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6 Patterns of Aging in Thailand and Côte d'Ivoire

Angus Deaton and Christina H. Paxson

This paper presents and discusses some facts about older people in two contrasting developing countries, Côte d'Ivoire and Thailand. We shall be concerned with standard questions in the aging literature, namely, demographic structure, living arrangements, urbanization, illness, labor force behavior, and economic status. In this paper, we shall not go far beyond the presentation of data from a series of household surveys from the two countries. Although recent years have seen increased attention in the demographic and sociological literatures to questions of aging in LDCs, data are still relatively scarce, particularly for Africa, and we see our current task as providing stylized facts to help focus further discussion.

There are two research issues that provide the structure for our discussion: household saving behavior and, more broadly, the economics of aging in countries with low living standards but with rapidly expanding shares of old people in the population.

Research on saving behavior in the United States, Japan, and Western Europe has been dominated by permanent income and life-cycle models since their introduction in the 1950s. There has been a good deal less work done on household saving behavior in LDCs, and much of the work that has been done has simply transferred the analytic framework from the more to the less developed context. It is not clear that this is the best way of proceeding. While it makes sense to work with the same basic ideas—that saving can smooth con-

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sumption over time and that assets provide a measure of insurance against an uncertain future—there are important differences in environment and in mechanisms, and the same aims may therefore be achieved in very different ways. A much larger share of the population in developing countries is engaged in agriculture, where incomes are very variable, and there are many poor people living close to the subsistence level, so consumption insurance may be of the greatest importance.

Household size is typically larger in poorer countries. Extended families, or even simply large households, may play many of the roles that are performed by asset markets in more developed economies. For example, wealthy older men may acquire additional young wives as an alternative to an annuity. At the same time, the internal organization of the family and its living arrangements are intimately tied to patterns of inheritance, and therefore the means of transferring assets from one generation to the next will themselves vary with household structure. Because age composition within very large households may not vary very much over time, the main motive for saving becomes the protection of living standards from short-term covariate risk and has little to do with transferring resources between generations or between widely separated time periods. One of the issues that we examine in this paper is the extent to which there are clearly defined economic and demographic characteristics of households that vary systematically with the ages of their members, particularly characteristics that are likely to provide motives for saving.

A number of broader issues have been raised in the literature on aging in LDCs, and these also play a role in shaping our discussion. The dominant *demographic* fact for LDCs is the effect of the demographic transition on raising the fraction of old people in the population. In Thailand, where the demographic transition is largely complete, the share of people over 60 in the population, which was 6.2 and 5.7 percent in 1960 and 1985, respectively, is expected to rise to 11.9 percent in 2020 (United Nations 1986), figures that are repeated in much of South, Southeast, and East Asia as well as in Latin America. United Nations (1987) lists 3.8, 3.5, 5.1, and 4.3, respectively as the percentages of the population aged 65 and over in these four regions in 1980, whereas the estimated figures for 2000 are 4.8, 4.6, 7.8, and 5.2, rising in 2025 to 8.2, 8.3, 13.3, and 8.3. In Africa, where by contrast there has been little decline in the rate of population growth, the percentages of the population aged 65 and over are 3.1, 3.0, and 3.9 in 1980, 2000, and 2025, respectively. The two countries discussed in this paper are good examples of these two contrasting cases.

It is also important to note that life expectancy for older people in LDCs is high, and although life expectancy is not as high as in Japan or the United States, the difference is much smaller than the corresponding differences at birth. Life expectancy at birth in North America is 72.4 years for men and 80.1 years for women, and at age 60 men can expect to live for 17.8 years and

women for 21.8 years. In South Asia and Africa, respectively, life expectancy at birth is 59.4 and 54.1 for men and 60.2 and 57.4 for women, and at age 60 it is 15.1 and 14.3 for men and 16.3 and 15.9 for women (for these and other figures, see Treas and Logue 1986). Since women live longer than men, higher life expectancy for all tends to exaggerate the predominance of women over men in the population, with the result that the ratio of males to females tends to decline with the level of development. In the more developed countries in 1980, there were sixty-two males per one hundred females aged 65 and over, compared with eighty-two per one hundred in Thailand and eighty per one hundred in China, and in parts of South Asia, where there is excess mortality among women, there are more men than women in the older age groups (see Martin 1988). Several West African countries also show a predominance of men over women (U.S. Agency for International Development 1982).

The growing relative importance of the elderly, particularly in Asia, has led to an increased academic and policy debate mirroring much of the earlier debate in more developed economies. Two excellent reviews are provided by Treas and Logue (1986) and, for Asia, Martin (1988). One of the dominant themes of this debate is the contrast between the status of the elderly in more and less developed countries. There are extreme idealized versions of both types of societies. To some, the extended family provides insurance for old age, unemployment, and sickness as well as an environment in which the elderly are an integrated, useful, and respected part of their families. This is seen as a stark contrast to the "Western" treatment of the old, whereby they are unproductive, isolated, and institutionalized, with social insurance providing only a poor substitute for family insurance. Cowgill (1974; 1986, chap. 8) sees the victimization of the elderly as a natural concomitant of development. Education, urbanization, and technical change become "processes that strip the old of claims to respect, power, and independence" (Treas and Logue 1986, 666). To others, the security of the extended family is a romanticized myth that appeals mostly to those who have long escaped the grinding poverty, poor health conditions, and low life expectancy with which it is typically associated. One person's isolation is someone else's individual freedom. It is perhaps not surprising that Asian policymakers, faced with the prospect of rapidly increasing absolute and relative numbers of old people, view Western systems of pensions, social security, and public geriatric care with a mixture of envy and alarm.

These "big" questions of the effect of development on the status of the elderly are not sufficiently well posed to be amenable to serious empirical evaluation. Nevertheless, good work has been done on more specific issues, particularly on the living arrangements of the elderly. Martin (1989) reviews a number of studies of Asian populations that suggest that the proportion of the elderly living with their children, although still high (typically between 70 and 80 percent), is declining over time, with a corresponding increase in the

numbers living alone, a pattern that is consistent with a move toward living arrangements such as those in the United States, where only 15 percent of the elderly live with their children.

The remainder of the paper is organized as follows. Section 6.1 is concerned with *individuals* and reviews demographic characteristics and living arrangements for elderly people in Côte d'Ivoire and Thailand. It also presents data on urbanization, on health, on labor force participation and hours worked, and, as far as is possible, on levels of living. Section 6.2 is concerned with *households* and looks for "life-cycle"-type patterns in household size, income, and consumption patterns in relation to the ages of household members. Section 6.3 summarizes and concludes.

6.1 Individual Characteristics and Age

6.1.1 Sample Data and Population Characteristics

The data presented in this paper come from two series of household surveys from Côte d'Ivoire and Thailand. Côte d'Ivoire is listed by the World Bank (1989) in the lower-middle-income division of its middle-income category, with per capita GNP in 1987 of $740, which grew at an annual average per capita rate of 1.0 percent from 1965 to 1987. Its population in 1987 is estimated as 11.1 million and grew at an annual rate of 4.2 percent during both 1965–80 and 1980–87. The crude birth rate per thousand was fifty-two in 1965 and fifty-one in 1987, while life expectancy at birth in 1987 was 52 years. Thailand has a similar GNP of $850 but has experienced much faster growth, averaging 3.9 percent from 1965 to 1987. If these figures can be taken seriously, the average Thai was 280 percent richer in 1987 than in 1960, as opposed to an increase of only 30 percent for Ivorians over the same period. Whatever the precise magnitude, young Thais are now very much better off than were their parents, either in terms of lifetime resources or in terms of income at the same age, and this is much less true for young Ivorians. There were 53.6 million Thais in 1987, with a life expectancy at birth of 64 years. The population growth rate was 2.9 percent from 1965 to 1980, 2.0 percent from 1980 to 1987, and is projected to be 1.5 percent from 1987 to 2000; the crude birth rate per thousand fell from forty-one to twenty-five between 1965 and 1987.

The Ivorian surveys are the Living Standards Surveys of 1985 and 1986, collected by the Department of Statistics of Côte d'Ivoire with the technical and analytic support of the World Bank. The survey design, described in Ainsworth and Muñoz (1986), is a nontraditional one, carried out on a simple random sample of sixteen hundred households in each of the two years, with eight hundred households common to both surveys. Although the number of households is small compared with traditional designs, there are around fourteen thousand individuals in each of the two surveys. The emphasis is less on

large sample size than on the collection of comprehensive data for each household so that interlinkages between different economic activities can be studied. The Thai surveys are the two Socioeconomic Surveys of the Whole Kingdom, collected by the National Statistical Office in the two years 1981 and 1986. These surveys are more like the traditional household income and expenditure surveys. They have sample sizes in excess of twelve thousand, they have no panel element, and there is less detailed information about many of the activities covered in the Living Standards Surveys. Even so, for the purposes of this paper, the two sets of surveys provide roughly equivalent information.

There are earlier household surveys for Thailand that could be used to examine the same issues over a longer time period. However, after the 1975 survey, the definition of the household was changed to exclude subunit households; thus, for example, a married son and his wife living with parents would have been included as part of the parents' household in 1975 but not in later surveys. As a result, it is not possible to make consistent comparisons about living arrangements over the two types of survey. This seemingly technical issue points to a deeper problem in the measurement of household structure in Thailand and, indeed, in developing countries in general. To quote Cowgill (1986, 70),

> In Thailand, however, the term *household* is somewhat elusive and ambiguous. The climate is semi-tropical, and a great portion of one's life is spent out-of-doors. To a very great extent, this includes cooking, eating, and visiting. Thus the physical structure of the home is little more than a bedroom situated within a compound, while the cooking, eating, bathing, visiting, and even much of the working takes place in the compound rather than in the physical structure of the home. Hence when we say that the young married couple lives with the parents of one of them, the young couple usually sleeps in a separate structure within the parental compound. This usually involves common cooking and eating facilities, but this too is flexible, especially since eating is more of an individual matter and less often a scheduled group activity. Western definitions of household membership are not easily applied in this type of society.

These issues must be constantly borne in mind when interpreting the figures given below. In particular, the "new" treatment of the household in the Thai surveys is likely to *overstate* the degree to which people live either alone or in small groups and to *understate* household size. By contrast, the Ivorian survey used a more inclusive concept of the household and tended to include subunits if they lived in the same compound. As a result, household size in the surveys is larger than household size in the 1975 Ivorian census, and the biases may be in the opposite direction from those in Thailand.

Figures 6.1 and 6.2 show the age pyramids and sex ratios for Bangkok and for rural Thailand in 1981 and 1986; figure 6.3 provides the same information for Côte d'Ivoire. For most of the paper, we shall follow this practice of show-

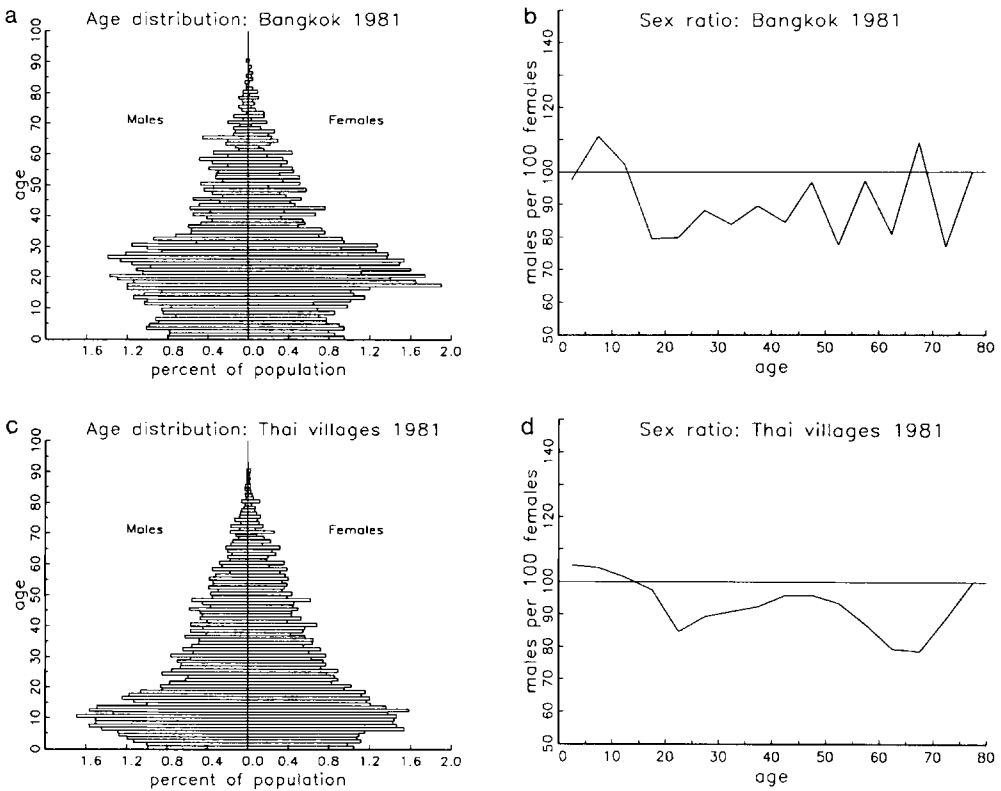
a
Age distribution: Bangkok 1981
Males
Females
age
percent of population
b
Sex ratio: Bangkok 1981
males per 100 females
age
c
Age distribution: Thai villages 1981
Males
Females
age
percent of population
d
Sex ratio: Thai villages 1981
males per 100 females
age

