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Globalization, Education and Development:
A Comparison between *Successes* and *Failures* in the Asia-Pacific

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Abstract

Link between globalization, education and development is one of the major subjects of interest in the contemporary discourse on international development. This paper compares the education, globalization, income and health indicators of successful and unsuccessful countries in the Asia-Pacific region in terms of their GDP per capita growth over the period of 1970 to 2006. The study finds that countries with high levels of education have achieved continuous high growth in GDP per capita along with rapid globalization over time. In contrast, countries with low levels of education have found it more difficult to achieve progress. They have experienced very slow growth in per capita income and have not been able to effectively integrate themselves with the global economy and society. In addition, using panel data of 26 countries from the region and applying fixed-effect regression model, it finds that globalization and education have high and positive impact on GDP per capita. However, in spite of high performance on education and globalization, the Philippines has surprisingly low growth in GDP per capita over the period, and poverty and income inequalities are also still high in the country. Thus, further research is proposed to explore the reasons behind this unusual outcome.

Globalization, defined as increasing global interdependence in economic, political and cultural spheres and reducing barriers to international trade, investment and migration, has accelerated in recent decades, affecting many aspects of development (while) bringing opportunities and threats to all nations (Dreher et al. 2008). In this process education can play an important role in optimizing the gain from globalization and ultimately achieving development goals, particularly in less developed countries (Green et al 2007). As the latest champions of globalization for their national development mainly come from the Asia-Pacific region, it is worthwhile to see the triangular relationship between globalization, development and education in these countries. It is also relevant because of the fact that Asia-Pacific region also has a number of countries that are lagging behind in tapping globalization for national development, both economic and social. On the basis of recent trends of globalization and development, as well as educational attainments, this paper examines the role of education for successful globalization and broad-base development in the Asia-Pacific region, particularly in East Asia and the Pacific and South Asia.

The definition of globalization is complex and there is rich and growing literature on the causes and consequences of it. This paper adopts a rather comprehensive definition of globalization that covers the rapid acceleration of cross-border movements of capital, people, goods, knowledge, information and ideas. Globalization generally covers most of the dimensions of society including economic, political and social aspects. Accepting this fact, Axel Dreher introduced a new comprehensive indicator of globalization in 2002, which is called "KOF index of globalization." [1] The index was fully developed in 2006. The data for 153 countries from 1970 are being updated annually. Thus, this paper uses the KOF index of globalization as a working definition and measurement of globalization. Like globalization, "development" also is a vague term. Development refers to a range of aspects, from purely economic terms to human rights and social justice, from the physical quality of life to happiness and human satisfaction. To simplify the research, however, this paper uses growth rate of GDP per capita as the development indicator. Based on the average GDP per capita over the period of 1970 to 2006, five high

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[1] The KOF index of globalization was introduced in 2002 by Axel Dreher. According to Dreher (2006), overall index covers the economic, social and political dimensions of globalization. It defines globalization as a process of creating networks of connections among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. Also available at http://globalization.kof.ethz.ch/ (accessed March 15, 2010).

growth and five low growth countries are selected, and defines these countries as *successes* and *failures* respectively for the comparison. After selecting the countries to be examined, the paper accounts the equity or distributional aspect of economic gains and health aspect of population. Finally, education seems a rather simple term. However, when we try to measure the quantity and quality of education, it proves not so simple. Although this study intends to comprehensively cover all aspects of education, gross enrollment rate (in primary and secondary education) and adult literacy rate are used to measure education level.

The remaining part of this paper is organized as follows. Section 2 presents trends and relationships between globalization and development. Based on the average growth of GDP per capita over 1970-2006, five *successes* and five *failures* are identified from the Asia-Pacific region to compare trends of globalization, poverty and inequality indicators across countries. Section 3 analyzes educational status and achievement of *successes* and *failures* that demonstrate the critical importance of education to leverage the benefits of globalization for overall development. Section 4 empirically shows the significant positive impact of globalization and education on GDP per capita in the region. Finally, to conclude, Section 5 offers some policy recommendations and explores further research areas.

Globalization and Development: Trends and Linkages

Globalization can simply be defined as the rapid acceleration of cross-border movements of capital, labour, goods, knowledge and ideas (Green et al 2007). Martin Carnoy (1999, 13) defines global economy as the main component of globalization. He writes, "A global economy is one whose strategic, core activities, including innovation, finance and corporate management, function on a planetary scale in real time." Many scholars claim the current wave of globalization started in the 1970s (Green 2002, Wolf 2004). According to them, the current web of globalization has resulted mainly from the expansion of faster and more efficient transport and communication sectors made possible by rapid advances in science and technology. At the same time political factors have led to trade liberalisation and more open markets since the early 1970s. When global flows of goods and services and factors of production increase, naturally, cultural interactions also increase at the global level, leading to social globalization. Thus, as the KOF index of globalization comprehensively incorporates economic, political and social aspects of

globalization, this paper uses the KOF index to observe the trend of globalization in the region. Details of the index appear in Appendix 1.

Globalization affects the development process in many ways. Generally, it increases the importance of international trade and also changes the terms of comparative economic advantage while increasing labor, materials, capital, technology and know-how. Thus, globalization reduces inefficiencies and increases factor productivity (Green et al. 2007). However, globalization increases competition and non-competitive countries can be sidelined in the process. Since the openness of a country means that its resources are accessible to other countries, non-competitive countries may lose their unused resources. Hence, it is very much important to know how countries are successfully globalizing to achieve national development.

The concept of development mostly depends on how we understand the concept of globalization. In fact, there is no consensus among scholars regarding the benefits of globalization. Whether globalization is "a good thing" for all nations or a phenomenon which further enriches the elites in the developed world is a topic of heated debate among policymakers and academics alike. Optimists, who believe globalization is a good thing, point to East Asian countries in general and China in particular as examples of what less developed countries can gain from globalization. On the other hand, pessimists remind us of the stories of countries in Latin America, South Asia and Africa who have gained very little and even suffered relative declines as a consequence of globalization. Still others present a more balanced view. For instance, Joseph Stiglitz (2002, 20) argues that globalization is inherently neither good nor bad since it depends on how it is managed. He states, "Globalization itself is neither good nor bad. It has the power to do enormous good. But in much of the world it has not brought comparable benefits."

