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Human Capital and Economic Growth **by: Hyun H. Son**

1. Introduction

According to the modern growth theory, the accumulation of human capital is an important contributor to economic growth. In this regard, there have been numerous cross-country studies, which have extensively explored whether the attainment of education can contribute significantly to the generation of overall output in economy. On the one hand, these macro studies continued to produce inconsistent and controversial results (Pritchett 1996). On the other hand, countless micro studies have looked into a similar problem and have shown a positive relationship between the education of a working individual and his or her labor earnings and productivity. To put it differently, the general finding is that more educated individuals tend to have higher employment rate and earnings and produce more output relative to those who are less educated. Therefore, it provides a strong rationale for governments and private households to invest substantial portions of their resources in education with the expectation that higher benefits would accrue over time. In this context, education is deemed as an investment that enables individuals to be equipped with knowledge and skills that improve their employability and productive capacities that would lead to higher earnings in the future.

The Philippines educational system is commonly characterized by high attendance rates, implying that unlike other developing countries, there is widespread social interest in education. As a result, the average years of schooling of the labor force have increased over time and excellent performance in educational effort by the Filipinos has been widely acknowledged in the international circle. Yet, the performance in labor productivity contrasts with the fact that workers have been endowed with rising levels of education in the country. Moreover, the poor growth performance of the Philippines has become even more puzzling if we consider the educational attainment of the labor force. In this context, we raise a question as to “to what extent education contributes to growth in the Philippines?” Both macro and micro approaches will be used to deal with this complex issue. The main objective of this chapter would be to discuss whether human capital is indeed a binding constraint to investment and growth in the Philippines.

From a macro perspective, we will review some of the past studies on growth accounting looking into the contribution of education to the total output of the economy. We provide cross-country comparisons to see whether there is evidence that human capital plays an important role in explaining poor performance in output growth which the Philippines has experienced over the years.

From a micro perspective, we will utilize the Investment Climate Survey of more than 70 firms – which was conducted in 2005 and 2006 by the Asian Development Bank and the World Bank – so as to test a hypothesis whether human skills and education are major obstacles for firms to make decisions on their investment in the Philippines. Further, we will attempt to investigate the relationship between education and labor earnings and productivity at household

level. This analysis makes perfect sense because households make decisions on education and labor force participation. From this analysis, it will be clear if education matters not only for employment, but also for individual earnings and productivity.

This chapter attempts to address the following questions:

- (i) Are human skills and education major obstacles for attracting private investment in the Philippines?
- (ii) Is human capital a major contributor to the growth performance of the Philippines compared to other countries?
- (iii) Does human capital or education matter for labor productivity over time within the Philippines?
- (iv) Does education matter for employability in the Philippine labor market?
- (v) To what extent is per capita productivity able to explain per capita labor earnings?
- (vi) Does higher education give rise to higher earnings in the Philippine labor market?

The chapter is organized in the following manner. In Section 2, we provide discussions on the macro links between education and economic growth. Section 3 is devoted to the micro analysis looking into the relationship between education and labor market. Section 4 investigates the issues of rates of returns to education. Section 5 concludes the study.

2. Education and Economic Growth

Early neoclassical growth models did not consider education as an input to production. It was only in the 1960s when education began to be seen as one of the variables that account for the unexplained residual in growth accounting exercises. Toward the middle of the 1960s, microeconomic studies based on the concept of human capital investment began to measure education's rates of return. The endogenous growth theory provides explanations on why human capital investments are important to economic growth (Barro and Sala-i-Martin 1995). However, the cross-country empirical estimations that tested the endogenous growth theory have yielded mixed results.

In the Philippines, several attempts have been made to quantify the contribution of education to economic growth. Such studies in recent years are by Alonzo (1995), Cororaton (2002), and Bosworth and Collins (2003).

As discussed in an earlier chapter, the Philippines has recorded sluggish growth relative to other major economies in East Asia. While real GDP grew by 3.8% per annum over 1961-2003, the country's labor force also expanded by an annual rate of 2.8%. This suggests that, on average, real GDP per capita – which is a proxy measure of standard of living – increased by only 1% every year during that period (Table 1). This was even lower than the 1.4% average growth rate achieved by all developing countries, and far below 2.4% and 4.4% seen in the developed economies and 7 other major East Asian economies, respectively.

