Labor force status transitions at older ages in the Philipines, Singapore, Taiwan, and Thailand, 1970–1990

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Abstract. While there is considerable evidence of a trend toward earlier retirement in the United States and Europe, trends in rapidly growing economies in other parts of the world have not been closely examined. This paper traces the labor force participation rates of older men and women in four Asian countries, the Philippines, Singapore, Taiwan, and Thailand, over the period of 1970 to 1990. Aggregate census data are used to calculate net transitions into and out of the labor force so as to permit the analysis of differences by country and cohort as well as change over time. Results show that, although men exhibit a general trend toward earlier net labor force exit, labor force participation rates at older ages remain high. Older women are found to be increasingly engaged in economic activity, especially in Singapore and Taiwan.

Keywords: Asia, Economy, Elderly, Labor force participation, Retirement, Social Security

Introduction

The trend toward lower labor force participation and earlier retirement among older men in the USA and other industrialized nations is well documented (e.g., Hurd 1990; Quinn & Burkhauser 1990, 1995; Kohli et al. 1991; Lumsdaine & Wise 1994; Peracchi & Welch 1994; Gruber & Wise 1997). While women also appear to be retiring earlier, female labor force participation at older ages has been stable, reflecting a general trend toward greater labor supply at all ages (Jacobs, Kohli & Rein 1991a; Quinn & Burkhauser 1995). This trend toward earlier retirement is one of considerable policy interest. The primary concern is that reductions in labor force participation at older ages will present a major challenge to the viability of pay-as-you-go social security systems by increasing the size of the retired population relative to the working population. The rapid aging of populations in industrialized countries is expected to add to the challenge of maintaining current levels of economic well-being among the elderly without overburdening the working-age population. This interaction between rapid population aging, earlier retirement, and generous pay-as-you-go pension programs has stimu-

lated a vast body of research focused primarily on the USA, Western Europe, and Japan.

The importance of rapid demographic change for social security policy and the economic well-being of the elderly is not limited to these industrialized countries. As a result of rapid fertility and mortality declines, large increases in the absolute and relative size of the elderly population are projected in a number of non-Western countries as well. This is particularly true of rapidly developing countries in East and Southeast Asia. In this paper, we extend the analysis of labor force participation behavior at older ages beyond the West by examining trends over a twenty-year period in four countries with very different economic, social, demographic, and policy incentives to retirement: the Philippines, Singapore, Taiwan, and Thailand.[1] Using data for 1970, 1980 and 1990, we examine patterns of labor supply among older men and women in these countries over time and across cohorts. We are particularly interested in determining if, as in the West, there is a trend toward earlier labor force exit among older workers in these four East and Southeast Asian countries.

Labor force participation at older ages

In the absence of consistent individual-level data on the transition to retirement, we examine aggregate labor force participation data in order to make inferences regarding trends in retirement behavior. This approach has a long history in the literature and is justified by the fact that national levels of labor force participation at older ages represent the aggregation of individual retirement decisions (e.g., Pampel & Weiss 1983; Pampel & Park 1986; Clark & Anker 1990, 1993).

Before examining the data, we discuss several factors that have been offered as explanations for lower labor force participation rates (LFPR) at older ages and earlier retirement in the West. These include expanded coverage and increasing benefit levels provided by social security and private pension programs, changes in occupational structure, trends in economic growth, and population aging (Durand 1975; Pampel & Weiss 1983; Pampel & Park 1986; Clark & Anker 1990, 1993; Kohli et al. 1991). We evaluate the potential relevance of each of these factors for understanding changes in the Philippines, Singapore, Taiwan, and Thailand.

Social security and private pensions

Most explanations of the large decline in labor force participation at older ages in the USA and Western European countries stress the importance of

social security and private pension programs. Reductions in labor supply at older ages have occurred simultaneously with increases in the coverage of social security and private pension plans and with reductions in the age of eligibility for benefits (Hurd 1990; Lumsdaine & Wise 1994; Gruber & Wise 1997). Large peaks in labor force exit at ages associated with eligibility for benefit receipt are interpreted as evidence that social security and private pension provisions are the driving force behind declining labor force participation at older ages (Burtless & Moffit 1984; Jacobs, Kohli & Rein 1991a; Quinn & Burkhauser 1995; Ruhm 1995). This is particularly true of pronounced increases in labor force exit at ages associated with eligibility for early benefit receipt (e.g., age 62 for Social Security receipt in the USA) (Kohli et al. 1991; Gruber & Wise 1997).

