Human Investment and Population-Related Aspects of Economic Growth in East Asia : A European Perspective

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C O N T E N T S

T A B L E S

F I G U R E S

A B S T R A C T

The recent modernization in Japan and the four "dragons" (Hong Kong, Singapore, Taiwan and South Korea) is a well-known success story. They achieved in a quarter of a century what required a full century in the West. In Japan, the feudalistic economy was transformed into a modern one by the Meiji Restoration during which time a high population density and efficient allocation of public resources encouraged intensive utilization of agricultural techniques and rapid industrialization. Consequently, Japan expanded her influence over the rest of Asia as, contrary to classical theories of development, countries with limited space and resources achieved economic prominence. A crucial factor of productivity growth seemed to be the structural shift in the quality of labor force and adoption of modern technology.

Two underlying dimensions of this experience, which are not yet sufficiently understood, are examined in this paper: the intensity of the change in human capital; and patterns of demographic transition in East Asia. A major argument of this paper is that the principles of the original theory of demographic transition in Europe are relevant but their application in East Asia is often misinterpreted among scholars.

I. The Intensity of the Change in Human Capital

A. The economic performance: a brief overview

The comparative economic experience of various countries needs to be assessed on a sound basis in order to improve our perception of world economic trends. The method which is commonly used--the conversion of income in a local currency to a key currency (usually the U.S. dollar) by the use of an exchange rate--is misleading. It exaggerates the dispersion of per capita incomes. It systematically understates the incomes of the poorest countries because the prices of services are much lower there. So, it is necessary to take into account the huge international differences in price levels. The relative quantities and prices of the goods and services that make up the GDPs of different countries have to be put in the balance, in order to reflect the actual reality. Hence, purchasing-power parities replace the exchange rate as the means of converting GDP to a common currency: the exchange ratio is not a reliable indicator of the purchasing power of a currency.

The following results (Table 1) are derived from the International Comparison Project (ICP) which was jointly conducted by the United Nations and the World Bank (see Kravis et al., 1975; and Heston-Summers, 1984). The period under consideration is the postwar era (1950-1985). The more recent data have been updated from the latest national accounts statistics.

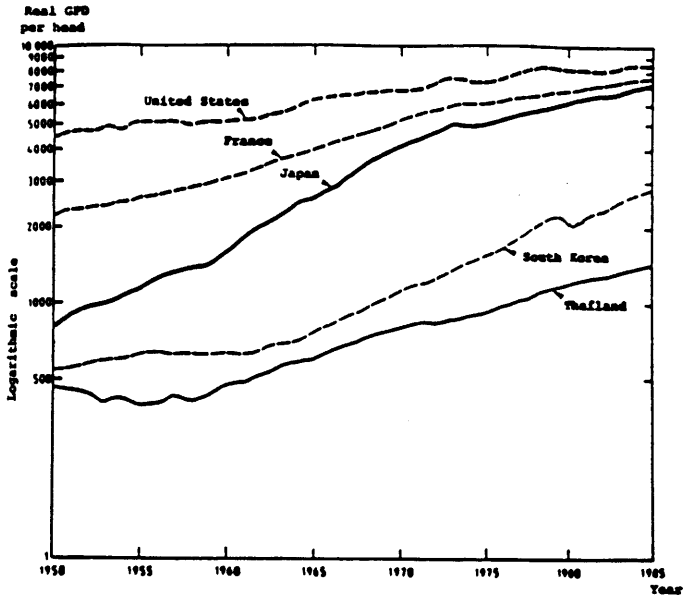
Laggards seem to have better performance than forerunners since it is obviously easier to imitate successful strategy than to innovate it. In Figure 1, we have plotted the data on a logarithmic scale in order to show the relative paces of growth of selected economies. The relative economic distance or the income ratio between old industrial nations like France or the United States and newly industrializing ones like South Korea or Thailand tends to reduce rapidly: these latter are progressively filling the gap. This convergence process is more evident since the sixties. This was the period when these countries experienced a marked shift in their development policy, from a moderate import substitution to an outward-looking one (emphasis on borrowing Western technology and on increasing exports).

Table 1. Evolution of the Real GDP per Capita Converted by Purchasing Power Parities (in 1975 U.S. Dollars) in Asian and Western Nations with More Than 50 Million Inhabitants

Country	1950	1960	1970	1980	1985**
China*	300	(250)	(330)	(450)	(600)
India	333	428	450	498	580
Indonesia	316	370	391	734	835
Japan	810	1674	4215	5996	7280
Bangladesh	u	355	370	432	450
Pakistan	382	404	564	663	780
Philippines	440	644	781	1022	880
Thailand	472	486	791	1181	1380
South Korea	488	631	1112	2007	2700
United States	4550	5195	6629	8089	8510
Germany (West)	1880	3711	5356	6967	7630
France	2221	3163	5041	6678	7120
Italy	1379	2313	3650	4661	4990
U.K.	2700	3388	4216	4990	5240

* Our estimates (from La revanche du Tiers-Monde, Paris: Laffont, 1987); ** Provisional data. Source: R. Summers and A. Heston, Review of Income and Wealth, 1984, pp. 207-262; u: information unavailable.

Figure 1. Real GDP per Head in Some Western and Asian Nations, 1950-1985



Source: J. C. Chesnais, 1987, p. 285.