Table 1: Growth Accounting

	Growth in output per worker	Contributions to growth of:		
		Physical Capital	Human Capital	TFP
The Philippines				
1961-2003	1.0	0.8	0.4	-0.2
1961-1980	2.3	1.2	0.4	0.7
1981-1985	-1.9	1.5	0.2	-3.6
1986-2003	0.9	0.1	0.4	0.3
Comparators 1961-2000				
OECD	2.4	1.0	0.4	1.0
Developing economies	1.4	0.8	0.3	0.3
East Asia (7)	4.4	2.4	0.5	1.4
Comparators 1986-2000				
OECD	1.9	0.7	0.3	0.8
Developing economies	1.0	0.3	0.4	0.3
East Asia (7)	4.8	2.3	0.5	2.0

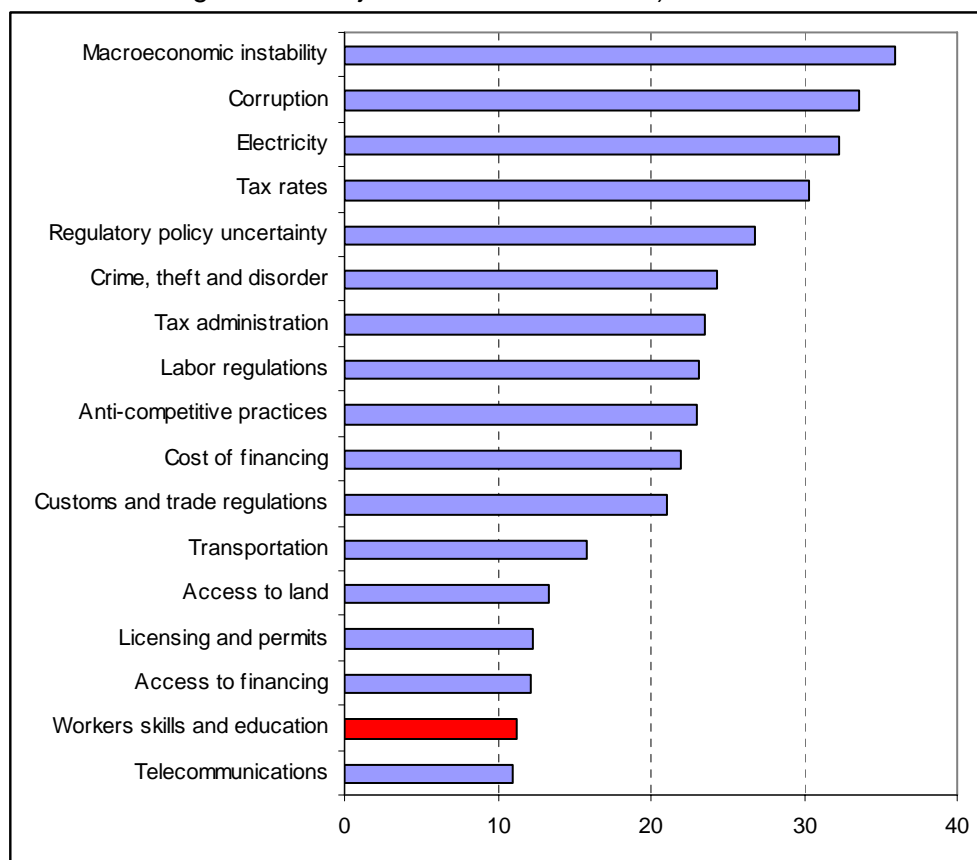
Note: Calculations of growth and contributions to growth draw on the database which covers 22 developed and 62 developing economies over the 1960-2000 period. The 7 other East Asian economies referred to in this table are China, Indonesia, Republic of Korea, Malaysia, Singapore, Taiwan and Thailand.

Source: Bosworth and Collins (2003)

The Philippines' output per worker increased about 50% over the last four decades or so. In comparison, the corresponding figure for the other East Asian economies rose by more than four folds on average (i.e. 450%). The results shown in Table 1 outline the approximate sources of the difference in growth between the Philippines and its East Asian neighbors. The table points to the conclusion that ***the difference was not primarily due to educational attainment or the growth of human capital***. In the Philippines, the average years of education of people aged 15 and over almost doubled from 4.4 years in 1960 to 8 years in 2000. In comparison, it increased on average to 7.8 years from 3.4 years for the other 7 East Asian economies. Thus Filipinos are largely considered to be highly educated in Asia. For instance, the median years of education among taxi drivers are around 6 in Thailand, 9 in Indonesia and 10 in the Philippines (ADO 2007).

