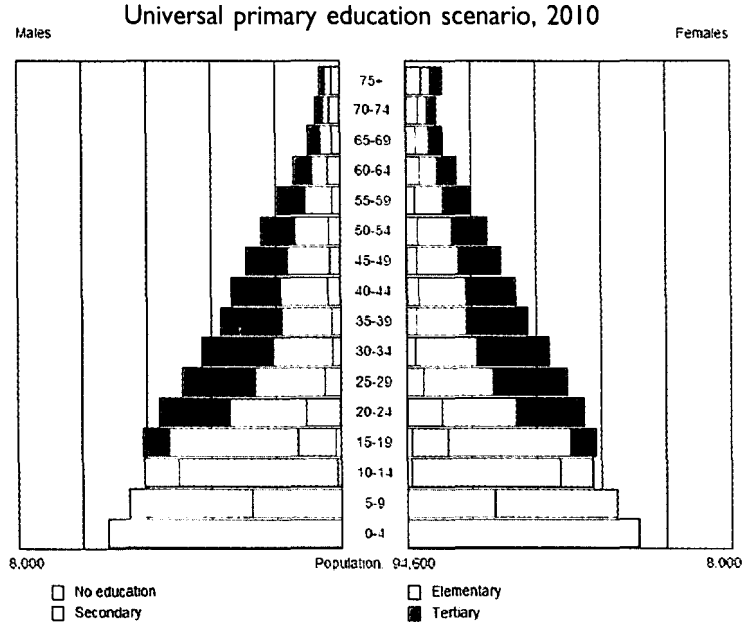


Figure 2B

Population pyramids of Philippine population by levels of educational attainment: Universal primary education scenario, 2010



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Population pyramids of Philippine population by levels of educational attainment: Universal primary education scenario, 2020

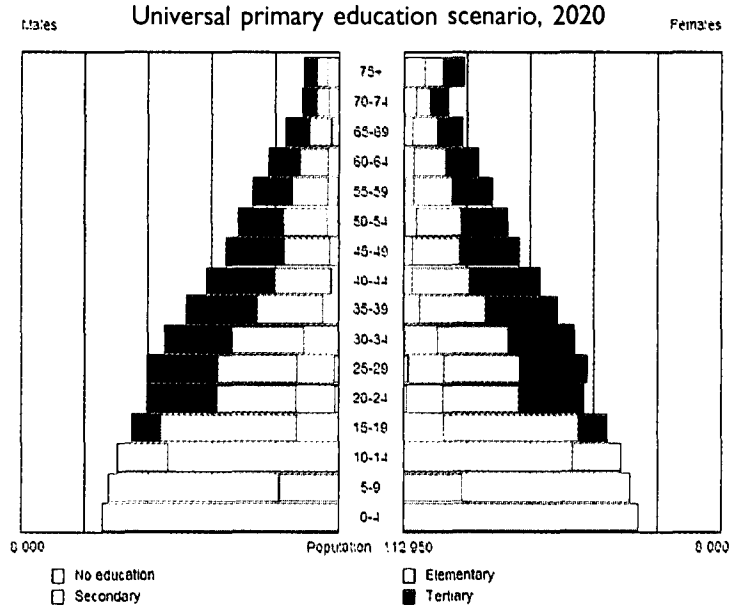


Figure 2D

Population pyramids of Philippine population by levels of educational attainment: Universal primary education scenario, 2030