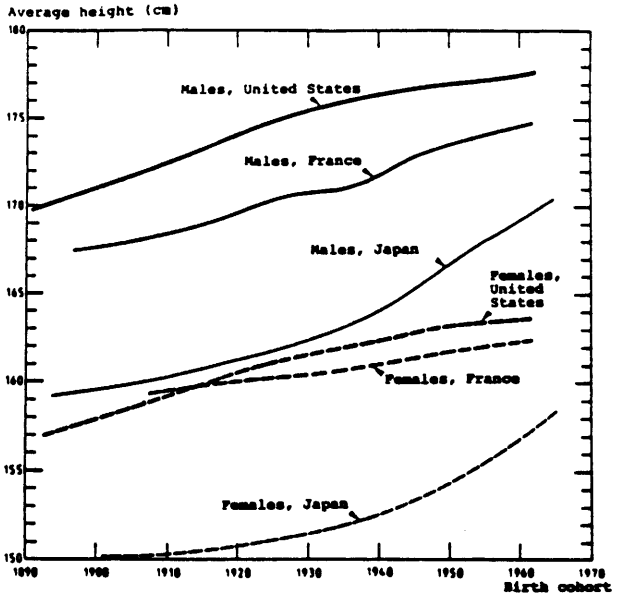
Japan obtained the best results over the whole period. Her real GDP per capita was multiplied by nine between 1950 and 1985 (for the Federal Republic of Germany, which was one of the best Western performers, the multiplier was only four!). But the speed of growth in South Korea since the above-mentioned policy shift (1963) is even more impressive than the Japanese one in the 1950's and 1960's, marked by the economic recovery and the so-called "economic miracle." The case of Thailand also deserves special mention since this country was able to sustain a very rapid pace of growth over a quarter of a century: 4.3 percent as an average per year for the real GDP per capita in 1960-1985. During this period, Taiwan achieved the same record as South Korea: 6 percent per year. Such a performance is quite exceptional by Western standards. The corresponding weighed average rate for the EEC-12 (present territory) was 3.3 percent during the 1950-1985 period. This difference can be a structural and long-lasting one, as the Japanese experience suggests. From 1879 to 1985, Japan underwent an average GDP per capita growth rate of 2.7 percent per annum; this performance was by far greater than that of her five big partners of the OECD: during the 1870-1985 period, the corresponding rate was 2.1 percent in the United States, 1.9 percent in Germany, 1.8 percent in France, 1.6 percent in Italy and 1.2 percent in the United Kingdom.

Another lesson which can be drawn from Table 1 is the real measurement of the relative economic disparity between nations. Asia in now an increasingly heterogenous continent. But the gap between the poor and the rich countries is not so wide as shown by the commonly used exchange rate conversion. The ratio between the real GDP per head (or purchasing power) of the richest (Japan) and the poorest (Bangladesh) is 16 to 1, instead of 75 to 1: according to the World Bank Atlas, the GNP per capita in 1985 is US$150 in Bangladesh and US$11,330 in Japan. Still, the gap is huge but such a correction deserves special attention both for analysts and policymakers.

B. Human physical development

A more concrete measure of improvement in living conditions than that given through the vague concept of income per inhabitant is the variation in human stature. Ideally, one should have available mean

Figure 2. Adult Stature by Sex and Birth Cohort



Source: J. C. Chesnais, 1987, p. 98.

height for retrospective periods or at least average values for each of the age and sex group in each of the countries. Unfortunately, local anthropometric data are available for only a few of the countries under study and mainly for school-age population. The trends in the adult height curve, the age structure of the growth curve, and the age during the growth spurt are strongly correlated with the patterns of modernization (food and protein intake, disease control, housing conditions, degree of consanguinity and so on).

In this perspective, the experience of Japan can be compared with that of the United States and France; these two countries are representative of the Western standard of modern economic growth. In order to compare the variations of adult stature during the present century, we have classified the data by birth cohort and sex for each country and put the corresponding values on one chart (Figure 2).

In the younger generations, born at the beginning of the 1960's, the height of the Japanese is still lower than that of their French or U.S. counterparts, but the difference has rapidly narrowed. If we make the comparison with older generations, born thirty years before,

we see that the difference was twice as big as it is now. The mean height of younger adult males in the new generations is now above 170 cms. It is more than that of the premodern and predominantly rural French of the nineteenth century and similar to that of people born in the U.S. around 1900. For females, the findings are the same. Young Japanese adults of modern Japan have an average stature of about 15 cms above that of their grandparents at the same age. The rapidity of the change is striking. Similar findings are available for school-age children in South Korea since the 1970's.

This conclusion is very important. It stresses that the commonly perceived notion of genetic inheritance is highly disputable. Some of the traditionally observed discrepancies between nations or ethnic groups were not only "natural" or "racially" induced as it is generally stated; they were mainly due to differences in the standards of living and more precisely in the nutritional status (namely the milk intake) and in the prevalence of disabling diseases. How could we otherwise explain this exceptional Japanese record?

Modern economic growth plays a central role in the process of human development; the rise of income brings about positive and interconnected changes in all fields of daily life: hygiene, food, education, housing, disease eradication (tuberculosis was one of the leading causes of death in Japan until World War II). All these changes have a serious impact on human growth.

C. Educational performance: quantitative and qualitative aspects

The progress in education, namely in female education, is a crucial determinant both for demographic change and economic modernization. According to universal historical records, though acquiring educational benefits after males because of their lower status, females generally bear most of the responsibility for child care, and hence for the improvement of future human capital.

In Japan, since the Meiji era, a strong emphasis has been placed on education by all successive governments. Reformers, who were recruited from among an educated urban elite, wanted to catch up with the West. The aim was to maintain national independence and avoid colonization by the European powers; in fact, we can consider that the ruling class implemented a pragmatic "autocolonization", which was

aimed at strengthening the nation's military efficiency and global power. A detailed analysis was then made of the educational systems in the more advanced nations of the West (England, France, Germany, the United States) and the best organizational or technical aspects of each were borrowed as a model for the country. Advanced students were sent abroad to the most famous Western universities. Foreign scientists, administrators and teachers were invited to Japan. A policy of systematic translation of useful knowledge was initiated. Science and technology were introduced in the school programs; the speed and extent of westernization were impressive.

At about the same time, public education was being introduced in the West. Much earlier, Prussia and other predominantly Protestant countries (Scotland, Switzerland, Holland) had been the first to make education free and compulsory (Cipolla, 1969). This compulsory educational system had been introduced as early as 1763 in Prussia. In most other western European nations, this occurred about one century later, during the last quarter of the nineteenth century (Italy: 1877; England: 1879; France: 1882). But Japan preceded these last ones: school was made mandatory in 1872.

Since the Japanese adult female literacy rate is now close to 100 percent, we did not compute here the corresponding data, but we took that of laggard countries like South Korea, Thailand or Indonesia. As an index of the importance of the change, we can use the comparison between the percentage of illiterate women in contemporaneous generations, among younger and older ones, respectively. We have taken the 1906-1915 and 1946-1955 birth cohorts as the terms of comparison. If we divide the first corresponding proportion by the second, we have an indicator of the intergenerational progress of literacy in the present population (Table 2).

