

Population and Inequality in East Asia

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May 18, 1999

One of the most important lessons of the East Asian development experience is that "growth with equity" is an achievable objective. In its 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, p. 8) Their experience, thus, appears to repudiate the view that the region's development policy over-emphasized 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 first a rise in income inequality on later followed by a decline (Kuznets, 1955).

The objective of this paper is to examine the trends and differences in income inequality in the high performing countries of East Asia and to identify important factors that influenced inequality. We begin with brief discussions 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. Taken as a group the countries of East Asia do have lower income inequality than the countries of Latin America or Africa. There is, however, wide variation. Income inequality in Northeast Asia is very low; income inequality in Southeast Asia is similar to that found in Latin America and Africa. Moreover, the trends in inequality differ greatly from one country to the next. 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. History, culture, agricultural conditions, e.g., weather and soil conditions, economic structure, development policies, and politics 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 pre-industrial development affected factor shares, i.e., profits, rents, and wages, influenced later writings. Population growth caused the demand for food to rise, raising agriculture prices, and the supply of labor to increase, depressing wages. Hence, rents rose relative to profits and wages. The impact on inequality would depend on how widely land was held. If land were concentrated among an elite, landlord class, population growth would have led to increased inequality.

The role of technology is prominent in the writings of Marx who worked during the emergence of steam-driven technologies that revolutionized industry. He argued that workers were displaced by machines depressing wages and increasing unemployment.

¹ The authors wish to thank Jeff Brown for his assistance. Harry Oshima passed away during the preparation of this paper.

Rising profits and lower wages led to greater inequality given the concentration of capital in the hands of an elite, capitalist class.

Inequality in modern developing countries was addressed by Arthur Lewis' model of economic growth. At low levels of development, the rural, agricultural sector provided a virtually an "unlimited" supply of workers insuring that wages remained at low levels and profits of manufacturing enterprises rose as the industrial sector developed. Again, with concentrated ownership of industrial enterprise, development would have been accompanied by increased inequality. Under these circumstances, population growth would contribute to increasing inequality by depressing wages.

The central role of population growth in the determination of the distribution of income persists in the neo-classical model of economic growth. More rapid population growth leads to lower capita 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 influence income inequality by affecting factor prices. The impact 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 just as well have led to a rise in inequality as to a decline. As Kuznets pointed out with respect to the US (Kuznets, 19xx), many low income families are pensioners who would be adversely affected by a decline in profits or interest rates relative to wages.

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

Kuznets attributed the subsequent fall in inequality to the decline in the gap between output per worker in agriculture and non-agriculture; the decline in the size of the entrepreneurial class; the increased number of white-collar relative to blue-collar workers; a decline in the size of the agricultural sector and property income; and the rise of public welfare policies. 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 gap between wages in the agricultural and non-agricultural sector

and accelerated the shift of the labor force out of agriculture.² Mechanization also accelerated the decline in the entrepreneurial class and reduced the number of handicraftsmen. 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 look at 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 change because of the rise of female labor force participation that accompanies reduced childbearing. A third line of research considers the intergenerational transmission of inequality, although work in this area is not yet sufficiently advanced to support firm conclusions about East Asia's experience (Lam, 1997).

Measuring Inequality and Some Pitfalls

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 relatively 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 data that are collected. Despite these advantages, data problems are still substantial. Data are available only beginning in the 1960s and collection efforts were much more sporadic in the 1960s and early 1970s than more recently. Literacy was a more serious problem for early surveys. Illiterate families are unable to record incomes and expenditures; hence, interviewers must rely on recall methods that are subject to great errors. Adequately measuring income is particularly difficult when substantial sectors of the economy are non-monetized 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 as high income individuals decline to be interviewed (or understate their income). Often, the poorest members of society are also under represented in surveys. Because of these 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 paper 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 fourteen Asian countries.³ Although these data are not without the problems noted above, they are thought to provide the best available estimates. For some purposes we rely on the international data base described by Deininger and Squire, 1996.

² For details of 19th century developments see Couzet, 1982 and, for details of the 20th century, Divine, 1982. Oshima, 1984 provides further elaboration.

³ See the references in Appendix Table 1.

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 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 the 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 income the Lorenz curve would lie along the horizontal axis and then would jump to one 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; those with unequal distributions have Gini ratios of 0.5 or somewhat higher.

Figure 1. Illustration of the Gini ratio and the Lorenz curve.

A variety of 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 across 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 enterprise in many developing countries, inequality measures based on the incomes of individuals can be seriously flawed. Consequently, the household is typically taken as the unit of analysis. Although this circumvents the practical problems of measuring income, it also suppresses consideration of the intra-household distribution of income. If the strong gender stratification and primogeniture characteristic of East Asia, especially Northeast Asia, lead to inequality within the household, standard approaches may understate East Asian inequality as compared with other regions.

A second important issue is how to compare incomes across 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 recognizes that "consumption needs" vary systematically depending on the characteristics of family members and uses income per equivalent adult. Either of these approaches requires data that are usually not 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 lifecycle by accumulating and dis-accumulating wealth. Thus, the income of the young or especially retirees may greatly understate their living standards as compared to prime age workers. This issue has particular relevance to analyses of the changes in age composition on income equality and has led some to argue that changes in inequality that result from changes in the age composition of the population have no welfare implications. (See Lam, 1997, for example.) 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 will be briefly discussed below.