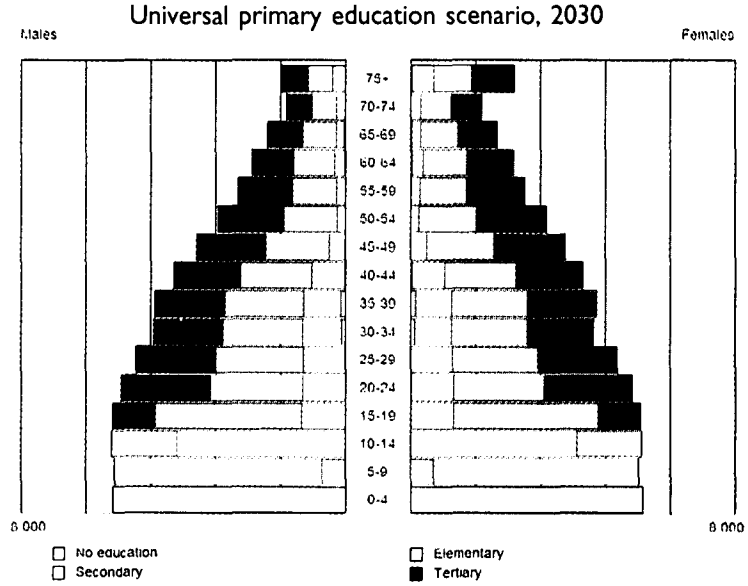


Figure 3A

Population pyramids of Philippine population by levels of educational attainment: Universal secondary education scenario, 2000

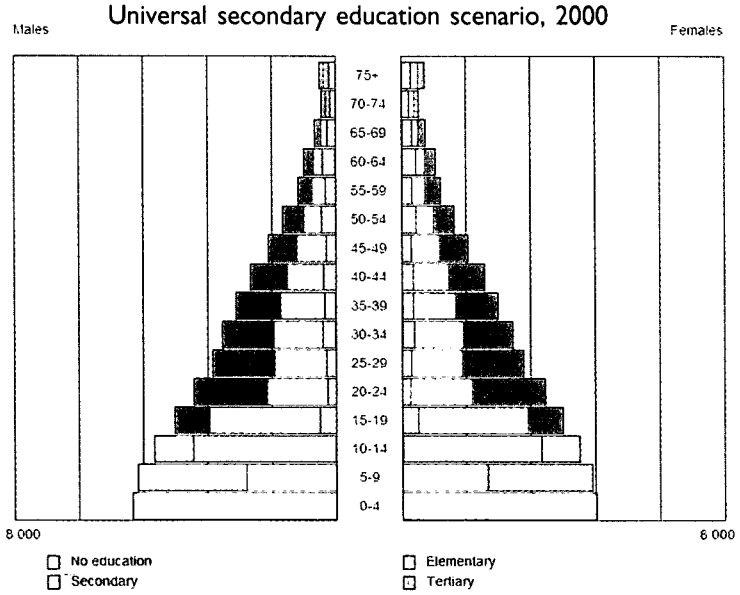


Figure 3B

Population pyramids of Philippine population by levels of educational attainment: Universal secondary education scenario, 2010

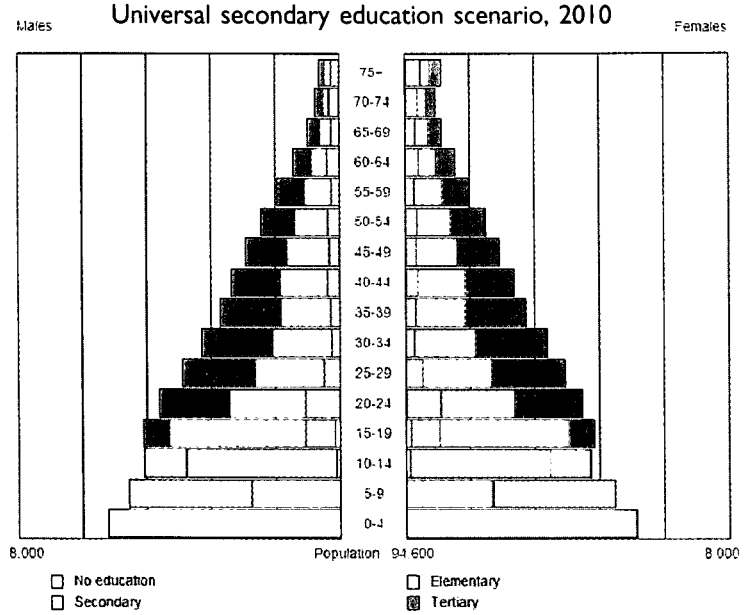


Figure 3C

Population pyramids of Philippine population by levels of educational attainment: Universal secondary education scenario, 2020