Similarly, the Investment Climate Survey (ICS) of more than 700 firms confirmed that education and worker skills were not a major impediment to a good investment climate in the Philippines. As Figure 1 shows, the severe constraints to attracting investments in the Philippines have to do instead with factors such as macroeconomic instability, corruption, and institutional quality (e.g. security, regulatory uncertainty, etc.). These constraints are beyond the scope of this chapter which is mainly concerned with human capital.

Figure 1: Firms perceptions of severe constraints for the Philippines
(% of firms finding issue a major or severe constraint)



Source: ADB-World Bank Investment Climate Survey

By contrast, growth in both physical capital and total factor productivity (TFP) in the Philippines has been much lower than in the rest of East Asia (see Table 1). While average TFP growth for the Philippines was slightly negative over the entire period (i.e. -0.2% per year), the 7 other East Asian economies experienced an increase in the average TFP by 1.4% per annum. Such findings of a low or negative TFP growth since the early 1960s are essentially similar to those found in recent detailed studies of the Philippines' growth performance such as Alonzo (1995) and Cororaton (2002).

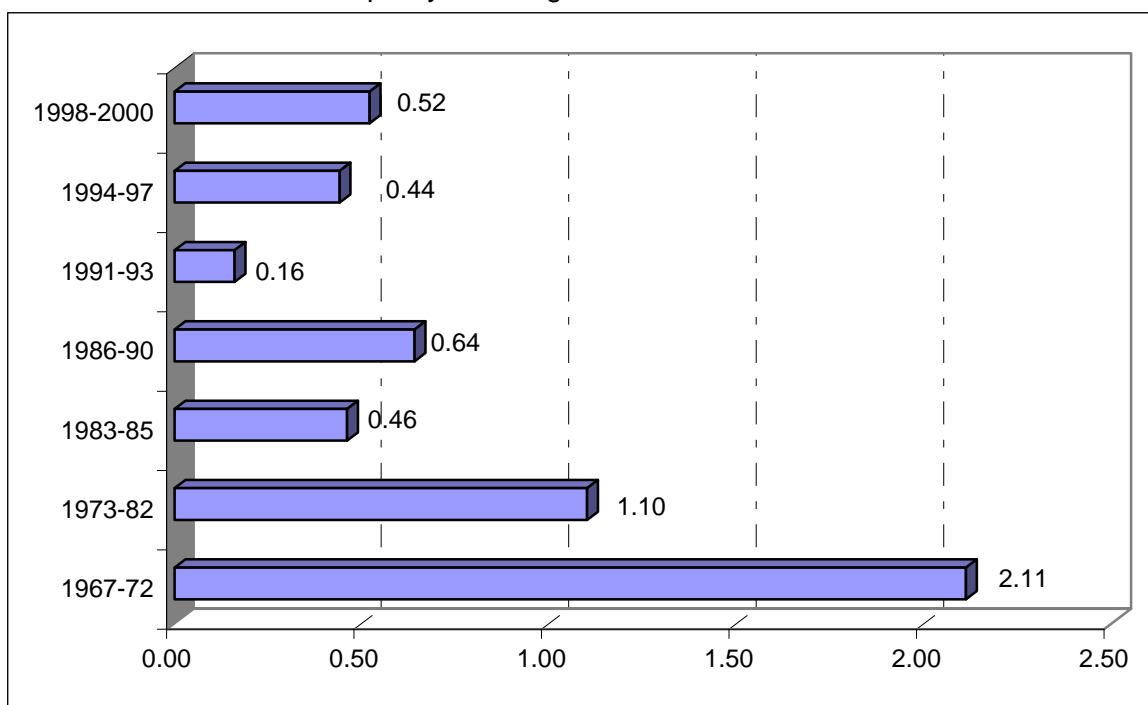
Earlier, Alonzo (1995) carried out a growth accounting analysis for the 1961-1991 period, which was divided into four sub-periods: 1961-65, 1965-76, 1976-81, and 1981-91. In the exercise, he used the growth in net domestic product at 1985 prices; physical capital based on estimates in Sanchez (1983); labor quantity based on third quarter employment, and index of labor quality based on average years of schooling embodied in the employed labor force weighted by the observed relative earnings by schooling completed based on the 1988 LFS. He also employed the assumption in Sanchez (1983) that gave equal weight to total output for labor and capital. Considering only 'raw' labor, Alonzo found that labor accounts for more output growth than does capital. When improvements in labor quality are considered, he concluded that much of the output growth is explained by both quantity and quality of the labor force. The contribution of education ranges from 11.8 percent in 1961-65 to 59.2 percent in 1981-91. The contribution of 'labor quantity' (or raw labor) ranges from 18.2 percent in 1961-65 to 110.4