In this context, what do empirical data from Asia-Pacific countries reveal about globalization and development? Assessment of the actual situation can not only explain the validity of theoretical arguments but also offer a reliable solution to the existing debates. This study takes GDP per capita of all the East Asia and Pacific and South Asian countries from World Development Indicator (WDI) online database of the World Bank to define countries as *successes* or *failures*. Average GDP per capita growth of each country from 1970 to 1990 and 1991 to 2006 is calculated and defined *successes* for high growth countries and *vice versa*. Year 1990 is used to separate the two periods because the Cold War ended then and globalization

process became more rapid (Sapkota 2010). Relevant data for other development indicators and globalization are presented in Table 1.

Table 1 clearly contrasts two groups of countries in the Asia Pacific in terms of their GDP per capita growth, globalization trends and level of poverty and income inequality. As defined earlier, *successes* achieved quite high per capita GDP growth rates ranging from 3.13% in Indonesia to 9.26% in China during the period of 1970 to 2006. On the other hand, *failures* are indicated by low rates of growth ranging from the average growth of -0.7% of Papua New Guinea in 1970 to 1990 to 3.02% of Bangladesh in 1991 to 2006. Although the average annual growth rate of Bangladesh in the later period indicates notable progress, it was as low as 0.09% before 1990.

TABLE 1

GDP PER CAPITA GROWTH RATE AND OTHER DEVELOPMENT INDICATORS
OF SUCCESSES AND FAILURES

Country	GDP per capita growth rate (%)		KOF Index of Globalization (0-100)			Infant mortality rate (per 1,000 live births)			Poverty rate*	Gini Index*
	1970-90	1991-06	1970	1990	2006	1970	1990	2006		
Successes (In terms of GDP per capita growth):										
China	6.55	9.26	15.67	34.76	59.85	83	37	20	16	42
S. Korea	6.43	4.83	27.23	42.74	65.87	41	8	5	2	32
Malaysia	4.21	3.96	45.19	58.62	76.24	41	16	7	2	38
Thailand	5.54	3.79	28.31	39.62	66.49	71	26	14	2	42
Indonesia	4.96	3.13	23.99	35.25	57.66	103	56	33	21	39
Failures (In terms of GDP per capita growth):										
Bangladesh	0.09	3.02	13.29	20.17	39.78	160	103	48	50	31
Nepal	1.1	2.02	13.87	24.47	39.65	158	99	46	55	47
Pakistan	2.77	1.93	26.69	33.29	53.32	136	101	75	23	31
Philippines	1.2	1.47	31	42.78	60.63	59	42	26	22	44
Papua New Guinea	-0.07	0.79	27.96	41.08	44.57	107	67	54	36	51

SOURCES.– 1. KOF index of globalization: (Dreher 2006), also available at http://www.kof.ethz.ch/globalisation, (accessed March 15, 2010). 2. Other remaining variables: The World Bank, WDI online database (accessed on various dates).

NOTE.–* Latest data available from 1995 and 2005.

5

Notably, three of the *successes* are from East Asia and the rest two are from South East Asia, which experienced very rapid and sustained growth and poverty reduction. Although there are some problems with the development paths followed by these countries - including politically repressive governments, adverse environmental effects and poor labor conditions - their development must be regarded as successful. From many perspectives, including real improvement in human conditions as indicated by a sharp fall in infant mortality rate and reduction in poverty, their development success is impressive. This is why East Asian development trend is regarded as "East Asian miracle" in development discourse (World Bank 1993).

The *successes'* globalization trends are rapidly growing as expected. For instance, while the KOF index of globalization of China, Malaysia and Thailand was 15.67, 45.19 and 39.62 respectively in 1970; by 2006 the index had reached 59.85, 76.24 and 66.49 respectively. The other two *successes* (South Korea and Indonesia) also showed very good progress on globalization. Interestingly, even among the *successes*, those with higher GDP per capita growth rates had faster increases in the globalization index in general. Such progress on economic growth also led to improved health condition of the population and hence reduced poverty. This fact can be interpreted from the data on infant mortality and poverty rates. The infant mortality rate is defined as "the number of infants dying before reaching one year of age, per 1,000 live births in a given year" and poverty rate, also called poverty headcount ratio, is "the percentage of the population living on less than $1.25 a day at 2005 international prices (World Bank 2010)." Between 1970 and 2006 the infant mortality rate of China, Malaysia and Thailand dropped from 84, 46 and 73.9 to 18.7, 9.8 and 6.96, respectively.

On the other hand, many other countries operating in the same global economy performed far worse. The five *failures* in Table 1 experienced minimal GDP per capita growth rates and high infant mortality and poverty rates. One of the countries, Papua New Guinea, even experienced a negative growth rate of GDP per capita from 1970 to 1990. Despite some improvements, infant mortality rates remained unacceptably high in the *failures*. For instance, the poverty head count rate was 50, 55, 23, 22 and 36 respectively for Bangladesh, Nepal, Pakistan, the Philippines and Papua New Guinea. Another indicator of development, infant mortality rate, was quite high in these countries, ranging from 73.1 in Pakistan to 23.56 in the Philippines in 2006. Interestingly, if we compare the GDP per capita among these countries, there was not a big

difference between the two groups of countries at the beginning. Figure 1 shows the trend of GDP per capita at purchasing power parity (PPP) at current price. It shows there were no big differences in terms of GDP per capita in 1970. Thus, we can observe that these *successes* and *failures* operated not only in the same global and regional environment but also nearly at the same level of development at the beginning of this study period. However, *successes* achieved very high GDP per capita growth over the period of time under investigation.

