**POPULATION AND INEQUALITY
IN EAST ASIA**
by

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One of the most important lessons of the East Asian development experience is that "growth with equity" is an achievable objective. In a recent study, *The East Asian Miracle*, the World Bank notes that the successful Asian economies are "unique in that they combine . . . rapid, sustained growth with highly equal income distributions" (World Bank 1993, 8). Their experience thus appears to repudiate the view that the region's development policy overemphasized economic growth at the expense of broader social welfare concerns. Moreover, their experience establishes the existence of a development path that is much preferred to the well-known Kuznets curve, which posits an initial rise in income inequality that is followed by a decline (Kuznets, Moore, and Spengler 1955).

In this chapter we examine trends and differences in income inequality in the high performing countries of East Asia and identify important factors that influenced inequality. We begin with a brief discussion of early thinking about the determinants of income inequality and some of the practical difficulties encountered in measuring income inequality. We then turn to a closer examination of the East Asian experience. As a group, the countries of East Asia have lower income inequality than the countries of Latin America or Africa. Within the region, however, there is wide variation. In Northeast Asia income inequality is very low; whereas in Southeast Asia the level is similar to that found in Latin America and Africa. Moreover, the trends in inequality differ greatly from one country to another. Even the most cursory inspection of the data suggests that income inequality is governed by exceedingly complex forces that differ greatly from country to country. Simple generalizations about the connection between inequality and economic growth or inequality and the demographic transition are elusive. Development policies, economic structure, politics, culture, and agricultural conditions all play a role.

The classical economists laid some of the important groundwork for current thinking about income inequality. They did not explicitly consider income inequality, but their ideas about how preindustrial development affected factor shares—that is, profits, rents, and wages—influenced later studies. Population growth caused the demand for food to rise, raising agricultural prices, and the supply of labor to increase, depressing wages. Hence, rents rose in relation to profits and wages. The effect of these changes on inequality depended on how widely land was held. If land was concentrated among an elite, landlord class, population growth led to increased inequality.

The role of technology is prominent in the writings of Karl Marx, who lived during the emergence of steam-driven technologies that revolutionized industry. Marx argued that machines displaced workers, depressing wages and increasing unemployment, and that rising profits and lower wages led to greater inequality, given the concentration of capital in the hands of an elite, capitalist class.

Arthur Lewis's (1954) model of economic growth addressed inequality in modern developing countries. According to this model, at low levels of development the rural, agricultural sector provides a virtually unlimited supply of workers, ensuring that wages remain low and profits from manufacturing enterprises rise as the industrial sector develops. Again, with concentrated ownership of industrial enterprises, development is accompanied by increased inequality. Under these circumstances, population growth contributes to increasing inequality by depressing wages.

The central role of population growth in the determination of income distribution persists in the neoclassical model of economic growth. This model posits that more rapid population growth leads to lower capital per worker, higher returns to capital, and lower wages. Again, if the ownership of capital is more heavily concentrated than labor resources, income inequality will rise.

In each of these models, population growth, technology, or investment influences income inequality by affecting factor prices. The effect of a decline in wages, relative to rents or profits, on inequality depends on the extent to which those in the lowest income classes depend on wages for their income. In much of East Asia in the late 1950s and early 1960s, ownership of agricultural land was not heavily concentrated, so that a decline in rents might have led to either a decline or a rise in inequality. As Kuznets points out with respect to the United States (Kuznets 1966), many low-income families are pensioners who would be adversely affected by a decline in profits or interest rates relative to wages.

As stated at the outset of this chapter, Kuznets hypothesized that economic development led at first to a rise in income inequality and later to a decline. The rise in the early phase was due to rapid growth in the nonagricultural sector, which contributed to inequality in two ways. First, because wages were higher in the nonagricultural sector than in the agricultural sector, growth in the nonagricultural sector caused inequality to rise as long as most workers were employed in agriculture. Second, because wage inequality was greater in the nonagricultural sector, growth in that sector led to increased inequality. Underlying the "Kuznets curve" was the uneven effect of technological innovation, which initially led to huge productivity gains in manufacturing and transportation but largely by-passed agriculture.

Kuznets attributed the subsequent reduction in inequality to a decline in the gap in output per worker between the agricultural and the nonagricultural sectors; to a shrinking entrepreneurial class; to the increased number of white-collar workers relative to blue-collar workers; to a decline in the size of the agricultural sector and property income; and to an increase in policies favoring public welfare. Underlying these changes was the emergence of electric-powered technologies whose cheapness, efficiency, and flexibility succeeded in mechanizing most industries, farms, and services. The application of technology to agriculture reduced the wage gap between the agricultural and nonagricultural sectors and accelerated the shift of the labor force out of agriculture.[1] Mechanization also accelerated the decline in the entrepreneurial class and reduced the number of workers in handicrafts. As entrepreneurs were converted into employees, the share of wages and salaries rose even more than the share of profits (Kuznets 1966).

Recent studies of the influence of population on inequality examine three broad sets of issues. The first, emphasized above, is that population influences the factor distribution of income and, hence, income inequality. The second line of research emphasizes the composition of the population or households. Changes in family size, living arrangements, and age structure that accompany the demographic transition may lead to important changes in inequality. The number of workers per household also changes because of the rise of female labor force participation that accompanies reduced childbearing. A third line of research considers the intergenerational transmission of inequality (e.g., Lam 1997**[b]**). Work in this area is not yet sufficiently advanced to support firm conclusions about East Asia's experience

Some Pitfalls in Measuring Inequality

Studies of income distribution must deal with many practical and conceptual difficulties. A pervasive problem is the limited availability and poor quality of income data. As compared with most developing areas, Asian survey data are plentiful and high in quality. Most East Asian countries conduct income surveys every few years, and several conduct annual surveys. The high levels of literacy in the region contribute to the quality of collected data. Despite these advantages, data problems are still substantial. Income data have been available only since the 1960s, and collection efforts were much more sporadic in the 1960s and early 1970s than recently. Literacy was a more serious problem in early surveys. Illiterate families are unable to record their incomes and expenditures; interviewers must therefore rely on recall methods that are subject to serious errors. Adequately measuring income is particularly difficult when substantial sectors of the economy are nonmonetized, as would have been the case in the 1960s and, in some countries, the 1970s. Modern surveys have their own difficulties. Conducting a representative survey has become increasingly difficult in some countries because many high-income individuals decline to be interviewed or understate their income. The poorest members of a society are often underrepresented in surveys. Because of these

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[1] For details of developments in the nineteenth century, see Couzet **[Crouzet, as in the reference?]** (1982); and

for details of twentieth-century developments, see Divine (1982) **[1983, as in the reference?]**. Oshima (1984)

provides further elaboration.

problems, inequality is probably underestimated in all surveys, and more so in some countries (e.g., Indonesia) than in the others.

      The data used in this chapter to summarize the trends in inequality are drawn from several sources. We rely on country studies written by specialists for a volume on income distribution in 14 Asian countries. (See the sources cited in Appendix Table A5.1.) Although these data have some of the problems just mentioned, we believe they provide the best available estimates. For some purposes we rely on the international data base described by Deininger and Squire (1996).

      These studies and most others rely on the Gini ratio to summarize the degree of income inequality. To calculate the Gini ratio, the share of total income earned by households is cumulated from the lowest to the highest shares and plotted as in Figure 5.1 to form the Lorenz curve. The Gini ratio is calculated as the area between the Lorenz curve and the diagonal (A) divided by the total area under the diagonal (A + B), or A/(A + B). Were income the same for all members of a population, the Lorenz curve would lie along the diagonal and the Gini ratio would be 0. At the other extreme, if one individual earned all the income of a population, the Lorenz curve would lie along the horizontal axis and then would jump to 1 for the final value. In this instance the Gini ratio would be 1. Although in principle the Gini ratio ranges from 0 to 1, in practice countries with relatively equal income distributions have Gini ratios near 0.3, whereas those with unequal distributions have Gini ratios of 0.5 or somewhat higher.