percent in 1981-91. The contribution of physical capital, on the other hand, ranges from 5.5 percent in 1961-65 to -18.7 percent in 1981-91.

Later, Cororaton (2002) used empirically estimated production functions to compute the contribution of labor quality to total factor productivity from 1967 to 2000, which was divided into seven periods. Workers were disaggregated into skilled and unskilled to capture labor quality. Skilled workers refer to those who are at least high school graduates. The study found that the contribution of labor quality to TFP had declined from 2.11 percent in 1967-72 to 0.16 percent in 1991-93, but rose slowly to around 0.52 percent in 1998-2000 (see Figure 2).

Although Alonzo and Cororaton used different methods to estimate the contribution of education to economic growth, both these studies provide evidence that **education matters for output growth or productivity**. This evidence only holds at the aggregate level. In the following section we provide micro evidence as to whether there is a positive or negative relationship between the education of a working individual and his or her labor earnings and productivity in the context of the Philippines.

Figure 2: Contribution of labor quality to TFP growth



Source: Cororaton (2002)

3. Education and Labor Market

The objective of this section is twofold: first, it seeks to investigate whether labor productivity is an important factor in explaining the earnings and productivity of employed persons who belong to a household; secondly and in the main, it explores to what extent labor productivity contributes to a growth in real wage income.

Households decide on education and labor force participation. In this regard, it does make sense to use a micro approach to look into the relationship among education and labor productivity and earnings. The primary motivations to attend school are better future income

prospects and personal well-being. Education is known not only to lead to higher earnings but also to other non-labor market benefits, for instance better nutrition and health, better capacity to enjoy leisure (Haveman and Wolfe 1984). Higher earnings are compensation for increased productivity through education. This is the human capital view of education.

Before going into the issues of productivity and individual labor earnings, it will be useful to discuss the educational attainment of the working-age population within households. In addition, we will also touch upon the educational attainment by sectors and gender.

Table 2: Per capita household employment by education and gender (in %)

	Actual values			Annual growth rate	
	1997	2000	2003	1997-00	2000-03
Primary education	16.5	15.2	15.0	-2.9	-0.3
Male	10.9	9.8	9.9	-3.4	0.4
Female	5.7	5.4	5.1	-2.0	-1.6
Secondary education	12.5	13.1	14.1	1.7	2.5
Male	8.2	8.5	9.1	1.0	2.3
Female	4.3	4.6	5.1	2.9	2.8
Tertiary education	8.5	9.1	9.3	2.3	0.7
Male	4.5	4.8	4.9	1.7	0.8
Female	3.9	4.3	4.4	2.9	0.6
Total employment	37.5	37.3	38.4	-0.1	0.9

Source: Author's calculations based on FIESs and LFSs.

Table 2 shows the educational levels for those employed within households during 1997-2003. To begin with, one should note that the figures presented in the table are all expressed in per capita terms within households. For instance, per capita educational level within households was 38.4% in 2003. This means that on average, about 38.4% of household members were employed in 2003: almost 2 members living in a 5-member household were engaged in some form of employment in the labor market.

Table 2 presents an interesting point. The per capita employment has increased from 37.5% in 1997 to 38.4% in 2003, yet this has not been sufficient to lower per capita unemployment given a rise in labor force participation (LFP) in the economy. According to the ADB, per capita LFP has been growing by 0.9% per annum while per capita unemployment jumped at 10% per annum during the crisis period (1997-2000) and rose slightly by less than 1% annually afterwards (2000-03). Overall, the number of jobs available in the labor market has not been growing fast enough to absorb the number of new entrants to the labor force.

