

# Population change and economic development: what have we learned from the East Asia experience?

Andrew Mason

University of Hawaii and East-West Center, Honolulu, HI, USA

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**Abstract:** Between 1960 and 1990, many East Asian countries experienced remarkable economic growth and rapid demographic change brought on by the onset of a precipitous drop in childbearing. The research summarised in this paper considers whether demographic change played an important role in the region's economic success and whether fertility decline was a by-product of economic development or a response to population policy.

**Keywords:** population, economic development, East Asia, population policy

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## Introduction

The twentieth century was a period of unprecedented demographic change. The global population increased nearly fourfold, growing from 1.6 billion in 1900 to 6 billion in 2000 (Cohen 1995; United Nations 2003). Population growth rates accelerated, particularly in the developing world, during the first part of the century, reaching a peak in the late 1960s. The response to rapid population growth was also unprecedented. Motivated by concerns about the environmental and economic effects of population growth, the United Nations, bilateral foreign aid agencies, multilateral institutions and private foundations invested billions of dollars in population programmes. Many developing-country governments, especially in Asia, vigorously pursued policies aimed at slowing population growth.

The countries of East Asia were among the first and most active proponents of population policy.<sup>1</sup> Beginning in the 1960s, many East Asian developing countries abandoned pro-natalist policies, identified population stabilisation as a national development objective and adopted comprehensive programmes intended to slow population growth. At first glance, the East Asian experience appears to provide strong support for the value of population stabilisation policies. Childbearing and population growth rates dropped more rapidly there than in any other region of the developing or industrialised world. During the same period, the countries of East Asia achieved unparalleled economic success. Within three decades, 1960–1990, they were transformed from an

economic backwater to the most dynamic region in the world economy. Countries that were impoverished in 1960 joined the ranks of, and in some respects surpassed, the high-income countries of the West.

This study builds on the comprehensive analysis undertaken by the US National Academy of Sciences (Johnson and Lee 1987) and complements several more recent studies of the development effects of population change (Ahlburg et al 1996; Bloom and Williamson 1998; Chu and Lee 2000; Birdsall et al 2001). These recent studies differ in their methodological approaches and their details, but the conclusions reached are broadly consistent – population change has more important effects on economic development than was widely believed a decade ago. Bloom and Williamson (1998), for example, conclude that demographic change between 1965 and 1990 accounted for about one-third of the growth in per capita income in developing countries. Kelley and Schmidt (2001) conclude that ‘fertility and mortality changes have each contributed around 22 percent to changes in output growth’ between 1965 and 1990. Mason (2001a) concludes that demographic factors accounted for 28 percent of Taiwan’s growth in per capita output between 1965 and 1990. The evidence supports the view that the demographic transition has played an important, positive role in economic development.

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Correspondence: Andrew Mason, University of Hawaii at Manoa, 2424 Maile Way, Room 542B, Honolulu, HI 96822, USA; tel +1 808 956 8118; fax +1 808 956 4347; email amason@hawaii.edu

The research summarised and updated in this paper examines the connections between demographic change and economic development in one region of the world – East Asia. Detailed results of the study are reported in two volumes. One volume examines the developmental impact of demographic change (Mason 2001b). Specifically, what aspects of the region's development were influenced by demographic trends? What were the mechanisms through which population influenced the East Asian economies? What institutional, political, social and economic features conditioned the influence of population on development? The focus of the second volume is on population policy in East Asia (Mason 2001c). What policies and programmes were implemented and at what cost? What evidence is there that East Asia's population policies achieved their demographic goals? Were there features of these programmes that led to their success and may offer lessons for other countries?

The study concentrates on the experience between 1960 and 1990 of six East Asian economies: Japan, South Korea, Taiwan, Singapore, Thailand and Indonesia. These countries were selected for several reasons. First, they are the first group of developing countries to achieve low fertility; fertility low enough, except in Indonesia's case, to produce zero or negative population growth. Their transition from high to low fertility has been so compressed temporally that we actually have an historical record of the entire transition and accompanying economic changes. The demographic changes – the decline in fertility, the rise in life expectancy and the swings in age structure – have been so substantial that their developmental effects should be evident if population really does matter.

Second, the governments of East Asia changed course with respect to population policy early in the post-World War II era. They abandoned the view that a large and growing population was a source of national strength and embraced the view that population growth was a threat to development goals. Within a relatively brief period of time, pro-natalist policies were abandoned and, over time, a wide variety of anti-natalist programmes and policies were adopted. Governments engaged in educational programmes, increased the availability of contraceptive supplies and services, urged their citizens to adopt small family norms and relied on incentives and disincentives to encourage couples to bear fewer children. The countries examined in this study, however, did not resort to coercive programmes, such as India's short-lived compulsory sterilisation programme or China's one-child policy.

Third, the East Asian experience is instructive because the development policy environment was so outstanding. Many scholars have maintained that rapid population growth exacerbates the costs of poor economic policy. Less clear, however, has been the impact of population variables in an environment of outstanding policy formulation and implementation. Of course, the countries of East Asia have made mistakes, as recent events have so convincingly demonstrated, but few countries have matched their record over the post-World War II era.