The concurrent trends toward earlier retirement and longer life expectancy suggest an important role for increasing resources with which to finance retirement. It seems clear that large real increases in the level of benefits provided by social security, pension, and disability transfer programs in the USA and Europe have been the primary source of improvements in the financial status of the elderly (Ippolito 1990; Kohli et al. 1991). Public transfer programs now constitute the most important source of income for the elderly in industrialized countries (e.g., Hurd 1990; Smeeding, Torrey & Rainwater 1993).

As improvements in the economic status of the elderly make retirement financially feasible, and as generational roles change in ways that offer the elderly more fulfilling roles outside of work, it is also likely that (early) retirement has become a more socially desirable event. Evidence suggests that, until recently, most retirement in the USA was involuntary (Quinn & Burkhauser 1990), and was associated with a loss of economic security, a loss of social interaction, and a reduced sense of productivity (Treas & Torrecilha 1995). It is only in the past few decades that retirement has come to be seen as a desirable and socially acceptable goal.

In three of the four countries we examine, however, it is unlikely that expanded pension coverage and increasing benefit levels are capable of producing significant reductions in the labor supply of older workers. Although public pension programs were in effect in all four countries during the period of analysis, coverage and benefit levels are generally quite low. In the Philippines, civil servants are covered by the Government Service Insurance System (GSIS) and other employees are covered by the Social Security System (SSS). However, the proportion of the elderly covered by these programs is low (7% in 1990) and the benefit levels are generally not high enough to finance retirement (World Bank 1994; Social Security Administration 1995). Taiwan also has a two-tier pension program, with

civil servants covered by the Civil Servant Retirement Regulation (CSRR) and private sector employees in certain occupations covered by the Labor Standard Law (LSL). Although both coverage and benefit levels are higher than in the Philippines, these programs cover only a minority of the elderly population and provide lump-sum benefits that amount to a maximum of four to five years worth of wages (Shih 1997). In Thailand, the only pension program in place during the period of analysis was for civil servants and teachers (Social Security Administration 1995).[2] Singapore is the one country where increases in coverage and benefit levels may be reflected in changes in the labor supply behavior of older workers. Singapore's Central Provident Fund (CPF) is a fully-funded pension program with a relatively high level of coverage (38% of the population aged 55 and over had CPF savings in 1995) and contribution levels that allow for financial independence following retirement (Chan & Cheung 1997).

Changes in occupational structure

Earlier retirement in the West is also thought to reflect the diminishing importance of industries without formal retirement regulations and benefits, such as agriculture and other forms of self-employment (e.g., Pampel & Weiss 1983; Pampel & Park 1986; Clark & Anker 1990, 1993; Jacobs, Kohli & Rein 1991b). Increased participation in the 'modern' sector of the economy, with its higher incomes, better pension coverage, less flexible working schedules, and in some cases, mandatory retirement ages tends to reduce LFPRs at older ages (Clark & Anker 1990). Related explanations stress the role of technological and educational change. Technological change, by reducing the economic opportunities for less skilled workers of all ages, is thought to promote the early retirement of less skilled workers near retirement age (Peracchi & Welch 1994). Similarly, increasing educational attainment among younger cohorts places older workers at a competitive disadvantage in the labor market, thereby promoting the forced retirement of the least competitive (Durand 1975; Pampel & Weiss 1983).

The Philippines, Taiwan, and Thailand have all experienced declines in the proportion of the labor force employed in the primary sector (fishing, forestry, and agriculture). Between 1970 and 1990, the proportion of the labor force in the primary sector declined from 52% to 42% in the Philippines, from 38% to 19% in Taiwan, and from 79% to 66% in Thailand. This structural change is less relevant in Singapore where the primary sector is very small (primary sector representation declined from 4% in 1970 to 0.3% in 1990). Although absolute levels remain high in the Philippines and Thailand, the above argument suggests that the decline in primary sector employment may

be reflected in an aggregate trend toward lower labor force participation at older ages (i.e., earlier retirement) in these countries.