A fourth issue is pervasive: dealing with 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 leisure - labor tradeoff. 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. There are other important decisions that have potentially important implications for income distribution including labor force participation decisions by women, fertility decision making, and living arrangements.

These difficulties should be kept in mind as we examine inequality in East Asia and assess the impact of demographic factors.

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. As a group, the East Asian economies had a more equal income distribution *circa* 1990 than the developing countries of Latin America or Africa (Table 1). However, income inequality was greater in East Asia than in South Asia or OECD countries (Japan excluded).

Table 1. Income inequality for regions of the world

The level of inequality in individual East Asian countries is quite varied. Northeast Asian countries, Japan, Taiwan, and Korea, had levels of inequality comparable to OECD countries. 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 extent of inequality in Korea is a subject of some dispute as will be discussed momentarily.

The clear demarcation between Northeast and Southeast Asia has been a persistent phenomenon. Trends in inequality for the eight high-performing economies of East Asia are plotted in Figure 2. The Gini ratio is plotted against the natural log of per capita income.⁴ The substantial inter-country differences noted above have been persistent. Gini ratios in the Southeast Asian countries of Hong Kong, Malaysia, and Thailand were greater in all years charted, irrespective of the level of income, than 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 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 appear to be increasing with income at low income levels. Nor does it appear to be declining with income at higher income levels. Only in Thailand does there appear to be any strong correlation between inequality and development.

Figure 2. Inequality and development in East Asia.

There are 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 very long-term characterization compared to the two to three decades covered in the Figure 2. 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 taken as a group cover a very wide development range. Japan's income in the last year observed exceeds Indonesia's first observation by more than twenty-fold.

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 phenomenon --- random, episodic events such as oil shocks, weather variations, exchange rate movements, and commodity price fluctuations. 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 an important impact on inequality. Finally, some unknown portion of the differences and changes shown in Figure 2 reflect differences in data collection procedures and measurement error.

Both the inter-regional differences and the inter-country 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 numbers 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.

⁴ Footnote: Per capita income data are based on Penn **World Tables (199x)**. Appendix Table 1 reports detailed Gini ratios and sources.

This is unlike densely populated monsoon Asia. Most farms are small, averaging around two hectares as compared to 200 hectares in Latin America. Numerous small and medium industries and services are prevalent in most of monsoon Asia. A variety of factors account for the different patterns of development. In the densely packed lowlands of Asia, villages were large groupings of farm families which 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 lowering inequality between rural and urban sectors in Asia. In Latin America farmers could travel on horses to far away towns to market their wares and purchase supplies. Horses were too expensive to raise in land-scarce Asia (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. The populations are very homogeneous, in large part, because the countries have been relatively closed to emigration (see Chapter by Martin). Thus, ethnic and racial income differentials have had little bearing on the overall degree of inequality. Likewise, regional disparities are relatively unimportant in these countries. They are relatively small and compact and their excellent transportation and communication infrastructures have facilitated economic integration.

The city-states, Hong Kong and Singapore, have higher levels of inequality, in part, because of the absence of any sizeable agricultural sectors which tend to be homogeneous under Asian monsoon conditions. The non-agricultural sector tends to generate higher levels of inequality than agriculture because of the diversities between and within the branches of the industrial and service sectors. 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 hand. Moreover, the non-agricultural 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 first to greater heterogeneity of agriculture as compared to Northeast Asian agriculture. Malaysian agriculture is dominated, on the one hand, with huge rubber and palm-oil plantations employing large groups of low-paid laborers and a small group of high-paid managers and other white-collar staff, and on the other hand small two-hectare rice farms are found in the north and coastal regions. In between are small-holders of five or more hectare farms growing rubber and palm-oil. Inequality in Thailand reflects important regional differences in the pace of development in recent years. In the Southern region of Thailand are plantations, in the Northern regions poor peasants, and in the irrigated Central region large, prosperous rice farms.

Urban inequality in Malaysia and Thailand is as high as in the city-states, and for similar reasons--the heterogeneity of industry and services, with traditional types of industry and service enterprises of much greater importance than in the city-states. There is a greater range of proprietors' income with rich industrial and mercantile families and small handicraft shops, stall-keepers, sidewalk vendors, and so on. In urban Malaysia, ethnic differences in incomes are wide with the Chinese at the top, the Indians in the middle and the Malays at the bottom. In Thailand, incomes in Bangkok with modern industries and commerce are much higher than in other cities and towns where crafts and small shops predominate.

A comparison of South Korea and Taiwan illustrates the importance of development strategy. Income inequality in South Korea and Taiwan were very similar in the 1960s. The two countries diverged sharply in the early 1970s when per capita income passed the \$2000 mark. The Gini ratio rose substantially in South Korea and dropped in Taiwan.⁵ Just as the level of per capita income cannot account for this difference, neither can demographic trends. Taiwan's and South Korea have very similar demographic features in all respects. Trends in age structure, fertility, mortality, family size, workers per household, and other potentially important demographic factor were very similar in both countries. If demographic factors had an influence, they would have affected both countries in the same way.

The divergence between South Korea and Taiwan can be accounted for by differences in development policy. In the 1970s and 1980s South Korea veered away from agricultural development and labor-intensive industries in favor of heavy and chemical industries. Import-substitution policies favored capital-intensive industries and large conglomerates received liberal government credit, subsidies, and tariff protection. Agriculture was neglected and grew slowly with average incomes lagging behind non-agricultural income (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 3.5-fold increased 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* (Jones and Sakong, 1980).