[Figure 5.1 about here]

      Various other measures are also used to summarize inequality. The variance in the log of income is often used in analyses of the sources of income inequality because changes in the variance can be decomposed into constituent parts. We will make use of this property in our discussion of the relationship between demographic factors and income inequality.

      Most studies use current household income to measure inequality, but for several important reasons current household income may be a poor way to compare welfare or living standards among individuals or households. The use of the household as the unit of analysis is necessitated by practical as well as conceptual considerations. Although wages and salaries can be assigned to individuals, property income, interest income, and proprietor's income cannot except in a relatively arbitrary fashion. Given the importance of family enterprises in many developing countries, inequality measures based on the incomes of individuals may be seriously flawed. Consequently, economists typically use the household as the unit of analysis. Although doing so circumvents the practical problems of measuring income, it also ignores consideration of the distribution of income within households. If the strong gender stratification and primogeniture characteristic of East Asia, especially Northeast Asia, produce inequality within households, standard approaches may understate East Asian inequality more so than in other regions.

      A second important issue is how to compare incomes among households with different compositions. The standard approach, one suggested by Kuznets (1976), is to use per capita household income rather than household income. A simple refinement, recognizing that "consumption needs" vary systematically depending on the characteristics of family members, uses income per equivalent adult. Either of these approaches requires data that are not usually published. Consequently, trends in inequality based on per capita income measures are infrequently available. Given the great changes in household composition in East Asia, this is a serious drawback for any assessment of the impact of population change on inequality.

      A third issue is the use of current income to compare households. Current income may be a poor measure of welfare because it neglects the capacity of families to smooth consumption over the life cycle by accumulating and spending wealth. Thus, the income of the young or, especially, retirees may greatly understate their living standards when compared with that of prime-age workers. This issue has particular relevance to analyses of the effect of changes in age composition on income equality and has led some (e.g., Lam 1997b) to argue that changes in inequality that result from changes in the age composition of the population have no welfare implications. The use of lifetime income as a measure of inequality would also naturally incorporate considerations of the length of life into inequality measures. This is a topic that is usually ignored but one that we shall discuss briefly below.

      A fourth, pervasive issue is that of choice. Household income often reflects decisions made by household members that involve tradeoffs between income and unmeasured sources of welfare. A simple

example is the tradeoff between leisure and labor. Individuals with a strong taste for leisure choose to work fewer hours and earn less income than their counterparts, but in no meaningful sense can we say that they have lower welfare than those who choose to work more hours and earn higher incomes. Other decisions have potentially important implications for income distribution, including the labor force participation decisions by women, fertility decision-making, and living arrangements.

All of these difficulties should be kept in mind as we examine inequality in East Asia and assess the effects of demographic factors on it.

An Overview of East Asian Inequality

"Growth with equity" is a label often used to characterize East Asia's economic record between 1960 and 1990. As with any generalization, however, broad characterizations of East Asian inequality can be misleading. The East Asian economies as a group had a more equal income distribution circa 1990 than the developing countries of Latin America or Africa (Table 5.1). However, income inequality was greater in East Asia (Japan excluded) than in South Asia or the OECD countries.

[Table 5.1 about here]

The level of inequality in individual East Asian countries is quite varied. In Northeast Asia, Japan, Taiwan, and South Korea had levels of inequality comparable to those of OECD countries. The extent of inequality in South Korea is a subject of some dispute, as we shall discuss momentarily. The Southeast Asian countries of Hong Kong, Malaysia, and Thailand had Gini ratios that were much closer to those found in Africa or Latin America. Indonesia's Gini ratio was also quite low, but the calculations for Indonesia are based on expenditure rather than income and consequently understate the degree of income inequality.

The clear demarcation between Northeast and Southeast Asia has been a persistent phenomenon. Figure 5.2, showing the trends in inequality for the eight high-performing economies of East Asia, plots the Gini ratio against the natural log of per capita income.[2] Gini ratios in the Southeast Asian countries of Hong Kong, Malaysia, and Thailand were greater in all the years charted, irrespective of the level of income, than were the Gini ratios among the countries of Northeast Asia. Singapore generally falls between the two groups. Thus, it is the countries of Northeast Asia that have been especially successful at achieving rapid economic growth while maintaining a low degree of income inequality.

[Figure 5.2 about here]

Figure 5.2 provides scant evidence of a Kuznets curve. Indeed, there appears to be no relationship at all between inequality and the level of development. Inequality does not seem to be increasing with income at low income levels. Nor does it seem to be declining with income at higher income levels. Only in Thailand does there appear to be any strong correlation between inequality and development.

We can suggest several reasons why the simple relationship between inequality and development postulated by Kuznets may not be apparent in the East Asian experience. The Kuznets curve is intended as a long-term characterization, whereas Figure 5.2 covers only two to three decades. Limited information on income inequality is available earlier for Japan and Taiwan, but individual countries cannot be followed over the entire development process. However, the eight countries cover such a wide development range that, taken as a group, we might reasonably expect them to capture a portion of the development experience sufficient to reveal the Kuznets curve. Japan's income in the last year observed exceeds Indonesia's first observation by more than twentyfold. Differences in economic structure and other idiosyncratic features of individual countries described above may have masked the long-term relationship. Some of the important changes in income distribution are clearly the consequence of short-run phenomena—random, episodic events such oil shocks, weather variations, exchange rate movements, and commodity price fluctuations.

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[2] Per capita income data are based on Penn World Tables **[Table (singular), as in the reference?]** (Summers and Heston 1991). Appendix Table A5.1 reports detailed Gini ratios and sources.

Inequality reflects the influences of demographic change and other long-run trends, the timing of which has varied from country to country. Countries have employed different development strategies and adopted different income-distribution policies that clearly had important effects on inequality. Finally, some unknown portion of the differences and changes shown in Figure 5.2 reflect differences in data-collection procedures and measurement error.

Both the interregional differences and the intercountry differences in inequality reflect differences in culture, history, and economic structure. Huge *haciendas* dominate the plains of many Latin American countries, generating large incomes for the owners while employing large number of low-paid laborers. In the hills, indigenous peasants live at near-subsistence levels, tilling small patches of land. Latin American countries have relatively large urban sectors dominated by large-scale, capital-intensive enterprise. The situation is quite different in densely populated monsoon Asia. Most farms there are small, averaging about two hectares as compared with 200 hectares in Latin America. Numerous small and medium-size industries and services are prevalent throughout most of monsoon Asia.

A variety of factors accounts for the different patterns of development. In the densely packed lowlands of Asia, villages were large groupings of farm families that could support small workshops and stores. Off-farm jobs in the factories, shops, and stores of nearby towns were sources of wages to supplement the incomes earned on the farms, thus reducing inequality between the rural and urban sectors. In Latin America farmers could travel on horses to far-away towns to market their wares and purchase supplies; but in land-scarce Asia, horses were too expensive to raise (Oshima 1993).

Important structural, historical, and cultural differences also account for differences between Northeast and Southeast Asia. Japan, Taiwan, and South Korea are characterized by a large middle class and an agricultural sector dominated by small-scale holdings, in large part due to land reform in the aftermath of World War II. Their populations tend to be homogeneous, in large part because these countries have been relatively closed to immigration (see Chapter 10, by Philip Martin, in this volume). Ethnic and racial income differentials therefore have had little bearing on the overall degree of inequality. Likewise, regional disparities are relatively unimportant in these countries. Compared with most of Latin America, they are small and compact, and their excellent transportation and communication infrastructures have facilitated economic integration.