Although the shared experience of the six economies motivates this study, their differences are also instructive. The economies span a wide range of development and demographic circumstances. Income levels in Japan and Singapore were substantially higher in 1960 than those in Thailand and Indonesia. Women in Japan were already bearing only two children each in 1960, whereas in Indonesia fertility decline did not begin until the late 1960s. The populations of Indonesia and Japan are among the largest in the world; Singapore's is among the smallest. Immigration was an important component of demographic change in Singapore, but not elsewhere. Regional variation in the populations and economies of Thailand and Indonesia are critical to an understanding of development in those countries, much more so than in Taiwan or South Korea. The countries of Northeast Asia were densely populated by 1960 and had limited natural resources. Thailand, on the other hand, was still bringing land under cultivation in 1960, while Indonesia's development during the 1970s was aided by vast petroleum reserves.

### **East Asia's success**

In the 1950s, the countries of East Asia were poor, and their prospects did not seem promising. By 1960, per capita income in Japan had not yet reached US\$3000; less than one-third of the US level. In the other countries, per capita GDP (gross domestic product) was even lower, ranging from as little as US\$600 in Indonesia to as much as US\$1700 in Singapore.<sup>2</sup> Histories of foreign domination, except in Japan and Thailand, had undermined the development of strong political and economic institutions. Much of the region's wealth and the institutions that did exist were destroyed by revolution and war – World War II, civil war in China and the Korean War. Efforts to rebuild physical infrastructure and industrialisation were hampered by very low saving and investment rates. The economies were overwhelmingly agricultural, and, especially in Northeast Asia, prospects for increasing food production or agricultural employment

appeared to be bleak because of the limited supply of agricultural land. With the exception of Indonesia's large petroleum reserves, the countries were poorly endowed in natural resources.

Accelerating rates of population growth were also a serious concern. Taiwan and South Korea both experienced large population inflows. More than a million Chinese nationalists fled to Taiwan from the mainland in 1949 and 1950. South Korea experienced two large-scale migrations: the first, a repatriation of Koreans after the defeat of Japan in World War II; the second, an influx from North Korea when China entered the Korean War. By the late 1950s and early 1960s, however, rapid population growth could be traced to declining death rates and high birth rates. Birth rates had declined in Japan, but elsewhere women were averaging about six births each over their reproductive span. Given mortality conditions earlier in the twentieth century, many children died during the first few years of life. But significant declines in infant and child mortality led to much larger families and more rapid population growth.

There were a few bright spots. Wealth and income inequality were relatively low in Northeast Asia. In part, this was a consequence of war-time destruction and, in part, the result of major land reform programmes in Taiwan and South Korea. The countries enjoyed relatively high levels of literacy and significant pools of educated manpower. Substantial levels of foreign assistance, especially from the US, helped with reconstruction efforts.

No-one anticipated the economic success that the countries of East Asia would enjoy over the coming decades. Economic growth was exceptionally high in Japan beginning in the 1950s; in South Korea, Taiwan, Singapore and Thailand beginning in the 1960s; and in Indonesia beginning in the 1970s. Between 1960 and 2000, real per capita GDP grew at an annual rate of 5.8% in South Korea, 4.5% in Thailand and 4.2% in Japan. In Singapore (for the 1960–1996 period), GDP growth was 6.6% per annum, and in Taiwan (for the 1960–1998 period), 6.5% per annum. In contrast, US growth averaged 2.5% per year between 1960 and 2000. Per capita income in South Korea increased from US\$1570 in 1960 to US\$15 880 in 2000. In Singapore, per capita income rose from US\$2280 in 1960 to US\$24 940 in 1996 (Summers et al 2002).

The rise in per capita income is just one of many features of the region's economic success. Despite the limited supply of agricultural land, food production grew rapidly, easily outstripping population growth. Growth in the industrial and service sectors provided employment opportunities

more than sufficient to match the rapidly growing working-age population and the increased entry of women into the workforce. Universal literacy and substantial improvements in educational attainment were achieved. Rates of saving and investment increased to high levels, and the more advanced economies became major lenders on international capital markets. The status of women improved, with substantial declines in the gender gap in educational attainment, employment and wages in many countries.

Demographic change in East Asia was as dramatic as economic change. Infant and child mortality rates dropped to low levels and life expectancy at birth approached and, in Japan, surpassed levels found in the West. The drop from high to low fertility came with remarkable speed. Of all the countries with high fertility in 1960, in only six were women averaging two or fewer births by 1990: Taiwan, South Korea, Thailand, Singapore, Hong Kong and China. Of 36 countries with a per capita income of less than US\$1000 and a population in excess of 2 million in 1960, only five had achieved a total fertility rate of 3 births or less per woman by 1990: China, South Korea, Thailand, Indonesia and Romania (Feeney and Mason 2001).

Changes in fertility and mortality influenced two other important demographic variables: population growth and population age structure. By the late 1990s, Japan's population growth had dropped to only 0.2% per annum. Population growth in South Korea, Taiwan and Thailand had declined to about 1% per annum. In Indonesia, where fertility declined somewhat later, population growth had dropped to 1.4% per annum by 1995–2000. Despite the shift to slower rates of growth, the countries of East Asia did not avoid overall large increases in their populations. Between 1950 and 2000, Japan's population increased by 50%, the populations of South Korea and Indonesia more than doubled and those of Taiwan, Singapore and Thailand more than tripled (United Nations 2003).