The evidence shows that South Korea is by far the country with the best educational performance. It is followed by NICs like Thailand, Singapore and Malaysia. In all these countries, the proportion of illiteracy among females born around 1950 is at least three times smaller than among their mothers (or grandmothers) born 40 years before. These data show that the record of East Asia (Japan, South Korea, Singapore[1/]) tends to be much better than those of the Association of Southeast Asian Nations (ASEAN): Malaysia, Philippines, Indonesia; Thailand, however, is an exception. These ASEAN nations, in

Table 2. The Progress of Female Literacy in Asian Nations, Classified by Speed of Progress

Country	Percentage of illiterate among females by birth cohort 1906-1915 a	1946-1955 b	Index of intergenerational progress Ratio a/b
Bangladesh	96.4	82.4	1.2
Pakistan	96.1	81.8	1.2
India	92.5	67.5	1.4
China	97.1	40.4	2.4
Indonesia	88.0	26.2	3.4
Sri Lanka	56.6	15.7	3.6
Malaysia	92.5	25.5	3.6
Philippines	39.3	7.6	5.2
Singapore	84.6	15.7	5.4
Thailand	79.8	8.2	9.7
South Korea	61.5	1.2	51.2

Source: Population censuses.

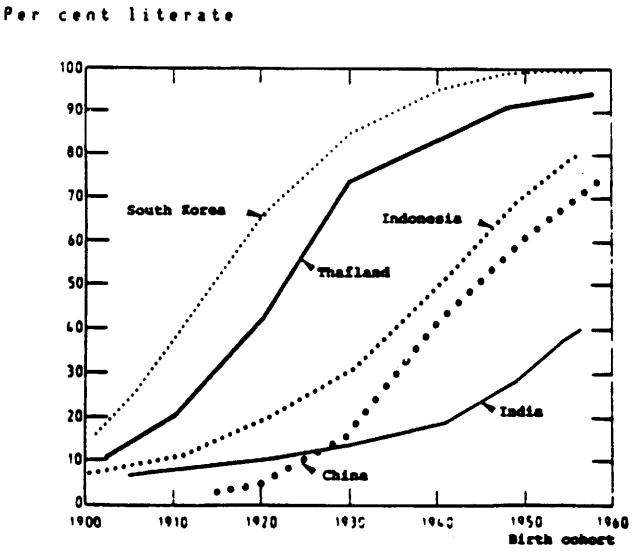
turn, have better records over the countries of South Asia (India, Pakistan, and Bangladesh). Giant China is also rather backward. This hierarchy is, at first glance, rather similar to that of the economic growth performance during the recent decades.

Even in low-income countries such as India, Indonesia, Pakistan or Bangladesh, the comparative historical records are remarkable, at least if we take the traditional European standards as a reference.

The level of female literacy among young adults is higher than the prevailing one in Europe at a similar stage of development one century ago. In spite of the pace of population increase (which was more rapid--roughly double), the rise of literacy has been faster: in both Italy and Spain, according to the population censuses of 1881 and 1887 respectively, the corresponding index of intergenerational progression of literacy was only 1.25 (instead of 1.4 in India). In the Russian Empire in 1897 it was even lower than in present-day Bangladesh: 1.1 instead of 1.2. Even in more advanced regions like the Austrian Empire (1890), Belgium (1880), or Bohemia (1890), the records (1.5; 2 and 4, respectively) have nothing in common with that experienced in East Asian nations in the present century.

Such a discrepancy means that, independently of their ideological orientation, there is a minimal consensus, at least since World War II

Figure 3. Female Literacy Trends in Some Large Asian Nations



Source: J. C. Chesnais, 1986, p. 370.

among all governments of this region on the policy priority of public education.

D. Impact of education on the qualification of the labor force

In Taiwan and South Korea, the influence of the Japanese colonization in the field of education has been strong. As early as 1950, the average level of education of the labor force, as measured by the number of years of schooling, was about five years. It was similar to that of some "developed" countries of southern Europe, like Spain or Greece. This fact has obviously something to do with the economic success of the following decades: they were prepared to integrate external innovations of all kinds. These two countries (South Korea and Taiwan) were also those with the highest percentage of labor force with a high level of technical training, as shown below for the year 1965 (Table 3).

Countries of East Asia are the ones with the highest percentage of highly skilled manpower. In 1965, the average number of years of primary and secondary education per member of the labor force was

Table 3. Educational Qualifications of the Labor Force in Developing Asian Nations, Classified by Degree of Literacy, 1965

Country	Percent literate	Percent with high level tech. training	Average number of years primary and secondary education per member of the labor force
South Korea	82.5	0.9	6.5
Taiwan	78.9	0.9	5.7
Sri Lanka	76.0	u*	7.5
Philippines	75.6	0.7	7.8
Thailand	74.9	0.1	5.5
Malaysia	64.7	u*	5.1
India	35.4	0.35	3.2
Pakistan*	27.0	0.08	2.5

u*: data unavailable; *Including Bangladesh.
Source: A. Maddison, Economic Progress and Policy in Developing Countries, London: Allen and Unwin, 1970, p. 46.

about 6 years or more. The Korean record was equivalent to that of Italy, and not so far from the Japanese one (9 years), which, in turn, was among the highest in the world (after the U.S. and the U.K.: 10 years).[2]

One other striking feature of the last decade is that the female education made much greater progress than male education. In some countries of Europe, the average number of years of schooling is now tending to be higher for young females than for their male counterparts. Such is the case for contemporary France. According to the latest available data given by UNESCO (1988), many East Asian nations, and particularly Japan, but also Singapore and South Korea (with a time lag) follow the same path. This change has a tremendous impact on the female labor force participation. In a country like France, the number of female wage-earners increased by two-thirds in the last quarter of a century (4.6 million in 1962, 7.7 million in 1987); the share of females in the total employed labor force went up from 34 percent to 42 percent. New patterns are also emerging in Japan (Ogawa, 1987).

Besides the increasing share of youngsters who are enrolled in higher level schools (secondary schools or universities) in East Asia, there is another important aspect to emphasize, and this is a qualitative one, namely the attitude toward education which is pro-

moted by a Confucian ethic in a context of struggle for survival due to traditional population pressure. Schools currently emphasize the work ethic and rigid discipline; work is considered a supreme social virtue; the framework of a competitive school system is an image of the future struggle for a career. Workers are more eager to sacrifice themselves to the demands of the company than in the less group oriented nations of the West; education also includes intensive training of graduates by the corporations. According to official data, which are known to underestimate the reality of East Asia, in similar manufacturing industries, the number of work hours performed in Japan and even more in South Korea, is much greater (by one third) than in Western nations; the effective duration (which differs from the legal one) of annual vacation is only about 7 days in Japan instead of 20 to 30 in the West; the social pressure of the group leads people to give up their legal rights.