Rapid increases in levels of educational attainment also suggest the possibility of accelerated labor force exit among older workers. Between 1970 and 1990, the proportion of the 20–29 year old population having completed a secondary education or more increased from 20% to 57% in Singapore, from 26% to 75% in Taiwan, and from 11% to 22% in Thailand.

In countries like the USA, where social security and pension provisions offer financial incentives to early retirement, mandatory retirement age regulations do not have a substantial effect on the labor supply of older male workers.[3] Without such incentives to early retirement, however, mandatory retirement age regulations may be an important mechanism through which economic development and changing occupational structure reduce labor force participation at older ages. As changing labor market demands place older workers at a competitive disadvantage, mandatory retirement age regulations serve to push older, less efficient workers out of the labor force (Clark, Kreps & Spengler 1978; Pampel & Weiss 1983). Most of the countries in this analysis have mandatory retirement ages for a portion of the labor force. In the Philippines, the standard age at retirement is 60, the age at which those covered by either of the two pension programs are eligible for benefits (World Bank 1994; Social Security Administration 1995). The mandatory retirement age for most workers in Singapore is 55 (Shantakumar 1994), which is also the age of eligibility for withdrawal of CPF savings. The mandatory retirement age in Taiwan is 65 for civil servants and 60 for most employees in the private sector (Shih 1997) and in Thailand is 60 for government employees.

Economic growth

The low levels of economic growth and the high levels of unemployment that characterized Western industrial economies during the 1970s, 1980s, and early 1990s have also been offered as an explanation for increases in early retirement. In order to provide employment opportunities for younger workers in periods of low economic growth, early retirement strategies have been particularly popular in Western European countries (Kohli et al. 1991). The concentration of early retirement in industries experiencing the greatest employment contraction (e.g., textiles, mining, and construction) is consistent with this interpretation (Mirkin 1987). Falling real wages for older workers, in combination with employer incentives for early retirement, may have also provided an incentive for earlier labor force exit in the USA (Sheppard 1991; Lumsdaine & Wise 1994).

Unlike the USA and Western European economies, three of the four countries in this study have experienced very rapid economic growth and

development during recent decades. Between 1971 and 1990, real per capita GNP increased by 3 times in Singapore, by 3.6 times in Taiwan, and by 2.5 times in Thailand (World Bank 1993; Council for Economic Planning and Development, Republic of China 1996). In the Philippines, where growth has been slower, real per capita GNP in 1990 was 30 percent higher than in 1971 (World Bank 1993). It is possible that, in contrast to the Western experience, rising wages associated with rapid economic growth have provided an incentive for older workers in these countries to remain in the labor force. It is equally possible, however, that increases in wealth and changes in skill requirements have worked in the other direction. Increasing family wealth may be particularly important in these four Asian countries where the most important source of income for the elderly continues to be transfers from children (Roan & Hermalin 1997). In this context, the increases in wages and personal wealth that accompany rapid economic growth may promote reductions in labor supply at older ages not only because older workers are better able to finance their own retirement, but also because children are better able to provide the financial support necessary for aging parents to cease working.

Population aging

Population aging is another factor which can influence labor force participation at older ages. By increasing the competition for jobs, and thus lowering wages, increases in the relative supply of older workers should promote earlier retirement (Pampel & Weiss 1983; Clark & Anker 1990, 1993). Population aging should not be an important factor in the four countries being considered here, which remain relatively young. Between 1970 and 1990, the proportion of the population aged 60 and over increased from 4% to 5% in the Philippines, from 6% to 8% in Singapore, from 5% to 10% in Taiwan, and from 5% to 7% in Thailand. However, the proportion of the elderly population in these countries will increase substantially in the near future as a result of rapid declines in fertility and mortality during recent decades. By 2020, the proportion over age 60 is projected to be 10% in the Philippines, 24% in Singapore, 21% in Taiwan, and 13% in Thailand (World Bank 1994). These projections suggest that population aging may play an increasingly important role in determining the labor force behavior of future cohorts of elderly, particularly in Singapore and Taiwan.