Similar to our earlier findings (see Section 2), Table 2 indicates that household members are getting more educated in the Philippines. Over the period 1997-2003, the proportion of employed household members who have secondary and tertiary education has increased, while those who have acquired primary education has declined. This suggests that **higher education matters for employment in the Philippines labor market**. In terms of gender, the proportion of employed female members tends to be higher at secondary and tertiary level. Moreover, the gender gap in the employment rate within household narrows down – still higher for male members – particularly at tertiary level.

Based on the foregoing so far, a puzzle remains as to the differences in the employability of male and female employed by educational levels. In a study by ADB, it is noted that educational attainment is higher for women compared to men. However, it does not seem to be the case that higher educational attainment among females leads to their greater employability in the labor market. This issue will be discussed below.

In general, one would expect employability to increase with a higher level of education. Such a pattern is indeed observed from Table 3. For instance in 1997, employability among the primary educated persons is 47.8%, rising to 48.9% among secondary educated and reaching 56.6% among the tertiary educated, which implies that 56.6% who acquired tertiary education are employed. More importantly, at all education levels, women have much lower employability than men. The male-female gap, however, is much less among tertiary educated persons.

Interestingly, employability among the primary educated labor force declined sharply over the period 1997-2003, while it increased for both secondary and tertiary levels. This suggests that as the labor force is becoming more educated, job opportunities for those with lower education have become increasingly scarce. There are two alternative explanations behind this. One is that there has been more demand for secondary and tertiary educated individuals in the labor market. The other is that low-productivity jobs are taken over by the educated labor force.

If the latter is true, the above observations suggest that the labor productivity of educated workers has been on the decline. As indicated in Table 2 (see Section 2), per capita employment has remained roughly constant over the period. This implies that employment has increased merely in line with the population growth. Hence, if there is no improvement in labor productivity, then growth in per capita real labor earnings is expected to be stagnant. To achieve a positive growth, labor productivity has to increase. Total labor productivity depends on the pattern of employment by sectors and gender.

Table 3: Employability by education and gender (in %)

	1997	2000	2003
Primary education	47.8	45.4	34.3
Male	61.5	57.5	43.6
Female	33.6	32.8	24.3
Secondary education	48.9	48.1	49.8
Male	64.0	60.9	63.9
Female	33.6	34.8	35.7
Tertiary education	56.6	54.3	56.8
Male	64.5	61.0	64.1
Female	49.6	48.4	50.4

Source: Author's calculations based on FIESs and LFSs.

Table 4 reports per capita household employment by sectors and gender. It shows that in terms of magnitudes, the proportion of household members employed in agriculture has declined, has remained virtually unchanged in the industrial sector and has risen for the service sector. This suggests a structural change where the labor force is moving away from the agricultural sector towards the service sector. Overall, the average household members are largely employed in services. In the service sector, there is a significant increase in the employment of female household members over the period. This could be supported by a claim

that the proportion of female college graduates employed in finance, insurance and real estates has increased over time (Orbeta 2002).

Table 4: Per capita household employment by sectors and gender (in %)

	Actual values			Annual growth rate	
	1997	2000	2003	1997-00	2000-03
Agriculture	14.7	13.8	14.0	-2.2	0.5
Male	10.9	10.4	10.6	-1.6	0.6
Female	3.8	3.4	3.4	-3.8	0.2
Industry	6.3	6.1	6.1	-1.0	0.0
Male	4.5	4.3	4.4	-2.0	0.6
Female	1.8	1.9	1.8	1.3	-1.4
Service	16.4	17.4	18.3	1.9	1.6
Male	8.1	8.3	8.9	0.9	2.2
Female	8.3	9.1	9.4	2.9	1.1
Total employment	37.5	37.3	38.4	-0.1	0.9

Source: Author's calculations based on FIESs and LFSs.

As the findings clearly suggest, the working-age population is increasingly more engaged in the service sector. Although the service sector tends to create more number of jobs, ***the quality of job does matter for individual earnings in the labor market***. While taxi drivers belong to the service sector, lawyers and doctors also belong to the same sector.

Taken altogether, employment within households varies according to their educational levels, gender and sectors of work. All these factors determine the level of individual labor earnings. In this context, we have attempted to explain per capita earnings in terms of four key labor indicators.

Another objective of this exercise is to find out to what extent productivity contributes to a growth in real wage income. In this regard, productivity is thought to be a proxy for assessing the quality of labor. For this study, productivity is estimated as per capita wage income adjusted for the number of working hours per week. As can be seen from Table 5, the decline in productivity factor has contributed largely to the negative growth in real wage income among the employed population during the 1997-2003 period.