Fig. 6.1

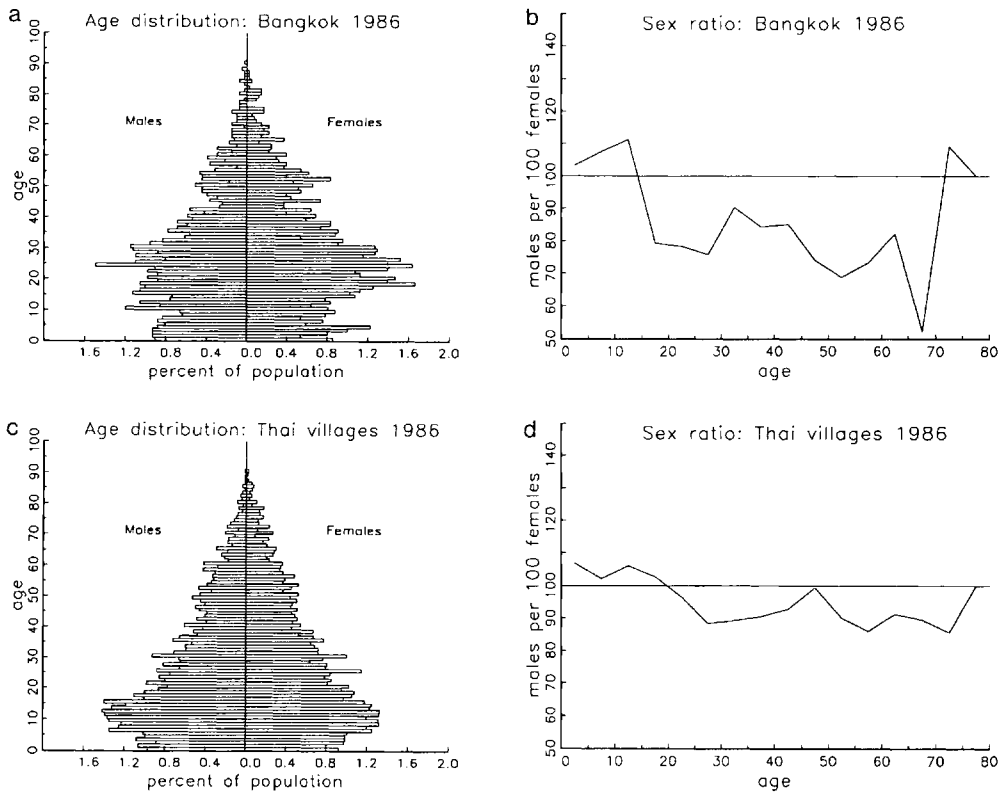
a
Age distribution: Bangkok 1986
Males
Females
age
percent of population
b
Sex ratio: Bangkok 1986
males per 100 females
age
c
Age distribution: Thai villages 1986
Males
Females
age
percent of population
d
Sex ratio: Thai villages 1986
males per 100 females
age

Fig. 6.2

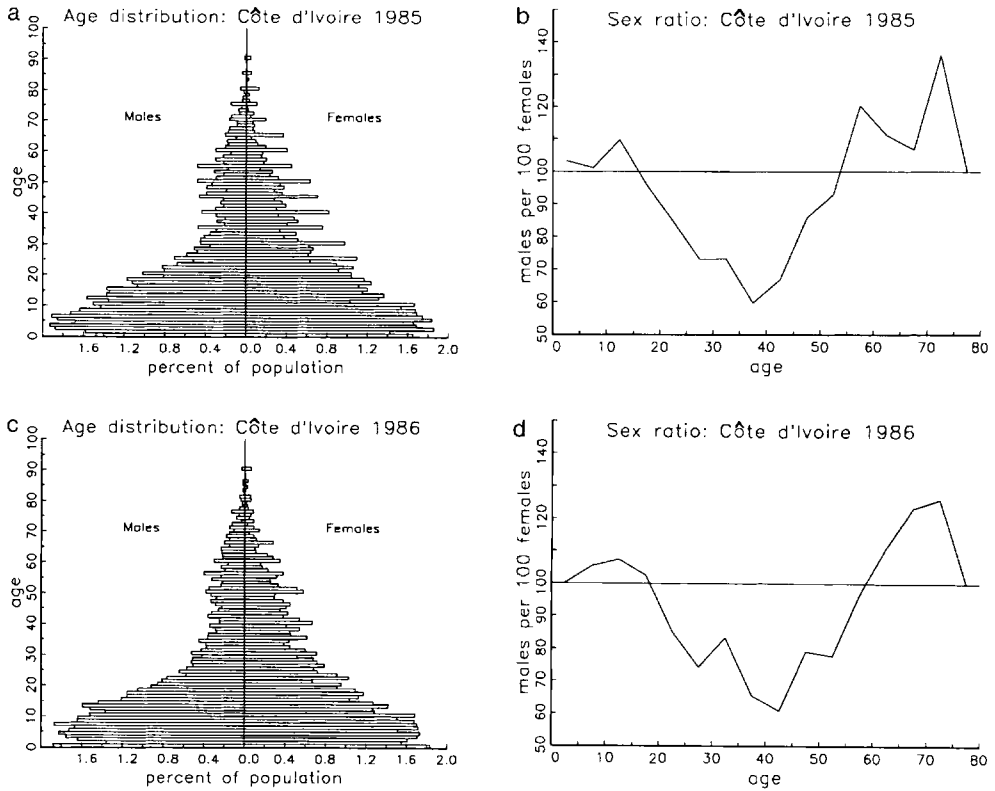
a
Age distribution: Côte d'Ivoire 1985
Males
Females
age
percent of population
b
Sex ratio: Côte d'Ivoire 1985
males per 100 females
age
c
Age distribution: Côte d'Ivoire 1986
Males
Females
age
percent of population
d
Sex ratio: Côte d'Ivoire 1986
males per 100 females
age

Fig. 6.3

ing data for Bangkok and for rural Thailand rather than for the more conventional urban-rural split. Bangkok contains nearly 70 percent of Thailand's urban population, and while the survey also collects other urban and semiurban (sanitary district) data, these seem sufficiently different from Bangkok to merit separate treatment. In order to avoid a three- or possibly four-way split for each table, we compromise with two. For the same reason, and when it is not misleading to do so, we shall normally present data from the 1986 Ivorian survey. On balance, the data from the second year are probably of somewhat higher quality.

There are a number of problems with the Ivorian data that are apparent from the figures, although none are particularly serious for older people. There is very pronounced peaking at five-year age intervals, particularly in 1985 and particularly among females. Such effects are not uncommon among uneducated populations (see, e.g., Ewbank 1981, 66–68) and are typically correlated with low education and low incomes; the 1975 Ivorian census shows similar effects (see Ahonzo, Barrere, and Kopylov 1984, 9). In 1986, interviewers placed less reliance on reported figures and acquired more supporting information, and the problem was considerably reduced. Even so, it is wise not to make much of the precise age estimates and to work instead with five- or ten-year age brackets. More serious is an apparent undercount of prime-age males; in 1986, the sex ratios (males per hundred females) in the age groups 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, and 50–54 are, respectively, 85.1, 74.2, 83.2, 65.3, 60.7, 78.9, and 77.6, with between two hundred and six hundred people in each sex-age cell (see figs. 6.3b and 6.3d). Neither we nor the World Bank currently has any explanation for these results. Again, there are similar, although not identical, problems with the 1975 census and other demographic surveys as well as with census data in other African countries. Ahonzo, Barrere, and Kopylov (1984, chap. 5) find similar patterns in surveys carried out in the early 1960s as well as in the 1975 census once the predominantly young, male, non-Ivorian immigrants (22 percent of the population) are removed. Although the Living Standards Surveys include nonnationals, there are only 14 percent in the two surveys in 1985 and 1986. Since it is the same age group missing in data ten years apart, and since there is no large-scale emigration from Côte d'Ivoire, the problems must come from measurement errors, possibly in connection with the many prime-age males in the cities, where they are hard to count or survey. Respondents may also exaggerate their ages, and it is possible that men do so more often or by more than do women. The figures for the fractions of old people appear to be consistent with those from the census (again, see Ahonzo, Barrere, and Kopylov 1984; and U.S. Agency for International Development 1982); note that once again differential overreporting of age by men may account for at least part of the apparent excess of older men.

Tables 6.1A and 6.1B show the fractions of people, by sex and urbanization, who are aged over 55 in both Thailand and Côte d'Ivoire. We have cho-

Table 6.1 **Age Distribution by Sex: 55 and Over**

A. Thailand, 1981 and 1986

	Bangkok				Rural			
	Females		Males		Females		Males	
Age	1981	1986	1981	1986	1981	1986	1981	1986
55–59	3.2	3.5	3.5	3.0	3.3	3.8	3.0	3.4
60–64	2.3	2.3	2.1	2.2	2.5	2.6	2.1	2.5
65–69	1.6	2.1	2.0	1.3	1.8	1.9	1.5	1.8
70–74	1.1	1.0	1.0	1.3	1.4	1.7	1.3	1.5
75–79	.5	.7	.7	.5	.8	1.3	.6	.6
80+	.8	.8	.2	.8	1.0	1.0	.4	.8
> 55	9.5	10.5	9.5	9.1	10.7	12.5	9.0	10.6
Obs.	3,399	2,209	3,028	1,879	11,941	10,260	11,359	9,862

B. Côte D'Ivoire, 1985 and 1986

	Urban				Rural			
	Females		Males		Females		Males	
Age	1985	1986	1985	1986	1985	1986	1985	1986
55–59	1.5	1.8	1.9	2.0	2.7	3.0	3.6	2.9
60–64	1.1	1.3	1.5	1.5	2.1	2.7	2.3	3.1
65–69	.7	.8	.5	.6	1.7	1.7	2.2	2.5
70–74	.3	.3	.6	.5	.9	1.1	1.3	1.4
75+	.4	.5	.3	.4	1.4	1.3	1.3	1.5
> 55	3.9	4.7	4.8	5.0	8.9	9.7	10.6	11.4
Obs.	2,842	2,805	2,678	2,662	4,014	3,846	3,737	3,583

Note: Figures are percentages of the relevant group; e.g., in Thailand in 1981, 3.2 percent of all women in Bangkok were aged 55–59. "Obs." is the total number of observations for all ages in the sample; e.g., there are 2,842 females in the urban Ivorian sample in 1985. Note that the Ivorian sample is a simple random sample and that the sample numbers can therefore be used to estimate the fraction urbanized. This is not true for the Thai survey (see table 6.2 below). The Thai results exclude urban non-Bangkok and the suburban "sanitary districts" sector.

sen the young cutoff age of 55 because, particularly in a young, rapidly growing population such as that in Côte d'Ivoire, there are relatively few old people. In the 1985 Ivorian sample as a whole, there are 994 individuals aged 55 or over out of 13,271 people in all, or 7.5 percent (in 1986, 1,046 out of 12,896, or 81.8 percent). For Thailand, because the urban sector is relatively oversampled, when the appropriate weights are applied, the survey shows 9.9 percent 55 and over in 1981 (weights for the 1986 survey are not currently available). National Economic and Social Development Board (1985) gives a lower figure of 7.83 percent over 55 in 1980. This publication notes a tendency for Thai survey data to underestimate the numbers of children under the

age of 10, which may explain some of the discrepancy. The two estimates for Côte d'Ivoire, which are only one year apart, provide some cross-check on reliability, although remember that half the households are common both surveys.

In rural areas of both countries, the age distributions of older men are very similar, with around 10 percent of men older than 54 in both cases. The Ivorian survey shows (absolutely) more men than women in all the age categories over 54, whereas Thailand shows the common pattern of more women than men (see figs. 6.1b, 6.1d, 6.2b, 6.2d, 6.3b, and 6.3d). In Thailand, the proportions of elderly are increasing over time (except for males in Bangkok), as is to be expected given the continuing decline in fertility. The major difference between the two halves of table 6.1 lies in the relative youth of the urban sector in Côte d'Ivoire. Only 4 percent of the urban population is aged 55 or over, as opposed to 10 percent in Thailand, and the much higher level of urbanization in Côte d'Ivoire (42 as opposed to 27 percent) is what reconciles the similarity between the rural sectors with the overall lower fraction of elderly in Côte d'Ivoire. Of course, both fractions are still much lower than those for the more developed countries of the world; in the United States, 21.3 percent of the population was aged 55 or over in 1985 (United Nations 1987), while for developed countries as a whole 15.8 percent of the population was 60 years or over in 1985.