The comparison between East Asian countries and other parts of Asia shows that the average number of hours per week in the 1970's was about 8 to 10 hours longer in East Asia (Oshima, 1988); and much more emphasis is put on work as a social value. This is no longer the case in most Western nations where the work ethic was strong, not only in Protestant areas; even in a country like France, the average yearly number of hours of work effectively performed fell from 3800 in 1830 to 3000 around the year 1900 and to 1700 at the end of the 1980's.

Countries of East Asia experienced not only a very rapid economic growth but a very peculiar pattern of demographic transition. These two phenomena are not independent; they go hand in hand and tend to mutually reinforce each other; as historians have shown for the European case (McEvedy and Jones, 1978), the demographic revolution and the industrial revolution are closely interconnected. Societies which have a high density of population for their time and a relatively high rate of increase seem to be better at innovating than most; there is a correlation in past centuries and millennia between the demographic surges and socio-economic advance. The big population waves mark the advance of science and technology, and also its spread through nations. In this second part, we shall first present the content of the original theory of the demographic transition and show its actual relevance: then we shall consider its possible interactions with the patterns of economic development in East Asia.

II. Specific Patterns of Demographic Transition in East Asia and Their Economic Impact

A. The relevance of the original theory of demographic transition

The innovative texts on the demographic transition were written during WWII and in the immediate postwar period by different authors (namely Notestein, 1945 and 1953; Davis, 1945; Landry, 1934). The original theory of the demographic transition was derived from the European experience; the demographic transition is considered as a central dimension of development, an aspect of the modernization process. Such a concept is still highly relevant for the present-day experience in Asia as well as in most other parts of the world.

If we summarize the broad precepts of this theory, we can capture three basic principles or empirical laws: the anteriority of the mortality decline; the generality of the two-phase reproductive control (first marriage control, then legitimate fertility control); the importance of socio-economic development as a source of demographic modernization. But the theory also needs to be revised on some points, such as the role of the international transmission of the institutional and scientific innovation and the feedback effect of demographic changes.

The first basic principle is that the mortality decline is a prerequisite for the fertility decline. Hence, mortality decline should always precede fertility decline. This proposition has been denied by Knodel and Van de Walle (1980) for France, Belgium and Germany. But we have shown that the corresponding historical records were false exceptions, at least at the level of national time series (Chesnais, 1986). In France, according to the life tables of 1740-1749 and 1780-1789, the number of surviving people at the mean age of marriage increased by 10 percent in the four decades before the onset of the secular fertility decline. In Belgium, the infant mortality rate was 20 percent higher in the 1830's than that around 1870, when fertility began to drop. In Germany, there was a considerable under-registration of infant deaths in the first half of the nineteenth century; in spite of important emigration streams and in the absence of a fertility rise, there was a tremendous acceleration in the pace of population growth throughout this century. How can we explain this

fact in the absence of a strong mortality decline?

Hence, the history of secular mortality decline is a very long story which began in the seventeenth century with the discontinuance of the plague, the introduction of the potato crop and the emergence of the modern state as an active engine of modernization, encouraging trade, road building, struggling against epidemics and so on. Even in Third World countries, the decline began much earlier than it is commonly believed. Let us take the case of India, which is one of the very few developing countries with a well-documented past (even in Japan, mortality statistics before the first census of 1920 were not reliable). In nineteenth-century India, for example, due to malnutrition and frequent famine and epidemics, the average life expectancy at birth was about 20 years (Davis, 1951). Big mortality crises were progressively eliminated through drastic regulations under the British rule at the end of the nineteenth century; a more gradual and steady mortality decline began in the 1920's with the application of modern medicine. This fact is important since the elimination of recurrent famine and catastrophes is a precondition for structural shifts in the economy (rural outmigration, long-term investment, increase in the productive capacity of the labor force, and so on). Even in very low income countries of South Asia (India, Bangladesh, for example), the average lifespan is now at least 50 years, and therefore double than it was in the traditional setting. When the total fertility rate began to fall, the average life expectancy at birth was about 40 tc 50 years in most East Asian nations; in Western Europe it was arounc 40 years only. Such a figure represents a tremendous progress in comparison with the pre-industrial stage; in the middle of the eighteenth century, France was the leading country of the Western world; still the average life expectancy at birth was only 25 years.

The second basic empirical law is the existence of a two-phase process of reproductive control; before the reduction of the family size within marriages (or sexual unions), there is a first stage of marriage limitation. This marriage regulation can be considered as a first adaptation to the mortality decline. This role of selective and late marriage was decisive in pretransitional Western societies (Hajnal, 1965). Through this mechanism, traditional fertility was limited to 4 or 5 children as an average per women (instead of 6 or 7 in many LDC's). In Switzerland, for example, the total fertility rate

Table 4. Fertility Reduction in Developing Nations of Asia According to Their Degree of Female Literacy Progress

Country	Total fertility rate around 1950	Total fertility rate around 1985	Variation between 1950 and 1985
Bangladesh	6.5	5.8	-0.7
Pakistan	7.0	6.7	-0.3
India	6.0	4.5	-1.5
China	6.0	2.5	-3.5
Indonesia	5.5	3.7	-1.8
Sri Lanka	5.7	3.1	-2.6
Malaysia	6.8	3.6	-3.2
Philippines	7.2	4.5	-2.7
Singapore	6.3	1.7	-4.6
Thailand	6.6	3.1	-3.5
South Korea	6.0	2.5	-3.5

Source: Computed from United Nations data.

was only 4 children as an average per woman in 1870-1880; in Norway, Sweden and Finland it was about 4.5 in 1850-1870, while in England and Germany, it was 5. Since the years before marriage are the most productive for the individual, this factor played a key role at the beginning of the wealth accumulation process. As we shall see, something analogous occurred in the present century in most East Asian nations.

The third common denominator is that the fertility decline requires a certain threshold of socio-economic development. In Europe, when the secular decline began, the real income was approximately double than it was one century before. The same is true for the present fertility transition in the developing world. Among the 25 developing nations (with more than 500,00 inhabitants) which experienced a fertility decline in the 1950-1970 period, 22 had a mean annual rate of growth for a real GNP per head over 1.5 percent. In many of these countries, modern economic growth began under colonial rule, during the first worldwide economic boom (1870-1913). The correlation with the literacy level is even more obvious (Table 4); the common picture is the following one: in most countries where the secular fertility decline has begun, the female literacy rate among cohorts born around 1950 is over 50 percent and the literacy rate has at least doubled in the four previous decades.