In Taiwan, 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. Non-agricultural employment and wages rose rapidly in the countryside and productivity in all sectors of the economy. The impact was favorable to equality. The importance of non-agricultural income rose rapidly for farm families in Taiwan as compared with South Korea (Mizoguchi and Terasaki, 1992). Smaller farms, with their

⁵ The trend in inequality in the 1980s is the subject of disagreement. The estimates reported here based on Ahn's work show increasing inequality during the 1980s. The estimates included in the Deininger and Squire data, based on government estimates and work by Choo, show declining inequality during the 1980s. Using either set of estimates, however, Korean inequality remains above Taiwan's.

surplus labor, benefited most from non-agricultural work, reducing inequality within farm families and shrinking the gap between average farm and non-farm family incomes (Oshima, fn 27, 1993).

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

Several other aspects of Thai development has contributed to the rise of inequality. Foreign investment in the 1990s both 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). As compared with other East Asian countries, Thailand's work force has much lower educational attainment. Consequently, shortages of educated workers and plentiful supplies of less-educated workers led to rising wage differentials.

Population and Inequality

Demographic transition is accompanied by changes in rates of population growth, childbearing, mortality, age structure, living arrangements, and the roles of women that influence income inequality in important and varied ways. Feeney and Mason (Chapter 3) provide a detailed accounting of the changes in the six successful Asian economies that are the focus of this volume. The most important changes include the slowdown in population growth, reduced levels of childbearing, mortality decline, and shifts in economic activity among women. Other demographic changes have to the point been more modest and are unlikely to have greatly influenced 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 fewer member in 1990 than in the 1960s (Table 2). In Singapore, Thailand, and Indonesia, a drop in the number of children aged 0-14 accounted for virtually all of the decline in household size. In Japan, Korea, and Taiwan, the number of working age adults aged 15-64 also dropped primarily because of reduced numbers in the 15-24 age group.

Second, the change in the number of elderly per household varied considerably from country to country. In three countries, Japan, 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 increased from under 10% in 1960 to about 17% in 1990. In contrast, the number of elderly 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 2). In Japan, a decline in the working age population pushed the number of workers per household down by about 25%. In Thailand, increased school enrollments led to reduced labor force participation by young Thais. In 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 Okunishi, chapter x; Bauer, chapter y for a more extensive discussion).

Table 2. Household size and composition.

Fourth, changes in living arrangements, described in more detail by Feeney and Mason (Chapter 3), were relatively modest. The greatest changes occurred in Japan. By 1990, young 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. None the less, extended living arrangements are still much more the norm in Japan than in the West. Changes in other East Asian countries have been much more modest and quite recent, where they have occurred.

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, life expectancy is lower than in the other successful countries, it increased by a remarkable 25 years between the end of World War II and 1990-95.

Assessing the implications of 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 impact 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.

Several alternative income measures have been proposed and used 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. 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, 1997). 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 alternative. The approach that we employ below 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 impact 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, 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 a convenient alternative to the Gini ratio, the variance of the natural log of per capita income, $Var(\ln Y/N)$. 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 impact of some of the important demographic changes described above. The $Var(\ln Y/N)$ can be represented as:

$$Var(\ln Y/N) = Var(\ln Y/A) + Var(\ln N/A) - 2 Cov(\ln Y/A, \ln N/A),$$

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 impact of population growth on factor prices, the impact of changes in the age structure of the adult population, and changes in female labor force participation that accompany declining fertility. Each of these is discussed below.

The impact of changes in childbearing 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 so, inequality is exacerbated.

Child Dependency

Variation in the number of children over the entire demographic transition is not well documented. One might suppose that the variance in children 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 decline began first among those who were educated, living in urban areas, and earning high incomes, the impact would have been to increase the heterogeneity in child dependency within the society increasing inequality in per capita income. If low rates of childbearing were subsequently adopted by broader segments of 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. 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 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 children ever born, the variance in the number of children is higher than in other states and there is no evidence that the variance increases or declines with the number of births. As we move to lower fertility states, however, there is a substantial decline in the variance in the number of children.⁶

The second piece of evidence is drawn from Korean census data which reports the number of surviving children by age of mother in 1970, 1980, and 1990 (Republic of Korea, various). These data are used to calculate the mean and variance in the number of surviving children by age of mother. 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 3 or more surviving children but fewer than 4, the average variance was 3.1. And for the 3 cohorts of women who had between 2 and 3 surviving children, the average variance was only 1.2. The shift to smaller families in Korea has been accompanied by a decline in the variation in family size within cohorts of women.

The impact of declining childbearing on the variance in household members per adult depends, also, on variation in the number of children across cohorts. Because fertility declined so rapidly in Korea and other East Asian countries, differences across cohorts may be substantial for a short period of time. At least in Korea, the net impact 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 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 Korea.

⁶ Based on authors' calculations using primary survey data.