The urbanization figures given in table 6.2 are for the elderly and for the population as a whole. In Côte d'Ivoire, the urban population grew by 8.7 percent per annum from 1965 to 1980, as opposed to 4.2 percent for the total population (World Bank 1988), and we see the picture that would be expected if it is largely the younger people who move to the cities; most old people (three-quarters) live in the countryside, as opposed to only 60 percent of the population as a whole. The towns are predominantly young; there are relatively few old people in Côte d'Ivoire in any case, and a relatively small pro-

Table 6.2 **Urbanization and the Elderly, Côte d'Ivoire and Thailand**

	Percentages of People Living In:		
	Côte d'Ivoire[a]		
	1985	1986	Thailand, 1981
Aged 55 or over:			
Urban	24.3	25.3	17.5
Semiurban			10.3
Rural	75.7	74.7	72.2
All ages:			
Urban	41.6	42.4	17.8
Semiurban			9.0
Rural	58.4	57.6	73.2

[a]In the Ivorian survey, households are categorized only as urban or rural, not as semiurban.

portion are urbanized. For Thailand, the picture is different; the distribution of elderly across rural and urban regions is virtually identical to the distribution of all people across regions. For example, in 1981, 17.5 percent of people older than 54 were urbanized, as opposed to 17.8 percent for the population as a whole. However, these numbers mask the fact that the fraction of older people urbanized exceeds the fraction of children urbanized (14.9 percent) and is less than the fraction of people aged 15–54 who are urbanized (20.9 percent). Thus, cities in Thailand have a slightly heavier concentration of younger adults than older adults. The difference between the fraction of older and younger adults who are urbanized is so small because there is relatively slow growth of urban areas in Thailand and because there are fairly high rates of migration by the elderly to urban areas other than Bangkok. The growth of the urban population in Thailand averaged 4.6 percent a year between 1965 and 1980, as opposed to a 2.6 percent annual growth rate for the population as a whole (World Bank 1988). Migrants to Bangkok tend to be young: only 2.6 percent were aged 65 or older in 1982 (National Statistical Office 1983). However, migration rates of older people to urban areas other than Bangkok have been quite high, with rates for those 65 and older exceeding rates for those aged 30–49 (World Bank 1979).

The Ivorian data also provide information on the nationality of people sampled. Côte d'Ivoire has been one of the more successful West African economies, thus attracting many migrants from its neighbors, particularly Burkina Faso, Mali, and Guinea. Of the two samples, 13.9 percent in 1985 and 13.1 percent in 1986 are non-Ivorian, divided in the ratios 4:2:1:1 among those three neighboring countries and other Africans. As one might expect if many of these migrants are young, the proportions of those 55 and over are lower—7.6 and 6.8 percent.

6.1.2 Living Arrangements

Tables 6.3A and 6.3B tabulate marital status for those aged 55 and over. For women, the modal status at ages 55–59 is married and at 70 and over widowed, with the weight shifting from one category to the other as we move from the younger to the older women. These patterns are similar in the two countries. The modal status for men is married in all these elderly age categories. In Côte d'Ivoire, where one-quarter of men have more than one wife, 83 percent of men aged 70 and over have at least one spouse. Of the 543 men in table 6.3B, 492 are household heads, and for them we have data on numbers and ages of wives. Of these, 449 have one or more wives in the household: 59 percent have one wife, 26 percent two, 11 percent three, and 4 percent four or more. The average age of these 449 men is 64, that of the first wife 51, the second wife 44, and the third wife 40. It is difficult to become a widower in Côte d'Ivoire, and even among those aged 70 or more, there are only 12 percent in this category, compared with 26 percent in rural Thailand.

For Ivorian men, there is a strong association between wealth (especially

Table 6.3 **Married Status of the Elderly**

A. Thailand, 1981

Age	Rural Females					Bangkok Females				
	Never Married	Married	Widowed	Divorced	Total	Never Married	Married	Widowed	Divorced	Total
55–59	1.8	63.9	29.6	4.8	396	2.8	73.2	15.7	8.3	108
60–64	2.0	57.6	37.3	3.1	295	3.9	39.7	48.7	7.7	78
65–69	1.8	43.6	51.8	2.7	220	1.8	49.1	43.6	5.5	55
70+	2.2	21.4	74.5	1.9	364	3.7	9.8	79.3	7.3	82
	Rural Males					Bangkok Males				
55–59	2.3	86.3	8.4	2.9	344	.0	87.6	6.7	5.7	105
60–64	.4	83.8	13.7	2.1	234	1.6	89.1	17.5	.0	63
65–69	.6	84.3	13.4	1.7	172	3.3	80.0	13.3	3.3	60
70+	.8	71.9	25.8	1.5	267	.0	60.7	36.1	3.3	61

B. Côte d'Ivoire, 1986

Age	Females					Males				
	Never Married	Married	Widowed	Divorced	Total	Never Married	Married	Widowed	Divorced	Total
55–59	.6	65.0	25.8	8.6	163	1.9	90.5	5.1	2.6	157
60–64	.0	54.4	39.1	6.5	138	2.0	91.5	2.0	4.6	153
65–69	.0	41.9	55.8	2.3	86	.9	85.9	11.3	1.9	106
70+	.9	15.5	81.9	1.7	116	.0	82.7	11.8	5.5	127

cash wealth), age, and number of wives. Hecht (1984) describes how, in the 1920s, which were the early years of cocoa and coffee production in Côte d'Ivoire, the cash from the new crops, which were farmed by lineages, not families, was used to provide bridewealth for the acquisition for the lineage of new wives, and thus ultimately new labor. By the 1980s, the old lineage system had largely broken down and been replaced by one of small-scale peasant farming, with alienable land and wage labor, but the surplus is still used to acquire additional wives. Indeed, the acquisition of additional young wives by wealthy Ivorians is a standard way of purchasing old age security. The occurrence of polygyny rises with age until remarkably late in life (see Ahonzo, Barrere, and Kopylov 1984, table 5.8). Only 10 percent of men aged 25–29 have more than one wife, but the proportion rises with age until it reaches nearly one-third for 65–74-year-olds. Indeed, 13 percent of men aged 70–74 have three or more wives.

The effects of polygyny on living arrangements also appear in tables 6.4A and 6.4B. Over 80 percent of Ivorian males in the table live in households with at least one spouse, as compared with only 60 percent of men aged 70 or more in Thailand. Elderly women, by contrast, are increasingly widowed and live with their children or with others. About half these "others" are brothers who take their sisters into the household; the rest are women living with a head of household who is more distantly related, perhaps a niece or nephew. Very few of the elderly, either men or women, live alone in Côte d'Ivoire; in the 1986 (1985) sample, there are only twenty-two (seventeen) people over 54 living by themselves. Indeed, there are very few couples; less than 5 percent of the elderly live in households with only two members. Households are large in Côte d'Ivoire, averaging 8.1 persons in 1986, and neither the elderly nor anyone else is likely to live in a small household; only 1 percent of the people in the survey live in households with fewer than three members.

The situation in Thailand is different, although the caveat about the definition of the Thai household must be kept in mind. Household size is smaller, with, respectively, 4.2 and 4.6 persons per household in Bangkok and rural regions in 1981 and 3.6 and 4.5 in 1986. There are correspondingly more older people who live alone or with their spouses. Among elderly women in Rural Thailand in 1981, 5.6–14 percent lived alone, and a substantial fraction among the younger elderly lived with a spouse but with no other family members. The numbers for 1986 do not reveal an increase in the tendency to live alone or with a spouse only. In fact, the fraction of rural females living alone decreased substantially between the two survey periods for all age groups. Older individuals who do not live alone or with a spouse only almost always live with adult children. The fraction of older people living with "others only" is small for all but Bangkok females. Of women who do live with "others only," the age of the household head is typically quite low, indicating that these women may live with adult grandchildren. The "Western" view of the elderly living either alone, alone with spouse, or with their children is perhaps

Table 6.4 Living Arrangements of the Elderly

A. Thailand, 1981 and 1986

	Bangkok Females							
	1981				1986			
	55–59	60–64	65–69	70+	55–59	60–64	65–69	70+
Alone	3.8	7.9	7.3	9.8	9.0	8.0	10.9	1.8
Spouse	5.7	9.2	5.5	2.4	3.9	6.0	10.9	.0
Kids	18.9	31.6	32.7	24.4	37.2	36.0	34.8	31.6
Others	8.5	11.8	9.1	22.0	6.4	16.0	13.0	14.0
Spouse + kids	49.1	22.4	25.5	4.9	33.3	26.0	21.7	5.3
Spouse + others	1.9	2.6	1.8	.0	1.3	.0	.0	5.3
Kids + others	3.8	13.2	9.1	36.6	5.1	2.0	6.5	42.1
Spouse + kids + others	8.5	1.3	9.1	.0	3.9	6.0	2.2	.0
Subtotals:								
With spouse:	65.1	35.5	41.8	7.3	42.3	38.0	34.8	10.5
With kids:	80.2	68.4	76.4	65.9	79.5	70.0	65.2	79.0
Number	106	76	55	82	78	50	46	57
	Rural Females							
Alone	5.6	13.2	12.3	13.7	3.4	5.6	9.0	7.6
Spouse	12.2	12.9	13.2	6.9	11.2	16.7	12.5	7.1
Kids	23.9	22.7	28.8	22.5	23.6	24.1	28.5	25.1
Others	5.3	3.4	9.6	14.8	3.1	3.0	4.5	11.1
Spouse + kids	42.6	38.0	23.7	7.7	49.9	41.5	29.0	10.9
Spouse + others	2.5	2.4	1.4	2.8	2.1	.4	4.0	2.1
Kids + others	3.1	4.8	7.8	28.3	2.9	5.2	7.5	29.6
Spouse + kids + others	4.8	2.7	3.2	3.3	3.9	3.7	5.0	6.4
Subtotals:								
With spouse:	62.2	55.9	41.6	20.6	67.0	62.2	50.5	26.5
With kids:	74.4	68.1	63.5	61.8	80.3	74.4	70.0	72.0
Number	394	295	219	364	385	270	200	422
	Bangkok Males							
Alone	5.7	7.9	5.0	4.9	3.5	7.3	4.2	10.2
Spouse	9.5	9.5	8.3	13.1	8.8	14.6	8.3	12.2
Kids	6.7	9.5	11.7	19.7	3.5	14.6	.0	14.3
Others	1.9	1.6	5.0	3.3	1.8	.0	4.3	6.1
Spouse + kids	61.0	55.6	55.0	36.1	66.7	48.8	75.0	30.6
Spouse + others	2.9	4.8	6.7	1.6	7.0	2.4	4.3	4.1
Kids + others	1.9	1.6	.0	16.4	1.8	.0	.0	20.4
Spouse + kids + others	10.5	9.5	8.3	4.9	7.0	12.2	4.3	2.0
Subtotals:								
With spouse:	83.8	79.4	78.3	55.7	89.5	78.1	91.7	49.0
With kids:	80.0	76.2	75.0	77.1	79.0	75.6	79.2	67.4
Number	105	63	60	61	57	41	24	49

(*continued*)

Table 6.4 (continued)

A. Thailand, 1981 and 1986

	Rural Males							
	1981				1986			
	55–59	60–64	65–69	70+	55–59	60–64	65–69	70+
Alone	5.3	5.1	2.3	4.2	2.1	2.0	3.9	3.9
Spouse	14.9	15.4	21.4	23.6	15.0	19.4	22.4	18.4
Kids	7.3	8.1	11.6	12.6	6.3	6.9	11.2	14.5
Others	2.0	3.0	1.7	2.7	1.2	2.0	1.7	3.2
Spouse + kids	61.5	58.1	52.6	35.7	64.9	59.5	48.0	39.4
Spouse + others	2.9	2.6	1.2	4.6	3.3	3.6	3.9	4.3
Kids + others	.3	2.6	2.3	10.3	.3	.4	.6	6.7
Spouse + kids + others	5.8	5.1	6.9	6.5	6.9	6.1	8.4	9.6
Subtotals:								
With spouse:	85.1	81.2	82.1	70.3	90.1	88.7	82.7	71.6
With kids:	74.9	73.9	73.4	65.0	78.4	72.9	68.2	70.2
Number	343	234	173	263	333	247	179	282

B. Côte d'Ivoire, 1986

	Females				Males			
	55–59	60–64	65–69	70+	55–59	60–64	65–69	70+
Alone	.6	.7	2.3	.0	2.5	2.6	2.8	5.5
Spouse	4.2	.7	.0	.9	1.9	4.6	1.9	3.1
Kids	2.5	2.9	.0	.9	1.3	.7	.9	.8
Others	15.3	16.7	26.7	21.6	3.8	4.6	7.5	6.3
Spouse + kids	3.7	2.2	4.7	.9	17.2	14.4	18.9	11.0
Spouse + others	20.2	23.9	16.3	5.2	3.8	11.1	6.6	10.2
Kids + others	22.1	27.5	31.4	62.1	3.8	1.3	5.7	6.2
Spouse + kids + others	31.2	25.4	18.6	8.6	65.6	60.8	55.7	56.6
Subtotals:								
With spouse	59.5	52.1	39.5	15.5	88.5	90.8	83.0	81.1
With kids	59.5	58.0	54.7	72.4	87.8	77.1	81.1	82.6
Number	163	138	86	116	157	153	106	127

Note: **Thailand:** "Alone" means living alone, "Spouse" means living with a spouse only, "Kids" means living with children only, etc. "Children" can include sons- or daughters-in-law and step-children. Only people aged 15 and over were included in household member counts, and servants were excluded. For some observations, it is not possible to determine the relationships between all people in the household. For example, an older person who is an "other relative" of the household head could potentially be the parent of another person in the household (who would also be coded as an "other relative" of the head). In this case, the older person would be coded as living with "others only." Thus, the fraction of people living with others only is likely to be overstated and the fraction living with children understated. **Côte d'Ivoire:** "Spouse" means living alone with spouse and no others, "Kids" with children and no others, and so on. Children are defined as biological children of the reference elderly person, living in the same household, so that a woman living with her spouse and the spouse's children who are not her own would be classed under "spouse and others," which is different from the treatment in Thailand.

closer to the truth in Thailand than it is in Côte d'Ivoire. The larger, more complex families in West Africa allow a wide range of living arrangements, especially for the large fraction of widows.