Why did populations increase so substantially despite the dramatic decline in childbearing? The phenomenon, called 'population momentum', occurs because rapidly growing populations have a characteristic age structure that favours population growth (Bongaarts 2001; Feeney and Mason 2001). At this stage of demographic transition, large percentages of these populations are young adults who are bearing children, and small percentages are at older ages where the risks of mortality are high. Such an age structure leads to elevated fertility, a depressed death rate and, consequently, more rapid population growth. Slowly the age structure evolves as a result of lower fertility and higher

life expectancy. The percentage in the childbearing years drops and the percentage at high mortality ages increases, leading to slower population growth. Eventually, population growth stops if women average about two births each during their lifetime – the so-called ‘replacement fertility’ level – or populations begin to decline if fertility remains below replacement level.

Japan’s population is expected to begin declining during this decade, but the other countries of East Asia should continue to experience moderate momentum-derived population growth for several more decades. Recent United Nations population projections anticipate that Thailand will continue to experience population growth until 2045 and that Indonesia’s population will still be growing in 2045–2050, the last period for which projections are available (United Nations 2003). Nonetheless, the era of rapid population growth has ended in East Asia, and the contributing populations are much smaller than would be the case had fertility remained at high levels or declined only gradually.

Changes in age structure in East Asia have been large and have occurred rapidly compared with other countries. Of particular importance to economic growth have been changes in size of the working-age population relative to dependent populations (those who are either too young or too old to work). Most East Asian countries have gone through the three ‘classic’ demographic transition phases. During the first phase, the dependent populations were growing relative to working-age populations because

declining infant and child mortality rates led to rapid growth in child populations. During the second phase, working-age populations were growing relative to dependent populations. The numbers of dependent children stabilised with lower birth rates, but working-age populations continued to grow rapidly with the entry of large cohorts of young workers. The second phase dominated changes in age structure in East Asia during the 1960–1990 period. During the third phase, growth of the working-age populations slows while older dependent populations continue to experience rapid growth. Consequently, the working-age populations (will) decline relative to the dependent populations. Japan has entered the third phase and the other East Asian countries will follow in the coming decades.

These three phases are captured by the economic support ratio, which measures the working population relative to the consuming population.<sup>3</sup> Figure 1 illustrates this index using the support ratio for Southeast Asia. The first phase, during which the support ratio deteriorated, is evident during the 1950s and the 1960s. The second phase began in the 1970s and is projected to last until the 2020s. During that period, the number of workers per consumer is expected to increase from 0.50 to 0.62, an increase of 24%. Starting in the 2020s, the support ratio is projected to begin a long and sustained descent. Two alternative representations of the support ratio are provided in the lower panel of Figure 1. The first gives the average annual rate of growth for each decade. The horizontal bar represents the three phases outlined above and reports the average rate of growth during each phase.

The varied patterns in the support ratio, and the distinctive features of the East Asian experience, are evident in Figure 2. In South Korea and Indonesia, the growth phase of the support ratio is expected to last for a further five decades and the annual rates of increase are substantial. Taiwan and Singapore experienced similar changes (figures are not shown). Changes in age structure in Thailand and the Philippines have also been favourable, but the increase in the support ratio has been somewhat smaller than in Indonesia or South Korea. Japan’s momentum-derived growth phase is now complete. In India, where fertility decline began later and has been slower than in East Asia, the growth phase in the support ratio is both short in duration and modest in level. In Bangladesh, where fertility decline has been more rapid in recent years, the trend in the support ratio is more favourable.

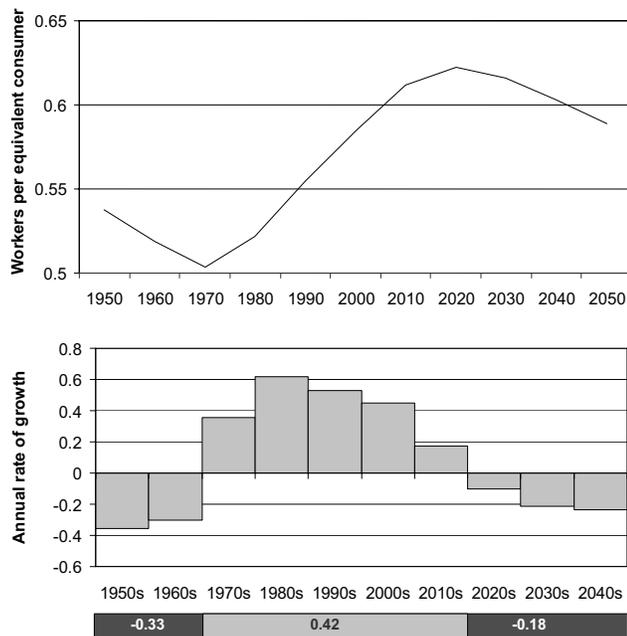
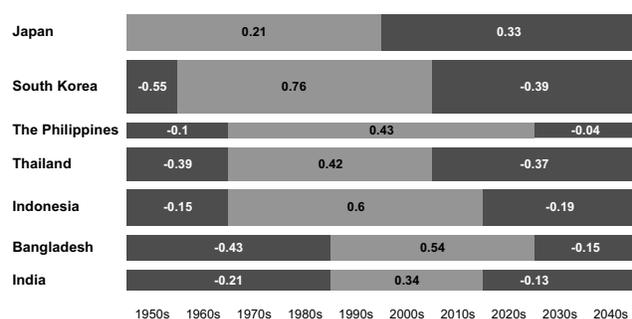


Figure 1 Economic support ratio, Southeast Asia.