The numerous studies of the socio-economic determinants of fertility decision-making provide a strong empirical basis for determining whether or not higher income adults have more or fewer children. (See Mueller and Short, 1983 for an extensive review of the evidence). Most studies show that father's income and the number of births are not highly correlated. However, 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 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 investigated (Germany, Israel, Taiwan, the Philippines, and the US) larger households had greater household income but lower household income per person or per equivalent adult (counting children as 0.5 adults). 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 shows that the number of young children in the household either depressed or had no impact on household income in the 1980s. Teenagers of either sex in Thailand and female teens in South Korea had a modest positive effect on household income. However, the effect were not sufficiently large that greater variance in the number of teens in a household would reduce the variance in per capita household income (Mason, 1993). 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 directly calculate the impact of the decline in the heterogeneity of child dependency on income inequality. Schultz, 1997 (Figure 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 impact of declining heterogeneity in child dependency, i.e., the last two terms in the equation given above. Between 1987 and 1995, the variance in the natural log of per capita income declined by approximately 10 percent because of the changes in the number of household members per adult.

Income per Adult

In this section, we examine inequality in income per adult and three channels through which population may have an important influence. First, we consider changes in the age structure of the adult population. Next, we examine the rise in female labor force participation. Finally, we address the impact of demographic transition on changing factor prices and, hence, income inequality.

In his recent survey, Lam (1998) provides a careful discussion of the impact of changes in 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 sub-population in these age groups is disequalizing. The net impact 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 impact 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 has a low mean and high variances relative to other age groups. Consequently, a decline in 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, 1998; Lam and Levison, 1992).

Analysis of inequality in household income has several advantages over analysis of the earnings of individuals. Household income includes additional sources of income, e.g., rents and profits, 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) recent analysis examines how household income is influenced by changes in the structure of households by the age of the head. In the four countries they analyzed, the US, Great Britain, Taiwan, and Thailand, they find that the within-age group inequality increases very substantially with age. They assess the overall impact on inequality of population aging produced by slowing population growth in Taiwan and conclude that the net impact 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 would produce a rise in inequality, 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.

Analysis of the impact of age structure on inequality in income per adult by Schultz (1997) bears most directly on the approach taken here. He estimates the impact of changing age structure 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 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.

Change in the economic role of women is 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 increased relative to 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 chapters by Bauer and Mathana). 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 role 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, 1997).

The reason income inequality declines with the addition of female workers can be traced 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 US, 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 impact. 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.

Each of these analyses demonstrates the impact on income inequality of two extremes, 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 the Survey of Personal Income Distribution in Taiwan from 1976 to 1993 to replicate standard analyses. The income data are used to calculate a measure of inequality, the coefficient of variation, for the income of males, females, and the combined income. Estimates for four years, 1976, 1982, 1988, and 1993, are presented in Table 3.

There are several noteworthy features of these results. First, the contribution of women to household income increased substantially during this period. In 1976, only 16% of household income was earned by women. By 1993, the contribution of women had increased to 24%. Second, the coefficient of variation in women's income is

substantially greater than for men's income, but the coefficient declined substantially during the seventeen year period analyzed. Third, the correlation between the income of males and females was negative throughout the period but less so at the end of the period. In fact, 1988 and 1993 the correlation between the incomes of men and women was very small.

Table 3. Income inequality for male, females, and households, 1976-1993, Taiwan.

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

However, the impact of women's income on inequality has not increased as women have increased their contribution to household income. Their impact on inequality was just as great in 1976, when women contributed only 15 percent of household income, as in 1993 when women contributed nearly one-quarter of household income. Looking at each year individually one might conclude that an increase in the incomes of women relative to men has an equalizing effect. Looking at the trend one might 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 no further impact.

At least in Taiwan, the increased integration of women into the work force during the last two decades has not had an important impact on income inequality. Can we generalize to other countries? The studies needed to answer this question for East Asian countries are not available. Lam (1996) reports estimates for the US from 1973 to 1987. During that time, women's share of household income increased from 15% to 25%, remarkably similar to the rise 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 is true of Taiwan.

This analysis begs a potentially important issue. The rise in the contribution of household income by women may have an impact on the intra-household distribution of income that is far more important than impact on the inter-household distribution of income. However, we have no information on which to base an assessment.

In the neo-classical growth model, population growth has an unambiguous impact 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 impact 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 work generally supports this view, but the results of these studies have been questioned on a number of econometric grounds (Lam, 1997).

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 than envisioned in the simple neo-classical model. Slower population growth has not produced slower labor force growth except in Japan. However, the decline in population growth has led to higher rates of saving and investment. Hence, the rise in the capital-labor ratio and the impact on the distribution of income can be traced to demographic forces, but for reasons very different than envisioned 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 neo-classical model. But as described more fully in Chapter 3, the initial slow-down 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 impact of slower population growth has been to increase, not to reduce, labor force growth.

The divergence between population growth and labor force growth is very clear in the East Asian experience. The eight high performing economies are arrayed in Table 4 by the rate of population growth, from highest to lowest. Between 1960 and 1990, the labor forces of the three countries earliest in their demographic transitions, Malaysia, Thailand, and Indonesia, grew at an annual rate varying from 2.7 to 3.4 percent per annum. During the same period, the four 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 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 4. Labor force growth, 1960-1990, East Asian economies.

Although one might suspect that labor force growth slowed toward the end of 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 (Chapter 2, Figure 4). The change is a consequence of the substantial rise in saving and investment rates that have occurred throughout the region. Analyses presented by Williamson and Higgins (Chapter 6), Lee, Mason, and Miller (Chapter 7), and Toh (Chapter 8) document the importance of demographic factors, 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 than envisioned in the textbook model. The change occurred because slower population growth led to more rapid capital accumulation, not to slower labor force growth.