The above explanations for the trend toward earlier retirement in the West suggest that, in some cases, these same factors may be important for understanding changes in labor supply at older ages in the Philippines, Singapore, Taiwan, and Thailand. Of particular relevance are mandatory retirement savings (CPF) in Singapore, the declining importance of primary sector employment in all countries except Singapore, increasing educational attain-
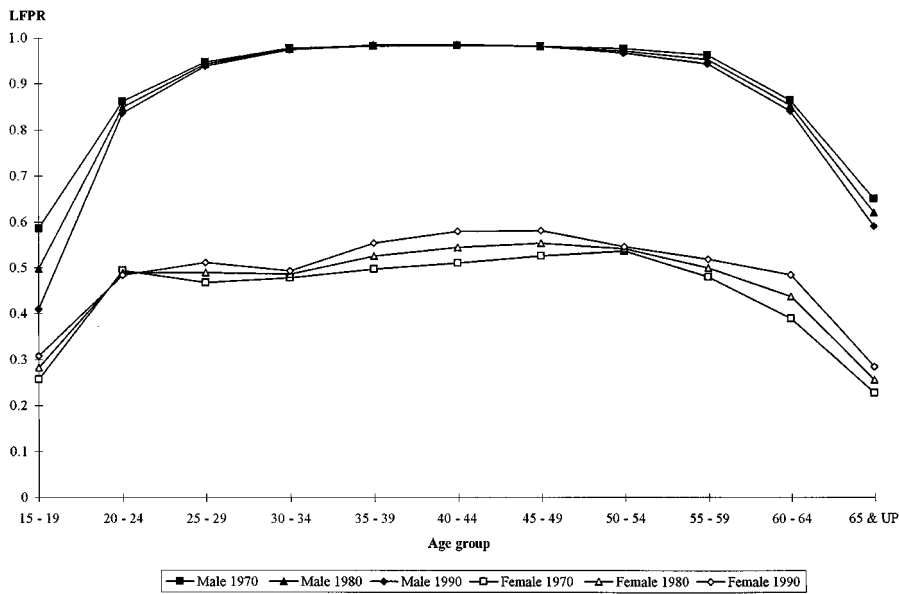
Figure 1. Labor force participation rates in the Philippines. Based on ILO estimates.

ment among younger workers, and rapid economic growth in all countries except the Philippines. Examination of age-specific labor force participation rates (Figures 1–4) indicates that, since 1970, labor force participation for men over age 55 has declined in all four countries. The pattern for women is more variable. In three of the countries, labor force participation rates of women over 55 in 1990 were either higher or largely unchanged relative to 1970. The largest increases in female labor force participation have occurred in Singapore and Taiwan, where absolute levels of participation are much lower than in the Philippines and Thailand. In Thailand, female labor force participation rates at all ages were lower in 1990 than in 1970.