Table 5: Explaining growth rates in real labor income

	1997-00	2000-03
Labor force participation	0.89	0.92
Employment rate	-1.02	0.02
Work hours per employed	2.15	-0.63
Real productivity	-4.76	-1.42
Real labor income	-2.73	-1.10

Source: Author's calculations based on FIESs and LFSs.

4. Rates of Returns to Education

Policy-makers in almost all countries agree on one thing: namely on the importance of education and skills to ensure future economic prosperity. Studies show that countries with higher levels of education and skill, have on average higher levels of productivity and economic growth (Machin and Vignoles 2005). However, proving that there is a causal relationship between education and skill, and economic growth, at a country level has proved quite problematic, not least because countries vary in so many dimensions, not just in their levels of education and skill (Sianesi and Van Reenen 2000).

As shown in the context of the Philippines, the higher educated labor force might be taking away the jobs which were previously held by the less educated labor force, particularly in the service sector. In our view, this is a likely scenario which has contributed to declining labor productivity in the Philippines. As noted in the previous section, declining productivity is the major contributing factor to the negative growth in per capita real labor earnings.

There is evidence that with the rising education levels of labor force, college graduates have increasingly taken on low-skilled work such as driving taxis, Jeepneys, buses and motorized tricycles in the Philippines (ADO 2007). It appears that a large proportion of the highly educated workers are employed in jobs that do not match their educational attainments, hence there is a mismatch between the labor market and the educational sector. To enhance long term growth prospects, the government needs to formulate policies which address this issue.

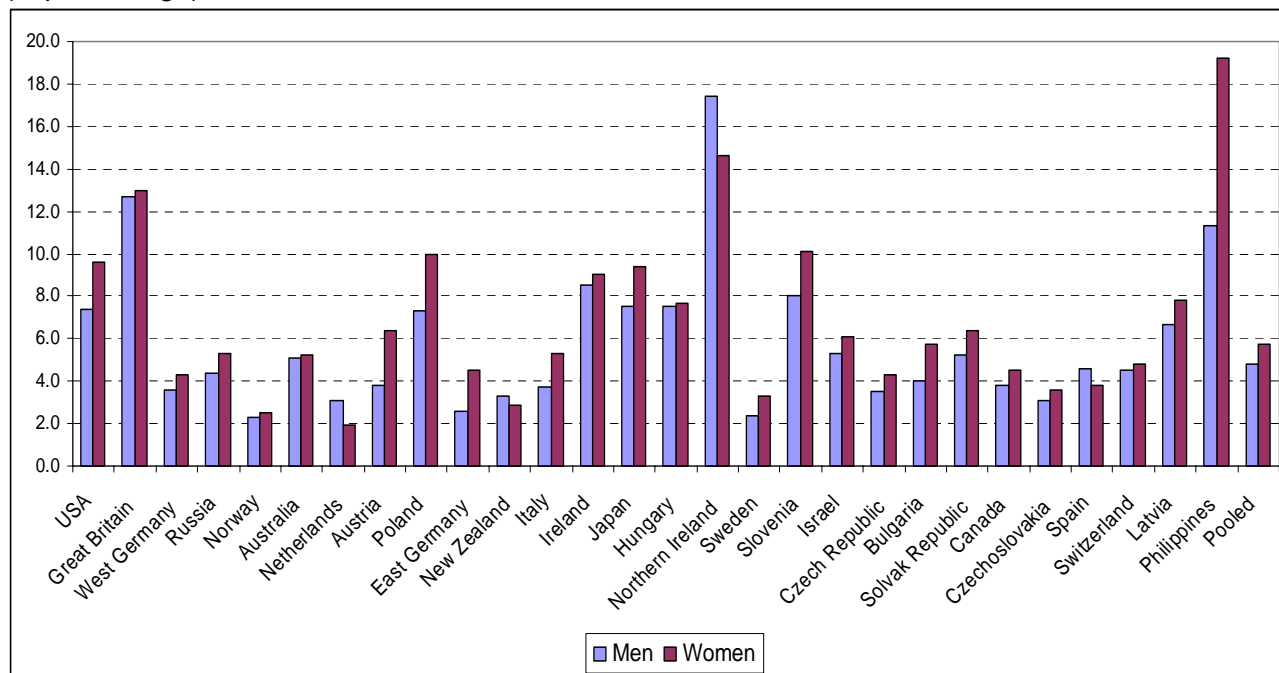
In evaluating the rates of return to education, education is analyzed as an investment, which involves individuals and the state incurring costs now (lost income or direct costs of tuition), in order to reap gains in the future, in the form of higher income. So how does education and training actually enhance individuals' earnings? Human capital theory suggests that when individuals invest in education and training they make themselves more productive in the labor market, which leads them in turn to have higher earnings. This assumes that the labor market is fully competitive so that wages will fully reflect the productivity of workers, and that any gain in productivity due to education will subsequently result in higher earnings for the worker. These assumptions are subject to question, however, in theory but not in practice. Signalling theory (Spence 1973) for example, hypothesizes that individuals acquire education merely to signal to potential employers that they have superior productivity, albeit education itself does not necessarily enhance productivity. Equally there are a number of theoretical reasons as to why wages may not reflect an individual's true productivity. However, bulk of the empirical evidence on this issue broadly supports the human capital perspective (Machin and Vignoles 2005). Just like any other investment, returns on education at different levels and in various fields of specialization have been computed and compared, to guide policy makers in assessing the appropriateness of allocating labor within and across sectors.