FIGURE 1
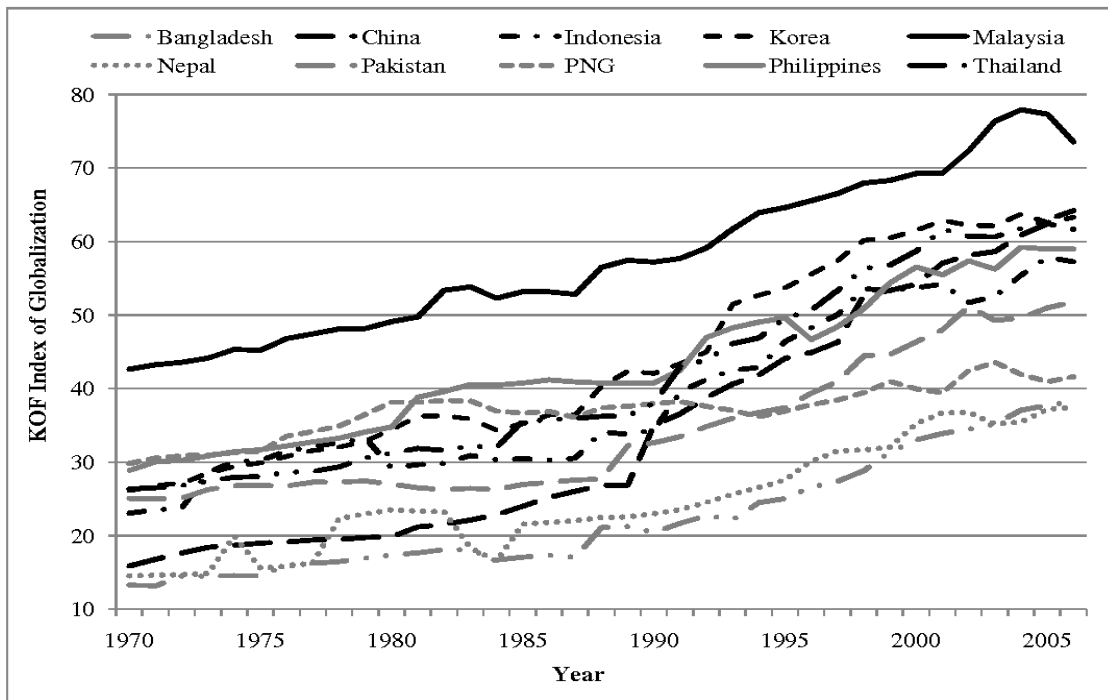GDP PER CAPITA (CURRENT US$) BETWEEN SUCCESSES AND FAILURE
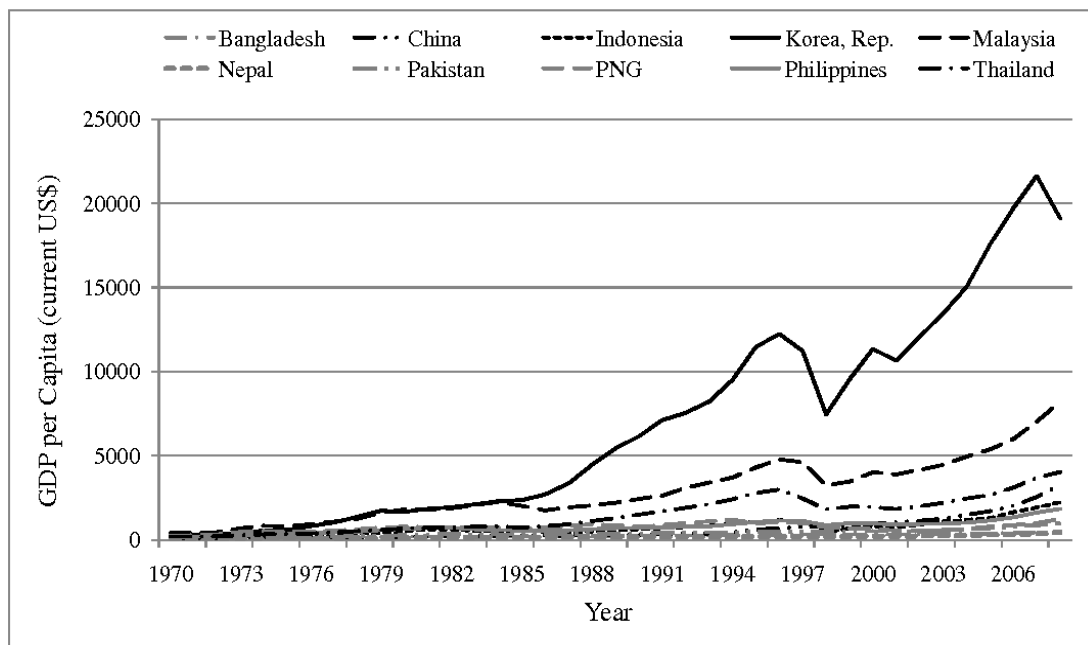
SOURCE.– Author's calculations based on data from the World Bank, WDI online database.

NOTE.– Dark lines for *successes* and gray lines for *failures*.

Along with development indicators, globalization trends are also found to be slower in the *failures*. Interestingly, globalization level was lower in some of the *successes* than that of *failures* at the beginning. However, *successes* globalized rapidly and reached far higher level than that of the *failures*. These trends are presented in Figure 2. For instance, Malaysia had significantly higher level of globalization already in 1970 but other *successes* had no big differences with the *failures*. However, *successes'* level of globalization grew faster together with their development and in 2006 they all reached much higher point than *failures* except for

the Philippines. Notably, like in GDP per capita, progress in globalization is recorded very fast for South Korea.

FIGURE 2
GLOBALIZATION TREND (KOF INDEX OF GLOBALIZATION)

SOURCE.– Author's calculations based on data from http://globalization.kof.ethz.ch/query/.

NOTE.–Dark lines for *successes* and gray lines for *failures*.

Noticeably, the Philippines has very low GDP per capita growth rates in spite of relatively high levels of globalization index and other social indicators than rest of the countries in the same category. There might be some other reasons behind the low growth performance, such as corruption, political instability, outward migration of skilled manpower, etc. Thus, the case of the Philippines needs further research.

It has been argued that globalization increases inequality within and among countries as many believe that the gains from globalization go more to richer countries and richer segments of national populations. Scholars agree that income inequality within most states has increased over the past decade, as has the gap in average incomes between the world's richest and poorest countries (Wolf 2004). Since Kuznets, development economists tend to predict that inequality

within a country increases at least until it reaches a certain development level.[2] However, the inequality measure in Table 1, represented by Gini Index, reveals no significant differences between *successes* and *failures*.[3] For example, the Gini Index for *successes* ranges from 42.45 in Thailand to 31.59 in South Korea, whereas for the *failures*, it ranges from 31.02 for Bangladesh to 50.88 for Papua New Guinea. It appears that rapid economic growth and globalization do not necessarily worsen the income inequality within a country.