The city-states of Hong Kong and Singapore have higher levels of inequality, in part because they do not have any sizable agricultural sectors, which tend to be homogeneous under Asian monsoon conditions. The diversities between and within the branches of the industrial and service sectors tend to generate higher levels of inequality than exist in agriculture. Incomes in the services are much lower in retail, restaurants, and personal services than in banking, real estate, and insurance. Within industries, the disparity in incomes is high between laborers on the one hand and executives, managers, and professionals on the other. Moreover, the nonagricultural sector contains a large number of proprietors whose incomes vary more than those of farmers and tenant farmers. They range from very rich entrepreneurs in manufacturing, real estate, commerce, and finance to very poor street vendors, stall-keeper hawkers, and family craft shops.

The high degrees of inequality in Malaysia and Thailand are due in part to greater heterogeneity of agriculture there than in Northeast Asia. Malaysian agriculture is dominated, on the one hand, by huge rubber and palm-oil plantations that employ large groups of low-paid laborers and small groups of highly paid managers and other white-collar staff, and, on the other hand, by small (two-hectare) rice farms that found in the northern and coastal regions. In between are holders of modest-size farms that grow rubber and palm oil. In Thailand inequality reflects important regional differences in the pace of development during recent years. In the southern region are plantations, in the northern regions are poor peasants, and in the irrigated central region are large, prosperous rice farms.

Urban inequality in Malaysia and Thailand is as pronounced as in the city-states, and for a similar reason—the heterogeneity of industry and services—but traditional types of industry and service enterprises are of much greater importance there than in the city-states. There is a greater range of income between rich industrial and mercantile proprietors and small handicraft proprietors, stall-keepers, sidewalk vendors, and so on. Incomes within the modern industries and commerce of Bangkok are much higher than in other Thai

cities and towns, where crafts and small shops predominate. In urban Malaysia the income differences between ethnic groups are wide, with the Chinese at the top, the Indians in the middle, and the Malays at the bottom.

A comparison of South Korea with Taiwan illustrates the importance of development strategy. Income inequality in South Korea and Taiwan were at similar levels in the 1960s. The two countries diverged sharply in the early 1970s, when per capita income passed the US$2,000 mark. The Gini ratio rose substantially in South Korea and dropped in Taiwan.[3] Neither the level of per capita income nor demographic trends account for this difference. Taiwan and South Korea have similar demographic features, particularly their trends in age structure, fertility, mortality, family size, and the number of workers per household. If demographic factors had had an influence on income inequality, they would have affected both countries in the same way.

The divergence between South Korea and Taiwan can be explained by differences in their development policies. In the 1970s and 1980s South Korea veered away from agricultural development and labor-intensive industries in favor of heavy and chemical industries. Its import-substitution policies favored capital-intensive industries and large conglomerates, which received liberal government credit, subsidies, and tariff protection. Agriculture was neglected and grew slowly, average incomes lagging behind nonagricultural incomes (Choo 1975). Between 1975 and 1985 the index of production for capital-intensive basic metals (e.g., steel and machinery) increased 5.5 times, as compared with a 3.5-fold increase in all industrial production. Light industry and agriculture were squeezed in several ways, including the use of favorable credit terms for 50 or so large *chaebols*, or conglomerates (Jones and Sakong 1980).

In Taiwan, on the other hand, development did not favor large-scale, capital-intensive industry over agriculture and small-scale, labor-intensive, light industry. With the rapid growth of industries, the cities became fully employed and firms were forced to seek labor in rural areas. Nonagricultural employment and wages rose rapidly in the countryside and productivity increased in all sectors of the economy. These changes favored equality. The importance of nonagricultural income rose rapidly for farm families, in contrast to the situation in South Korea (Mizoguchi and Terasaki 1992). Smaller farms, with their surplus labor, benefited most from nonagricultural work, which reduced inequality within farm families and lessened the gap between average farm-family and nonfarm-family incomes (Oshima 1993, footnote 27).

The rise in inequality that has accompanied economic growth in Thailand can be traced to some of the important forces that Kuznets identified in his characterization of development and inequality. Regional variation in income is greater in Thailand than in any other country of East Asia. In 1990 gross regional product per capita in Bangkok was almost 10 times that of the Northeast. Regional income disparities in Thailand reflect, in part, historical factors. Thailand was never occupied by foreign powers who might have developed transportation systems. Residents of the North and Central regions can reach Bangkok only by way of the Chao Phraya River and its tributaries. Only the transport system near Bangkok is well developed. Foreign investment has been heavily concentrated in Bangkok and neighboring areas, causing income to grow much more rapidly there than in the North or Northeast.

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[3] The trend in inequality in the 1980s is the subject of disagreement. The estimates reported here based on the work of Ahn (n.d.), which reports increasing inequality during the 1980s. The estimates included in Deininger and Squire (1996), which are based on government estimates and work by Choo (1995), indicate declining inequality during the 1980s. Using either set of estimates, however, we find that South Korean inequality remains above that of Taiwan.

Several other aspects of Thai development have contributed to the rise of inequality. Foreign investment in the 1990s was concentrated in industries with relatively high technology such as electrical appliances, computer parts, and automobiles. When superimposed on existing low-paying textile, food, shoe, toy, and garment industries, a dualistic industrial structure characterized by large wage differentials resulted (ADB 1995, fn 52). Compared with workers in other East Asian countries, Thailand's work force has low educational attainment. Shortages of well-educated workers and plentiful supplies of less-educated workers have contributed to rising wage differentials.

Population and Inequality

The demographic transition is characterized by declining rates of mortality and childbearing that affect population growth, age structure, living arrangements, and the roles of women. In Chapter 3, Griffith Feeney and Andrew Mason provide a detailed accounting of those changes in the six successful Asian economies that are the focus of this volume. Those changes in turn have influenced income inequality in various ways. The most important changes have been the mortality decline, reduced levels of childbearing, lower rates of population growth, and shifts in economic activity among women. Other demographic changes have been more modest and have probably not had a great influence on income inequality. Several key points bear on our assessment of the connection between trends in inequality and demographic change.

First, average household size dropped precipitously in East Asia as a consequence of reduced rates of childbearing. In every country but Indonesia, the average household in 1990 had at least one less member in 1990 than in the 1960s (Table 5.2). In Singapore, Thailand, and Indonesia, a drop in the number of children aged 0–14 accounted for virtually the entire decline in household size. In Japan, South Korea, and Taiwan, the number of working-age adults (ages 15–64) also dropped, primarily because of reduced numbers in the 15–24 age group.

[Table 5.2 about here]

Second, the change in the number of elderly persons per household and their proportion within the population varied considerably from country to country. In three countries—Japan, South Korea, and Taiwan—the elderly population increased substantially as a proportion of the adult population. In Japan, where population aging is most advanced, the proportion of the adult population 65 and older grew from less than 10 percent in 1960 to about 17 percent in 1990. In contrast, the number of elderly persons per household and the number of elderly as a percentage of adults changed very little in Singapore, Thailand, and Indonesia.

Third, the average number of workers per household declined significantly in only two countries, Japan and Thailand (Table 5.2). In Japan, a decline in the working-age population pushed the number of workers per household down by about one-quarter. In Thailand, increased school enrollments led to reduced labor force participation by young Thais. In the other East Asian countries the average number of workers per household was stable or increased. Rising female labor force participation offset the decline in the number of working-age adults in Korean and Taiwanese households and led to a substantial increase in the number of workers per household in Singapore. (See Chapter 9, by Yoshio Okunishi, and Chapter 14, by John Bauer, for a more extensive discussion of these changes.)

Fourth, changes in living arrangements, described in more detail in Chapter 3, were relatively modest. The greatest changes occurred in Japan. By 1990, young Japanese adults were much more likely to live independently from their parents and elderly parents were much more likely to live independently from their adult children than had been true in 1960. Nonetheless, extended living arrangements are still much more the norm in Japan than in the West. Changes in other East Asian countries, where they have occurred, have been considerably more modest and quite recent.