6.1.3 Education, Labor Supply, and Health Status

The data on education are not comparable between Thailand and Côte d'Ivoire; nevertheless, tables 6.5A and 6.5B show similar patterns across ages and sexes in the two countries. By any measure, educational standards are much higher in Thailand, and, even among rural women, over 90 percent of the 20–39 age group have had at least one year of school, whereas only 37 percent of Ivorian women in the same age group have ever been to school. Even in Thailand, however, very few individuals have ever completed elementary school (seven years of education), and, in the rural villages, fewer than 1 percent of men or women over 40 have done so. In Côte d'Ivoire, none of the sample women aged 60 or over can read a newspaper or do a simple written calculation, and only a negligible fraction of women over 50 have ever been

Table 6.5 **Educational Attainment**

A. By Age, Sex, and Location: Thailand, 1981

	Bangkok						Rural					
	Females			Males			Females			Males		
Age	Sch.	Elem.	Sec.	Sch.	Elem.	Sec.	Sch.	Elem.	Sec.	Sch.	Elem.	Sec.
20–39	.96	.29	.17	.99	.38	.22	.91	.02	.02	.96	.04	.03
40–49	.77	.05	.04	.89	.14	.10	.84	.00	.00	.90	.01	.01
50–59	.58	.04	.02	.67	.09	.05	.65	.01	.00	.85	.01	.01
60–69	.27	.00	.00	.40	.03	.02	.32	.00	.00	.63	.01	.01
70+	.13	.01	.01	.36	.07	.03	.06	.00	.00	.47	.00	.00

B. By Age and Sex: Côte d'Ivoire, 1986

	Females				Males			
Age	Years	Arith.	Read	Sch.?	Years	Arith.	Read	Sch.?
20–39	2.60	.35	.32	.37	5.94	.70	.66	.68
40–49	.28	.04	.03	.04	2.36	.37	.32	.32
50–59	.05	.01	.01	.01	.96	.19	.17	.18
60–69	.05	.00	.00	.01	.49	.11	.09	.09
70+	.00	.00	.00	.00	.29	.06	.05	.04

Notes: **Thailand:** "Sch." means that the respondent had completed at least one grade higher than kindergarten. "Elem." means that the respondent had completed elementary school. "Sec." means that the respondent had completed high school or a technical/vocational school. **Côte d'Ivoire:** "Years" is years of school completed. "Arith." is fraction of people who can do written calculations. "Read" is the fraction who can read a newspaper. "Sch.?" is the fraction who are attending or who have ever attended a school.

to school. But, apart from the differences in levels, the patterns are the same; men have more education than women, and young people have much more education than their elders. Conventional concerns about education separating the generations are clearly relevant in these sorts of situations. Three-quarters of Ivorian males and more than half of Ivorian females between 15 and 19 can read a newspaper, something that be accomplished by only about half their fathers, perhaps one-quarter of their mothers, and almost none of their grandparents. One might legitimately wonder if the experience and wisdom of older farmers, real though it is, may not be offset by their inability to read the label on a bag of seeds or fertilizer. Experience may be more valuable than education in a stationary environment, but much growth in LDCs has come from exploiting new crops and new growing techniques; indeed, there appear to be large gains to greater use of fertilizer and insecticide in coffee and cocoa production in Côte d'Ivoire, gains that have so far gone almost entirely unexploited (see Deaton and Benjamin 1988).

Labor force participation and hours worked show the standard life-cycle patterns in both countries. In rural areas in Thailand (table 6.6A), almost all prime-age males and females participate in (mostly agricultural) work, although substantial fractions of time are spent idle according to the dictates of the agricultural calendar. Participation rates are lower for women than for men in Bangkok and fall off very rapidly among the elderly. Among those who continue to work, hours and weeks remain high. This contrasts with behavior in the rural sector, where hours and weeks decline along with participation among the elderly, perhaps because of the physical demands of agricultural work.

Participation rates in Côte d'Ivoire are surprisingly low, especially among males in the 20–39 age group (table 6.6B). Note that these figures, although covering a broad range of activities, relate to the last seven days prior to the survey interview; thus, those farmers who did not work during that period would be counted as nonparticipants. Furthermore, the traditional allocation of tasks among many West African groups is for women to undertake food growing and trading activities, leaving men free for hunting, fishing, and fighting. Cocoa and coffee farming are, however, legitimate activities for men and are undertaken by a large fraction of Ivorian households. Participation rates among older workers remain relatively high into the late 60s, only falling off among the oldest group. Among older participants, weeks worked declines hardly at all, although both days and hours per day fall with age, which is exactly the pattern that might be expected in a predominantly agricultural economy. Note that the hours, days, and weeks figures for Côte d'Ivoire relate only to the activity defined as the main job over the last seven days. Many individuals have second jobs, and there are a large number of small family enterprises, many run by women.

Table 6.7 presents information on the health of the respondents in the Ivorian survey. These are self-reported figures, and the investigators have no means of checking the reliability of these reports. Although all respondents

Table 6.6 Labor Force Participation and Work Hours, by Age Category

A. Thailand, 1981

	Bangkok									
	Females					Males				
Age	Obs.	LFP	Weeks	Hours	Weeks Idle	Obs.	LFP	Weeks	Hours	Weeks Idle
15–19	460	.37	43.3	51.6	2.1	365	.32	48.4	45.7	6.9
20–39	1,338	.67	48.3	49.3	1.2	1,131	.85	50.2	49.4	1.8
40–54	437	.57	49.7	52.7	.0	375	.97	51.4	50.4	.7
55–59	108	.45	50.2	52.2	.0	105	.87	51.1	51.5	.0
60–64	78	.32	51.5	53.0	.0	63	.67	51.4	55.7	1.7
65–69	55	.16	51.3	62.2	.0	60	.53	49.3	53.8	.0
70–99	82	.06	52.0	58.8	.0	61	.23	52.0	53.7	1.1
	Rural									
15–19	1,304	.86	46.0	57.3	4.2	1,270	.89	47.6	58.1	5.7
20–39	3,295	.94	45.3	57.8	3.3	2,927	.99	50.6	61.4	5.0
40–54	1,569	.93	45.4	57.1	2.9	1,493	.99	50.8	61.9	4.3
55–59	396	.80	44.7	54.2	3.8	344	.96	50.9	60.0	5.4
60–64	295	.62	44.2	52.0	2.0	234	.88	49.9	55.6	4.3
65–69	220	.47	42.3	48.6	3.2	173	.77	47.2	53.9	4.2
70–99	365	.24	41.3	41.0	3.0	267	.46	46.7	49.5	4.1

B. Côte d'Ivoire, 1986

	Females					Males				
Age	Obs.	LFP	Weeks	Days	Hours	Obs.	LFP	Weeks	Days	Hours
15–19	690	.41	45.2	4.92	6.70	707	.43	44.0	5.12	7.60
20–39	1,643	.59	45.5	5.09	6.84	1,281	.66	44.7	5.43	8.02
40–54	792	.76	47.0	5.16	6.90	566	.86	47.0	5.37	8.10
55–59	163	.69	46.7	4.81	6.53	157	.73	49.4	4.90	7.56
60–64	138	.62	46.4	4.72	6.40	153	.71	45.9	5.06	7.55
65–69	86	.63	46.0	4.93	6.59	106	.63	47.2	4.72	6.61
70+	116	.22	44.5	4.52	5.72	127	.40	45.5	4.53	6.25

Note: **Thailand:** Labor force participation (LFP) was defined as spending at least one week in the last year employed, self-employed (on or off farm), or working as free family labor. Average weeks in the labor force includes weeks unemployed. Weeks unemployed ("Weeks Idle") consists mainly of weeks spent waiting for the agricultural season or "because no work was available." "Hours" is the individual's reported hours per week when working. "Obs." is the number of observations. **Côte d'Ivoire:** These relate to household members. For a person to be a nonparticipant, he or she must answer no to the following three questions: "During the past seven days, have you worked for someone who is not a member of your household, e.g., an employer, a firm, the government, or some other person outside your household?" "During the past seven days, have you worked in a field or garden belonging to yourself or your household or have you raised livestock?" "During the past seven days, have you worked in a trade, industry, business, enterprise, or profession belonging to yourself or your household, e.g., as an independent merchant or fisherman, lawyer, doctor, or other self-employed activity." "Weeks" are number of weeks during the last twelve months in main job only. "Days" is days worked in the last seven days. "Hours" is hours per day worked in the last week, again in the main job. "Obs." is the number of observations. "LPF" is labor force participation.

Table 6.7 **Health and Sickness by Sex and Age, Côte d'Ivoire, 1986**

	Females					Males				
Age	Ill	Days1	Days2	Con.	Med.	Ill	Days1	Days2	Con.	Med.
15–19	.16	1.5	.7	.51	.58	.12	1.0	.4	.45	.56
20–24	.21	2.0	1.0	.59	.61	.17	1.6	1.0	.51	.54
25–29	.27	2.4	1.6	.49	.60	.20	2.1	1.3	.57	.63
30–34	.27	3.3	1.6	.59	.61	.30	2.7	1.2	.52	.62
35–39	.34	4.8	2.8	.48	.55	.32	3.5	1.6	.58	.69
40–44	.36	4.7	2.1	.40	.53	.36	3.5	1.8	.50	.59
45–49	.40	5.4	2.7	.45	.50	.42	5.5	2.5	.41	.58
50–54	.36	5.2	2.2	.47	.54	.47	6.2	3.1	.43	.62
55–59	.40	6.2	2.9	.35	.45	.45	6.2	4.0	.47	.57
60–64	.41	7.2	3.7	.30	.43	.52	7.6	4.4	.41	.47
65–69	.37	5.2	3.4	.25	.38	.57	11.8	6.9	.45	.58
70–74	.50	9.8	6.0	.28	.60	.67	11.2	7.6	.26	.40
75+	.59	12.0	7.9	.10	.36	.66	13.0	9.6	.38	.48

Notes: These are self-reported figures for all household members. "Ill" is the fraction of respondents who, during the last four weeks, experienced an illness or injury, "e.g., a cough, a cold, diarrhea, an injury due to an accident, or any other illness." "Days1" is the number of days in the last four weeks during which the respondent suffered from the illness or injury, counting in zero days for those not sick. "Days2" is the number of days the illness prevented the respondent from carrying on his or her usual activities. "CON." is the fraction of persons reporting an illness who consulted "a doctor, nurse, pharmacist, healer, midwife, or other health practitioner." "Med." is the corresponding fraction of cases where the respondent bought medicine.

were weighed and measured, such measurements are of relatively little value in determining health status, except for children. Except for those under 30, more than one-quarter of all respondents in each age group report some sickness or injury in their last four weeks, with the fraction rising to well over half among the older groups. For those aged 55 or over, six to thirteen days a month are days of illness, and these illnesses are sufficiently severe to cause a suspension of normal activities for three to ten days. Women show more illness than men until about 40 years of age, after which age they show less, considerably less in some of the older age groups. Somewhat less than half of all illnesses lead to a medical consultation or the purchase of medicine, and the figures suggest that, among the elderly, a smaller fraction of illnesses in females are severe or are treated as such. Comparable data from the Thai survey are not available.

6.1.4 Levels of Living

Although much of the concern about the elderly is a concern about living standards, it is remarkably difficult to measure their consumption or income levels, even in more developed countries, and the difficulties are much greater in poor countries. In the United States, where many old people live alone or with their spouses, their household income and expenditure levels can give

some idea of living standards in relation to the rest of the population. Indeed, work on the status of the low-income elderly in more developed countries (e.g., Coder, Smeeding, and Torrey 1990) effectively defines the population of interest to be this group, which is typically female, one-person families and married couples, groups that together accounted for 91 percent of the U.S. population aged 65 and over in 1982 (see Cowgill 1986, 29).

In Thailand, and even more so in Côte d'Ivoire, the vast majority of the elderly live with other people, children, spouses, and other relations; very few live alone. Household surveys collect data on household levels of living, not on those of the individuals within them. Disentangling who gets what within the household is difficult, even for "private" goods like food, and attempts to do so require costly and intrusive techniques of observation. For public goods, such as housing, entertainment, and many services, individual consumption levels are not even well defined. In contrast to consumption, many income flows can be assigned to individual members of the household, although only with great difficulty in farm households, and such assignment, even when possible, tells us only a limited amount about the distribution of welfare within the household, which is our main concern. There is a belief in much of the development literature that individuals who bring money into the household receive better treatment than those who do not, but there is little credible evidence to support this contention.

This problem of isolating the living standards of the elderly is conceptually the same as that of isolating the living standards of children, a topic on which there exists a large and venerable literature. However, as argued in Pollak and Wales (1979) and elaborated in Deaton and Muellbauer (1986), much of this literature sets out by assuming what it wants to measure, and, even after more than a century of research, no generally accepted methodology has been derived that would support the isolation of children's living standards from household-level data. One possible avenue, suggested in Deaton, Ruiz-Castillo, and Thomas (1989), is to identify a set of goods that are not consumed by adults, for example, children's goods, and, on the grounds that additional adults exert negative income effects but no substitution effects on such goods, measure the "cost" of old people versus that of younger adults by calculating their relative (negative) effects on the consumption of children's goods. However, it is difficult to isolate commodities that are consumed only by children, especially in less developed countries, where children consume little beyond food, shelter, and clothing. Moreover, (unreported) experiments with the Spanish data used in Deaton, Thomas, and Ruiz-Castillo did not lead to sensible estimates.