If we compare between two sub-regions within the Asia-Pacific, there are three *failure*s in South Asia: Bangladesh, Pakistan and Nepal. These countries have often experienced social conflicts and political volatility. Among the other *failures*, Papua New Guinea belongs to the Pacific and the Philippines belongs to Southeast Asia. On the other hand, China and South Korea, both in the group of *successes,* belong to East Asia and the rest of the *successes* are from Southeast Asia. There are no success stories in South Asia, although India is performing well in recent years as globalization has quickened pace in recent decades.

In this context, an obvious question to be asked is: why are some countries successful in utilizing globalization for their development and why others are failing? Although, there are many differences between the two groups of countries (and within each group), their initial conditions (in per capita income or natural resource base, for example) were not very different and all the countries face the same global economy and the same regional geo-political environment. So, what factors explain the different development performance between the *successes* and *failures*? Are differences in human resources base a factor? The following section examines this aspect.

Educational Status and Trends and its Role in Development and Globalization

Globalization has substantially changed the role of education in development processes. Knowledge and skills become more important in the global era of competition. Many "rate of return to education" studies have emphasized the importance of education in economic and social

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[2] Kuznets (1955) argued that a country's income distribution worsens during the early industrialization process and later stages at some critical point it starts to decrease over time. His argument was based on the inverted U shaped curve that he drew from the measures of increased economic development on the horizontal axis and measures of income inequality on the vertical axis.

[3] Gini index is a widely used measure of inequality in development literature and ranges between 0 and 100. Here, 0 means perfect equality in which everybody has the same amount of income, whereas 100 means perfect inequality, that is, that all the income goes to one person and the remaining population shares no income.

development. This is because education not only affects labor productivity and countries' ability to compete in international markets, but it is also necessary to attract international capital and hence affects the accumulation of capital that is essential for investment.

It is difficult to study empirically the relationship between education and economic growth. The relationship is very complex because of many other intervening variables that interact in many ways (Lewin 1993). Thus, available research findings are not consistent. However, most scholars argue that human capital and technological know-how are vitally important to growth (Barro 1991). For example, analyzing 98 countries between 1960 and 1985, Robert J. Barro (1991, 409) concluded, "the growth rate of real per capita income is positively related to initial human capital and negatively related to initial level of real per capita GDP."

Indeed, education helps to enrich human lives, to empower people and to raise human wellbeing (Stewart 1996). Education and skills determine the degree to which knowledge and technologies can be transferred and absorbed, which means the capacity of the state to build up its indigenous industries and to compete in world markets with their goods and services (Amaden 1981). Investment is a very important phenomenon in the development process and Education and skills become more important to attract Foreign Direct Investment (FDI), which is one of the primary engines of development for many countries (Wolf 2004; Carnoy 1999). Various researches have showed that education and skills were one of the important factors for attracting and benefiting from FDI in East Asia. Similar trends were observed recently in South Africa as well (Willem and Xenogiani 2007). Generally, FDI tends to be involved in high skill activities. This creates employment opportunities for well-qualified population that ultimately raises enrollments in secondary and higher education (ODI 2005). The importance of education has also been supported by many "rate of return to education" analyses (Becker 1993; Psacharopoulos 1994). For instance, George Psacharopoulos and Maureen Woodhall (1985, 55) found that "the rate of return to investment in education is higher than the average rate of return to physical capital in developing countries, though not necessarily in developed countries."

Furthermore, education not only contributes to the sectors that need high-skilled human resources but also enhances the productivity of the primary sector. Scholars agree on the positive relationship between education and agricultural productivity. For example, eighteen research studies on agricultural productivity revealed that four years of primary education increased farm productivity by an average 8.6% (Lockheed et al. 1980). The same studies also found that

agricultural productivity was more influenced by education in modernizing environments than in traditional environments. Similarly, a positive and significant effect of education, particularly in modernizing environments, was found in studies on education and agricultural productivity in Korea, Malaysia, Thailand and Nepal (Haddad et al. 1991). J. Knight and R.H. Sabot (1990) showed significant labor market returns to cognitive achievement through their study that included about 2,000 employee samples in Kenya and Tanzania.

Educational development research used to be focused on economic aspects of development in the past. Its recent focus, however, is increasingly on social benefits of education. The role of education in promoting equity with growth has become more important. Therefore we can find lots of recent evidence on the benefits of education to health, population control, crime, equality and social cohesion. For example, for East Asian countries, Walter McMahon (1999) showed that education could have a substantial downward effect on income inequality, even after controlling for population growth. However, increasing aggregate levels of education may not always help to achieve greater income equality. For instance, the World Bank (2002) pointed out that liberalization in Eastern Europe led to increased returns to higher education that might in turn result in greater income inequality. According to human capital theory, in general, income inequality increases when demand for skills is not matched by increases in supply because returns to higher qualifications will increase in such a situation. A similar situation holds even if the supply of lower level skills increases faster than demand for them.

Moreover, McMahon (1999) found strong correlation between educational enrollment and other socio-political indicators such as human rights, political stability and democratization. He also showed significant positive correlation in primary and secondary enrollment with poverty reduction. In addition, generalization of primary education and extension of secondary education to rural areas is associated to development with stable or declining income inequality.

In light of these findings, what can be revealed from the data on the Asia-Pacific countries examined here? Table 2 shows the human resource level, represented by gross primary and secondary enrollment ratio, of *successes* and *failures*. The data source is World Bank, WDI online database. As defined by United Nations Educational, Scientific and Cultural Organization (UNESCO 2009, 9), "Gross Enrollment Ratio (GER) is total enrollment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population corresponding to the same level of education in a given school year."

We can observe a clear linkage between GDP per capita, which is shown in Table 1, and enrollment rate in Table 2. Countries which have achieved high GDP per capita growth, referred to as *successes,* also have high enrollment rates in both primary and secondary education. For instance, the primary enrollment rate in China was 121.9 and 111.3 in 1976 and 2006, respectively, whereas its secondary enrollment rate was 39.4 in 1970 and 75.5 in 2006, which is a very impressive improvement. China's human resources, in this study, measured by gross enrollment rate, are remarkable from the beginning of our study period. Therefore, it is argued that China had a big investment in human resources that critically contributed to its economic as well as social development. The other countries in this group also have a good human resource base.