Data and methodology

In the following analysis, we employ the forward survival method as described by Hermalin and Christenson (1992) to examine net transitions in the economic activity status of older men and women.[4] Calculations for Singapore, Taiwan, and Thailand are based on data from the 1970, 1980, and 1990 censuses. For the Philippines, data on economic activity status are not available in the 1980 census, necessitating the use of an alternative source of data. Transition rate calculations for the Philippines are based on estimates of total population and economically active population produced by the Interna-
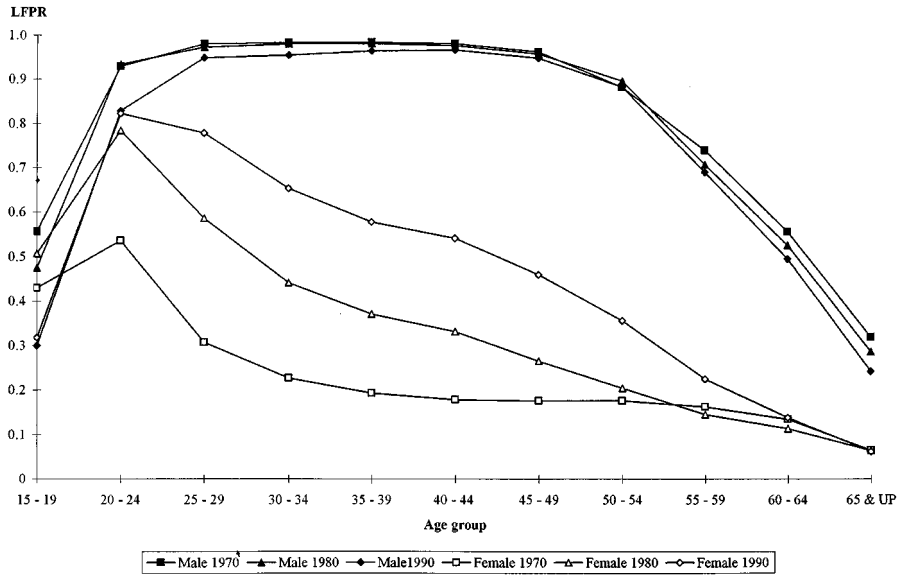
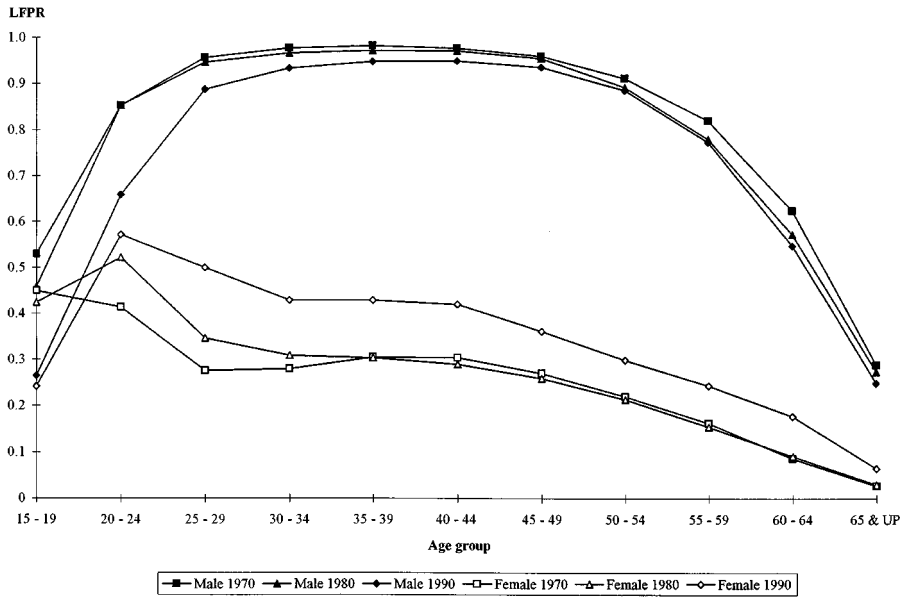*Figure 2.* Labor force participation rates in Singapore.

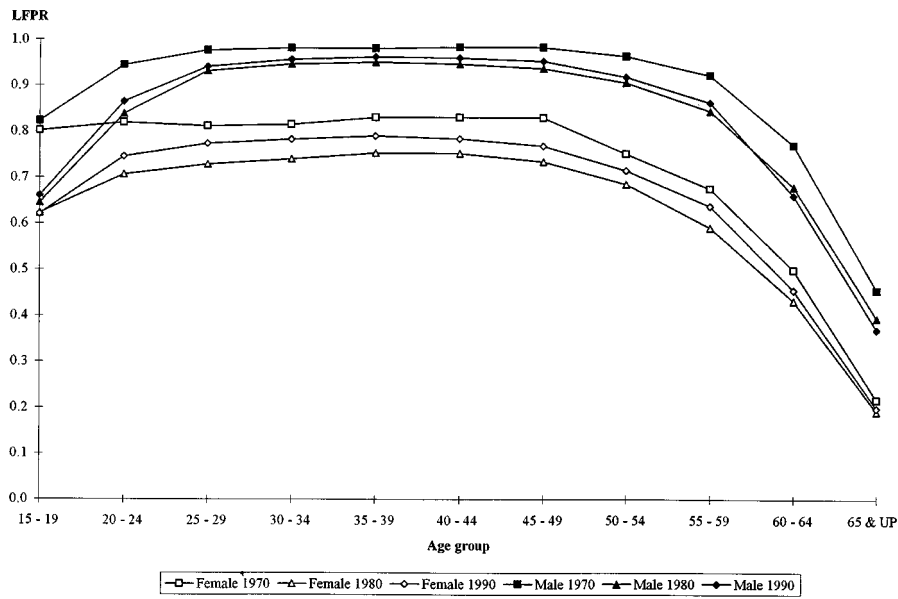*Figure 3.* Labor force participation rates in Taiwan.