If these problems of measuring living standards are taken seriously, it is unclear whether it is possible to make statements about, for example, the fraction of old people living in poverty in most LDCs, let alone to address broad topics like the effect of development on the status of the old. Even so, something can be said, and we report some fragmentary but relevant evidence.

The simplest procedure is to assume that everyone in each household is treated equally and to impute to each person the per capita or per adult equivalent total expenditure or income for the household in which he or she resides. If the assumption is correct, the procedure yields the right answer. If it is false, as it almost certainly is, then the calculations are still informative. If old people live predominantly in households with low average living standards, we are more likely to be concerned about their welfare than would otherwise be the case. Of course, it may be that it is the children or younger people in such households that we should worry about, not their likely powerful elders.

Table 6.8 shows the relevant calculations for Côte d'Ivoire in 1986. In computing adult equivalents, children under 5 have been assigned a weight of 0.25 and those from 5 to 14 a weight of 0.45. These numbers are essentially arbitrary, but they are relatively low in the light of the considerations discussed in Deaton and Muellbauer (1986), and it is better to make some such assumptions than to work with either total or per capita household expenditure. As the age of the individual increases, the average number of household members with which he or she resides decreases from twelve at birth to nine at age 70, but it rises to around ten for the oldest ages. The economic measures, income, consumption, and income and consumption per equivalent, all have the same general shape, rising to their maxima for the 30–34 year age group and falling steadily thereafter. Among the oldest people, total income and expenditures in the households in which they live are little more than half the levels in the peak years, and the per equivalent measures are less than half of the peaks. If consumption per equivalent is taken as a representative measure, the average for those 55 and over is 79 percent of the average for all individuals.

Older Ivorians live in households that have less income and consumption than the national average. However, old people live mostly in rural areas, and the much better-off urban residents are typically young. Moreover, the rural-urban difference is likely overstated because no allowance is made for price differences between rural and urban areas and because urban residents typically pay rent or have rents imputed for them, something that cannot be done for rural residents. Table 6.9 repeats the information for rural areas only. Now the relation between living standards and age has essentially disappeared; while total consumption and income fall with age, at least until the late 60s, adult equivalents fall at much the same rate, and there is therefore little or no relation between age and the per equivalent measures.

Tables 6.10 and 6.11 show income and expenditure by the age of the individual for Bangkok and rural areas in 1981. Unlike Côte d'Ivoire, the number of adult equivalents per household does not vary with age. However, family income and expenditure do not vary greatly with age either. There is a small peak in income in the 50–54 age range for males in Bangkok and rural regions; in Bangkok, this peak in income is offset by a corresponding peak in the number of adult equivalents. Overall, income and expenditure, as well as

Table 6.8 **Average Household Characteristics by Age of Household Members, Côte d'Ivoire, 1986**

	NMEMS	NAE	Y	CND	YPE	CNDPE	N
0–4	11.7	7.6	1,760	1,748	267	264	2,176
5–9	12.0	7.9	1,779	1,878	248	262	2,140
10–14	11.8	7.9	1,995	2,011	278	278	1,841
15–19	12.0	8.7	2,232	2,264	294	295	1,395
20–24	11.3	8.3	2,127	2,111	296	296	1,021
25–29	10.7	7.6	2,239	2,080	366	341	763
30–34	10.1	7.0	2,262	2,143	385	387	608
35–39	10.4	7.1	1,839	1,890	313	325	528
40–44	10.4	7.2	1,610	1,661	258	252	489
45–49	10.5	7.4	1,642	1,780	239	270	423
50–54	10.2	7.4	1,356	1,407	211	220	443
55–59	9.3	6.9	1,391	1,534	224	243	320
60–64	9.4	6.8	1,815	1,468	340	220	288
65–69	8.9	6.6	1,049	1,135	169	185	190
70–74	9.8	7.2	1,262	1,378	191	246	113
75–79	10.5	7.7	1,653	1,540	227	224	64
80+	9.8	7.5	1,397	1,348	175	178	66
All	11.2	7.7	1,884	1,895	278	279	12,868
	Females Aged 55 and Over						
55–59	9.5	7.2	1,382	1,570	209	234	163
60–64	9.9	7.2	1,991	1,560	362	228	136
65–69	9.2	6.8	1,047	1,177	164	187	85
70–74	11.9	8.4	1,379	1,498	159	179	50
75–79	10.8	7.8	1,744	1,723	196	227	28
80+	10.0	7.8	1,234	1,239	159	165	38
All	11.4	7.8	1,877	1,898	273	273	6,636
	Males Aged 55 and Over						
55–59	9.1	6.6	1,400	1,497	240	252	157
60–64	8.9	6.5	1,657	1,386	322	214	152
65–69	8.7	6.3	1,050	1,100	172	183	105
70–74	8.1	6.2	1,170	1,283	216	298	63
75–79	10.3	7.5	1,583	1,398	252	221	36
80+	9.6	7.3	1,617	1,496	198	196	28
All	11.1	7.7	1,890	1,892	285	285	6,232

Note: These are calculated on an *individual* basis; i.e., each individual in the sample is assigned the number of household members, household income, or household income per equivalent, and then averages are calculated conditional on individual age. NMEMS is number of household members, NAE is number of adult equivalents, where children aged 0–4 are counted as .25, aged 5–14 as 0.45, and 15 and over as 1. Y is household income. CND is household consumption excluding purchases of durables, and YPE and CNDPE are the corresponding figures per equivalent adult. N is the number of persons over which the means are calculated. Money amounts are in thousands of CFA per year (about $3.00).

Table 6.9 **Average Household Characteristics by Age of Household Members, Rural Côte d'Ivoire, 1986**

	NMEMS	NAE	Y	CND	YPE	CNDPE	N
0–4	11.8	7.6	1,307	1,310	179	181	1,327
5–9	11.8	7.7	1,263	1,384	167	185	1,245
10–14	11.6	7.7	1,334	1,400	173	183	1,039
15–19	12.3	8.7	1,472	1,471	170	168	690
20–24	11.2	7.9	1,345	1,300	180	169	471
25–29	11.5	7.9	1,318	1,349	194	200	354
30–34	10.6	7.3	1,293	1,301	187	190	300
35–39	10.7	7.2	1,272	1,319	184	195	310
40–44	10.2	7.0	1,108	1,175	165	174	305
45–49	10.3	7.2	1,124	1,243	165	185	272
50–54	9.7	7.0	1,013	1,088	156	169	320
55–59	8.9	6.6	1,006	1,130	166	185	218
60–64	9.2	6.6	1,082	1,158	163	172	211
65–69	8.2	6.1	842	945	148	170	151
70–74	9.0	6.6	1,086	1,190	186	245	92
75–79	9.0	6.7	1,004	1,132	150	182	49
80+	9.5	7.3	1,280	1,138	165	153	55
All	11.2	7.6	1,262	1,313	173	181	7,409

Note: Y is household income. CND is household consumption excluding purchases of durables, and YPE and CNDPE are the corresponding figures per equivalent adult. N is the number of persons over which the means are calculated. Money amounts are in thousands of CFA per year (about $3.00). For other notes, see table 6.8.

income and expenditure per adult equivalent, are very flat across age groups. The average consumption per adult equivalent of those 55 and over is 100.3 percent of the average for all individuals in Bangkok and 109 percent for rural regions. On average, older Thais in both Bangkok and rural regions do not live in poorer households.

Unlike the Ivorian surveys, the Thai surveys provide a good deal of information on individual income levels and the sources of individual income. If the allocation of consumption to members within a household depends on the amount of income members bring to the household (again, this is not known to be true), then the patterns of individual income with age provide evidence on standards of living over the life cycle. Information on the distribution of income between pensions, annuities, and property income, as opposed to remittances and gifts, provides evidence on the extent to which older individuals rely on asset markets for old-age support.

It is possible to disaggregate individual income into that derived from wages, farming and self-employment (called business income), property, transfers (remittances, pensions and annuities), and other sources. The measures of profits from farming and self-employment are problematic in that they do not exclude the value of free family labor used and are usually "assigned" to the household head "or to the operator of the enterprise if he could be identified." For most family businesses, it is not clear that the profits from

Table 6.10 **Average Household Characteristics by Age of Household Members, Bangkok, 1981**

	NMEMS	NAE	Y	CND	YPE	CNDPE	N
0–4	5.0	3.4	7,141	5,693	2,173	1,729	565
5–9	6.0	4.3	8,031	6,600	1,949	1,615	515
10–14	6.5	4.8	7,945	6,760	1,754	1,500	629
15–19	6.2	5.5	9,044	7,540	1,678	1,423	825
20–24	5.4	4.9	9,152	7,185	1,962	1,574	816
25–29	4.7	4.1	8,518	6,260	2,229	1,680	783
30–34	4.6	3.7	8,496	6,121	2,527	1,800	546
35–39	5.1	3.9	7,947	6,240	2,208	1,752	324
40–44	5.4	4.3	8,209	6,671	2,176	1,759	317
45–49	5.7	4.9	9,057	7,159	2,059	1,574	252
50–54	5.5	5.0	9,971	8,051	2,092	1,697	243
55–59	5.1	4.8	9,467	7,135	2,111	1,591	213
60–64	4.8	4.4	9,682	6,781	2,238	1,662	141
65–69	5.3	4.6	7,659	6,354	1,778	1,518	115
70–74	5.4	4.6	8,596	7,733	1,958	1,842	69
75–79	4.6	4.3	7,026	5,872	1,929	1,596	39
80+	5.3	4.7	8,515	7,151	2,031	1,719	35
All	5.5	4.5	8,513	6,739	2,043	1,624	6,427
				Females			
55–59	4.9	4.6	8,334	6,679	1,905	1,504	108
60–64	4.6	4.2	9,196	6,195	2,220	1,655	78
65–69	5.2	4.4	7,856	6,662	1,908	1,674	55
70–74	5.4	4.6	7,757	7,587	1,795	1,784	39
75–79	4.1	3.6	5,307	4,861	1,632	1,544	17
80+	4.9	4.5	8,517	7,127	2,157	1,840	26
All	5.5	4.5	8,486	6,772	2,010	1,616	3,399
				Males			
55–59	5.3	4.9	10,633	7,604	2,324	1,680	105
60–64	5.0	4.6	10,284	7,506	2,261	1,671	63
65–69	5.3	4.8	7,478	6,072	1,660	1,376	60
70–74	5.3	4.6	9,685	7,924	2,170	1,916	30
75–79	5.1	4.8	8,355	6,653	2,159	1,637	22
80+	6.4	5.2	8,510	7,220	1,665	1,369	9
All	5.4	4.5	8,544	6,702	2,080	1,634	3,028

Note: Money amounts are baht per month. Variables are defined in tables 6.8 and 6.9 above.

the business should be assigned to any one person. In what follows, no adjustments were made for these problems.

Table 6.12 provides information on individual income and the distribution of income for males and females in Bangkok and rural regions. Unlike the household income figures discussed above, there is a clear pattern of individual income over the life cycle. For both rural and Bangkok males, income levels peak in the 50–59 age range and then decline rapidly. Female income

Table 6.11 **Average Household Characteristics by Age of Household Members, Rural Thailand, 1981**

	NMEMS	NAE	Y	CND	YPE	CNDPE	N
0–4	5.5	3.7	2,316	2,158	673	624	2,536
5–9	6.0	4.1	2,455	2,270	636	582	3,328
10–14	6.2	4.5	2,789	2,530	659	597	3,272
15–19	6.1	5.0	3,074	2,716	643	569	2,572
20–24	5.3	4.3	2,892	2,486	718	619	1,880
25–29	4.8	3.6	2,545	2,234	766	685	1,656
30–34	5.1	3.5	2,622	2,296	784	693	1,458
35–39	5.5	3.9	2,587	2,374	705	640	1,225
40–44	5.7	4.3	2,828	2,612	723	656	1,123
45–49	5.6	4.4	2,853	2,596	696	635	1,097
50–54	5.2	4.3	3,288	2,862	852	772	839
55–59	4.8	4.1	2,877	2,479	773	665	740
60–64	4.3	3.8	2,858	2,410	900	720	529
65–69	4.3	3.7	2,525	2,228	787	707	393
70–74	4.4	3.6	2,336	2,260	710	685	308
75–79	4.7	3.9	2,650	2,466	748	678	160
80+	4.9	4.1	2,711	2,441	724	656	164
All	5.6	4.2	2,706	2,430	703	631	23,280
				Females			
55–59	4.6	3.9	2,583	2,316	718	646	396
60–64	4.2	3.6	2,684	2,337	848	743	295
65–69	4.2	3.4	2,482	2,237	852	784	220
70–74	4.4	3.6	2,309	2,263	674	662	163
75–79	4.9	4.0	2,504	2,512	656	664	94
80+	4.9	4.2	2,834	2,472	769	677	108
All	5.5	4.1	2,699	2,435	708	640	11,935
				Males			
55–59	5.1	4.3	3,215	2,666	837	688	344
60–64	4.5	4.0	3,077	2,501	965	690	234
65–69	4.6	3.9	2,580	2,216	705	610	173
70–74	4.3	3.6	2,367	2,256	750	712	145
75–79	4.4	3.8	2,857	2,399	879	697	66
80+	4.9	4.1	2,474	2,382	639	616	56
All	5.6	4.2	2,714	2,425	697	621	11,345

Note: Money amounts are baht per month. For definitions of variables, see tables 6.8 and 6.9.

levels are flatter over the 30–60 age range but then also decline. These results are consistent with the declines in labor force participation for both males and females after the age of 60, and much of the declining income levels of older individuals can be accounted for by the increasing fraction of those who earn no income at all.