Although we will not spend long on the technical details of how rates of return are actually calculated, a brief explanation will aid the reader in interpreting the evidence base. Regression analysis is most commonly used to estimate or approximate the return to education. Information is generally collected on a cross section of individuals working in the labor market, including data on their earnings, education, work experience or age, and other personal characteristics such as gender. A statistical model of wages is then estimated which relates individuals' current wages to their education and training, as well as their characteristics.

It is often noted that the Philippine rate of return has always exhibited an unusual behavior: though classified as a developing nation, its rate of return is more comparable to that

of a more developed country (Gerochi 2002). Figure 3 below indicates that the Philippines has very high returns to schooling. For example, the rate of return to a year of schooling in the Philippines ranks second highest followed by Northern Ireland. Workers with one more year of schooling in the Philippines earn around 15% more in terms of wages. This is far higher compared to the pooled average returns, where an additional year of schooling is worth just 5%. These findings suggest that an additional year of education offers rewards to a working individual in terms of higher labor earnings in the Philippines.

Figure 3: International comparisons of the returns to schooling (1985-1995) (in percentage)



Source: Trostel, Walker and Woolley (2002)

The figure above considers the average return to a year of schooling during the period 1985-1995, which coincides with a significant expansion in the supply of skilled labor. Of significant interest to policy-makers is whether the rate of return differs significantly between different levels of education. A latest estimate from Schady (2001) arbitrarily limits the sample to the male population based on the 1998 Annual Poverty Indicator Survey. This gets around the selection problem in the labor market that is essentially more established in estimating returns for women and approximating the potential experience that could lead to an upward bias of years of experience for women. The author attempts to determine the convexity in the relationship of the age and years of completed schooling and to measure the 'sheepskin effect'. Partial controls for ability, measured by parental education and within-sibling estimates, are also specified. The reported coefficient of schooling (i.e. 12.6%) may not be comparable to estimates in Figure 3 due to the specification of the earnings function used. Nevertheless, a more detailed result from a spline function indicates that the smallest coefficient has resulted for primary education, slightly higher for secondary education and much higher for tertiary education. The author found significant sheepskin effects, in terms of higher wages, especially in the last year of schooling.

Similarly, we have estimated rates of returns to different educational levels during 1997-2003. Note that our concern lies in marginal rates of returns rather than average returns to see if higher education is disproportionately rewarded in terms of higher returns. The estimates are presented in Table 6. As would be expected, returns rise with higher levels of education. The increase in returns is relatively smaller, moving from primary to secondary level. The returns to education increase substantially moving from secondary to the tertiary level. Consider the period 2003, real labor household income per hour has increased by more than three times between secondary and tertiary level, from 5.16 Pesos to 16.57 Pesos.

Table 6: Rates of returns by education and sector

	1997	2000	2003
By educational levels			
Primary education	2.50	2.42	2.22
Secondary education	6.75	5.57	5.16
Tertiary education	19.80	17.62	16.57
By sectors			
Agriculture sector	0.84	0.96	0.89
Industry sector	7.57	7.01	7.23
Service sector	11.42	9.90	9.36

Source: Author's calculations based on FIESs and LFSs.