TABLE 2

SCHOOL ENROLLMENTS IN *SUCCESSES* AND *FAILURES*

Country	Primary enrollment (%)						Secondary enrollment (%)					
	1970			2006			1970			2006		
	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male
Successes												
China*	121.9	114.2	129.1	111.3	110.9	111.5	39.4	32.1	46.3	75.5	75.8	75.2
S. Korea**	103.4	102.9	103.9	105	103.3	106.6	41.6	32.5	50.2	97.5	94.5	100.3
Malaysia	88.7	83.4	93.9	100.5	100.3	100.7	34.2	27.9	40.7	69.1	72.3	66.0
Thailand***	79.5	75.4	83.5	107.9	107.9	107.8	17.4	14.6	20.2	78.1	81.5	74.8
Indonesia	79.2	73.5	84.8	114.1	112.1	116.1	16.9	11.8	21.9	65.7	65.8	65.5
Failures												
Bangladesh****	51.2	33.9	67.5	92.9	95.9	90.1	15.5	8.5	21.9	42.7	44.1	43.1
Nepal	24.5	7.5	40.4	126.1	123	129	8.7	2.6	14.5	43.2	40.5	45.7
Pakistan******	43.1	23.4	61.5	84.1	73.5	94.2	15.2	6.3	23.4	30.0	26.2	33.7
Philippines	113.8	---		109.5	108.7	110.3	48.5	47.2	49.8	83.1	87.6	78.8
Papua New Guinea	47.0	34.8	58.8	55.2	50.3	59.7	6.9	3.7	10.1		---	

SOURCE.– The World Bank, WDI online database.

NOTE.– *China's Primary enrollment is for 1976; **South Korea's primary enrollment is for 1971; ***Thailand's primary enrollment is for 1971; ****Bangladesh's secondary enrollment is for 1972; *****Pakistan's primary enrollment is for 1971.
--- = data not available.

However, there is a considerable gender gap in education in Indonesia, especially at the beginning which resulted to relatively low progress in development among *successes*. In 1970, the nation's primary education enrollment rate was 73.5 for females and 84.8 for males and the secondary enrollment rate was 11.8 and 21.9, respectively. The gap lessened to 112.1 and 116.1 in the primary level and 65.8 and 65.5 in the secondary level in 2006. Here, the gap between female and male enrollment considerably shrunk in the later period.

The second part of Table 2 is educational status of *failures* in the region. All the countries in this category had significantly low levels of human resources, especially at the beginning. For instance, Nepal's primary enrollment rate in 1970 was 24.5, whereas secondary enrollment was 8.7. Rest of the countries in this group, except the Philippines, also have quite low level of human resource.

Adult literacy rate is another widely used educational indicator that captures the overall level of educational development of a country. This indicator is used widely in development research and practice, and there are high concerns and commitments to increase the literacy level particularly in developing countries in the light of Education for All (EFA) targets. Adult literacy rate is one of the aspects to measure "knowledge" in calculating Human Development Index (HDI) including enrollment ratio. As defined by UNESCO (2009, 3), "adult literacy rate is the percentage of people ages 15 and above who can, with understanding, read and write a short, simple statement on their everyday life." Let us compare the *successes* and *failures* on the basis of adult literacy.

Figure 3 presents the total adult literacy rates for both *successes* and *failures* in two periods, 1980-1982 and 2005-2008. It shows a clear link between a country's level of development and its educational attainment. All the countries, both *successes* and *failures*, are included in Figure 3, except for South Korea and Papua New Guinea because of lack of data. The first four countries are *successes* and the other four countries are *failures*.

The data reveal that *successes* already had adult literacy rates above 65% in 1980-1982. Interestingly, these *successes* did not have big gaps between them, whereas the *failures*' literacy rates varied widely from country to country. Notably, three South Asian countries had adult literacy rates lower than 30% in 1980-1982. From the first to the second period, *successes* achieved progress and reached higher than 90% in 2005-2008, but *failures* could not even reach

60% except the Philippines. The adult literacy rate in the Philippines was exceptionally high among the *failures* and compared favorably with the rates in the *successes* in both periods.

FIGURE 3
COMPARISON OF TOTAL ADULT LITERACY RATES OF SUCCESSES AND FAILURES
(1980-1982 AND 2005-2008)
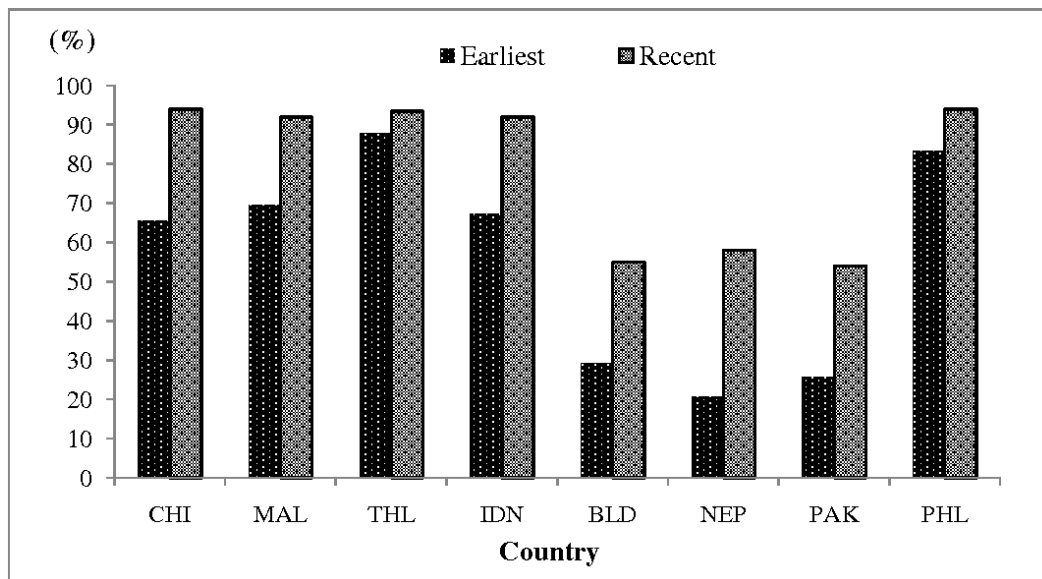
SOURCE.– Author's calculations based on data from the World Bank, WDI online database.