As is to be expected, the share of income from wage and business declines for older people, although the share of income from farming and self-employment remains quite high for men (49 and 79 percent, respectively, for

Table 6.12 Distribution of Income, by Age, Sex, and Location, Thailand, 1981

Age	Obs.	Mean Individual Income	%INC > 0	Share of Individual Income					INC/ FAMINC	FREE/ FAMINC
				Wage	Bus.	Prop.	Trans.	Other		
Bangkok Females										
20–29	870	1,177	.54	.75	.09	.01	.11	.04	.18	.05
30–39	468	1,733	.62	.61	.25	.01	.06	.07	.24	.05
40–49	299	1,648	.58	.39	.37	.04	.14	.07	.23	.05
50–59	245	1,764	.58	.25	.35	.03	.32	.05	.23	.04
60–69	133	1,523	.47	.05	.31	.06	.56	.03	.19	.07
70+	82	456	.26	.00	.10	.12	.74	.05	.11	.05
Bangkok Males										
20–29	729	2,141	.71	.81	.09	.00	.08	.02	.34	.05
30–39	402	4,517	.93	.73	.24	.01	.01	.02	.62	.06
40–49	268	4,899	.96	.60	.37	.00	.01	.02	.65	.05
50–59	211	5,418	.89	.48	.41	.01	.06	.04	.53	.03
60–69	123	2,719	.67	.26	.49	.07	.15	.04	.34	.07
70+	61	1,168	.41	.07	.23	.11	.58	.01	.16	.08
Rural Females										
20–29	1,893	241	.39	.67	.21	.00	.09	.03	.09	.06
30–39	1,400	394	.42	.50	.36	.02	.07	.04	.12	.04
40–49	1,134	473	.46	.35	.45	.03	.13	.04	.17	.04
50–59	830	369	.44	.23	.49	.03	.21	.05	.17	.05
60–69	515	384	.46	.10	.42	.07	.38	.03	.16	.08
70+	365	129	.38	.08	.21	.12	.55	.04	.10	.10
Rural Males										
20–29	1,643	808	.71	.55	.42	.00	.01	.01	.37	.05
30–39	1,283	1,591	.94	.27	.69	.00	.01	.02	.66	.04
40–49	1,086	2,031	.98	.18	.77	.01	.02	.02	.68	.04
50–59	749	2,278	.96	.16	.75	.01	.05	.02	.65	.04
60–69	407	1,665	.87	.06	.75	.03	.13	.03	.55	.06
70+	267	825	.63	.03	.54	.10	.29	.04	.29	.09

Note: Individual income includes wages, business income (farm plus self-employment income), property income (interest, dividends, income from roomers and boarders), transfer income (pensions and annuities, remittances from friends and relatives), other income (lotteries, insurance, sales of durable goods). Family income (FAMINC) equals the sum of all member's individual incomes plus the rental value of owner-occupied homes, home-produced goods not included in farm income, and goods received free. FREE/FAMINC is the value of goods received free as a fraction of family income. "Obs." is number of observations.

Bangkok and rural men aged 60–69). This reflects the fact that the oldest man in the household is usually the head of the household and would typically have all family business income assigned to him.

The share of income derived from transfers (including pensions, annuities, and remittances) increases dramatically with age for both men and women in

Bangkok and rural regions. Transfers account for a large share of individual income, particularly for women. These transfers consist mainly of remittances, presumably from family members or friends in other households. Although transfers cannot be divided up between remittances and pensions and annuities at the individual level, they can be disaggregated at the household level. Of all households that receive transfers, 93 percent of those in Bangkok and 97 percent of those in rural areas receive no pensions or annuities. The share of income from property (including interest, dividends, and rents) increases with age but, like pensions and annuities, is quite small, reaching only 10–12 percent for both Bangkok and rural residents in the 70 and over age group. Thus, sources of old-age income that are standard in developed countries play only a very small role in Thailand.

Table 6.13 tabulates income by source for rural males and females who live alone or with a spouse only and for those who live with at least one person who is not a spouse. Older people living with others are less likely to earn any income at all. However, the shares of income from different sources are not too dissimilar for those in different living arrangements. The fraction of total family income derived from goods received free does vary with living ar-

Table 6.13 **Income Composition and Living Arrangements, Rural Thailand, 1981**

Age	Obs.	Mean Individual Income	%INC > 0	Share of Individual Income					INC/ FAMINC	FREE/ FAMINC
				Wage	Bus.	Prop.	Trans.	Other		
Females, Living Alone or with Spouse Only										
50–59	157	417	.64	.27	.37	.04	.27	.05	.25	.11
60–69	133	394	.69	.11	.35	.09	.43	.03	.28	.18
70+	75	292	.84	.07	.25	.13	.52	.04	.32	.30
Females, Living with at Least One Child or Other Person										
50–59	669	359	.40	.21	.53	.03	.19	.05	.15	.04
60–69	381	382	.38	.10	.46	.06	.35	.03	.12	.05
70+	289	87	.25	.09	.19	.11	.57	.05	.05	.05
Males, Living Alone or with Spouse Only										
50–59	144	1,984	.99	.26	.63	.03	.08	.01	.68	.07
60–69	89	1,479	.96	.09	.67	.06	.15	.04	.59	.11
70+	73	1,038	.96	.05	.47	.15	.31	.03	.50	.18
Males, Living with at Least One Child or Other Person										
50–59	602	2,352	.95	.14	.79	.01	.04	.03	.64	.03
60–69	318	1,717	.84	.05	.77	.03	.12	.03	.54	.04
70+	190	761	.51	.01	.59	.07	.28	.05	.22	.06

Note: See table 6.12.

rangements. For example, for rural females aged 60–69, goods received free account for 18 percent of family income for those alone or with a spouse only and only 5 percent of family income for those living with others. For females living alone or with a spouse only, free goods and transfers make up a significant share of their income.

6.2 Household Life Cycles

In this section, we shift our focus away from individuals and toward households and how they change with the ages of their members. Households in LDCs are typically larger than those in more developed countries, particularly so here for Côte d'Ivoire; thus, with several generations living together, the life-cycle patterns of the household as an aggregate may be much attenuated compared with the patterns observed in the West. Households with between ten and twenty members are not uncommon in Côte d'Ivoire, and it is possible to imagine a state of affairs in which each household's demographic composition is a miniature version of that of the country as a whole and the life cycles of the individuals within that household are subsumed into a stationary structure for the household.

In fact, such is far from being the case in Côte d'Ivoire. Table 6.14B shows the breakdown of household heads by age and sex. (Table 6.14A shows the same data for Thailand.) If household composition were stationary and the oldest male always designated the household head, there would be no heads outside this category. In reality, 42 percent of household heads are under the age of 55, and only 19 percent are men over the age of 70. Only 5 percent of households contain one or more married sons of the head, and fewer than 1 percent have two or more. Similarly, it is rare for married brothers to live together; only 3 percent of male-headed households contain a married brother. These households seem to conform well to what Cowgill (1986, 62) describes as the common pattern among polygynous households: "a man, his several wives, their (unmarried) children," and possibly "some additional consanguines, such as unmarried or widowed sisters of the husband, and perhaps his aged parents." While there is a clear bias toward older heads and there are more heads in older groups than their share of the population would warrant, there are many households headed by younger men because married sons set up new households.

The economic status of the household is also clearly related to the age of its head, as shown in table 6.15. These data are presented for both years; they are probably a good deal less reliable, particularly for assets, than previous data, so one year cannot be safely taken as representative for both. The figures show that older heads preside over bigger households but that both household income and household total expenditure reach a peak among households headed by 30–34 year-olds, declining steadily thereafter. The pattern, if it is there, is a good deal less obvious in the rural areas. As was the case for patterns in the

Table 6.14 **Age and Sex Composition of Household Heads**

A. Thailand, 1981

	Bangkok			Rural		
	Females	Males	All	Females	Males	All
15–19	1.05	1.31	2.36	.20	.42	.62
20–24	2.16	4.52	6.69	.52	3.87	4.39
30–34	2.62	11.67	14.30	.86	9.29	10.15
35–39	2.36	12.33	14.69	.86	11.08	11.94
40–44	2.30	8.46	10.75	1.08	10.51	11.58
45–49	2.30	8.79	11.08	1.68	10.21	11.88
50–54	2.23	7.34	9.57	2.14	10.29	12.42
55–59	2.82	6.23	9.05	2.00	7.87	9.87
60–64	2.30	5.70	8.00	2.34	6.55	8.89
65–69	2.16	3.54	5.70	1.94	4.51	6.45
70–74	1.25	2.95	4.20	1.78	3.24	5.01
75–79	.66	1.25	1.90	1.24	2.52	3.75
80+	.66	1.05	1.70	1.30	1.74	3.04
All	24.85	75.15	100.00	17.91	82.09	100.00

B. Côte d'Ivoire, 1986

	Males	Females	All
20–24	1.3	.1	1.4
25–29	1.9	.1	2.1
30–34	3.5	.2	3.7
35–39	6.1	.8	6.9
40–44	8.8	.9	9.7
45–49	9.2	1.1	10.3
50–54	11.3	.9	12.1
55–59	10.6	.8	11.3
60–64	9.4	.9	10.4
65–69	10.9	1.0	11.9
70–74	10.4	.5	10.9
75–79	6.6	.6	7.3
80+	1.8	.1	1.9
All	91.9	8.1	100.0

individual data, the hump in household incomes and expenditures is exaggerated by pooling older, poorer, rural individuals with younger, richer, urban ones. Since household size and the number of equivalents increase with the age of the head, deflation by either measure produces a pattern in which household living standards decline with the age of the head, with the result that the hump is moved to the extreme left of the age distribution.

The hump-shaped pattern, in which incomes and consumption shapes are closely matched, is one with a peak that occurs much earlier in the head's age distribution than is the case in many LDCs, particularly those in Asia (for

Table 6.15 **Members, Income, Expenditure, and Assets by Head's Age, Côte d'Ivoire, 1985 and 1986**

Age	NMEMS	NAE	Y	CND	S	AGASS	BUSASS	PERASS
				1985				
20–24	3.5	2.7	926	933	−8	911	90	386
25–29	5.3	3.8	1,491	1,542	−51	560	6,148[a]	804
30–34	7.0	4.8	1,937	1,916	21	2,435	596	910
35–39	7.5	5.0	1,885	1,880	5	2,687	275	656
40–44	8.8	5.9	1,610	1,832	−222	2,632	893	716
45–49	9.7	6.6	1,857	1,749	107	3,666	636	1,108
50–54	9.2	6.5	1,271	1,408	−137	5,167	230	796
55–59	9.2	6.7	1,496	1,377	120	3,732	708	1,008
60–64	9.7	7.0	1,497	1,537	−40	5,199	737	1,314
65–69	9.6	7.0	1,470	1,415	55	4,655	752	1,251
70+	8.0	6.1	870	932	−62	6,882	155	976
				1986				
20–24	4.1	3.0	843	912	−70	1,194	27	198
25–29	5.5	4.0	1,845	1,659	186	613	211	726
30–34	6.7	4.5	2,096	2,050	46	1,055	170	780
35–39	7.9	5.3	2,132	2,119	13	1,173	398	979
40–44	8.4	5.6	1,455	1,677	−222	1,575	296	969
45–49	9.4	6.4	1,835	1,831	4	1,693	602	1,326
50–54	9.0	6.3	1,298	1,340	−41	2,187	274	658
55–59	8.7	6.4	1,381	1,481	−100	2,710	523	1,367
60–64	8.4	6.2	1,700	1,391	310	2,199	684	1,117
65–69	8.1	6.0	994	1,041	−57	3,275	287	628
70+	8.5	6.4	1,224	1,277	−53	2,568	492	786
				Rural 1986				
20–24	5.5	3.8	1,072	602	471	2,982	9	101
25–29	6.5	4.4	1,223	1,088	135	1,672	79	211
30–34	7.3	4.9	1,185	1,022	162	2,394	89	187
35–39	8.6	5.6	1,089	1,100	−11	2,334	111	263
40–44	8.6	5.5	831	1,033	−201	2,855	79	185
45–49	9.0	6.0	1,025	1,096	−71	2,042	57	264
50–54	8.7	6.0	919	963	−44	2,699	64	192
55–59	8.1	5.9	851	998	−146	3,879	33	235
60–64	7.9	5.7	1,116	1,123	−6	2,364	390	301
65–69	8.0	5.8	842	899	−57	3,572	70	319
70+	8.1	6.1	927	1,052	−124	2,938	41	176

Note: NMEMS is number of members. NAE is number of adult equivalents. Y is household income. CND is consumption excluding purchases of durable goods. S, for saving, is the difference between Y and CND. AGASS is the value of agricultural assets, including a farmer-estimated figure for the value of agricultural land. BUSASS is the value of assets used in the family business. PERASS is the value of personal assets.