**Figure 2** Growth rates (%) of economic support ratios, selected Asian countries.

## The challenges of population growth

In 1960, East Asian countries faced two challenges – feeding rapidly growing populations, and providing good jobs for rapidly growing and, except in Japan and Singapore, predominantly rural labour forces. Despite the speed of fertility decline, substantial population growth was unavoidable for the momentum-related reasons discussed above. Population policy, no matter how effective, could not achieve population stabilisation overnight. With one important exception, however, population growth did not impede East Asia's development efforts.

The food challenge was met with resounding success. Food output per capita increased by 36% in Asia and 47% in East Asia between 1963 and 1992 despite its limited

supply of agricultural land. During the same period, food production per capita increased by only 13% in Latin America and declined by 7% in Africa. East Asia succeeded by greatly increasing agricultural yields. Increased demand for food caused primarily by population growth, in conjunction with substantially lower fertiliser prices, led to the development and introduction of new high-yielding rice and wheat varieties (Hayami 2001).

The employment challenge was met more successfully in East Asia than in Southeast Asia. In Japan, Taiwan and South Korea, where the supply of land was especially limited, employment opportunities were created through changes in industrial and occupational structure. Despite growth in the total labour force, between 1960 and 1990 the agricultural labour force declined by 4% per year in Japan, by 2% per year in Taiwan, and by 1% per year in South Korea (Table 1). Expansion of the manufacturing and service sectors was so rapid that the limited availability of land had no bearing on employment.

Thailand and Indonesia responded somewhat differently to rapid labour force growth. In both countries, land under cultivation increased during this period. Thailand, in particular, managed to absorb substantial numbers of agricultural workers with no substantial decline in arable land per agricultural worker. Of the countries examined in this study, only Indonesia experienced a significant drop in arable land per agricultural worker. Non-agricultural

**Table 1** Summary of agricultural statistics: six East Asian countries, 1960–1990

	<i>Japan</i>	<i>South Korea</i>	<i>Taiwan<sup>a</sup></i>	<i>Singapore</i>	<i>Thailand</i>	<i>Indonesia</i>
Percentage of total labour force in agriculture						
1960	33.1	61.3	56.1	7.4	83.7	74.8
1990	7.3	18.1	12.6	0.4	64.1	55.2
Value added in agriculture (percentage of total GDP)						
1960	13.1	35.8	28.9	3.8	36.4	51.5
1990	2.5	8.7	4.1	0.3	12.5	19.4
Annual labour force growth, 1960–1990 (%)						
Combined	1.2	2.9	3.1	3.5	2.9	2.5
Agriculture	-3.9	-1.2	-1.9	-6.5	2.0	1.5
Non-agriculture	2.3	5.4	5.4	3.7	5.5	4.5
Annual growth in GDP per worker, 1960–1990 (%)						
Combined	4.9	5.0	5.7	4.8	4.5	3.4
Agriculture	4.5	4.4	4.1	5.9	1.8	1.2
Non-agriculture	4.2	3.7	4.4	4.6	2.9	3.2
Arable land per agricultural worker (hectares per worker)						
1970	0.47	0.38	0.54	0.18	0.88	0.61
1990	0.88	0.55	0.84	0.20	0.86	0.47

Source: Mason A. 2001. Population and economic growth in East Asia. In Mason A, ed. Population change and economic development in East Asia: challenges met, opportunities seized. Stanford, CA: Stanford Univ Pr. p 1–30. Copyright 2001: with kind permission of Stanford Univ Pr.

<sup>a</sup> Labour force statistics for Taiwan are based on employment rather than on the labour force.

employment also grew very rapidly in Thailand and Indonesia, but the manufacturing and service sectors were so small in 1960 that even their rapid growth was insufficient to absorb the large number of new workers. In both countries, labour productivity in the agricultural sector grew much more slowly than in the non-agricultural sector. Not only was this a drag on economic growth, but it was also a source of rising inequality.

In retrospect and in light of East Asia's effective policy response, fears about the development impact of population growth per se were probably exaggerated. Substantial population growth was accommodated in Northeast Asia with no apparent adverse economic effects and in Southeast Asia with only modest difficulties. Several points, however, should be born in mind. The first is that adverse effects of population growth may have been avoided, in part, because overall population growth did slow substantially during this period.