NOTE.– The earliest period is between 1980 and 1982 and the recent period is between 2005 and 2008 depending on countries and their data availability. The exact year and data are presented in Appendix 1.
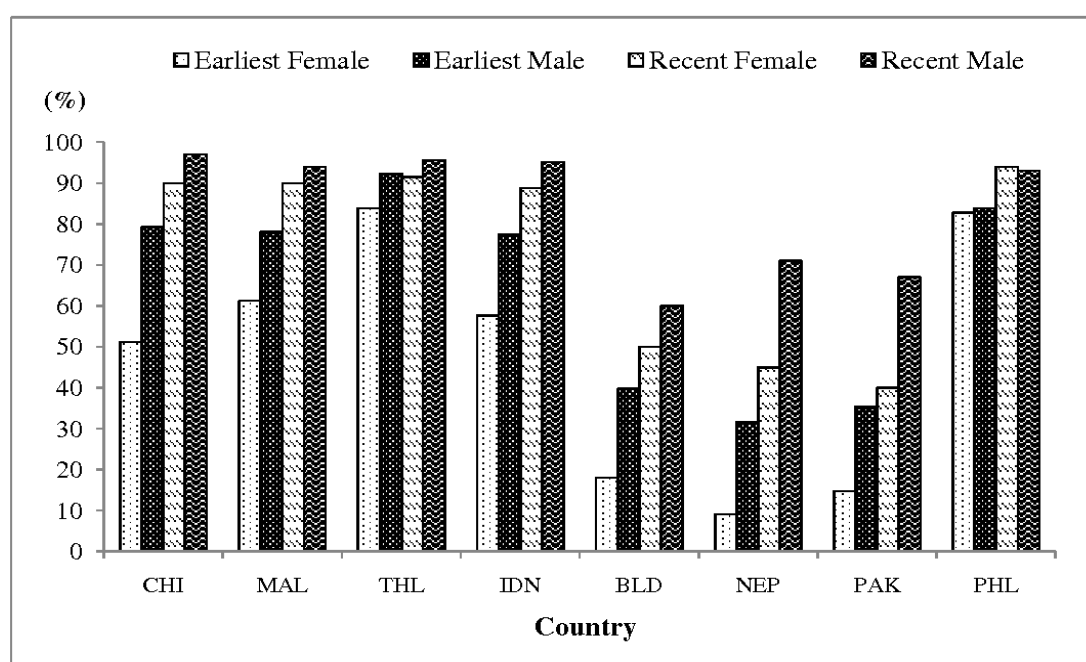   CHN: China; MAL: Malaysia; THL: Thailand; IND: Indonesia; BLD: Bangladesh; NEP: Nepal; PAK: Pakistan; and PHL: the Philippines.

How about the gender difference in adult literacy? In the case of developing countries, gender differences in education receive due attention by policymakers and development scholars. Because the gender gap in education is quite high in developing countries, it is hindering the development process. To assess the gender aspect of education in our sample of *successes* and *failures*, Figure 4 is presented. It shows male and female adult literacy rates for both the earliest years and the recent years.

As expected, gender gap in adult literacy is less pronounced in *successes* than in *failures* ones. Among the four *successes*, China had the lowest women literacy in the earliest period. However, China achieved a big progress, reaching almost 90%, in recent years and caught up with other countries in the same category. On the other hand, Nepal had the lowest literacy rate

14

for both males and females during the earliest period. Its female adult literacy rate was less than 10% whereas the male literacy rate was nearly 40%. The other two *failures* (from South Asia), Bangladesh and Pakistan, also had very low levels of female adult literacy, at less than 20%. The rate for males was below 40% and gender gap was quite wide, about 20% difference. Male adult literacy rates for *failures* in recent years ranged from 40% to 70% but female adult literacy ranged from 40% to 50%. These data show the importance of gender equity in education for development. The Philippines was the exceptional case here as well as it has both higher rate of adult literacy and lower level of gender gap. Recent data even shows slightly higher adult literacy rate for female than for male.

FIGURE 4

GENDER-WISE COMPARISON OF ADULT LITERACY RATES OF SUCCESSES AND FAILURES
(1980-1982 AND 2005-2008)

SOURCE.– Author's own calculations based on the data from the World Bank, WDI online database.

NOTE.– The earliest period is between 1980 and 1982 and the recent period is between 2005 and 2008 depending on countries and their data availability. The exact year and data are presented in Appendix 1.
CHN: China; MAL: Malaysia; THL: Thailand; IND: Indonesia; BLD: Bangladesh; NEP: Nepal; PAK: Pakistan; and PHL: the Philippines.

Analysis of the data in Table 2 and Figures 3 and 4 reveals direct linkages between average GDP per capita growth rate, level of globalization (measured by the KOF Index of

Globalization), other aspects of human development (measured by infant mortality rate, poverty rate and inequality rate) and human resources (gross primary and secondary enrollment rate and adult literacy rate) in all the countries in our sample. Although the linkages are not consistent for the Philippines, generally it is argued that educated human resources are an essential condition for successful globalization and economic and other aspects of development.

This argument is supported by many studies which have demonstrated strong and positive correlations between education and various aspects of development. For example, Edward F. Dennison (1967) found positive correlations between education and growth in the United States between 1930 and 1973. Later in 1979, he also found that direct effects of education were responsible for 20% of growth and indirect effects for 11%. However, results were considerably different when they were applied to other countries. In the study by Psacharopoulos and Woodhall (1985), the results varied from 2% to 25% for developed countries and from 1% to 6% for developing countries. Hicks (1980:17-20) found that twelve developing countries with the fastest growth rates had literacy levels above the average (68% compared to 38% in 1960). Other studies also found strong positive correlations between education and economic growth but the results were different from country to country (Harbison and Mayers 1964). What does the data from the Asia-Pacific countries? Following section presents the statistical relationships between these key variables.

Development, Globalization and Education: What are the Relationships?