[a]This figure is dominated by one outlier, a 28-year-old head near Aboisso, in the extreme southeast of the country, who reported business assets worth more than CFA 700,000 ($2.1 million).

evidence on Thailand, Korea, Indonesia, and Hong Kong, see Deaton [1990]). These cross-country patterns are important because, as pointed out by Carroll and Summers (1991), if tastes are common across countries, then the rapidly growing countries are those where young people are relatively much richer than their parents and grandparents, and age consumption profiles should therefore peak earliest in the most rapidly growing economies. But Côte d'Ivoire is a very slowly-growing economy relative to Thailand and the other Asian countries listed above, and this slow growth is accompanied by the earliest peak in household consumption. As Carroll and Summers emphasize, these results make it difficult to believe that life-cycle saving is responsible for the cross-country correlation between growth and savings that exists in the data. Instead, the obvious alternative is that consumption tracks income over the life cycle, a hypothesis that is fully consistent with the data in table 6.15.

Saving itself is as often negative as positive and shows no clear pattern with age. The measurement of income for poor, largely illiterate, self-employed farmers in LDCs is an undertaking fraught with difficulty, and little weight should be attached to the magnitude of these figures. However, analysis of the micro data from Côte d'Ivoire provides evidence that farmers undertake short-run saving to smooth their consumption relative to their noisy incomes, and this evidence is also consistent with the earlier results on farmers' saving behavior in Thailand in Paxson (1989).

The asset figures are likely to be almost as unreliable as the savings data, and there is a still unresolved question as to why the (largely self-reported) figures for agricultural assets are so much lower in 1986 than in 1985. The data in the upper panels of table 6.15 suggest that, over the country as a whole, asset levels continue to increase with the age of the household head, but some of this is an aggregation effect; in the rural panel, agricultural assets are more or less equally distributed across age groups, something that would follow from a process in which land is closely tied to household formation. Note that, at least until recent years, land has not been particularly scarce in Côte d'Ivoire (or in Thailand), and, given permission from the lineage owning the land, new cocoa and coffee farms could be established by clearing virgin forest, with ownership gradually established by use. Even today, fathers would typically assume responsibility for providing their sons with land, and if uncultivated land is no longer available within the lineage boundaries, the acquisition or use of land elsewhere will be arranged, preferably close by, but sometimes at some considerable distance. (For a description of the evolution of land markets in response to increasing scarcities, first of labor, later of land, see Hecht [1982].)

Table 6.16 presents regressions of income, consumption, and the asset variables on household demographic structure and on dummies for the five main urbanization and agroclimatic zones in the country. These results should be

Table 6.16 **Regressions of Income, Consumption, and Assets on Household Composition, Côte d'Ivoire, 1986**

	Income		Consumption		Agricultural Assets		Business Assets		Personal Assets	
Variable	Est.	(*t*)	Est.	(*t*)	Est.	(*t*)	Est.	(*t*)	Est.	(*t*)
CONSTANT	124	(.7)	259	(2.3)	−603	(1.4)	−378	(2.9)	−791	(3.7)
M0–4	−65	(.9)	−76	(1.7)	131	(.8)	40	(.8)	29	(.3)
M5–14	67	(1.4)	127	(4.3)	−44	(.4)	−29	(.8)	−22	(.4)
M15–24	214	(3.7)	173	(4.7)	417	(3.0)	195	(4.5)	401	(5.7)
M25–34	394	(4.0)	213	(3.5)	196	(.8)	64	(.9)	229	(2.0)
M35–44	257	(1.7)	219	(2.4)	167	(.5)	59	(.5)	23	(.1)
M45–54	157	(1.0)	25	(.3)	525	(1.4)	193	(1.6)	221	(1.2)
M55–64	302	(1.8)	29	(.3)	947	(2.3)	375	(3.0)	635	(3.1)
M65–74	24	(.1)	−19	(.1)	1,475	(3.0)	248	(1.6)	373	(1.5)
M75+	373	(1.2)	124	(.7)	547	(.8)	374	(1.7)	430	(1.2)
F0–4	−47	(.7)	−107	(2.4)	180	(1.1)	−30	(.6)	15	(.2)
F5–14	64	(1.3)	90	(2.9)	−40	(.4)	10	(.3)	29	(.5)
F15–24	199	(3.0)	279	(6.8)	164	(1.1)	20	(.4)	150	(1.9)
F25–34	345	(3.5)	257	(4.1)	1,033	(4.4)	75	(1.0)	291	(2.4)
F35–44	43	(.4)	89	(1.3)	713	(2.7)	26	(.3)	222	(1.7)
F45–54	−163	(1.4)	4	(.1)	144	(.5)	66	(.8)	−37	(.3)
F55–64	196	(1.4)	102	(1.2)	408	(1.3)	147	(1.5)	360	(2.2)
F65–74	−144	(.8)	−62	(.5)	−257	(.6)	38	(.3)	142	(.6)
F75+	17	(.1)	−5	(.0)	−262	(.4)	−113	(.6)	101	(.3)
ABIDJAN	1,742	(9.0)	1,673	(13.9)	−937	(2.0)	1,077	(7.6)	1,907	(8.3)
OTHER URB	909	(4.8)	739	(6.2)	−358	(.8)	405	(2.9)	1,266	(5.6)
W. FOREST	34	(.2)	36	(.3)	1,742	(3.7)	120	(.8)	38	(.2)
E. FOREST	186	(1.0)	96	(.9)	1,979	(4.7)	16	(.1)	−74	(.3)

Note: The figures are total income, consumption, and assets, undeflated by any measure of household size. M is males, F is females, and the independent variables are the number of people in the relevant age category in the household. The omitted region is the northern savannahs.

interpreted not as structural equations but as an alternative and more informative description of the relation between head's age and these economic variables. High income and consumption levels are associated with the presence of prime-age males and females—in itself evidence of consumption tracking income. The presence or absence of individuals aged 55 and over seems to contribute little to household income or consumption levels. Asset levels, however, are positively associated with the presence of older men (but not older women), particularly those aged from 55 to 64. This is certainly consistent with a steady accumulation of assets by the male head, assets passed on to sons at or before death. Women aged 25–34 also attract a very large positive coefficient in the agricultural assets equation. Since daughters would not normally inherit land, there is no obvious explanation for this result, although it could conceivably reflect the propensity of older wealthy men to

marry young second or third wives. There is no evidence of an association between business assets and women, although many small businesses in Côte d'Ivoire are owned by women.

Thai households (as defined by the Socioeconomic Surveys) are much smaller than those in Côte d'Ivoire. Using 1981 data, approximately 50 percent of rural households have four members or less, and households of ten or more members are rare. Households in Thailand are also likely to have younger household heads. Sixty-three percent of rural household heads and 69 percent of urban household heads are younger than 55 (see table 6.14A). The size of households also varies with the age of the household head. The first column of table 6.17 shows that the number of household members first increases and then decreases as the household head ages. These numbers are consistent with the "Western" pattern of children marrying and setting up their own households, which grow as children are added and then shrink as children move out. Cowgill (1986, 69–70) describes the Thai system as a "residual stem family" system, in which young married couples often live with one set of parents, but only until a younger sibling marries and takes their place. The last child married, often the last daughter married, stays with the parents until they die and then inherits the land. This would explain why households with very old household heads have, on average, four members rather than one or two.

These patterns of household formation may make life-cycle models of household consumption more relevant for Thailand than Côte d'Ivoire. With smaller households, it is less likely that household members span a broad range of ages, and the age of the household head should be a good indicator of where a household is in its life cycle. Given the fairly rapid growth in Thailand, one might expect to see younger (richer) households both earning and consuming more than older households.

The results in table 6.17 indicate that income and consumption in Thailand do follow a hump-shaped pattern similar to that seen in Côte d'Ivoire, but with a much later peak in both income and consumption. Household income reaches its highest level in the 60–64 age category for Bangkok and in the 50–54 age category for rural areas. Consumption tracks income closely, and saving also appears to follow a similar pattern, with those in the highest income groups saving most, although the pattern for saving is less pronounced. These patterns are consistent with the age patterns of individual income shown in table 6.12 and are also consistent with the patterns of household size shown in table 6.17. Household heads in their 40s and 50s have the largest households, and it is likely that the children in these households are old enough to contribute substantially to household income.

Although total household income and consumption are both strongly related to the age of the head of the household, income and consumption, after adjusting for the number of adult equivalents, are not. Since family size and the number of adult equivalents follows the *same* hump-shaped pattern as in-

Table 6.17 Members, Income, and Expenditure by Head's Age, Thailand, 1981

Age	NMEMS	NAE	Y	CND	S	Y/NAE	CND/NAE	S/NAE
				Bangkok				
15–19	1.6	1.5	2,225	1,961	264	1,682	1,467	215
20–24	2.3	2.0	3,736	3,285	451	1,939	1,779	160
25–29	3.1	2.5	6,065	4,570	1,495	2,564	1,993	571
30–34	3.9	3.0	7,239	5,348	1,891	2,724	2,002	722
35–39	4.5	3.3	7,017	5,540	1,477	2,294	1,822	472
40–44	4.8	3.8	7,598	6,165	1,433	2,437	1,940	497
45–49	5.3	4.4	6,951	6,245	706	1,758	1,543	214
50–54	5.3	4.9	9,284	7,570	1,714	2,073	1,676	397
55–59	4.9	4.6	9,831	7,114	2,716	2,289	1,670	619
60–64	4.3	4.0	10,033	6,806	3,227	2,449	1,765	684
65–69	4.8	4.3	6,933	5,941	991	1,832	1,588	244
70+	4.0	3.6	6,293	6,053	240	2,128	1,991	137
				Rural				
15–19	2.3	2.0	1,459	1,295	164	810	760	49
20–24	3.0	2.3	1,845	1,652	193	923	800	123
25–29	3.7	2.6	1,969	1,749	220	875	781	94
30–34	4.5	3.0	2,381	2,090	291	838	735	103
35–39	5.2	3.5	2,302	2,196	106	714	658	56
40–44	5.5	4.0	2,852	2,593	259	805	713	92
45–49	5.6	4.3	2,762	2,439	323	701	624	76
50–54	5.1	4.1	3,137	2,825	312	861	801	60
55–59	4.8	4.1	2,883	2,461	422	797	678	119
60–64	4.1	3.5	2,826	2,310	517	983	750	233
65–69	4.0	3.4	2,483	2,172	311	843	751	92
70+	3.7	3.1	2,095	2,010	86	756	711	44

Note: For variable definitions for the first six columns, see table 6.15. The last three columns are income, nondurable consumption expenditures, and saving divided by numbers of adult equivalents.

come and consumption, adjustment for family size results in extremely flat income and consumption profiles that appear to have no relation to the age of the household head.

The absence of any difference in income and consumption per equivalent adult between young and old households is puzzling, especially in a rapidly growing country such as Thailand. One possible explanation is that households in Thailand may be much more complex than the data suggest. As discussed earlier, a small "household" may actually be part of a larger group of several related households in a single compound, and there may be significant transfers between such households. The fact that older people "living alone" receive a large fraction of their incomes in the form of free goods (mostly food) suggests that this might be so. If each household, as measured by the survey data, is actually part of a network of closely linked households con-

taining people in different generations, then it becomes quite unclear whether one ought to expect individual households to operate in ways predicted by life-cycle models. One can imagine a situation in which household formation is itself the mechanism that is used to smooth consumption (and income) across individuals in different generations: individuals may be "allocated" across households so as to maintain roughly equal consumption levels across all family members within a group of households. Much more detailed data on links between households would have to be collected to determine whether this is so.

6.3 Conclusions

We have presented a considerable mass of evidence, most of it not well structured by any theoretical concerns. This is perhaps inevitable given the current state of the subject; aging in developing countries is an issue that looks like it might be important, but concern is still not focused on any particular set of economic research questions or even outstanding policy issues. There are many large and attractively wooly creatures at loose in the forest: the role of development and the status of the aged; the relation between marriage patterns, polygamy, living arrangements, and the treatment of the elderly; and what policy steps, if any, should be considered by those Asian countries that are facing rapidly rising shares of elderly inhabitants. But we are very far, not only from answers, but even from a well-defined set of topics that economists could usefully think about.

Even so, we feel that we have learned something by looking at these data and by writing this paper, and it is perhaps useful to conclude by summarizing some of what is known and what might usefully be learned.

1. Questions regarding the economic status of the old in LDCs cannot be answered and must be rethought. In more developed countries, where perhaps nine-tenths of the elderly live by themselves or with elderly spouses, household surveys can tell us a great deal about their living standards. In LDCs, to a greater or lesser degree, older people do not live by themselves, and until a method can be found for measuring intrahousehold allocations, we have no method of assigning welfare levels to them or indeed to other members of the households in which they live.

2. More work needs to be done on the question of whether the source of income (i.e., who earns it) affects what individual members of the household receive. This cannot be done directly, but if the earnings of the elderly are spent differently than other household income, we should be able to detect that fact from consumption data. Data such as those from Thailand show considerable variation in source of income with age, although the patterns are quite different from those in the United States or Western Europe.