Table 5. Average Life Expectancy at Birth since 1930

Country \ Year	1930	1950	1970	1986
			Males	
France	54.3	63.6	69.1	71.5
Norway	62.5	71.1	71.0	72.9
United States	58.1	65.6	67.1	71.3
Japan	44.8*	59.6**	70.5	75.2
			Females	
France	59.0	69.3	76.7	79.6
Norway	65.7	74.7	77.5	79.7
United States	61.6	71.1	74.8	78.3
Japan	46.5*	63.0**	75.9	81.3

* 1926-1930 life-table
** 1950-1952 life-table

Source: World Health Organization, 1988.

The onset of fertility transition has now become worldwide, even in rather backward societies of the developing world. Many factors tend to explain this massive shift: policymakers are more aware of population challenges, there are more efficient family planning techniques and the international community is much better organized than it was in the past. The case of mainland China, where a strong and coercive policy was implemented, is by far the most spectacular. There are only two remaining major exceptions to this change: sub-Saharan Africa and most of the countries with a deeply rooted Muslim tradition. Even India, with a total fertility rate of about 4 at the end of the 1980's, had completed more than half the transition from the traditional fertility (6 children or more as an average per woman) to the modern one (2 or fewer children).

B. Positive demographic and economic interactions in East Asia

The East Asian pattern of demographic transition has been very rapid and in many ways economically optimal: a) the quickest regression of diseases and epidemics ever seen; b) the unique marriage delay in the last decades and c) the sudden drop in fertility combined

their positive effects in approximately the same short period (the postwar era).

i. The speed of mortality decline

The world's best performances in the field of mortality control no longer occur in the cold and well-administered countries of northern Europe, but have moved to the warmer latitudes of the Pacific Rim (Japan, Hong Kong, Singapore, Taiwan). Norway was traditionally number one (probably due to factors of climate, village isolation, long breast-feeding tradition); this supremacy has ended in the 1970's following Japan's rapid economic growth. The average life expectancy at birth has reached the incredible figure of 75 years for males and even surpassed that of 80 for females (Table 5). Since long-term retrospective data in East Asia are available only for Japan, the comparison with Western nations will be limited to this country.

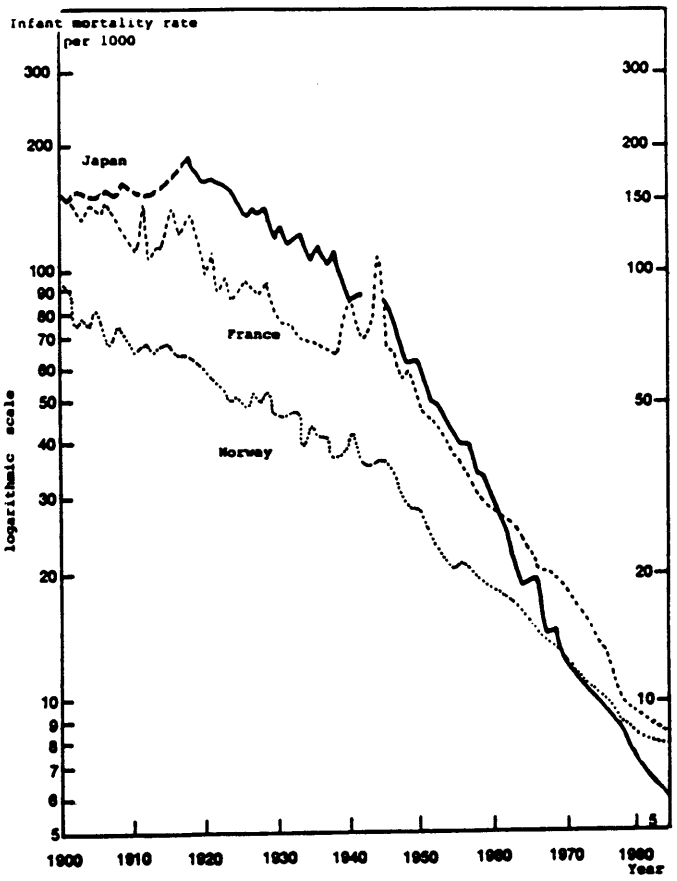
In France, the infant mortality rate was cut by nine-tenths in the last four decades or so; this is probably the best performance among Western nations. But in Japan the decline was even sharper (Figure 4). Most of this progress was accomplished in the immediate postwar period, following big institutional, social and health reforms which were launched by the Allied occupation. The case of Japan is not unique: Hong Kong has a better record than the UK. In Taiwan, the average life expectancy at birth for males has reached the United States and French level (71 years in the mid-eighties).

Such a shift has a considerable economic impact: the economic losses of premature deaths have progressively disappeared, the incidence of disease and disability on the productive capacity of the labor force is strongly reduced; the emergence of a low and stable mortality regime conveys confidence in the future and, hence, is a precondition for heavy investment in material and human capital.

ii. The rising age at marriage

Second, the singulate mean age at marriage increased faster and reached a higher level in East Asia than anywhere else in the world. In Japan, South Korea and Taiwan, this age is now close to 25 years for females (Figure 5). The highest present level in the world is

Figure 4. Infant Mortality Rates in Japan, France and Norway since 1900



Source: J. C. Chesnais, La Recherche, September 1983, page 1123. Updated figures.

that of Japan (25.8 years in 1985).

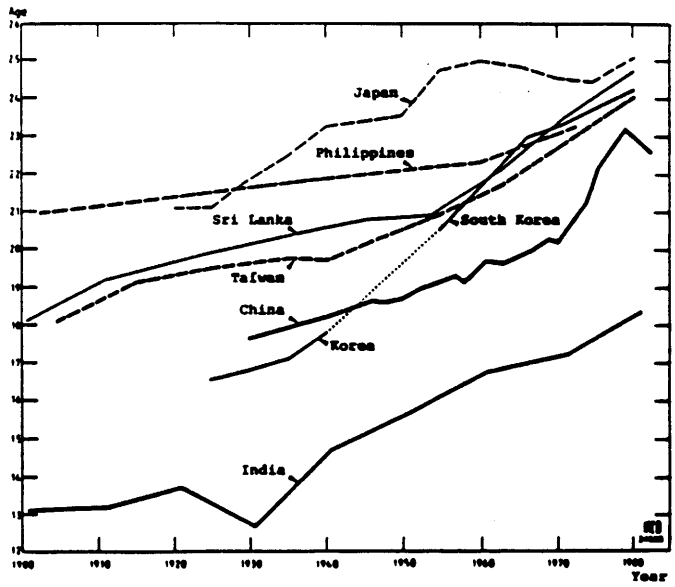
In South Korea, the percentage of single people in the 20-24 age group was 2 percent in 1930; and 51.6 percent in 1966 (Table 6).