Finally, mortality conditions have improved substantially in all of the successful East Asian countries. In the more advanced countries, life expectancy equals or exceeds levels reached in the Western industrialized countries. In Indonesia, where life expectancy is lower than in the other five countries, it nevertheless rose by a remarkable 25 years between the end of World War II and 1990–95.

Assessing the implications of all these changes for income inequality is a challenging task. Our knowledge of inequality trends in East Asia is incomplete because it is based on household income. As Kuznets (1976) argues in his extensive analysis of the effect of household composition on income inequality, household income is a poor basis for comparing standards of living, particularly where extended households are prevalent and large household income is often little more than a mechanistic outcome of co-residence decisions.

Economists have proposed several alternative income measures and used them in limited analyses. Kuznets (1976) maintains that income *per household member* is the preferred measure. Alternatively, income per equivalent adult can be employed to acknowledge systematic differences in "consumption needs" that are related to age and sex. Using per capita income can be misleading with respect to welfare issues when variation in family size primarily reflects different choices parents make about the number of children to have. Under these circumstances, variation in per capita income reflects variation in preferences about family size rather than variation in parents' welfare. Of course, concern about the welfare of children, rather than parents, may argue for relying on per capita rather than per household income (Lam 1997b). Income per adult has been proposed as an alternative to total income or income per capita. There is no definitive basis by which to choose among these alternatives. The approach that we employ here is to consider separately how demographic factors influence income per capita and income per adult. Assessing the welfare implications of any inequality measure is difficult because income differences inevitably reflect differences in tastes and the choices made by individuals and their family members.

The choice of income measure does have an important effect on the trend in inequality in the one economy for which comparisons are available. In Taiwan the log variance of household income increased substantially between 1980 and 1995. During the same period, however, the log variance of income per adult was essentially flat and the log variance of income per capita declined modestly (Schultz 1997).

Our examination of demographic factors is based on the variance of the natural log of per capita income, *Var(ln Y/N)*, a convenient alternative to the Gini ratio. A principal advantage of this measure is that it can be decomposed into additive components that distinguish inequality in income per adult and income per capita. The decomposition also allows us to isolate the effect of some of the important demographic changes described above. The *Var(ln Y/N)* can be represented as

$$Var(ln\ Y/N) = Var(ln\ Y/A) + Var(ln\ N/A) - 2\ Cov(ln\ Y/A,\ ln\ N/A), \qquad \text{(Eq. 5.1)}$$

where N is the number of household members and A is the number of adults in the household. The first term, inequality in income per adult, is influenced by three distinct demographic effects: the effect of population growth on factor prices, the effect of changes in the age structure of the adult population, and changes in female labor force participation that accompany declining fertility. We discuss each of these effects below.

The effect of changes in child dependency is captured by the last two terms. The second term measures the variability of child dependency within the population; and the third term, the covariance between income and child dependency, measures whether low-income adults support more household members than high-income adults. If low-income adults support more children and if the variance in the dependency ratio is greater in high fertility populations, then a decline in childbearing leads to lower inequality.

Child Dependency

Variation in child dependency over the entire demographic transition is not well documented. One might suppose that the variance in child dependency follows a pattern similar to and reinforcing of the Kuznets curve. In the 1960s and 1970s, when child dependency was at a peak in East Asia, family size could have been uniformly high and variance in household members per adult low. If fertility began to decline first among those who were educated, living in urban areas, and earning high incomes, the effect would have been to increase the heterogeneity in child dependency within a society, increasing in turn inequality in per capita income. If low rates of childbearing were subsequently adopted by broader segments of the society, the resulting decline in heterogeneity in child dependency would have led to a decline in income inequality.

The available evidence shows that the variance in the number of children is high when completed family size is high and that the variance declines substantially as the fertility transition is completed. We find no evidence that the early stages of the transition are marked by a rise in the variance in the number of children per woman. Early in the demographic transition, the number of children is influenced by variation in fecundity, age at marriage, and infant and child mortality that lead to a wide rather than a narrow dispersion in the number of surviving children.

Our first piece of evidence relies on regional variation in the number of children per woman in contemporary India. Reliable state estimates of fertility and surviving number of children are available from the National Family Health Survey conducted in the early 1990s. The total fertility rate varied from 4.75 births per woman in Uttar Pradesh to 1.89 births per woman in Goa. In the eight states with the highest numbers of children ever born, we calculate that the variance in the number of children per woman is higher than in other states, and there is no evidence that the variance increases or declines with the number of births. Among the lower-fertility states, however, we calculate a substantial decline in the variance in the number of children per woman.

The second piece of evidence is drawn from South Korean census data on the number of surviving children by mother's age in 1970, 1980, and 1990 (ROK EPB, NBS, various years). We used these data to calculate the mean and variance in the number of surviving children per mother by mother's age. For the 14 cohorts of women with the highest number of surviving children, between 4.0 and 4.6, the average variance in the number of surviving children was 3.9. For the 12 cohorts of women who averaged three or more surviving children but fewer than four, the average variance was 3.1. And for the three cohorts of women who had between two and three surviving children, the average variance was only 1.2. The shift to smaller families in South Korea has been accompanied by a decline in the variation in family size within cohorts of women.

The effect of declining childbearing on the variance in household size per adult depends, also, on the variation in the number of children across cohorts. Because fertility declined so rapidly in South Korea and other East Asian countries, differences among cohorts may be substantial for a short period of time during the demographic transition. At least in South Korea, the net effect of fertility decline was to reduce the variation in the number of children. For women 25 and older, the variance declined from 4.0 in 1970 to 3.8 in 1980, and to 3.2 in 1990. Unless higher-income parents had more children, fertility decline would have had an equalizing effect on the distribution of per capita income in South Korea.

The numerous studies of the socioeconomic determinants of fertility decision-making provide a strong empirical basis for determining whether or not higher-income adults have more or fewer children than low-income adults. (See Mueller and Short 1983 for an extensive review of the evidence.) Most studies show that the father's income is not highly correlated with the number of births. However, the mother's wage or income has a strong negative correlation with births in societies that have not reached low fertility levels. Thus, the relationship between household income and the number of children will depend on whether the contributions to household income by children are more important than the inverse relationship between the mother's earnings and the number of children.

The relationship between household size and household income is one of the key issues addressed by Kuznets (1976). In the five countries he investigated (West Germany, Israel, Taiwan, the Philippines, and the United States), larger households had greater household income but lower household income per person or per equivalent adult. (Kuznets counted a child as equivalent to one-half an adult). Schultz (1982) finds that the covariance between fertility and total household income is negative in both India and Colombia, supporting the view that high fertility leads to increased inequality in per capita household income. Analysis of data from South Korea and Thailand indicates that the number of young children in the household either depressed or had no effect on household income in the 1980s (Mason 1993). Teenagers of either sex in Thailand and female teens in South Korea had a modest positive effect on household income. However, the effect was not so large that greater variance in the number of teens in a household would reduce the variance in per capita household income. The available evidence indicates, then, that the covariance between per capita income and child dependency is typically negative. The decline in the number

of surviving children over the demographic transition should have an equalizing effect on per capita household income.

In one instance, Taiwan, it is possible to calculate directly the effect of the decline in the heterogeneity of child dependency on income inequality. Schultz (1997, fig. 6) provides annual estimates of the *Var(ln Y/N)* and *Var(ln Y/A)* from 1976 to 1995. The difference between the two values gives the effect of declining heterogeneity in child dependency—that is, the last two terms in Equation 5.1. Between 1987 and 1995 the variance in the natural log of per capita income declined by approximately 10 percent in Taiwan because of the changes in child dependency.

Income per Adult

Next, we examine inequality in income per adult and three channels through which population may have an important influence. We begin by considering changes in the age structure of the adult population. Then we examine the rise in female labor force participation. Finally, we address the effect of demographic transition on changing factor prices and, hence, on income inequality.