The impacts of globalization and educational on GDP per capita are further analyzed statistically through regression analysis. To do so, a panel data set is used taking data from 1980 to 2006 for 26 countries in East Asia and the Pacific and South Asia.[4] The list of the selected countries is presented in Appendix 3. All the data is obtained from the World Bank's World Development Indicators (WDI) online database except KOF index of globalization, which is sourced from Dreher (2006). The summary statistics of the data are presented in Appendix 4 and correlation matrix is shown in Appendix 5. The panel is not fully balanced because of the insufficient data of secondary school enrollment rate which is available only in certain year gap.

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[4] This study intends to cover all the countries from the region, however only 26 countries have sufficient data for regression analysis.

The *fixed effect* (FE) estimation model is used to analyze the data. As explained by Kohler and Kreuter (2005, 245), the rationale for using the FE model is that; "The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics…(like culture, religion, gender, race, etc.)." Thus, as each country have their unique characteristics which are time-invariant, such country-fixed effects need to be controlled. The FE model controls the country-fixed effects. The FE estimation model is described as follows.

$$log\ (GDPpcp)_{it} = \beta_0 + \beta_1\ log(PGrowth)_{it} + \beta_2\ log(Gbn)_{it} + \beta_3\ log(Edu)_{it}\ (u_i + \epsilon_{it})$$

Here, *GDPpcp* is the vector of dependent variables (i.e. GDP per capita at constant US\$ 2005). *PGrowth* is annual population growth rate as control variables. Population growth rate is taken as control variable, because it is one of the major factors that affect GDP per capita, particularly in developing countries. And, it is expected to affect negatively to the GDP per capita. *Gbn* is the vector of explanatory variables (i.e. the KOF indexes of globalization). *Edu* is another explanatory variable which is secondary school enrollment rate. β is the coefficient of each explanatory variable that explain the magnitude and direction of impact on dependent variable, i.e. GDP per capita. In addition, i represents the group identifier (i.e. 26 countries), and t represents the time identifier (i.e. 27 years from 1980 to 2006). Similarly, $u_i + \epsilon_{it}$ is the composite error term, where u_i is the unobservable country effect fixed over time. To neutralize the different units of the variables used, all the variables are logged before running the regression. Time dummies are also included in the regression and it is found that time and country fixed effects are jointly significant. But, the results are excluded from the result table. As "the robust variance matrix estimator is valid in the presence of any heteroskedasticity or serial correlation" (Wooldridge, 2002:275), robust estimators are used to correct the problem of heteroskedasticity and serial correlations.

TABLE 3

GDP PER CAPITA, GLOBALIZATION AND EDUCATION (1980-2006)

Dependent Variable: GDP Per Capita

Explanatory variables	Coefficients
Log of population growth	−.04* (0.03)
Log of KOF index of globalization	.84** (0.32)
Log of secondary school enrollment	.25* (0.16)
Constant	3.91*** (1.25)
R-Square (within)	.78
Number of observations	276

NOTES.– Fixed effect (FE) estimations are reported. Robust standard errors adjusted for clusters in countries are in parentheses. Annual data from 1980 to 2006 in 26 countries in East Asia and the Pacific and South Asia are used. KOF index of globalization are taken from Dreher (2006) and the remaining variables are taken from the World Bank's WDI online database. The names of the countries and summary statistics of the data are given in Appendix 3 and Appendix 4 respectively. And, * $p< .10$, **$p< .05$, ***$p< .01$.

The result of the regression analysis is presented in Table 3. While the coefficients show the magnitude, sign of the coefficient indicates the direction of effect. The number/s of asterisk [*] indicates the level of significance of the effect. No asterisk means no significant effect. One asterisk [*] means the effect is significant at 10 percent. Two asterisk [**] means the effect is significant at 5 percent, and three asterisks [***] means the effect is significant at 1 percent. For instance, as all the dependent and independent variables are logged and as the coefficient of globalization is 0.84, which means if globalization index increases by 1 percent, GDP per capita will increase by 0.84 percent. This highly positive impact of globalization on GDP per capita is significant at 5 percent level. This result is consistent with the previous findings of positive association of globalization and GDP growth by Dennison (1967) and Green et al (2007).

Similarly, it is also found that secondary enrollment has positive and significant effect on GDP per capita. As the coefficient is 0.25, it evident that if secondary school enrollment is increased by 1 percent, GDP per capita will increase by 0.25. This positive effect is significant at 10 percent level. This result further reconfirm many existing studies (for example, Barro 1991; Stewart 1996; Haddad 1991) as discussed in the previous section.

As expected, the control variable, population growth, is found to have negative effect on GDP per capita. If there is population growth at 1 percent, GDP per capita will decrease by 0.04 percent, and the effect is significant at 10 percent level. This result is rationale, because population growth is considered as one of the major obstacles for development in developing

countries. Many scholars argue that higher population growth rates have negative correlations with economic growth, health and educational indicators, particularly in developing countries (Kelly and Schmitd, 1995; Kelly 1994; Shaw, 1989).

In sum, the result shows globalization and education have significant positive impact on GDP per capita, Thus, this study that focuses on the Asia-Pacific region generally support the existing literature, which emphasizes the central role of education for development as well as in the globalization process.

Conclusion

General comparison and empirical analysis between *successes* and *failures* from the Asia-Pacific region revealed that education plays a key role in optimizing the gain from globalization for development. Although, globalization is claimed to be positive for national development, lack of trained human resources limits countries' ability to take advantage of the positive benefits of the globalization process. The importance of having skilled human resources that will attract foreign investment has become much greater as the potential impact of trade and investment has increased with globalization, vis-à-vis other important factors of development, such as physical infrastructure, law and order, etc. This can be seen from the experience of *successes*, which had well educated human resources, to compete in the global market and benefited significantly from the process of globalization. Thus, in addition to opening their countries, governments should invest more in educational development if they are to benefit from successful globalization and expanded prosperity.