So, in almost all countries of eastern Asia, a dramatic change in the marriage patterns occurred before the onset of the fertility decline.

This pattern is now unique in the world; in western Europe, the age at marriage (or cohabitation) is much lower than it was in the past (Figure 6).

In the mid-nineteenth century western Europe, the singulate mean age at marriage for females was commonly above 25 years and the pro-

Figure 5. Singulate Mean Age at Marriage of Females since 1900 in Asia



Source: A. C. Chesnais and Liu, 1986.

portion of persons remaining single reached 15 to 25 percent; this age at marriage has now dropped to 22-23 years and many young couples prefer marital cohabitation to marriage. What is peculiar to eastern Asia is that, contrary to Western experience, the increase in age at marriage did not stop or even slacken when the marital fertility began to decline and that marriage remained a universal pattern.

This dramatic marriage shift observed in Asia is favorable to the accumulation of education and wealth. It also tends to accelerate the tempo of the fertility decline, thus generating a positive and cumulative feedback loop: economic growth facilitates education improvement; rising education in turn stimulates development and accelerates the tempo of the demographic transition.

Table 6. Proportion of Single Females by Age

Country	Year	Age Group 20-24	25-29	45-49
China	1929-1931	5.2	0.5	0.1
	1982	46.4	5.2	0.2
India	1931	4.7	1.8	0.8
	1971	9.1	2.0	0.4
Indonesia	(1964-1965)	(14.2)	(3.6)	(1.0)
	1973	22.9	5.4	1.0
Japan	1920	31.4	9.2	1.9
	1940	53.5	13.5	1.6
Philippines	1939	36.2	18.0	5.4
	1973	55.9	24.8	6.8
Thailand	1947	30.0	10.9	2.9
	1970	37.9	15.6	3.0
South Korea	1930	2.3	0.6	0.0
	1966	51.6	7.7	0.1

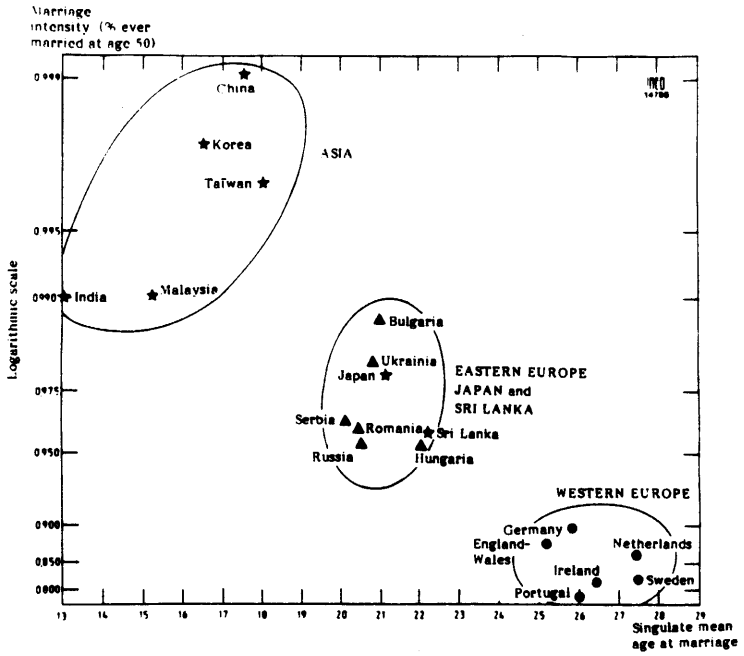
Source: Chesnais, 1986.

iii. The sharp decline in fertility

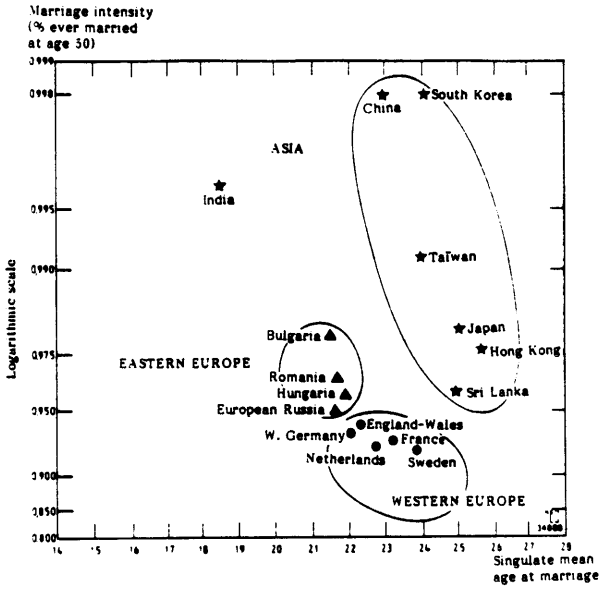
Even if we put aside the case of mainland China where the statistical data are not fully reliable and where coercion was the major determinant of the fertility reduction, it is also in this region that the fertility transition was the shortest. In Japan, the total fertility rate dropped from 4 to 2 between 1949 and 1957; the effect of return migration from the former colonies aggravated the population pressure, the psychological shock caused by the military defeat and the economic ruin modified the official and the collective attitude from a pronatalist tendency (1941) to a proabortionist one (Eugenic Protection Law of 1948); we can possibly also add the effects of the sudden economic recovery (the real GDP was multiplied by three during the same period, 1949-1957). The change in neighboring East Asian countries was less spectacular, but still very steep (Ogawa-Tsuya,

Figure 6. Asian and European Marriage Patterns in the Past and Present for Females

A-Traditional pattern



B - Contemporary pattern



Source: A. C. Chesnais and Liu, 1986.

1988). Like Japan, Taiwan, Singapore and Hong Kong have a below-replacement fertility, South Korea will soon experience the same situation (the estimated TFR for 1980-1985 is 2.40; in 1988, it is probably about 2). In most Western countries, the fertility decline process lasted about half a century, and even more if we include the

postwar era with the baby-boom period, while in eastern Asia, the fertility transition was generally concentrated on a much shorter period (two or three decades).

This shift means a contraction of the youth dependency ratio, a growth and a reorientation of savings, greater opportunities of salaried work for females, hence higher incomes per household.