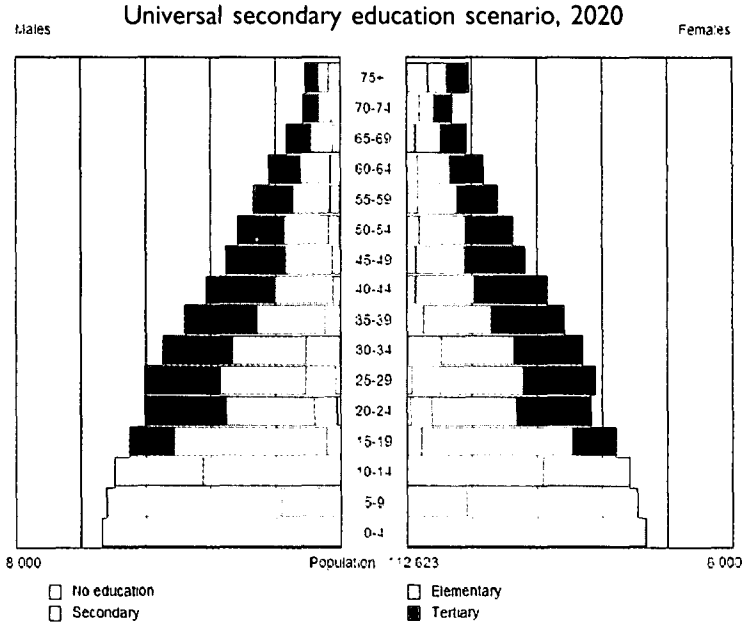
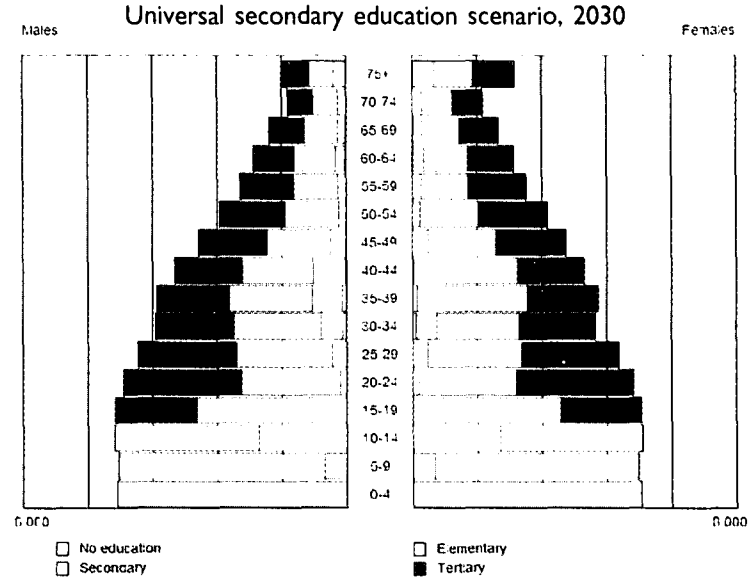


Figure 3D

Population pyramids of Philippine population by levels of educational attainment: Universal secondary education scenario, 2030



By adopting a policy that ensures USE by 2030, the proportion of the population with at most elementary education would decline from 12.68% in 2000 to 8.64% in 2030. This proportional reduction in elementary educational attainment over the next 30 years translates to about 6.55 million people who would be able to reach secondary education and be trainable for value-added jobs and greater economic efficiency.

TABLE 3. Distribution of projected working-age population by education and by scenario: 2030

	Constant		Scenario	
			UPE	USE
	2000	2030	2030	2030
A. Population (in million)				
No education	0.24	1.44	0.54	0.54
Elementary	5.77	13.79	13.56	7.24
Secondary	20.76	37.90	37.73	39.13
Tertiary	18.69	30.74	32.05	36.92
B. % Distribution				
No education	0.53	1.72	0.64	0.64
Elementary	12.68	16.44	16.17	8.64
Secondary	45.68	45.19	44.98	46.68
Tertiary	41.11	36.66	38.21	44.05

Again, under the constant scenario, the proportion of the working-age population that will progress to tertiary education would decline from 41.11% in 2000 to 36.66% in 2030. Alternatively, the said proportion would increase under the UPE and USE scenarios. With the advent of the knowledge society, it seems only rational to aim for a larger proportion of the population with higher education and skills to maintain the Philippines' comparative labor advantage in the ensuing "knowledge economic game."