No analysis of which we are aware has fully explored the implications of higher rates of saving and investment for inequality. A decline in interest rates typically has an equalizing impact 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 with an equalizing impact on income distribution, but a definitive assessment is not possible.

Inequality in years of life

Conventional measures of income inequality neglect the welfare implications of age at death by analyzing only variation in current income or consumption. Suppose, as an alternative, we followed the experience of a cohort of individuals subject to given mortality conditions. Assuming, for the sake of simplicity, that individuals value all years of life equally, total years lived is a reasonable metric for comparing the welfare of individuals and for judging the inequality inherent in any set of mortality conditions. How then does the distribution of years lived vary as development occurs and mortality conditions improve?

Feeney and Mason (Chapter 3) provides a detailed discussion of changes in mortality, in general and in East Asia. Figure 3.2 compares 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.

The implications of mortality for inequality is assessed using data from model life tables to calculate a Gini ratio for years of life lived.⁷ 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 of death, 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 1. The curve provides the proportion of total years lived by the "unluckiest" proportion of the population. Given a life expectancy of

⁷ 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 **Coale and Demeny, 19??**.

40, for example, the Lorenz curve tells us that the half of the population that dies first lives only 14% of the total years lived by the entire population.

The results charted in Figure 3 show, first, 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 with a Gini ratio of 0.08.

Figure 3. Inequality in years lived, model life tables.

Life expectancy increased rapidly in East Asia during the post-World War II era, but no country experienced an increase as great as the forty year span presented in Figure 3. Life expectancy increased the most in Indonesia --- rising 25 years. In Taiwan, life expectancy rose by only 12 years between 1950-55 and 1990-95 (Feeney and Mason, Table 3.2). Over the entire twentieth century, even more dramatic changes have occurred. In Taiwan, life expectancy increased from 28 years in 1906 to 74 years in 1990-95. Even in Japan, life expectancy didn't exceed 45 years until the mid-1930s (Japan Statistical Association, 1987, Table 2-38). Mortality represented an enormous risk throughout much of the twentieth century and success at increasing life expectancy greatly reduced inequality in welfare arising because of differences in the length of life.

Conclusions

First, there is tremendous variety in the level and trends in 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. 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 in Northeast Asia or South Asia. In some countries, inequality has declined modestly in recent years. In Thailand, on the other hand, 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 is not easily assessed. Widely available measures of inequality are not appropriate for examining the impact of demographic variables such as household composition on income inequality. There are, however, clear, identifiable ways in which demographic factors influence inequality. Empirical studies of East Asia and other countries provide strong indications about 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 population is dis-equalizing because the elderly of incomes that are lower than average or, more importantly, that income varies more among the elderly than other age groups in the population. A population heavily concentrated at young ages may also be dis-equalizing for the same reasons, although the evidence is less conclusive in this case. Changes in the age-structure of the adult population have been sufficiently small during the post-World War II era that any impact on inequality has probably been quite modest. Perhaps the increase in the elderly population in Japan has had a significant impact on income inequality, but probably not elsewhere.

Slowing population growth in East Asia has also not yet influenced inequality, except in Japan, by slowing labor force growth rates and depressing interest rates relative to wages. Slower population growth has not yet produced slower labor force growth except in Japan. As is typical of early stages of the demographic transition, the working age population has grown much more rapidly than the total population. Growth in 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 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 wages with potentially important implications for income inequality. Thus, the demographic transition influenced the distribution of factor income in important ways that are very different than envisioned in standard textbook growth models. The implication for income inequality requires further study.

Finally, we show that 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 changes in current income inequality that have occurred in East Asia or elsewhere.

The changes in 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. Improvements in health and contraceptive technology have led, it appears, to a monotonic decline in inequality.

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Figure 1. Illustration of Gini ratio and Lorenz curve.