The second point is that the favourable outcome in East Asia was not automatic but a consequence of very effective development policy combined with a favourable international economic environment. East Asia's experience with agricultural innovation illustrates this point. Even before the mid-1960s, when population growth was substantial, the price of fertiliser had declined, high-yielding varieties were available for temperate zones and major advances were possible with relatively modest effort. Yet, gains in yield were unimpressive until after 1965 when a *social decision* was made to invest in research that would otherwise not have taken place. Moreover, as compared with other regions of the world, Asia had relatively well-developed transportation and irrigation systems that were essential elements of Asia's green revolution. Both research efforts and infrastructure systems require the existence of political institutions that can effectively identify and respond to public needs (Hayami 2001).

The third point is that rapid changes in childbearing, life expectancy and, consequently, age structure created opportunities for more rapid economic growth in East Asia even as population growth abated. The opportunities came in three forms: the emergence of a large gap between overall population growth and potential labour force growth; changes in incentives and age structure that favoured higher rates of saving and investment; and changes in incentives and age structure that favoured greater human resource investment. A major part of the East Asian success story is how the region responded to these development opportunities.

**Table 2** Population and labour force growth: average annual growth rates in major world regions, 1960–1990

Region	Rates of growth (%)	
	Population	Labour force
Africa	2.6	2.3
Latin America	2.3	2.7
Asia		
South Asia	2.6	2.5
High performers	1.9	2.7
Europe and North America	0.8	1.1

Source: Mason A. 2001. Population and economic growth in East Asia. In Mason A, ed. Population change and economic development in East Asia: challenges met, opportunities seized. Stanford, CA: Stanford Univ Pr. p 1–30. Copyright 2001: with kind permission of Stanford Univ Pr. NOTE: Values are unweighted averages of country values.

## Demographic change and development opportunities

Between 1960 and 1990, the gap between labour force growth and population growth was so large that the region's labour force increased by 25% more than the population, accelerating per capita income growth by about 0.8% per year (Table 2). Labour force growth slowed much more slowly than population growth because of favourable changes in age structure and because of increased female labour force participation. The greater involvement of women in the formal labour force can be traced to a complex set of changes: some demographic (later age at marriage and declining childrearing responsibilities); others economic (rising wages and changes in employment structure); and still others political (changes in tax codes and policies toward discrimination) (see Bauer 2001; Okunishi 2001).

Rising rates of saving and investment are often cited as one of the most important sources of East Asia economic growth (Bauer 2001). Why saving and investment rates increased so dramatically, and the influence of demographics on them, is a controversial issue examined thoroughly in a number of recent studies. Changes in age structure, childbearing and life expectancy have an effect on saving rates, but estimates of the size of the effect vary greatly from study to study (Table 3). Particularly large effects are found in three studies (Kelley and Schmidt 1996; Toh 2001; Williamson and Higgins 2001) based on the analysis of aggregate saving data. These authors found that changes in age structure over the demographic transition, using Taiwan's experience to facilitate comparison, led to a rise in the gross national saving rate by between 25 and 45 percentage points. Lee et al (2000, 2001a, 2001b) rely on a simulation approach and conclude that demographics could account for no more than an increase of 14.5 percentage

**Table 3** Predicted saving rates (%), 1960–1990, based on Taiwan's demographics: five alternative models

Model	Over demographic transition			Over 1960–1990 period		
	Min	Max	Change	1960	1990	Change
Williamson and Higgins (2001)	1.6	44.7	43.0	1.6	36.8	35.1
Kelley and Schmidt (1996)	8.3	33.4	25.1	9.9	30.9	21.0
Toh (2001)	8.7	53.7	45.0	9.1	46.2	37.1
Lee et al (2001b)	5.1	19.6	14.5	9.3	16.0	6.7
Deaton and Paxson (2000)	18.2	24.6	6.5	19.3	22.4	3.1

points. Deaton and Paxson (2000) analyse household saving rates for Taiwan and conclude that changes in age structure could account for an increase of 6.5 percentage points.

These estimates are difficult to compare given the different measures of saving on which they are based. In all cases, however, the estimated shifts in saving induced by demographics are economically significant. Thus, the

impact of demographic change is greater than suggested by the standard neoclassical model. A growth accounting exercise allows us to summarise. Employing a 'middle-of-the-road' estimate of the saving effects, available only for Taiwan, leads to the conclusion that higher rates of saving and investment *due to changing demographics* accounted for 18% of the increase in output per worker. When combined with the gap between population and labour force growth, it appears that demographics accounted for about 28% of the increase in output per capita between 1960 and 1990 in Taiwan (Table 4, last column). This compares with an estimate based on econometric evidence by Bloom and Williamson (1998) that changing demographics accounted for about one-third of East Asia's 'economic miracle'. The effects of demographics in Singapore and South Korea were probably similar in magnitude. In Japan, most of the increase in the support ratio occurred prior to 1965 and, hence, is not captured in the analysis summarised in Table 4.