DISCUSSION

In the Philippines, free elementary education is provided by the government; secondary and higher education is privately financed. The traditionally high premium placed on education has kept the country's primary education near full coverage. However, there was a drop in the simple literacy rate from 97.3% in 1994 to 93.9% in 2003 (National Statistical Coordination Board, 2005), which appears to be consistent with the constant scenario trend of the HC projection. Functional literacy, on the other hand, was 84.1%: 81.9% for males and 86.3% for females in 2003 according to the 2003 Functional Literacy, Education and Mass Media Survey undertaken by the National Statistics Office (National Statistical Coordination Board, 2005). Total enrollment in 2002-2003 for elementary and high school was 18.995 million with 88.65% absorbed in public schools (PCDP, 2006).

This suggests that with the increasing population size, additional human capital investments (in education and health) that needed particularly for the future workers (i.e., the youth) would have to be a government concern, although the private sector could help alleviate this public burden as corporate social responsibility (CSR) is gaining ground in the country during the past seven years. Perhaps with the identification of avenues through which CSR could fill the gaps where the public sector has left off may help reduce the quantity-quality tradeoffs, which are becoming more apparent as a direct result of the burgeoning population of the country.

Although access has improved dramatically, there are indications that the quality of education remains a concern in the Philippines. The rapid expansion of schooling enrolment may have traded off quality; that is, as enrollments increased, fewer resources were available on a per student basis, either because of insufficient funding or because of inefficiencies induced in the education system as its size grew (Behrman, Deolalikar & Soon, 2002). The cohort survival rate for both the primary and secondary levels deteriorated between 1990 and 1997, with survival rates falling more at the secondary than at the primary school level.

In addition, the Medium Term Philippine Development Plan (2004-2010) has noted resource gaps totaling 4.454 billion Philippine pesos to account for greater number of classrooms (2-shifts at 1 classroom per 50 students), desks/seats, textbooks, and teachers (at 1 teacher per 50 students) (National

Economic Development Authority, 2004). Note that this large budget gap is not even based on international standards for producing quality education. The Philippines also recorded the largest decline in total education expenditure (24%) in real terms among selected countries from 1998 to 2001 with Malaysia (68 %), Cambodia (45%) and Lao PDR (35%) registering the largest increases (UNESCO, 2005).

In terms of the national government's health budget, 16.7 billion Philippine pesos were allocated in 2002, which was 16.3% lower than in 2001. This budget decrease had a marked impact on per capita health expenditure, which fell sharply from 538 in 2001 to 430 Philippine pesos in 2002 (National Statistical Coordination Board, 2002).

Another important issue can be drawn from the gradual ageing of the population which may have implications for the development of human capital. As the population ages, continuing adult education/learning and professional development would help prevent redundancy in an increasingly technology-based work environment. Many policies as well that relate to education and learning have age discrimination. Scholarships and fellowships for formal education through which a degree, diploma or certificate could be earned often have an exclusionary condition particularly for individuals older than 35. Replacement of such discriminatory policies with more age-neutral policies could motivate greater adult learning.

Perhaps the greatest challenge that can be drawn from the data is the escalating job creation the government has to face up to in the coming years as a result of the increasing workforce size and the growing educated workers. Without a long-term job creation strategy, the exodus of Filipino workers who were recipients of public human capital investments could gain momentum. While remittances from overseas Filipinos have time and again saved the country from balance of payment crises, full returns from its huge human capital investments directed at national development goals would be preferable in an economy fraught by unending predicament from various fronts. Hence, a strategic human capital development plan that acknowledges its burgeoning human resources could reposition the country in the global economy in the coming years.

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