Let us consider the trends in the total dependency ratio or, conversely, the share of the adult age-group 15-64 years in the total population. In the midst of her economic boom period, Japan recorded the highest percentage of adults in the world: 69 percent; from 1950 to 1970, this share increased from 59.6 to 69.0 percent. In South Korea the trend was the same, but the tempo less rapid (54.2 percent in 1960; 62.6 percent in 1985). In both cases, the youth burden fell drastically, while the share of the elderly remained very low. Aging in its real dimension will come a few decades later.

iv. The combined effects of the pattern of demographic transition

All these demographic changes were concentrated over a rather short period of time and their benefits accrued simultaneously.

Besides the direct effects already mentioned, we have to consider some other positive implications which were induced by their interactions:

- the age pyramid reached an optimal state in the last decades: the burden of older generations was reduced by the strength of the mortality at the time of their childhood; the burden of the youth had been drastically diminished by the fertility drop. Hence--as we have seen above--the share of persons in the working-age groups was thus inflated to its historical peak.
- The time lag between the fall in mortality and the fall in fertility was shortened by the speed of the modernization process. The pace of population growth was thus contained and moderated. The peak of the population growth rate was shorter (one or two decades) than in most developing countries--a quarter of a century at least).

- The population density was initially high. In 1960, this

density was 254 inhabitants per square kilometer in South Korea and 300 in Taiwan; in the city states of Singapore and Hong Kong, it was much higher (around 3000 inhabitants per square kilometer in both cases). But even in Japan during the Tokugawa era, the density was 100 inhabitants per square kilometer; it was similar to that of England and Wales by 1830, at the beginning of the industrial revolution; in Europe, this factor played a key role in the emergence of economies of scale and thus in the economic take-off. As a consequence, the conditions for intensive growth and collective capacity of reorganization pre-existed also in Japan; a centralized political system was established during the Tokugawa era. The increase in population density since that time (between 1850 and 1988 the population of Japan quadrupled) then reinforced the rate of return of investment and generated huge increases in the value of assets and capital (Tokyo has the highest cost of housing in the world). It also contributed to reinforce work ethics and initial low wages.

- The speed of the mortality decline favored a more rapid shift from rural occupations with lower productivity to the growing modern sectors and increased the rate of labor-force renewal, thus the infusion of technical innovation.

These arguments are only a few contributing factors among others. Above all, there was the quality of development policies, which were critically outward oriented and stressed the importance of priorities to agriculture (land reform, irrigation, mechanization, price fixing) and infrastructure (communication and social services--health, education--networks). Unfortunately for analysts, the sources of sustained growth remain partly mysterious. The leading variables seem to be largely political. This policy package is complex; it includes: the strength of nationhood (Japan, Korea, Taiwan have a strong sense of national identity; Japan after the war was demilitarized but her energy was converted to economic competitiveness); continuity of political leadership (this need is self-evident: turbulent political history, civil war, coups and countercoups are counterproductive to economic growth); the interests of the governing group and namely the

degree of priority attached to economic progress; the professional tradition of the administrative and entrepreneurial staffs. All the top performers of Asia tend to share these favorable political traits.

These findings are not new, they were outlined long ago by John Stuart Mill in his Principles of Political Economy (1848). Let us reread his meaty thought:

> "the desideratum for such a less developed country, economically considered, is an increase of industry and of the effective desire of accumulation. The means are, first, a better government; more complete security of property; moderate taxes, and freedom from an arbitrary exaction under the name of taxes; a more permanent and more advantageous tenure of land, securing to the cultivator as far as possible the undivided benefits of the industry, skill and economy he may exert. Secondly, improvement of the public intelligence . . . Third, the introduction of foreign arts, which raise the returns derivable from additional capitation . . . and the importation of foreign capital, which renders the increase of production no longer exclusively dependent on the thrift or providence of the inhabitants themselves . . . and by instilling new ideas and breaking the chain of habits . . . tend to create in them new wants, increased ambition, and greater thought for the future. These considerations apply more or less to all the Asiatic populations, and to the less civilized and industrious parts of Europe. . . ."

These lessons were wisely applied by pragmatic East Asian nations.

III. Conclusion

The most competitive countries with the lowest government expenditure are now in East Asia. Forty years after World War II, Japan has become both manufacturer and banker for much of the world. According to the available data, many other Asian countries could take the same direction in the coming decades. Japan has succeeded in her historical target; she has overtaken the West. But the differential

growth between Japan and her immediate followers (South Korea, Taiwan, Hong Kong, Thailand, Malaysia) is reducing; newcomers are entering the international competition with growing awareness of the means to fill the gap. Besides, progress in giant countries (China, India, Indonesia) is beginning, but the relative economic distance is important and the handicap in the field of human capital still very wide.

Japan will have to face much more difficult challenges than in the past. Let us consider only population-related aspects of this question. The major future challenge is that of aging (Ogawa, 1982). This will result of the combined effect of the specific pattern of demographic transition as described above and of the lower initial level of social coverage per elderly. The benefits of the demographic transition belong to the past: as from now, the mortality decline tends to increase the number of the elderly much faster than the supporting population. After three decades of below-replacement fertility and without any sign of reversal, the more flexible and better-trained segment of the labor force (the younger workers) will become scarce and costly; this poses a new threat to the rate of technical progress. On the other hand, the marriage delay has probably reached its upper limit and family splitting has become more frequent, thus raising social costs and demand for state support. The same will be true two or three decades later in many other East Asian nations, such as Taiwan, South Korea and mainland China, to name only the biggest.

East Asia's aging people will be a major burden on the young; besides, the shift to high technology requires creative workers, but students are still urged to conform and the rapidity of technical innovation widens the technological gap between the generations. The elderly will need to survive, but the enterprises prefer the youth. The saving rate could diminish (the elderly dissave) and this could of course have an adverse impact on the rate of investment. With the prolonged fertility decline, the potential shrinkage in the number of students could result in easier access to the universities, thus creating a shortage of unskilled manual workers. This, in turn, could stimulate a pull factor to immigation, thus reinforcing the push factor generated by the widening economic gap between Japan and most other Asian nations. This risk of labor-force shortage could, however, be limited by the use of labor-saving techniques or by the rise in female labor force participation. But these remedies are not cost

free: the intensification of labor saving can imply an increase in the burden of unemployed elderly; and a more intensive use of the female labor could depress fertility. As in some European countries (such as France, Sweden), a few East Asian countries (like Malaysia or Singapore), tend to stimulate fertility in order to limit the impact of aging.

Besides, can we imagine that the ongoing expansion of internal consumption (as an alternative to excessive exporting strategy) will not alter values and institutions that have made Japan powerful?