In a recent survey, Lam (1997b) provides a careful discussion of the effects of changes in adult age structure on income inequality. First, the average income of some age groups may differ substantially from the average income of the population as a whole. A rise in the proportion with either very high or very low income has a disequalizing affect. Second, some age groups have substantially more within-group inequality than other age groups. An increase in the subpopulation in these age groups is disequalizing. The net effect of changes in age structure will depend on whether the within-age-group and between-age-group effects are reinforcing or offsetting and on their respective strengths.

Empirical studies have examined the effects of age structure on three income measures: individual earnings, household income, and household income per adult. In the United States the earnings of teens and young adults have a lower mean and higher variances than those of other age groups. Consequently, a decline in the percentage of teens and young adults, such as has occurred recently in some East Asian countries, is equalizing. In Brazil, young age groups have low means but also low variances in earnings. Consequently, a shift to an older age structure does not have an equalizing effect on earnings. Earnings inequality is essentially unaffected by shifts in age structure in Brazil (Lam 1997b; Lam and Levison 1992).

The analysis of inequality in household income has several advantages over the analysis of individuals' earnings. Household income includes additional sources of income—for example, rents and profit—that may also be closely associated with age. Moreover, it incorporates the important redistributive role of the family. The earnings of teens and young adults may be low and highly variable, but most teens and young adults do not live independently from their parents in Asia. Deaton and Paxson's (1997) analysis examines how changes in the structure of households by the age of the head influence household income. In the four countries they analyze (the United States, Great Britain, Taiwan, and Thailand) they find that the within-age-group inequality increases substantially with the household head's age. They assess the overall effect on inequality of population aging produced by slower population growth in Taiwan and conclude that the net effect will depend on whether or not Taiwan achieves high rates of economic growth. If per capita income growth continues at 6 percent per annum, a decline in the population growth rate will produce a rise in inequality equivalent to an increase in the Gini coefficient from 0.31 to 0.42. However, if per capita income growth slows to low levels, population aging will lead to a decline in inequality. Deaton and Paxson do not provide estimates of how historical changes in Taiwan's adult age structure have influenced inequality.

Schultz's (1997) analysis of the effect of age structure on inequality in income per adult bears most directly on the decomposition approach taken here. Schultz estimates the effect of changing age structure in Taiwan between 1976 and 1995, holding the inequality age patterns constant. Given the 1976 age pattern of inequality, changes in the adult age structure would have produced an increase in the log variance of income per adult from 0.249 to 0.254. Given the 1995 age pattern of inequality, changes in the adult age structure would have produced an increase from 0.257 to 0.263. Either approach yields a quite modest increase in the log variance. Given that the rise in the elderly population has been more rapid in Taiwan than in any other

East Asian country except Japan, it seems unlikely that changes in the age structure of the adult population have had an important influence on income inequality in other East Asian countries.

Changes in the economic roles of women are a central feature of East Asian economic development with potentially important implications for income distribution. The proportion of women who are in the labor force has risen relative to that of men. The educational gap between men and women has declined. In some countries there have been modest declines in the wage gap. As a consequence, the share of household income contributed by women is rising. (See Chapter 14 John Bauer and Chapter 15 by Mathana Phananiramai.) This trend is not confined to East Asia, of course, as similar changes have occurred in many countries throughout the world.

How have changes in the economic roles of women influenced inequality? This question has been addressed in a number of studies using a simple accounting approach. A counterfactual is posed. Suppose women had no income; what would happen to income inequality? The question is answered by comparing the inequality of total household income to the inequality of income earned only by males (or husbands). With rare exceptions, the analysis indicates that women reduce inequality in household income (Lam 1997a).

That income inequality declines with the addition of female workers is due largely to a "pooling" effect. An increase in the number of earners of any type within the household will typically lead to lower income inequality because, in many households, higher income by one earner will be balanced by lower income by a second worker. Under some circumstances the pooling effect is insufficient to produce a reduction in inequality. If women's income is characterized by high inequality and if women with high income tend to be married to men with high income, then women's income can increase income inequality. This has found to be case for African Americans in the United States but is quite atypical (Lehrer and Nerlove 1981).

The few studies of East Asian economies support the conclusion that women's income has an equalizing effect. Pong (1991) reached that conclusion in an analysis of family income in Hong Kong in 1976 and 1981. Liu and Chang (1987) reached similar conclusions for Taiwan, as did Ogawa and Bauer (1996) in a more recent study of family income in Japan.

These analyses demonstrate the effect of two extremes on income inequality—the observed earnings by women versus no earnings by women. They do not tell us, however, how the rise in earnings by women has influenced income inequality. To examine this issue, we make use of data from the Survey of Personal Income Distribution in Taiwan, conducted from 1976 to 1993, to replicate standard analyses. We use the income data to calculate one measure of inequality, the coefficient of variation, for the income of males, females, and their combined income. Estimates for the years 1976, 1982, 1988, and 1993 are presented in Table 5.3.

[Table 5.3 about here]

These results have several noteworthy features. First, the contribution of women to household income increased substantially during this 17-year period. In 1976, women earned only 16 percent of household income. By 1993, their contribution had grown to 24 percent. Second, the coefficient of variation in women's income is substantially greater than for men's income, but the coefficient declined substantially during the period analyzed. Third, the correlation between the incomes of males and females was negative throughout the period but less so at the end of the period. In fact, in 1988 and 1993 the correlation between the incomes of men and women was quite small.

As other studies of East Asian economies have shown, women's income has had a consistently equalizing effect on household income. The coefficient of variation of household income is five "points" lower than the coefficient of variation of male income in 1976—that is, 0.64 as compared with 0.69. The effect in 1993 is essentially identical, a five-point reduction. Results for the intervening years are similar.

In contrast, the effect of women's income on inequality has not increased as their contribution to household income has grown. The effect of their income on inequality was just as great in 1976, when women contributed only 15 percent of household income, as in 1993, when they contributed nearly one-quarter of household income. Looking at each year individually, one may conclude that an increase in the incomes of women relative to those of men has an equalizing effect. Looking at the trend, however, one

may conclude that it does not. The only interpretation that can be made is that an increase in women's share of household income from 0 to 15 percent reduced inequality in household income, but a further increase to 25 percent has had no further effect.

At least in Taiwan, therefore, the increased integration of women into the work force during the last two decades has not had an important effect on income inequality. Can we generalize to other countries? The studies needed to answer this question for other East Asian countries are not available. Lam (1997a) reports estimates for the United States from 1973 to 1987. During that time, women's share of household income rose from 15 percent to 25 percent, an increase remarkably similar to that in Taiwan. At the end of the period, women's income reduced the coefficient of variation by 8 points as compared with 6 points at the beginning of the period. Hence, the only study available for another economy points to a different conclusion than that for Taiwan.

This analysis ignores a potentially important issue. The rise in the contribution of household income by women may have an effect on the distribution of income within households that is far more important than effect on the distribution of income between households. However, we have no information on which to base an assessment.

In the neoclassical growth model, population growth has an unambiguous effect on the factor distribution of income. A decline in population growth leads a rise in the capital-labor ratio and, consequently, a decline in interest rates relative to wages. The effect on the size distribution of income is uncertain, depending on how economic factors, capital and labor, are distributed within the population. If wealth is more heavily concentrated than labor, then slower population growth leads to a reduction in income inequality. Empirical studies generally support this view, but their results have been questioned on several econometric grounds (Lam 1997a).

A closer look at the East Asian experience shows that slower population growth has led to a rise in the capital-labor ratio, but the mechanism by which this has occurred is quite different from that envisioned in the simple neoclassical model. Slower population growth has not produced slower labor force growth except in Japan. The decline in population growth, however, has led to higher rates of saving and investment. Hence, the rise in the capital-labor ratio and its effect on the distribution of income can be traced to demographic forces, but not for the reasons predicted in standard economic growth models.