3. In the United States and other developed countries, where many elderly people live alone, there has been concern about the possible abandonment of

the old. However, such cases seem to be rare; most old people live alone because they want to, and frequency of contact with children is generally high (for a review, see Mancini and Blieszner 1989). In Côte d'Ivoire, under current living conditions, abandonment does not seem common because very few old people live alone. There are perhaps more grounds for concern in Thailand, but the population at risk is still small and is probably overstated by the survey results quoted here. However, there is evidence from elsewhere that suggests that these results should not be generalized to all poor countries. In many areas of India, living arrangements for newlyweds are strictly patrilocal, with the result that, after marriage, women are effectively cut off from their parents' family. In turn, they will be looked after in old age by their sons, their daughters having themselves moved to their husbands' families. In consequence, women who fail to produce sons, or fail to produce surviving sons, are likely to fall into destitution as widows. Drèze (1988) provides evidence on this problem and highlights it as an outstanding issue for social security and poverty policy in India.

4. The living arrangements of the elderly will vary from place to place according to marriage arrangements, agroclimatic conditions, and the availability of labor and land. The position of Indian widows has already been cited. In Côte d'Ivoire, living patterns have been changing in response to the increasing scarcity of land since sons, who were previously guaranteed land nearby, are now often required to set up households at considerable distances. The shortage of land itself reflects a great deal of immigration to the cocoa and coffee areas, an immigration that responded originally to *labor* shortage and that contributed to the destruction of the original lineage system of cocoa and coffee production. One may also wonder whether the pattern of inheritance in northern Thailand—whereby, as a result of the residual stem family system, the youngest daughter typically inherits the land—will continue unmodified into an era where land is increasingly scarce.

5. Individual participation and earnings patterns show the standard lifecycle hump shapes in Côte d'Ivoire and Thailand and presumably do so more widely. However, households act so as to make average living standards within households much less variable over the life cycle than are the individual patterns. The degree to which this happens in the data is different between the two countries and depends on how household size is measured. Even so, sharing resources between household members is presumably one of the main economic functions of the household. What needs a great deal more research is the extent to which household size and composition adapt to facilitate sharing and to guarantee the best possible living standards to household members. In both Thailand and Côte d'Ivoire, there is a great deal of migration both seasonal and nonseasonal. In Thailand, the process of household formation is explicitly tied to the pressure on resources within the compound; the departure of a previously married child on the marriage of a younger sibling is therefore as much a matter of economics as of immutable custom. In the panel house-

holds in Côte d'Ivoire, there are major differences in membership between 1985 and 1986, and while there is undoubtedly some measurement error, careful attempts were made to link household members from one year to the next. Certainly, there is a great deal of movement. Fosterage of children, often children not closely related, is a widespread phenomenon in West Africa (see Ainsworth 1989) and provides a mechanism, not only for education, training, and apprenticeship, but also for sharing economic burdens between members of the same lineage. There has been a good deal of emphasis on the role of risk sharing in determining patterns of marriage and migration (see, e.g., Rosenzweig 1988). But there is scope for more modeling here, particularly for a simple unifying theory that explains how potential household members decide how to form household groups given the economic opportunities available to them.

6. There are a number of interactions between urbanization and age distributions. Migration tends to lead to young cities and an older countryside, as is the case in Côte d'Ivoire, but much urban growth in LDCs comes from reproductive behavior as well as from migration. The fall in fertility in the demographic transition often begins in the cities, with the result that cities are likely to age more rapidly than more rural areas. The balances between these forces will produce different age distributions in different countries, for example, younger cities in Africa and older cities in Asia, and these have a number of repercussions for policy, for example, in the provision of services as well as in the likely effectiveness of older people as a political force.

7. Many LDCs are in a state of transition, not only demographic, but also educational. In both countries examined here, there are very large differences between the educational attainments of the different generations. The *consequences* of these differences are much less clear, and we do not wish to subscribe to the view that they always and everywhere undermine the status of the old. Nevertheless, models that provide a theoretical framework for the role of the elderly would do well to bear these facts in mind.

8. The life-cycle model of saving and capital accumulation, which has brought so many insights in developed countries, cannot be applied without modification to economies where the functions of households are different. Asset accumulation for old age, with a large share of the capital stock being accounted for (or not accounted for) by life-cycle saving, is not likely to be a very useful model for savings in LDCs. Households can and do provide old-age insurance without an obvious need to accumulate and decumulate assets. Our data do not suggest any run down of assets with the age of the household head. Of course, as in more developed economies, heads have a range of other motives for keeping control of assets for as long as possible.

9. As in developed countries, there is a pronounced household life cycle, with a hump-shaped income, peaking much earlier in Côte d'Ivoire than in Thailand. However, we doubt that there is much long-term consumption smoothing associated with these humps, and we tend to attach more impor-

tance to saving as a means of smoothing consumption over short-term fluctuations in income that are typically associated with agricultural activities. Indeed, it is possible that variations in household structure contribute more to long-term smoothing than do variations in assets.

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Comment

Fumio Hayashi

Angus Deaton and Christina H. Paxson have written a very useful paper. The first stage of any serious empirical research is to bury yourself in the data set and create a number of cross-tabulations, a sometimes painful and time-consuming task that requires a lot of attention to details. The second stage, which is the more enjoyable part of the empirical research, is to look at the cross-tabulations and try to figure out what sort of consistent stories one can tell from the data. I view Deaton and Paxson's paper as summarizing the first stage of their empirical research. I am happy to serve as a discussant of their paper because they have set me up for carrying out the second stage, analyzing the interesting data set they assembled.

Models of Saving Behavior

Although the models of saving behavior the authors seem to have in mind—the dynasty, the life-cycle, and consumption-tracks-income models—are the

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three reference models often relied on when one tries to interpret savings data, it is useful to note that they are particular combinations of the following three elements: altruism, risk sharing, and consumption smoothing over time. The standard life-cycle model combines no altruism, no risk sharing, and consumption smoothing. The consumption-tracks-income model has no altruism, no risk sharing, and no consumption smoothing. The standard dynasty model has all three elements, although one can imagine a dynasty model in which individuals and households in the same dynasty (family) are altruistically linked (hence there is risk sharing between them) but in which the dynasty has no access to loan markets to smooth total dynasty consumption over time. I find it a good strategy for interpreting savings data to check and see if each of the three elements is in the data.

If one has cross-sectional data for two countries with different secular productivity growth rates, one can test altruism by comparing the cross-sectional age profile of consumption for the two countries and testing whether the cohort effect is present. If different age cohorts are altruistically linked, then the shape of the age profile should not be affected by the growth rate of the economy.[1] Another type of test of altruism is possible if data on households belonging to the same dynasty are available. Under altruism, the distribution of consumption by individuals or households within the dynasty should not be affected by the distribution of income within the dynasty.[2]

Within the set of households that enter into a risk-sharing arrangement to pool income shocks, there should be no cross-sectional correlation between consumption growth (more precisely, the growth rate of the marginal utility) and contemporaneous income growth. This test, of course, requires panel data on consumption and income. A less formal test, which can be conducted using cross-sectional data, is to identify households apparently being subject to some adverse shock and see how their consumption is financed.

Testing consumption smoothing, or lack thereof, in cross-sectional data is less straightforward. If the level of consumption is highly correlated with income in cross section, then it can be a sign of households unable to smooth consumption over time. But it also admits other interpretations. The well-known example is the life-cycle model with income that is a random walk. Another possibility is that income includes insurance payments under the guise of transfer income. Under complete income insurance, consumption is insensitive to income shocks, but the level of consumption can differ across households because households have different endowments (lifetime resources). If transfers are timed exactly to finance consumption for households experiencing adverse income shocks, then in cross section there should be

1. C. Carroll and L. Summers ("Consumption Growth Parallels Income Growth: Some New Evidence," NBER Working Paper no. 3090 [Cambridge, Mass.: National Bureau of Economic Research, 1989]) conducted this type of test of altruism.

2. This test of altruism was carried out by J. Altonji, F. Hayashi, and L. Kotlikoff ("Is the Extended Family Altruistically Linked? Direct Tests Using Micro Data," NBER Working Paper no. 3046 [Cambridge, Mass.: National Bureau of Economic Research, August 1989]).

perfect correlation between the level of consumption and income (inclusive of transfers). Conversely, even if consumption and income appear unrelated in cross section at the household level, the dynasty as a whole can be liquidity constrained. Thus, simply documenting a lack of correlation between consumption and income is not enough to assert that there is a well-functioning economy-wide capital market.

With all these preliminaries in mind, I turn now to the data for Thailand and Côte d'Ivoire. I will argue that the standard dynasty model (the model of saving that combines altruism—and hence risk sharing—and consumption smoothing) goes a long way toward explaining the data for the two countries.

Thailand

Take Thailand first. As emphasized in the paper, the family size as defined in the survey is relatively small. This means that consumption by the age of the household head should be a good approximation to consumption by age cohort. As shown in the paper (see tables 6.10, 6.11, and 6.17), there is no cohort effect in the cross-sectional age profile of consumption, which is consistent with the existence of altruism for a quickly growing country like Thailand.

Altruism implies risk sharing, so if there is altruism, we should find evidence for risk sharing in the data. In tables 6.12 and 6.13, we find that more than half of income for those 70 years or over—those experiencing an adverse longevity shock—is transfer income. This certainly is consistent with risk sharing.

Regarding consumption smoothing, the data are not informative. There is fairly strong correlation between consumption and income across households, but, as I argued above, that can be consistent with models with consumption smoothing.

Côte d'Ivoire

The family in the Côte d'Ivoire survey is much larger in size. This makes it difficult to infer the consumption profile by *age cohort*. My favorite example is the following. Suppose the *cross-sectional* (not longitudinal) age profile of earnings is flat, with the old earning on average as much as the young at any given point in time. If a typical household in the survey contains both the young and the old, which is the case for Côte d'Ivoire, and if the head of the household is the main income earner, then half the households in the sample are headed by the young and the other half by the old. If one simply draws the cross-sectional profile of consumption by the age of the household head, it will be completely flat because household consumption is the sum of consumption by the young and old. The cohort effect (under the assumption of no altruism) is that the size of consumption by the young relative to that by the old depends on secular productivity growth, but it just does not show up in

the age profile of household consumption by the age of the head if households include both the young and the old.[3]

It is not clear, therefore, what one can learn from table 6.15, where consumption and income profiles *by the age of the head* are displayed. The authors note that the observed similarity between the consumption profile and the income profile is consistent with the consumption-tracks-income model, but it is also consistent with the standard dynasty model. We know (from table 6.4B) that the vast majority of households contain both parents and their children (which may or may not include the eldest son) in the same household. Take a young age bracket, say, the 25–29 age bracket for 1985 in table 6.15. Most of the household in that age bracket must contain a 25–29-year-old son who is already making more money than his father living in the same household. If earning capacity is positively correlated over generations, then having an able son surpassing his father in earnings is good news for the family because the son's children are also likely to have a high earning capacity. For such families, consumption should be high, thus explaining the correlation between consumption and income.

If the altruistic link is much stronger within the family than between families, the large family size in the data can be an advantage because we can think of family consumption as the sum of consumptions by individuals that are altruistically linked. In this context, table 6.16 has a very interesting interpretation that the authors do not seem to be aware of. The family income regression should not be controversial; it just uncovers the age profile of income by regressing family income on the number of people in the relevant age brackets. The consumption regression is much more interesting. If family members are not altruistically linked, then the consumption regression has the same interpretation as the income regression: the coefficients recover the age profile of consumption. Under this interpretation of the coefficients, the estimated age profile indicates puzzlingly low consumption for the old.

An alternative interpretation is possible if family members are altruistically linked. Take two hypothetical families, A and B, the only difference between them being the presence of old people. The difference between family A's consumption, which includes consumption by old people, and family B's consumption, which does not, is made up of two effects. The first effect, which is positive, is simply that family A has more bodies to feed. The second effect is negative and less obvious: the wealth depletion by old people producing nothing has to be financed partly by a reduction of consumption by young people (and partly by future generations of the dynasty). If family members are not altruistically linked, then the second effect is absent, and the regression coef-

3. In this paragraph about the cohort effect, we are temporarily assuming no altruism. The situation about the age profile of consumption by the age of the head for extended families will get more complicated if the two generations are altruistically linked. See the next paragraph.

ficients can indeed be interpreted as the age profile of consumption. However, if there is altruism, then the second effect must be taken into account. Even if the age profile of consumption within the family is flat, because of the second negative effect, the coefficient on old people can be smaller than that on young people in the same household. This explains the low coefficient on old people in the consumption regression in table 6.16.

A similar line of argument can be applied to explain the asset regression. Suppose for a moment that all parents live with their children and that no child has a parent maintaining a separate household. Thus, if there is a family without old people, that family has already received bequests from deceased parents. Compare family A with old people and family B without old people. On average, family A should have *lower* assets because of the asset depletion by the old. Thus, the coefficient of the number of old people should be *negative* in the family asset regression on a sample consisting of those two types of families. Now recognize the fact that some children (especially the eldest son) live separately from their parents. The sample therefore contains two additional types of families: young families whose surviving parents live separately from them and parents maintaining an independent household. If the family asset regression were run on just these last two types of households, then obviously the coefficient for the old should be *positive* and large if intergenerational transfers are in the form of bequests because family assets are still in the hands of independent parents. The actual data for Côte d'Ivoire contain all four types of families, so the coefficient on old people can be either positive or negative. If bequests are passed on to children on the death of the father without passing through the hands of his widow(s), then the assets will never reside in the fourth type of family, headed by an old mother (if there is one). This explains why the coefficient is negative for old females and positive for old males.

Conclusion

Deaton and Paxson have created a large set of informative and interesting tables. I could not find a single piece of evidence that is inconsistent with the simple dynasty model of saving.