Domestic demographic changes had smaller effects on the labour–population growth gap and saving and investment

**Table 4** Accounting for growth in output per capita: four Asian countries, 1965–1990

Factor	Japan	Taiwan	South Korea	Thailand	Taiwan with saving effects
<b>Growth of output per worker</b>	4.5	5.7	6.6	4.3	5.7
Contribution of specified factor					
Productivity	1.5	2.5	4.5	1.9	2.5
Investment	2.6	2.8	1.8	2.3	1.8
Investment (demographic)					0.9
Labour force growth	0.1	0.1	0.1	0.1	0.1
Interaction	0.3	0.3	0.3	0.1	0.3
Contribution of demographics	0.1	0.1	0.1	0.1	1.0
<b>Percentage contribution of specified factor to growth in output per worker</b>					
Productivity	33.8	44.4	67.4	43.1	44.4
Investment (non-demographic)	58.0	48.5	26.6	52.6	31.4
Combined demographic effects	2.2	2.5	1.3	1.3	18.2
Interaction	6.1	4.7	4.7	3.1	4.7
<b>Growth of output per capita</b>	4.7	6.9	7.7	4.8	6.3
Contribution of specified factor					
Output per worker	4.5	5.7	6.6	4.3	5.7
Support ratio	0.2	1.2	1.1	0.5	1.2
Contribution of demographics	0.3	1.3	1.2	0.5	1.8
<b>Percentage contribution to growth in output per capita</b>					
Productivity	32.1	36.8	58.0	38.8	39.8
Investment (non-demographic)	55.0	40.2	22.8	47.3	28.6
Combined demographic effects	7.1	19.2	15.1	11.2	27.7
Interaction	5.8	3.9	4.1	2.8	3.8

Source: Mason A. 2001. Population, capital, and labor. In Mason A, ed. Population change and economic development in East Asia: challenges met, opportunities seized. Stanford: Stanford Univ Pr. p 207–28. Copyright 2001: with kind permission of Stanford University Press.

NOTE: Values are based on an elasticity of output with respect to capital of 0.4. The contribution of demographics includes the combined impact of changes in labour force growth and changes in saving/investment induced by demographics in Taiwan. The interaction is not included.

rates in Thailand and Indonesia prior to 1990. The demographic transition occurred somewhat later there than in Singapore and Northeast Asia. In Taiwan, for example, demographics became favourable to saving around 1970, but fertility did not begin to decline until a decade later in Thailand and later still in Indonesia. The labour–population growth gap was smaller in Thailand and Indonesia. Moreover, they were less successful in translating rapid labour force growth into higher per capita income because, as explained above, they were less successful at absorbing their labour forces into higher-value-added non-agricultural sectors. Thailand and Indonesia did benefit from changes in demographic conditions in Japan, which became a major source of capital during the 1980s. Japan's enormous current account surplus can be traced, in part, to the effects of demographic conditions on the supply of savings and the demand for capital (Williamson and Higgins 2001).

Changing demographics in East Asia also had favourable effects on child health and education, but the resulting improvements in human resources exerted little influence on economic growth per se before 1990. Except in Japan, demographics began to have a favourable impact on human resource investment around 1970 or later. Given the inherent lags between investment in children and improvements in the characteristics of adults and workers, fertility decline could not have influenced labour force quality to any important extent until the 1980s or later. Human resource effects are important, but in the East Asian region they will be felt in the future more than they have been evidenced in the past. Of course, the improvements in child health and education contributed more immediately to welfare in ways not captured by conventional economic measures such as per capita income (Kelley 1996; Montgomery and Lloyd 1996; Ahlburg and Jensen 2001; Jensen and Ahlburg 2001).

As with the gains in agricultural productivity cited above, rapid growth in employment, increased rates of saving and investment, and greater investment in human resources were not inevitable consequences of East Asia's changing demographics. Rising unemployment was an alternative to rapid employment growth. A wide range of successful development policies created rapid expansion in job opportunities. These included: outward-looking strategies that encouraged domestic enterprises to compete in the global market place; stable macroeconomic policies that ensured low rates of inflation, discouraged capital flight and promoted economic efficiency; and the use of financial incentives, subsidies and access to credit to promote the growth of key industries. In similar ways, increased

investment in human and physical capital was not an automatic outcome of demographic change but depended, as well, on policies that promoted saving and increased spending on education (World Bank 1993).

## Population policies and programmes

The countries of East Asia were pro-natalist in their views and policies until the second half of the twentieth century. Japan's Meiji government prohibited not just infanticide and abortion, but also the manufacture and distribution of contraceptive devices because it viewed a large population as important to its military and economic power (Inoue 2001). Sun Yat-Sen, the founder of the Republic of China, believed that slower population growth would undermine his nation's power (Liu 2001). Thailand's government was providing bonuses for large families as late as 1956 (Gullaprawit 2001). In Indonesia, President Soekarno was unconcerned about rapid population growth, and family planning efforts were unpopular with community and religious leaders (Pasay and Wongkaren 2001).

In the late 1950s and early 1960s, however, positive views toward larger populations began to give way to concern about the adverse consequences of rapid population growth. Despite opposition from some political groups, governments cautiously initiated efforts to slow rates of growth. They began to dismantle legal obstacles to fertility reduction. Japan led this trend by legalising, in 1947, the manufacture and distribution of most contraceptive drugs and devices by private companies. (It legalised oral contraceptives only recently however.) In 1948, it essentially legalised abortion – allowing it if a pregnancy threatened a woman's physical or economic wellbeing (Inoue 2001). In 1961, South Korea set aside its law prohibiting the importation or production of contraceptives. In the 1960s, the Indonesian Ministry of Health ended its prohibition against the distribution of contraceptives. Governments also joined efforts by non-governmental family planning organisations that had recently been established in the region. Private organisations such as the Population and Community Development Association of Thailand, and the Indonesian Planned Parenthood Foundation and the Planned Parenthood Federation of Korea played a particularly important role during this transitional period.