Finally, I would like to touch on other important critical questions which are raised by the recent trends in higher education in Japan, as well as in other successful East Asian nations. Higher education has spread to such an extent that--as has been the case in western Europe since the 1970's--it will likely not entitle graduates to the same career expectations as in the past decades. In Europe, higher education is no longer, as it once was, an automatic ticket to a good position. Students who put extra time and effort into advanced studies often find they cannot get the kind of job traditionally associated with their level of education. This problem is made more complex by the generally high expectation that most young Europeans have concerning both their careers and the quality of their working environment. These expectations are not satisfied; the motivation for work is thus altered in favor of more leisure-oriented attitudes. Should this process also occur in East Asia, especially in countries experiencing a slowdown in the pace of economic growth following the first booming phase (catch-up period), similar consequences could emerge.

Another critical question also arises from the equalizing process of educational attainment between females and males. In western Europe, the shift toward higher and more pragmatic training among females was accompanied by a new demographic behavior among the concerned groups. The percentage of married women decreased (marriage fell and divorce rose); as a consequence, the fertility declined. This new female generation is more career-oriented than family-oriented and do not need income support from males. Since these most capable women represent a growing share of the population in East Asia too, a close examination of its possible future demographic implications should be made.

Notes

1/ According to the UNESCO compilation of school enrollment statistics, the performance of Hong Kong and Taiwan is similar to that of Singapore.

2/ Calculated from Maddison (1970 and 1982).

References

Banister, J. 1987. China's Changing Population. Stanford: Stanford University Press, Stanford University.

Boserup, E. 1981. Population and Technology, Oxford: Basil Blackwell.

Chenery, H. B. and M. Syrquin. 1975. Patterns of Development, 1950-1970. Oxford: Oxford University Press.

Chesnais, J. C. 1986. La transition demographique: etapes, formes, implications economiques, 1720-1984, Paris: INED-PUF. (The Demographic Transition: Stages, Patterns and Economic Implications, 1720-1984, to be published by Oxford University Press, 1990).

_____. 1987. La revanche du tiers-monde. Paris: Laffont.

_____. 1987. "Population growth and development: the unexplained boom," Population Bulletin, No. 21-22, New York: United Nations, pp. 17-25.

Chesnais, J. C. and Shanghong Liu. 1986. "Mariage et regulation demographique: le cas de la Chine," Population, pp. 979-1004.

Cipolla, C. M. 1969. Literacy and Development in the West, London: Penguin Books.

Davis, K. 1945. "The world demographic transition, The Annals of the American Academy of Political and Social Science, Vol. 273, January, pp. 1-11.

_____. 1951. The Population of India and Pakistan. Princeton: Princeton University Press.

Denison, E. F. 1974. Accounting for U.S. Economic Growth 1929-1969, Washington, D.C.: The Brookings Institution.

Denison, E. F. and W. K. Chung. 1976. How Japan's Economy Grew So Fast the Sources of Postwar Expansion. Washington, D.C.: The Brookings Institution.

Eveleth, P. B. and J. M. Tanner. 1986. Worldwide Variation in Human Growth, London: Cambridge University Press.

Hajnal, J. 1965. "European marriage in perspective." Pp. 101-143 in D. V. Glass and D. E. C. Eversley (eds.), Population in History: Essays in Historical Demography. London: Edward Arnold.

International Labor Office. 1987. Yearbook of Labor Statistics.

Knodel, J. and E. Van de Walle. 1967. "Demographic transition and fertility decline: the European case," Paper presented at the IUSSP Sydney Conference, 21-25 August, pp. 47-55.

Kravis, I. B., Z. Kenessey, A. Heston and R. Summers. 1975. Phase I: A System of International Comparisons of Gross Product and Purchasing Power," United Nations and World Bank, Baltimore: Johns Hopkins University Press.

_____. 1978. Phase II: International Comparison of real product and purchasing power . . . Baltimore: Johns Hopkins University Press.

_____. 1982. Phase III: World product and income: international comparison of real GDP, . . . Johns Hopkins University Press.

Kuznets, S. 1981. "Recent population trends in LDC's and implications for internal income distribution." Pp. 471-511 in National Bureau of Economic Research (ed.): Population and Economic Change in Developing Countries, Chicago: University of Chicago Press.

Landry, A. 1934. La revolution demographique. Paris: Sirey.

MacEvedy, C. and R. Jones. 1978. Atlas of world population history, London: Allen Lane.

Maddison, A. 1970. Economic progress and policy in developing nations. London: Allen and Unwin.

_____. 1982. "Phases of capitalist development," Oxford University Press.

Mialaret, G. (ed.) 1981. Histoire mondiale de l'education, Vol. 3, Paris: Presses Universitaires de France.

Mill, J. S. 1848. Principles of Political Economy, London: J. W. Parker.

Notestein, F. W. 1945. "Population, the long view," in E. Schultz (ed.) Food for the world. Chicago: University of Chicago Press. pp. 36-57.

_____. 1953. "The economics of population and food supplies. Economic problems of population change," Proceedings of the 8th International Conference of Agricultural Economists. London: Oxford University Press, pp. 13-31.

Ogawa, N. 1982. "Economic implications of Japan's aging population: a macro-economic demographic modelling approach," International Labor Review, Vol. 121, pp. 17-33.

_____. 1987. "Sex differentials in labour force participation and earnings in Japan." Pp. 305-332 in Women's economic participation in Asia and the Pacific, United Nations, ESCAP.

Ogawa, N. and N. O. Tsuya. 1988. Demographic change and human resources development in Asia and the Pacific: an overall view. NUPRI Research Paper Series No. 40, Tokyo: Nihon University Population Research Institute.

Ohkawa, K. and A. Shinohara. 1979. Patterns of Japanese economic development: a quantitative appraisal, New Haven: Yale University Press.

Oshima, H. T. 1982. "Reinterpreting Japan's postwar growth," Economic Development and Cultural Change, Vol. 31, pp. 1-43.

_____. 1988. "Human resources in East Asia's secular growth," Economic Development and Cultural Change, special issue, April, pp. 103-122.

Reynolds, L. G. 1985. Economic growth in the Third World, 1850-1950, New Haven: Yale University Press.

Summers, R. and A. Heston. 1984. "Improved international comparisons of real product, Review of Income and Wealth, Vol. 30, pp. 207-262.

UNESCO. 1970-1988. Statistical Yearbook, Paris.

Van de Walle and J. Knodel. 1980. "Europe's fertility transition: new evidence and lessons for today's developing world," Population Bulletin, Vol. 34, No. 6, (February).

World Health Organization. 1988. World health statistics annual 1988, Geneva.