As the end of the demographic transition approaches and population growth continues to slow, labor force growth unquestionably will decline as anticipated by the neoclassical model. But as described more fully in Chapter 3, the initial slowdown in population growth is a result of slower growth in the number of children, not in the number of working-age adults. Moreover, delayed marriage and reduced childbearing has facilitated a rapid increase in the number of working women. Consequently, the immediate effect of slower population growth has been to increase, not to reduce, labor force growth.

The divergence between population growth and labor force growth is clear in the East Asian experience. The eight high-performing economies are arrayed in Table 5.4 by descending rates of population growth. Between 1960 and 1990, the labor forces of the three countries earliest in their demographic transitions—Malaysia, Thailand, and Indonesia—grew at rates varying from 2.7 to 3.4 percent per annum. During the same period, four of the five remaining countries that are further in their transitions—Taiwan, Hong Kong, South Korea, and Singapore—experienced labor force growth that varied between 2.8 and 3.5 percent per annum. Slower population growth there did not translate into slower labor force growth. The sole exception is Japan, where the demographic transition is sufficiently advanced and the growth of the working age population has subsided.

[Table 5.4 about here]

Although one might suspect that labor force growth slowed toward the end of the 1960–90 period, this was not the case. Labor force growth was more rapid during the 1980s than in the two preceding decades in every economy but Hong Kong. Barring a reversal in birth rates, labor force growth will eventually begin to slow in East Asia. The population of working age will peak and begin to decline. Female participation rates will stabilize at higher levels. As this happens, labor markets will tighten, creating upward pressure on wages, and inequality in the size distribution of income may well be reduced. But only in Japan have demographically induced changes in the supply of labor begun to have this effect.

Despite the continuation of rapid labor force growth, the capital-labor ratio has increased rapidly in the countries of East Asia (see Chapter 2, fig. 2.4). The change is a consequence of the substantial rise in saving and investment rates that have occurred throughout the region. Analyses presented by Jeffrey Williamson and Matthew Higgins in Chapter 6, Ronald Lee, Andrew Mason, and Timothy in Chapter 7, and Toh Mun-Heng in Chapter 8 document the importance of demographic factors—specifically, changes in life expectancy, childbearing, and age structure—to the rise in saving and investment. Hence, demographic forces depressed interest rates relative to wages, but for reasons very different from those described in the textbook model. The change occurred because slower population growth led to more rapid capital accumulation, not to slower labor force growth.

We are aware of no analysis that has fully explored the implications of higher rates of saving and investment for inequality. A decline in interest rates typically has an equalizing effect on income, but the distribution of wealth has surely changed as rates of saving have reached such high levels. It may be that wealth has become more equally distributed over time, producing an equalizing effect on income distribution, but a definitive assessment is not possible.

Inequality in years of life

In Chapter 3 Griffith Feeney and Andrew Mason provide a detailed discussion of changes in mortality, both in general and in East Asia. Figure 3.2 graphs the extremes of human survivorship, showing that age at death or years lived varies widely in a high-mortality population. In a low-mortality population, by contrast, deaths are heavily concentrated at older ages.

We assess the implications of mortality for inequality using data from model life tables to calculate a Gini ratio for years of life lived.[4] The Gini ratio is calculated in the same fashion as for any other variable. For each level of life expectancy, the population is classified by age at death in years (less than 1, 1–4, 5–9, . . . 100+). For each group, the total number of years lived is calculated. The values are then cumulated to construct a Lorenz curve similar to the one shown in Figure 5.1. The curve provides the proportion of total years lived by the "unluckiest" proportion of the population. Given a life expectancy of 40, for example, the Lorenz curve tells us that the half of the population that dies first lives only 14 percent of the total years lived by the entire population.

First, the results charted in Figure 5.3 show that high mortality rates are a direct source of enormous inequality within a population. The Gini ratio of 0.43 for years lived for a life expectancy of 40 exceeds the cross-sectional inequality in income reported for many East Asian countries. Largely neglected, variation in years lived is a source of inequality in a high-mortality population that is as great or greater than varying economic circumstances. Second, the decline in the Gini coefficient over the mortality transition is strikingly large and far greater than what is ever observed for standard measures of income inequality. For a population with a life expectancy of 80, the vast majority are living to an old age and inequality in years lived is largely eliminated, the Gini ratio being 0.08.

[Figure 5.3 about here]

Life expectancy increased rapidly in East Asia during the post–World War II era, but no country experienced an increase as great as the 40-year span presented in Figure 5.3. Life expectancy rose the most in Indonesia, by 25 years. In Taiwan it rose by only 12 years between 1950–55 and 1990–95 (Chapter 3, Table 3.2). Over the entire twentieth century, even more dramatic changes have occurred. In Taiwan, life expectancy grew from 28 years in 1906 to 74 years in 1990–95. Even in Japan, life expectancy did not exceed 45 years until the mid-1930s (Japan Statistical Association 1987, table 2-38). Mortality represented

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[4] Model life tables have been constructed based on the mortality experience of many countries. The calculations

presented here are based on the "West" pattern of mortality for females constructed by Coale and Demeny (1983).

an enormous risk throughout much of the twentieth century, and success at increasing life expectancy greatly reduced inequality in welfare due to differences in the length of life.

Conclusions

There is tremendous variety in the level and trends in economic inequality in East Asia. It is accurate to say that inequality did not generally rise to high levels in East Asia as a consequence of rapid economic growth, justifying the "growth with equity" label. In Northeast Asian countries income inequality remained at low levels throughout the 1960s, 1970s, and 1980s. South Korea experienced a rise in inequality but to levels that are still well below those found in many Latin American and African countries.

The successful countries of Southeast Asia typically have levels of inequality that are similar to those found in Latin America and Africa and higher than those in Northeast Asia or South Asia. In some countries inequality has declined modestly in recent years. In Thailand, however, inequality increased substantially as economic growth rates reached high levels.

Simple models do not capture the enormous complexity that is characteristic of the region. The differences and the trends in inequality reflect a variety of historical, cultural, political, and geographic forces that have influenced agricultural systems, economic structure, technological innovation, social heterogeneity and cohesion, and the distributions of land, human capital, and other forms of wealth. All of these factors have influenced the extent of inequality in the region.

The extent to which changing demographic conditions have influenced income inequality cannot be easily assessed. Widely available measures of inequality are not appropriate for examining the effect of demographic variables, such as household composition, on income inequality. Nevertheless, demographic factors influence inequality in clear, identifiable ways. Empirical studies of East Asian and other countries provide strong indications of the likely role of population variables.

One of the most important demographic changes in the region has been the decline in child dependency, or the number of children per household. The available evidence shows that the decline in child dependency has been accompanied by a decline in the variation in child dependency. This has, in turn, led to a decline in income inequality as measured by the log variance of per capita household income. Experts disagree over the welfare implications of this change because per capita income does not incorporate the value that parents attach to their children.

Population aging frequently attracts attention in analyses of income inequality. Several studies have shown that an increase in the elderly proportion of a population causes inequality because the elderly have incomes that are lower than average or, as is more often the case, income varies more among the elderly than among other age groups in the population. A population heavily concentrated at young-adult ages may also produce inequality for the same reasons, although the evidence is less conclusive in this instance. Changes in the age structure of the adult population have been sufficiently small during the post–World War II era that any effect on inequality has probably been quite modest. Perhaps the increase in the elderly population in Japan has had a significant effect on income inequality, but probably not elsewhere.

Slower population growth in East Asia has not yet influenced inequality, except in Japan, by slowing labor force growth rates and depressing interest rates relative to wages. As is typical of early stages of the demographic transition, the working-age population has grown much more rapidly than the total population. Growth of the female labor force has been particularly rapid as women have increased their participation rates.