With varying speed, governments in East Asia became increasingly involved in population policies and programmes. Key political and religious groups were

persuaded of the importance to development of slowing population growth. The governments adopted national development plans with specific population growth-reduction targets. They initiated public campaigns to persuade couples of the importance of bearing fewer children. They attacked ignorance about modern contraceptive methods through education efforts both in the communities and in schools. Family planning clinics and distribution systems, many of them heavily subsidised, were established to increase the availability of contraceptive supplies and services.

The earliest efforts focused on education, persuasion and increased access to modern contraceptives. Beginning in the 1970s, however, some governments implemented 'beyond family planning' policies. Singapore adopted a comprehensive set of incentives and disincentives (Yap 2001), and similar efforts were pursued elsewhere in the region. Many of these efforts relied on financial incentives, but other initiatives were designed to attack some of the social underpinnings of high fertility. In South Korea, for example, legislative action addressed gender bias in the hope that reducing couples' preference for sons would lead to lower birth rates (Kwon 2001). In the countries examined in this study, however, population measures stopped well short of coercive programmes, such as India's ill-fated sterilisation campaigns and China's one-child policy.

What led countries in developing Asia to respond so quickly and decisively to curb rapid population growth? And why was the response so much faster than in other developing regions? Part of the answer lies in changing demographic conditions. Asia was the most densely populated region of the world, and population growth rates were accelerating in the 1950s and 1960s. The view that a large population would contribute to the strength of a nation then began to give way. Political and intellectual leaders were influenced in part by views in the West. Western academics involved in reconstruction efforts in Taiwan, South Korea and Japan expressed concern about rapid population growth. Family planning activist Margaret Sanger, for example, was a frequent and influential visitor to Japan. However, governments and scholars in East Asia also conducted their own assessments, and many concluded that continued rapid growth represented a serious impediment to development objectives (Gullaprawit 2001; Liu 2001; Yap 2001).

Several other factors contributed to Asia's rapid and vigorous policy response. First, few Asian governments faced active opposition from powerful religious groups, in

contrast with, for example, Latin America. In the Philippines, the Catholic Church, and in Pakistan, Islamic leaders, have wielded considerable influence in opposition to contraception. In most East Asian countries, however, religious opposition to family planning was either nonexistent or muted. Even in Indonesia, the largest Islamic nation in the world, religious leaders did not actively oppose President Soeharto's decision to promote family planning efforts.

Second, Asian countries experienced more political stability than most of Latin America and Africa. Consequently, their governments could realistically pursue longer-term goals. In South Korea, President Park Jung-Hee remained in power for 18 years after announcing his support for slowing population growth. In Taiwan, President Chiang Kai-Shek held office from 1950 to 1975. Lee Kuan Yew served as Singapore's Prime Minister from 1959 until 1990. Thus, prior to its recent financial and political crisis, Indonesia had known only two heads of state: Soekarno, who governed from 1945 to 1966; and Soeharto, who maintained his hold on power for more than three decades. Among the six countries in the study, only Thailand experienced repeated changes in governments, but even there the monarchy provided continuity and a stabilising influence. Its political transitions were often relatively peaceful and unaccompanied by wrenching changes in direction. Although strong political leadership in the region allowed a rapid shift in population policy, it by no means guaranteed that outcome. The particular policies pursued depended on the views of the leadership. A shift in policy was possible in Indonesia, for example, only with Soekarno's departure (Pasay and Wongkaren 2001).

Third, many Asian governments were inclined toward activism. Governments in India, Sri Lanka, the Communist regimes and other Asian countries took it upon themselves to direct many details of their economies and social affairs. The study countries of East Asia avoided the disastrous consequences of command economies, but their governments were much more actively involved in directing their economies than were governments in the West. They were much more active in dealing with social issues as well.

East Asia's family planning programmes were possibly the best run of any in the world. In a short period of time, they greatly expanded the supply of modern contraceptive services at relatively modest cost. Programmes in Taiwan, South Korea and Thailand have served as models for other countries. Tsui (2001) attributes their success to four factors. First, despite the governments' primary objective of curbing

rapid population growth, their programmes and policies emphasised family planning and health objectives. Second, religious and other politically powerful groups did not mount strong opposition to the programmes. Third, the governments maintained a significant and sustained effort, which included significant financial support. Finally, the governments willingly and successfully worked with non-governmental entities.

Despite their success at meeting programmatic goals, it is difficult to assess the effects of population programmes and policies on demographic outcomes; that is, to determine how rapidly fertility would have declined in the absence of government action. The East Asian countries with rapid fertility decline were all experiencing rapid social and economic development. Reductions in child mortality, increased female employment, higher wages, greater educational opportunities for women and a host of other development factors contributed to changing attitudes towards childbearing. Fertility preferences may have changed more rapidly because of government initiatives, but assessing whether this was so is not easy. Likewise, it is difficult to determine how much more rapidly effective, safe and inexpensive birth control became accessible because of government programmes. In an analysis of the determinants of fertility decline, Tsui (2001) estimates the contribution of family planning and development factors. She concludes that the total fertility rate in other countries of the developing world would have been lower by one birth per woman from 1982 onward had they implemented family planning programmes similar to those in the countries of East Asia. In another recent study of Indonesia, however, Molyneaux and Gertler (2000) conclude that family planning efforts had a more modest effect.