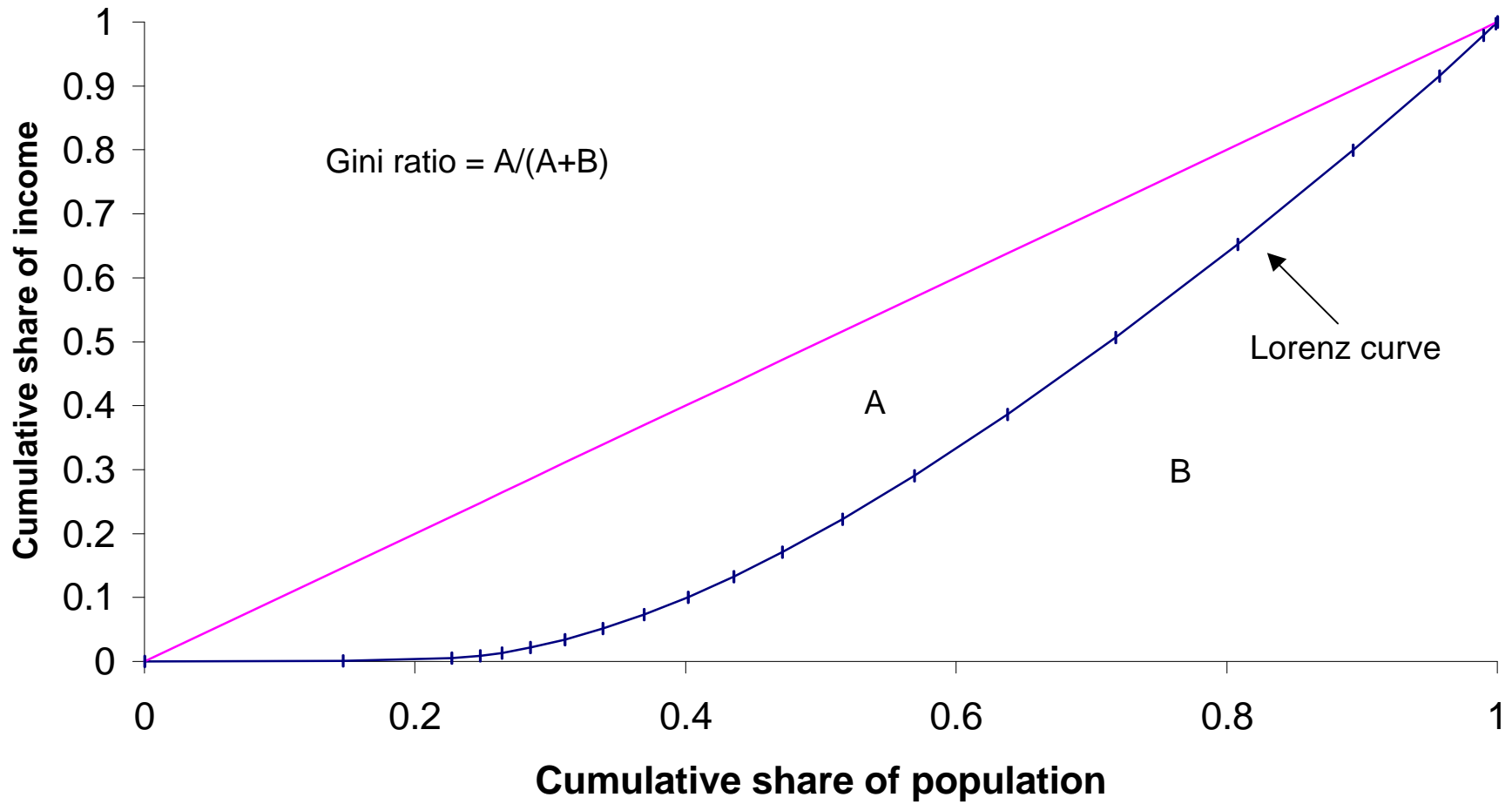


Figure 2. Inequality and development in East Asia.