The capital stock has grown much more rapidly than the labor force in East Asia because of the region's substantial increase in saving and investment rates. Evidence presented elsewhere in this volume concludes that saving rates were pushed higher in large part because of changes in fertility, mortality, and age structure. The rise in the capital-labor ratio has depressed interest rates relative to wage, and this change has potentially important implications for income inequality. Thus, the demographic transition influenced the distribution of factor income in important ways that are very different from those envisioned in standard textbook growth models. The implication for income inequality requires further study.

Finally, the transition to low mortality in East Asia has led to an enormous decline in inequality in length of life. The shift to uniformly long life, not captured in typical studies of income inequality, dwarfs the changes in current income inequality that have occurred in East Asia and elsewhere.

The changes in demographic inequality that occur over the demographic transition appear to differ considerably from the changes in inequality that Kuznets hypothesized with respect to development. Traditional societies were subject to enormous risks that influenced both fertility and mortality. The early part of the demographic transition is characterized by great diversity in family size, child dependency, and length of life. It appears that improvements in health and contraceptive technology have led to a monotonic decline in inequality.

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Table 5.1. Income inequality: regions of the world and eight East Asian countries, recent years

Region or country	Number of countries	Gini ratio
Region		
Africa	22	0.43
High-performing Asia	8	0.37
South Asia	5	0.31
Latin America	17	0.50
Industrialized	19	0.32
Country		
Japan		0.45
South Korea		0.32
Taiwan		0.31
Singapore		0.39
Hong Kong		0.45
Thailand		0.52
Indonesia		0.32
Malaysia		0.48

Source: Compiled from Klaus and Squire (1996).

Notes: Data are for the latest available year (after 1980). Only "high-quality" data are included. For regions, the values are medians.

Table 5.2. Household size and composition: six East Asian countries, circa 1960–90

Family members and period[a]	Japan	South Korea	Taiwan	Singapore	Thailand	Indonesia
All members						
1960–70	4.5	5.7	5.7	5.6	5.7	4.9
1990	3.0	3.8	4.0	4.2	4.4	4.5
Children (ages 0–14)						
1960–70	1.4	2.3	2.3	2.3	2.5	2.1
1990	0.6	1.0	1.1	0.9	1.3	1.7
Elderly (ages 65+)						
1960–70	0.3	0.2	0.1	0.2	0.2	0.1
1990	0.4	0.2	0.3	0.2	0.2	0.2
Working-age adults (ages 15–64)						
1960–70	2.8	3.2	3.3	3.1	3.1	2.6
1990	2.0	2.7	2.6	3.0	2.9	2.7
Workers						
1960–70	2.2	1.7	1.8	2.2	3.0	2.2
1990	1.6	1.8	1.9	2.6	2.6	2.0

Sources: Population data compiled from population censuses for each country. Labor force data, except for Taiwan, from ILO (various years). Taiwan labor force data: ROC DGBAS, *Statistical Yearbook* (1996, table 21).

a. First observation is from 1960 except for Taiwan (1966), Singapore (1970), and Indonesia (1971).

Table 5.3. Income inequality among males, females, and households: Taiwan, 1976–93

Measure	1976	1982	1988	1993
Mean income (NT$)				
Males	105,845	244,736	365,006	652,032
Females	19,417	59,498	102,137	205,841
Income share (%)				
Males	84.5	80.4	78.1	76.0
Females	15.5	19.6	21.9	24.0
Simple correlation	–0.073	–0.082	–0.020	–0.027
Coefficient of variation				
Males' income	0.691	0.697	0.702	0.678
Females' income	1.860	1.531	1.524	1.330
Total income	0.l641	0.631	0.658	0.630
Males (total)	0.050	0.066	0.044	0.048

Source: Calculated from ROC DGBAS, *Report on the Survey of Personal Income Distribution* (various years).

Table 5.4. Labor force growth: eight East Asian countries, 1960–90

Country	Average annual growth rate (%)	
	Population	Labor force
Malaysia	2.6	3.4
Thailand	2.5	2.7
Indonesia	2.2	2.7
Hong Kong	2.1	2.8
Taiwan	2.1	3.1
South Korea	1.8	2.9
Singapore	1.7	3.5
Japan	0.9	1.1

Sources: ILO (various years); UN DESIPA (1995); ROC DGBAS, *Statistical yearbook* (1996, various tables).

Table A5.1. Income and expenditure inequality in postwar Asia: Gini ratios for 14 n countries, by subregion and period

Northeast Asia

Japan	Gini ratio	South Korea[a]	Gini ratio	Taiwan	Gini ratio	Hong Kong	Gini ratio	China[b]	Gini ratio
1962	0.37	1965–67	0.34	1964	0.32	1957	0.48	1960s	0.20
1967	0.35	1968–70	0.34	1968	0.33	1963/64	0.50	1970s	0.25
1971	0.38	1971–73	0.33	1970	0.29	1966	0.49	1980s	0.28
1974	0.36	1974–76	0.38	1974	0.29	1971	0.43	Early 1990s	0.45
1978	0.35	1977–79	0.38	1978	0.29	1976	0.43	Average	0.33
1981	0.35	1980–82	0.36	1980	0.38	1981	0.45		
1984	0.35	1983–85	0.38	1984	0.29	1986	0.45		
1986	0.36	1986–88	0.38	1987	0.30	1991	0.48		
1988	0.37	1989–91	0.40	1990	0.31	Average	0.46		
1989	0.37	1992–94	0.39	1993	0.32				
Average	0.33	Average	0.37	Average	0.31				

Southeast Asia

Singapore		Thailand		Indonesia[c]		Malaysia		Philippines	
1973	0.41	1962	0.41	1964/65	0.35	1957	0.45	1961	0.50
1978	0.37	1968/69	0.43	1969/70	0.34	1967	0.50	1965	0.51
1980	0.41	1975/76	0.42	1976	0.34	1970	0.51	1971	0.49
1983	0.42	1980/81	0.43	1978	0.38	1973	0.51	1985	0.45
1988	0.41	1985/86	0.47	1980	0.34	1976	0.52	1991	0.48
1989	0.39	1988	0.47	1981	0.33	1979	0.50	Average	0.48
Average	0.40	1990	0.49	1984	0.33	1984	0.48		
		1992	0.52	1987	0.32	1987	0.46		
		Average	0.46	1990	0.32	1990	0.45		
				1993	0.34	1995	0.46		
				Average	0.34	Average	0.48		

South Asia

India[d]		Pakistan		Sri Lanka		Bangladesh	
1952/53	0.37	1963/64	0.39	1963	0.45	1963/64	0.36
1957/58	0.35	1966/67	0.36	1973	0.35	1966/67	0.34
1963/64	0.32	1969/70	0.34	1978/79	0.44	1968/69	0.29
1967/68	0.31	1971/72	0.35	1981/82	0.45	1973/74	0.36

1972/73	0.32	1979	0.37	1986/87	0.46	1977/78	0.45
1983	0.34	1984/85	0.37	Average	0.44	1981/82	0.39
1986/87	0.33	1986/87	0.35			1983/84	0.35
1989/90	0.34	1990/91	0.41			1988	0.39
Average	0.34	Average	0.36			Average	0.37

Sources: Japan: Mizoguchi and Terasaki (1992). South Korea: Ahn (n.d.). Taiwan: Chu (1995). Singapore: Deininger and Squire (1996). Hong Kong: Chau (n.d.). China: Oshima and Estudillo, *Rising income disparities in China under economic reform* (n.d.). Thailand: Ikemoto and Santisart (n.d.). Indonesia: Hill (1996). Malaysia: Ikemoto (n.d.). Philippines: Estudillo (n.d.). India: Oshima and Estudillo, *Uncertain trends and erratic changes in India's income distribution* (n.d.). Pakistan: Hill (1995). Sri Lanka: Karunatilake (n.d.). Bangladesh: Osmani and Rahman (n.d.).

a. Average of three years.

b. Per capita household income.

c. Consumption expenditure.

d. Per capita expenditure.