However, it has not been an easy task for the *failures* to invest in education. Because of the fragility of the countries, their governments have other short-term priorities, such as, disease control, infrastructure development, and conflict and crisis management. Such governments should undertake two major policy actions to attract investment in education: firstly, opening up the education services to the private sector, and secondly, attracting donor communities with well-designed and targeted educational programs especially to rural areas and poor people. The private sector's involvement can provide quality education in city centers where there is demand and people can easily afford these quality services. Consequently, the government can save resources from these urban centers and invest them in rural areas and for disadvantaged populations. Donor communities are another major source, both financially and technically, that

the government should look to. If the government has a reliable program to reach out to the poor areas and people, donor communities should play a significant role in the development of an education system. Moreover, donor communities also have due responsibility to support such poorer countries. They should proactively facilitate the weak governments who are preoccupied with tackling many other urgent problems, such as poverty, hunger, epidemics, natural disasters, political instability, and conflicts.

Although, this study shows that education is an important factor in obtaining "successful" development gains from globalization, the Philippines appears to be an exception. In spite of its high performance on education and even high level of globalization, the Philippines's GDP per capita growth was surprisingly slow over the period of 1970 to 2006, and its poverty rate was still high. Further research is recommended to find out why this was the case.

 In conclusion, multiple conditions are associated with rapid economic development, and no single factor can be considered a sufficient cause. However, education has been central to the development process in every case. It is worth noting that all the countries in the world that developed most rapidly, including Japan and many other East Asian economies, had near universal primary education enrollments and high levels of adult literacy at the beginning of their high economic growth.

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APPENDIX 1
KOF INDEX OF GLOBALIZATION

Indices and Variables	Weights
Economic Globalization	**[37%]**
i) Actual Flows	(50%)
Trade (percent of GDP)	(19%)
Foreign Direct Investment, flows (percent of GDP)	(20%)
Foreign Direct Investment, stocks (percent of GDP)	(24%)
Portfolio Investment (percent of GDP)	(17%)
Income Payments to Foreign Nationals (percent of GDP)	(20%)
ii) Restrictions	(50%)
Hidden Import Barriers	(22%)
Mean Tariff Rate	(28%)
Taxes on International Trade (percent of current revenue)	(27%)
Capital Account Restrictions	(22%)
Social Globalization	**[39%]**
i) Data on Personal Contact	(33%)
Telephone Traffic	(26%)
Transfers (percent of GDP)	(3%)
International Tourism	(26%)
Foreign Population (percent of total population)	(20%)
International letters (per capita)	(25%)
ii) Data on Information Flows	(36%)
Internet Users (per 1000 people)	(36%)
Television (per 1000 people)	(36%)
Trade in Newspapers (percent of GDP)	(28%)
iii) Data on Cultural Proximity	*(31%)*
Number of McDonald's Restaurants (per capita)	(43%)
Number of Ikea (per capita)	(44%)
Trade in books (percent of GDP)	(12%)
Political Globalization	**[25%]**
Embassies in Country	(25%)
Membership in International Organizations	(28%)
Participation in U.N. Security Council Missions	(22%)
International Treaties	(25%)

SOURCE.– Dreher, Axel (2006), available at: http://globalization.kof.ethz.ch/static/pdf/variables_2010.pdf

APPENDIX 2
COMPARISON OF ADULT LITERACY RATES OF *SUCCESSES* AND *FAILURES*
(Various years from 1980 to 2008, depending on availability of the data)

	Earliest			Recent		
Country	Female	Male	Total	Female	Male	Total
Successes						
China	51.14	79.19	65.51	90.50	96.70	93.70
S. Korea	---	---	---	---	---	---
Malaysia	61.25	78.15	69.52	89.80	94.30	92.10
Thailand	83.89	92.21	87.98	91.53	95.60	93.51
Indonesia	57.69	77.47	67.31	88.79	95.16	91.98
Failures						
Bangladesh	17.97	39.73	29.23	49.80	60.00	55.00
Nepal	9.15	31.67	20.57	45.40	71.10	57.90
Pakistan	14.77	35.38	25.73	39.97	66.84	53.70
Philippines	82.76	83.89	83.32	93.90	93.30	93.60
Papua New Guinea	---	---	---	---	---	---

SOURCE.– The World Bank, WDI online database.

NOTE.– Earliest data are from 1982 to 1984 and the most recent data from 2005 to 2008 depending on countries and their data availability.

CHN: China; MAL: Malaysia; THL: Thailand; IND: Indonesia; BLD: Bangladesh; NEP: Nepal; PAK: Pakistan; PHL: the Philippines; and PNG: Papua New Guinea.

--- = data not available

APPENDIX 3
LIST OF COUNTRIES INCLUDED ON REGRESSION ANALYSIS

1. Australia
2. Bangladesh
3. Bhutan
4. China
5. Fiji
6. Hong Kong
7. India
8. Indonesia
9. Japan
10. South Korea
11. Lao PDR
12. Malaysia
13. Magnolia
14. Nepal
15. New Zealand
16. Pakistan
17. Papua New Guinea
18. Philippines
19. Samoa
20. Singapore
21. Solomon Island
22. Sri Lanka
23. Thailand
24. Tonga
25. Vanuatu
26. Vietnam

23

APPENDIX 4

SUMMARY STATISTICS OF DATA USED IN REGRESSION ANALYSIS

Variable	Observation	Mean	Std. Dev.	Minimum	Maximum
GDP per capita, PPP (constant 2005 int'l $)	691	7296.75	9496.896	523.31	45948.72
Population growth	702	1.670028	0.95085	-2.36	4.81
KOF index of globalization	675	43.03191	17.53921	16.54	88.95
School enrollment, Secondary (% gross)	294	64.14459	32.45704	6.01	161.66

SOURCE.– Dreher (2006) for the KOF index of globalization; the World Bank, WDI online database for all other variables.

NOTES.–Annual data from 1980 to 2006 for 26 countries in East Asia and the Pacific and South Asia are used. The names of the countries included in the analysis are given in Appendix 3.

APPENDIX 5
CORRELATION MATRIX

	GDP PCP	Population growth	Globalization	School enrollment
GDP per capita, PPP (constant 2005 int'l $)	1.0000			
Population growth	-0.4140	1.0000		
KOF index of globalization	0.7368	-0.3892	1.0000	
School enrollment, Secondary (% gross)	0.7356	-0.6273	0.7148	1.0000

SOURCE.– Dreher (2006) for the KOF index of globalization; the World Bank, WDI online database for all other variables.

NOTES.– Annual data from 1980 to 2006 in 26 countries in East Asia and the Pacific and South Asia are used. The names of the countries included in the analysis are given in Appendix 3.