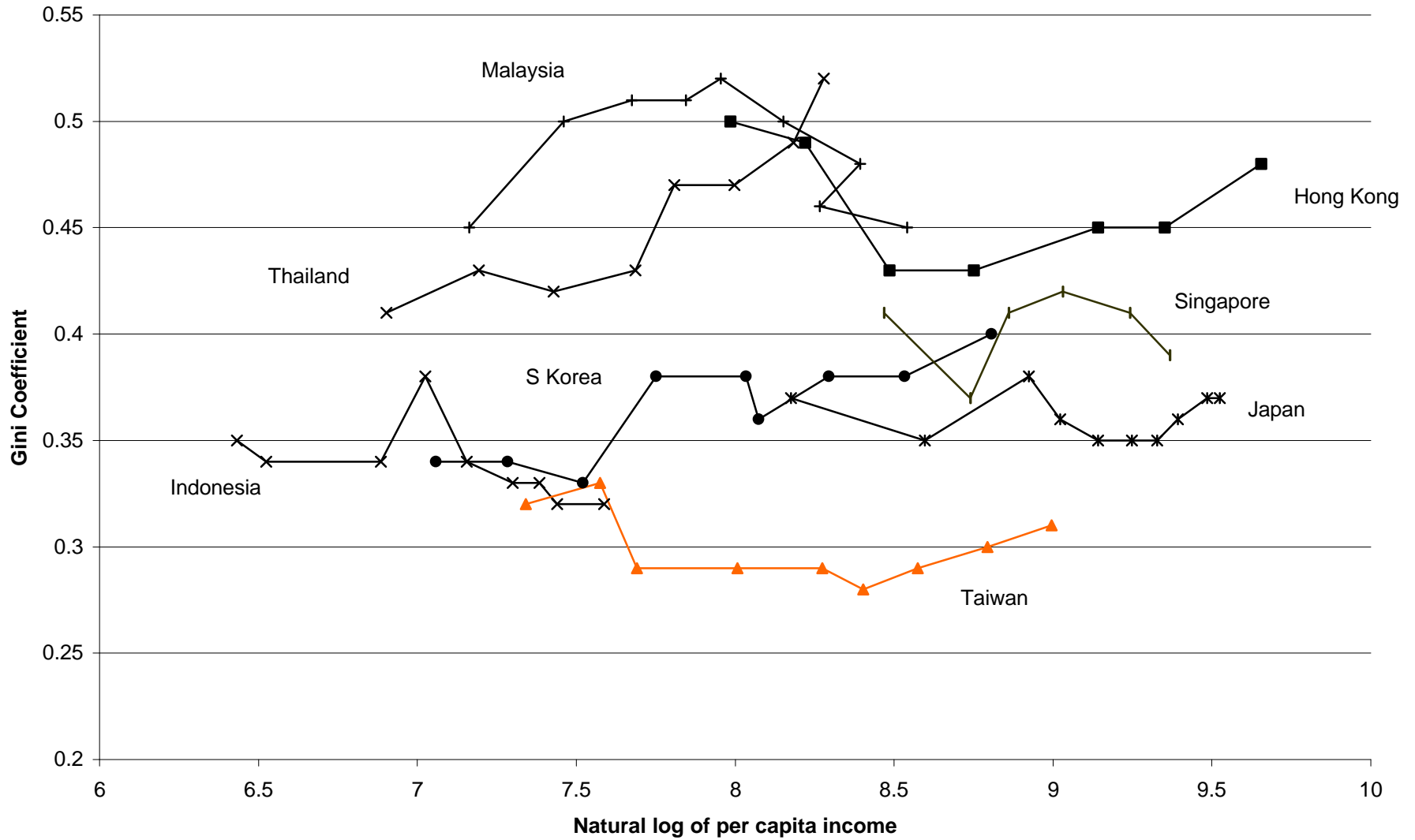


Figure 3. Inequality in years lived, model life tables.

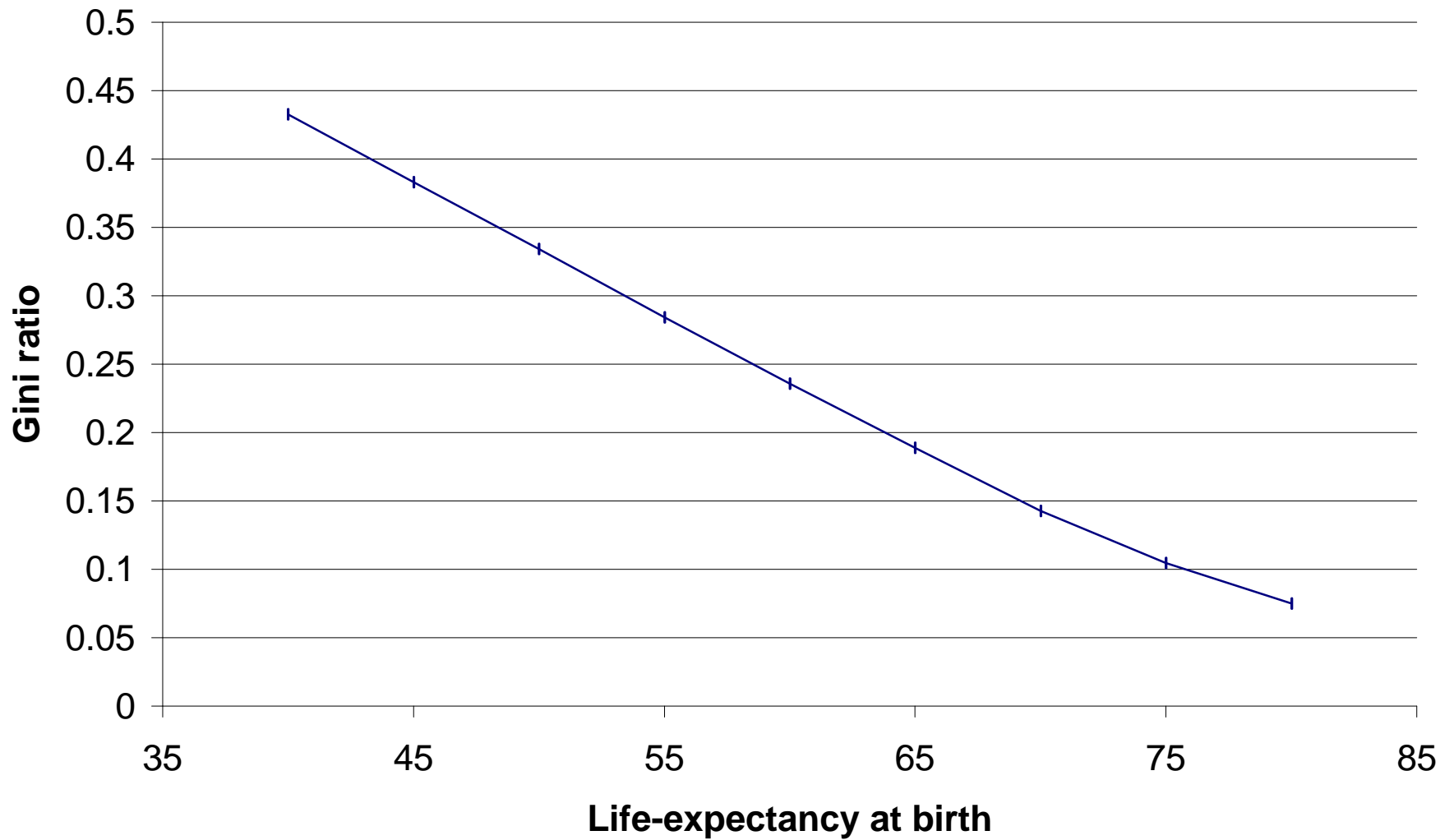


Table 1. Income inequality, regions of the world.

	Number of countries	Gini ratio
Africa	22	0.43
High-Performing Asia	8	0.37
South Asia	5	0.31
Latin America	17	0.50
OECD	19	0.32
Hong Kong		0.45
Indonesia		0.32
Japan		0.35
Korea		0.34
Malaysia		0.48
Singapore		0.39
Taiwan		0.31
Thailand		0.52

Source: Klaus and Squire (1996).