The success of population policies in East Asia came at a cost. Experts provide differing views on the importance of external funding. Liu (2001) believes that external support played a critical role in Taiwan because the controversial nature of family planning programmes, not the cost, made it difficult to mobilise domestic resources. Public financing of family planning did not begin there until 1968. Kwon (2001) believes that external support was critical to South Korea's efforts because of financial constraints. Of course, South Korea was a good deal poorer in 1961 than was Taiwan in 1968.

As the countries of East Asia have developed, reliance on external resources has declined, and family planning programmes have increasingly been financed by East Asian

governments and users. The best available information suggests that annual per capita funding of family planning was approximately US 20 cents or less in the mid-1970s and rose to around US\$1.00 by the early 1990s. In Singapore and South Korea, public spending peaked during the 1980s and has declined substantially in recent years as more and more couples have turned to private family planning sources (Tsui 2001). At no time have family planning expenditures been a large portion of government budgets. In Thailand, for example, the peak demand on public coffers occurred in 1977, when 0.38% of total government expenditures went to family planning (Gullaprawit 2001, Table 6.6). In Indonesia, family planning expenditure reached 0.6% of the government's budget in 1986/1987 (Pasay and Wongkaren 2001, Table 7.8). Clearly, funding population programmes was not a major financial burden for the countries of East Asia.

## Conclusions

In 1960, the countries of East Asia faced difficult problems. In the view of many at the time, rapid population growth was one of the most serious of those problems. Over the decades that followed, these countries were extraordinarily successful in reducing fertility and slowing population growth, overcoming potential problems associated with the significant population growth that did occur and turning changes in age structure and other demographic characteristics to their economic advantage. How this was accomplished is an important story because of its potential value to other developing countries confronting similar development issues.

Among the most important lessons that the East Asian experience offers are the following: first, given the right conditions, fertility will decline to low levels with remarkable speed. Within a period of two to three decades, the total fertility rate of East Asia dropped from six births per woman to two births per woman or less. For the most part, coercion did not play a systematic or important role. Second, there are different paths to low fertility. In Japan and other more industrialised countries, social and economic development drove fertility to low levels. Governments played a secondary role by either impeding or facilitating the availability of contraceptive technology. But in East Asia's developing countries, rapid fertility decline occurred, in part, as a consequence of the region's rapid social and economic development and, in part, because effective and comprehensive public programmes encouraged couples to

reduce their childbearing and provided them with effective and low-cost means to regulate their fertility.

Third, the developmental impact of population change is complex and multi-faceted. During East Asia's unusually rapid demographic transition, countries were experiencing large changes in birth and death rates, population size and growth rates, and age structure. These interrelated demographic changes influenced the relative sizes of the dependent and working-age populations, the economic roles of women, incentives for saving and investment, decision making about investing in the health and education of children, various dimensions of income inequality, international capital flows etc. In East Asia, rapid demographic transition had a substantial, favourable development impact.

Fourth, the development benefits of fertility decline and demographic transition are not automatic. Favourable outcomes depended to a great extent on the effective development policies that characterised the region. The gap between labour force and population growth was advantageous only because effective export promotion provided gainful employment to a rapidly growing labour force. Demographic change led to high saving rates because macroeconomic stability and the development of financial institutions encouraged saving and because governments avoided large-scale transfer programmes that might have undermined saving incentives. Changes in the population age structure led to greater spending on education because both public policy and parents attached a high priority to education. Changes in the childbearing responsibilities of women had a favourable economic effect because governments eliminated laws and administrative policies that discriminated against women. In short, rapid demographic change was a necessary but by no means sufficient condition for rapid economic growth. Demographic changes created development opportunities that East Asian countries seized by pursuing economic and social policies that supported development efforts.

That population policies and programmes were a success in East Asia is an inescapable conclusion. Commitments to reducing rates of childbearing and slowing population growth rates were followed by unprecedented declines in fertility. Rapid social and economic development drove the region's demographic transformation, but government action accelerated population change and economic development.

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## Notes

- <sup>1</sup> Throughout this paper we use the term East Asia to refer to countries in both Northeast and Southeast Asia.
- <sup>2</sup> All GDP figures in this chapter are expressed in 1985 international prices and taken from the Penn World Tables (Summers et al 2002).
- <sup>3</sup> The support ratio can be refined to incorporate age variation in productivity and consumption needs. In this case, the numerator weights the population in each age by the average productivity of workers in that age group, usually measured using the age-earnings profile. The denominator allows for age variation in consumption needs by using weights that are typically lower for children and may be lower or higher for the elderly than for prime age adults. Lee et al (2001b) provide detailed calculations for Taiwan. The results presented here use a consumer weight of 0.5 for children aged 0–14 and a weight of one for all other ages.

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