Figure 5.1

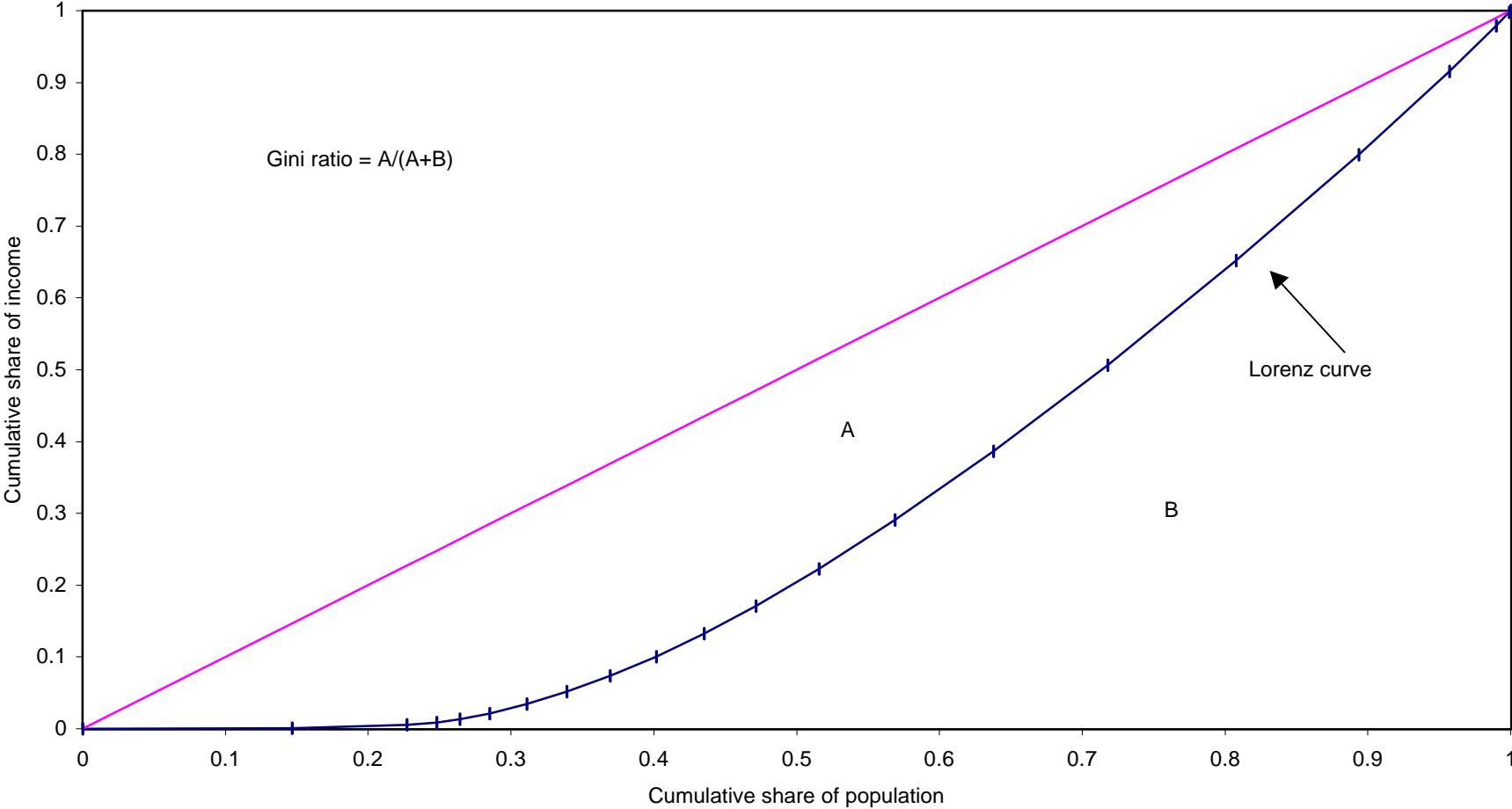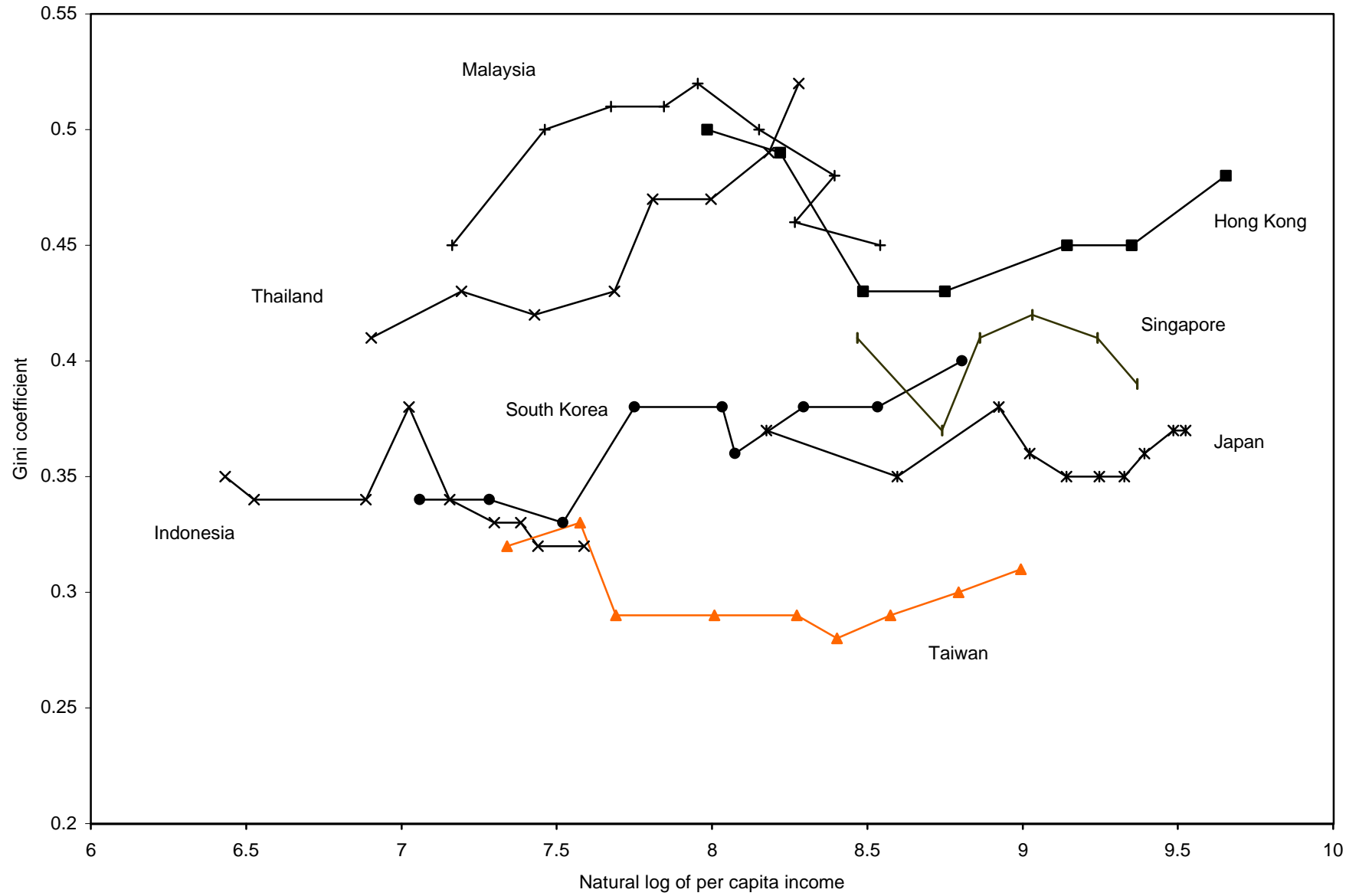Figure 5.2

Figre 5.3