Notes: Latest available year (after 1980). Only "high quality" data are included. For regions, value is median.

Table 2. Household size and composition, *circa* 1960-1990, East Asian economies

		Japan	Korea	Taiwan	Singapore	Thailand	Indonesia
All members	ca 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 (0-14)	ca 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 (65+)	ca 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 adults (15-64)	ca 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
Number of workers	ca 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

Notes: First observation is 1960 except for Taiwan (1966), Singapore (1970), and Indonesia (1971). Population data were compiled from population censuses for each country. Labor force data, except for Taiwan, obtained from ILO (various). Taiwan labor force data from DGBAS (1996).

Table 3. Income inequality for males, females, and households, 1976-93, Taiwan.

	1976	1982	1988	1993
Mean incomes (NT\$)				
Males	105,845	244,736	365,006	652,032
Females	19,417	59,498	102,137	205,841
Income shares				
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	0.641	0.631	0.658	0.630
Males - Total	0.050	0.066	0.044	0.048

Source. Calculated from Survey of Personal Income Distribution in Taiwan, various years.

Table 4. Labor force growth, 1960-1990, East Asian economics

	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
Korea	1.8	2.9
Singapore	1.7	3.5
Japan	0.9	1.1

Sources: ILO, various; UN, 1995, DGBAS, 1996.

Appendix Table 1
Income and expenditure inequality in postwar Asia, nationwide Gini ratios

Year	Taiwan	Year	Japan	Year	South Korea ^a	Year	Hong Kong	Year	Singapore	Year	China ^b	Year	Thailand
1964	0.32	1962	0.37	1965-1967	0.34	1957	0.48	1973	0.41	1960s	0.20	1962	0.41
1968	0.33	1967	0.35	1968-1970	0.34	1963/64	0.50	1978	0.37	1970s	0.25	1968/69	0.43
1970	0.29	1971	0.38	1971-1973	0.33	1966	0.49	1980	0.41	1980s	0.28	1975/76	0.42
1974	0.29	1974	0.36	1974-1976	0.38	1971	0.43	1983	0.42	Early		1980/81	0.43
1978	0.29	1978	0.35	1977-1979	0.38	1976	0.43	1988	0.41	1990s	<u>0.45</u>	1985/86	0.47
1980	0.28	1981	0.35	1980-1982	0.36	1981	0.45	1989	<u>0.39</u>	Average	0.33	1988	0.47
1984	0.29	1984	0.35	1983-1985	0.38	1986	0.45	Average	0.40			1990	0.49
1987	0.30	1986	0.36	1986-1988	0.38	1991	<u>0.48</u>					1992	<u>0.52</u>
1990	0.31	1988	0.37	1989-1991	0.40	Average	0.46					Average	0.46
1993	<u>0.32</u>	1989	<u>0.37</u>	1992-1994	<u>0.39</u>								
Average	0.31	Average	0.33	Average	0.37								

Year	Malaysia	Year	Indonesia ^c	Year	Philippines	Year	India ^d	Year	Pakistan	Year	Sri Lanka	Year	Bangladesh
1957	0.45	1964/65	0.35	1961	0.50	1952/53	0.37	1963/64	0.39	1963	0.45	1963/64	0.36
1967	0.50	1969/70	0.34	1965	0.51	1957/58	0.35	1966/67	0.36	1973	0.35	1966/67	0.34
1970	0.51	1976	0.34	1971	0.49	1963/64	0.32	1969/70	0.34	1978/79	0.44	1968/69	0.29
1973	0.51	1978	0.38	1985	0.45	1967/68	0.31	1971/72	0.35	1981/82	0.45	1973/74	0.36
1976	0.52	1980	0.34	1991	<u>0.48</u>	1972/73	0.32	1979	0.37	1986/87	<u>0.46</u>	1977/78	0.45
1979	0.50	1981	0.33	Average	0.48	1977/78	0.34	1984/85	0.37	Average	0.44	1981/82	0.39
1984	0.48	1984	0.33			1983	0.34	1986/87	0.35			1983/84	0.35
1987	0.46	1987	0.32			1986/87	0.33	1990/91	<u>0.41</u>			1988	<u>0.39</u>
1990	0.45	1990	0.32			1989/90	<u>0.34</u>	Average	0.36			Average	0.37
1995	<u>0.46</u>	1993	<u>0.34</u>			Average	0.34						
Average	0.48	Average	0.34										

Notes:

- a. Average of 3 years.
- b. Per capita household income.
- c. Consumption expenditure.
- d. Per capita expenditure.

Table 1 (continued)

Sources:

Japan: T. Mizoguchi and Y. Terasaki, 1992. Taiwan: Yun-Peng Chu, 1995; South Korea: Ahn, undated; Hong Kong: Chau, undated; China: Oshima with the assistance of Jonna Estudillo, undated; India: Oshima with the assistance of Jonna Estudillo, undated; Thailand: Ikemoto and Santisart, undated; Malaysia: Ikemoto, undated; Philippines: Estudillo, undated; Sri Lanka: Karunatilake, undated; Bangladesh: Osmani and Rahman, undated; Indonesia: Hill, 1996; Singapore: Deininger and Squire, 1996; Pakistan: Hill, 1995.