More interestingly, the returns to education at all levels are falling over the period. Noticeably, the fall for tertiary education is much greater compared to the lower levels. This confirms our conjecture that a large expansion in the supply of qualified workers has lowered the price for skilled labor over the period. As discussed earlier, this is an issue of mismatch between the labor market and the education sector. This means that at present, the education sector does not produce appropriate skill sets that are demanded by the labor market.

Returns are also calculated for different sectors. The results reveal that returns are highest from the service sector, followed by the industrial sector. There is a big difference in returns between agriculture, industry and service sectors. Yet the difference between industry and service sectors is relatively small.

5. Conclusions and Policy Implications

In the Philippines, there has been a massive expansion in the supply of qualified labor. Nevertheless, the performance in labor productivity contrasts with the fact that the market has been endowed with highly educated (and by implication highly skilled) labor. Moreover, the poor growth performance of the Philippines has become even more puzzling if we consider the educational effort that has been made. In this context, the chapter has posed a question as to 'to what extent education contributes to economic growth in the Philippines?' The chapter sought for answers to this question. Both macro and micro approaches were adopted to investigate such complex issues. The overall objective of this chapter was to scrutinize whether human capital is indeed a major obstacle to a low investment and growth that the Philippines has experienced so far. Pursuant to this objective, this chapter has attempted to address a number of key questions enlisted in section 1. The following provides a synthesis for our findings to these key questions.

First, we have shown that education and labor skills are not a major constraint to attracting investment to the Philippines. This finding was drawn from the Investment Climate Survey of more than 700 firms conducted jointly by ADB and WB in 2005-06. According to the Survey, the severe impediments to a good investment climate are not human capital but constraints related to macroeconomic instability, corruption, and institutional quality.

Second, the study has shown that the difference in growth between the Philippines and other countries – including OECD and East Asian neighbors – is not primarily due to educational attainment or the growth of human capital. Using a recent growth accounting study, we have argued that cross-country difference in growth in output per worker is largely attributable to changes in physical capital and total factor productivity over time.

Third, we have provided evidence that education matters for output growth or productivity in the Philippines. Using studies looking into the macro linkage of the contribution of education to productivity, we have argued that the quality of labor plays an important role in determining total factor productivity in the Philippines. Yet this evidence only holds at the aggregate level. As such, our analysis was extended to micro analysis to investigate the linkage between the education of a working individual and his/her labor earnings and productivity. The analysis was done at household levels because households decide on education and labor force participation. The major findings on the micro linkage are summarized as follows.

The study has found that higher education is an important determinant of employment in the Philippine labor market. Employability among the primary educated labor force has declined sharply over the period 1997-2003, whereas it has increased for both secondary and tertiary levels. This indicates that those with higher education have crowded out the less educated in terms of job opportunities. The study premised this finding on two explanations: One is that there has been more demand for secondary and tertiary educated individuals in the Philippine labor market. The other is that low-productivity jobs are taken over by the more educated labor force. If the second explanation is valid, then our finding supports a scenario wherein the labor productivity of educated workers declines.

So far, our analysis has proven this argument to be true. We have found that per capita labor productivity has fallen over the 1997-2003 period. This finding confirms our previous conjecture that a large expansion in the supply of qualified workers has lowered the price for skilled labor over the period. This is an issue of mismatch between the labor market and the education sector. This indicates that the current education sector does not supply the right kind of skills that are demanded by the labor market.

Sixth, the study has found a structural change where the labor force is moving away from the agriculture sector towards the service sector. While the share of employed persons in agriculture has declined, it remains virtually unchanged in the industrial sector while the share for the service sector is on the rise. Within the service sector, there is a significant increase in the employment of female working population over the period. This supports the view that the proportion of female college graduates employed in finance, insurance and real estates has increased over time.

The labor mismatch is an issue that government needs to reckon with in order to accelerate and sustain economic growth. The major findings in this study have made it clear, that a policy of expanding the aggregate supply of skills is not sufficient to address the decline in labor productivity which has in turn, slowed the pace of economic growth. From a policy perspective, going beyond universal coverage in education is imperative because what is required is an expansion of the supply of the right kind of skills. For this to happen, employers,

individuals and policy-makers need robust up to date information on the real labor market value of different qualifications, in order to help them navigate through the increasingly complex education system and make the optimal kinds of investment decisions.

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