Figure 4. Labor force participation rates in Thailand.

tional Labour Office (ILO).[5] Table 1 provides definitions of economic activity for each country.

The forward survival method is neither novel nor complicated, but does, in the absence of individual longitudinal data, offer an effective method for observing changes in the status of particular cohorts or groups. By utilizing data from three or more censuses, this method enables observation of both intracohort changes and intercohort differences. The former reflect the experience of various life cycle transitions within a given cohort while the latter reflect the social and economic change that differentiates cohorts.[6]

The forward survival method consists of four steps. The first is to calculate survival ratios for five-year age cohorts between two successive censuses. Assuming no immigration, this is simply the ratio of the number of people in a given age group at the second census to the number of people in the age group ten years younger at the first census. The second step is to apply these survival ratios to members of a given status (economically active in this case) within each age group in order to determine the expected number of individuals of that status at the time of the second census. The use of survival ratios based on the entire population implies the assumption that survival probability is the same for those in the labor force and those out of the labor force. Calculated transition rates will be biased to the extent that these survival probabilities differ. In this study, we do not attempt to correct for

Table 1. Definitions of economically active population by country

Philippines: The economically active population, which includes persons working and actively looking for work, is estimated by the International Labour Office based on census and labor force survey data following the procedures described in International Labour Office (1990).

Singapore: The economically active population includes all persons working or actively looking for work during the week prior to the census date (late June). The working population includes those who worked 15 hours or more for pay or profit and those who worked for 15 hours or more in a family business without fixed pay.

Taiwan: The economically active population includes all persons who were working, looking for work, or willing to work in the week prior to the census date (December 16). The working population includes individuals who were engaged in a paid job or doing unpaid work in a family-run business for 15 or more hours a week or employed but not working due to illness or seasonal factors. The 1990 census figures are for the civilian population only.

Thailand: The economically active population includes all individuals who were employed on the census date (April 1), those who had worked for wages, salaries, profits, dividends, or any other payment on any day during the seven days preceding the census date, and experienced workers and new workers who were looking for work during the same period. The economically active population also includes those waiting for the farm season.

the potential bias associated with differential mortality by economic activity status. The third step is to subtract the expected number from the actual number observed in the second census, yielding the net number of entries or exits, controlling for mortality, from the status under consideration. Finally, this difference is divided by the mid-period population (here, the average population for a given five-year age cohort at two successive censuses) and multiplied by 1,000 to yield a net transition rate per 1,000 people in the status being considered (Hermalin & Christenson 1992; Hermalin 1995). Although the same analysis could be conducted using life table survival ratios, census survival ratios are preferable in that they reflect variations in the completeness of census coverage and related factors (Hermalin & Christenson 1992).

It is important to realize that, because the only information used in calculating net labor force transition rates is total population and economically active population for a given cohort at two points in time, these rates can be derived by simple algebraic manipulation of age-specific labor force participation rates. One formulation of this procedure (Hermalin 1996), outlined in the Appendix, shows that a labor force participation rate that is higher (lower) in period two than in period one corresponds to a positive (negative)

net transition rate. More specifically, net transition rates can be expressed as the ratio of the difference in labor force participation rates to the mean labor force participation rate. In the subsequent discussion, we employ this decomposition procedure to facilitate the interpretation of differences in net transition rates across time, countries, and cohorts.

While the analysis of net transition rates for variable characteristics such as economic status is a valuable tool for examining intercohort stability or change in the behavior of the elderly over time (Hermalin & Christenson 1992), there are several limitations associated with this particular procedure and with aggregate level analyses of retirement behavior in general. The most important limitations are related to the fact that, by focusing only on national LFPR data, we cannot observe the complex nature of retirement decisions made at the individual level. First, the highly aggregated nature of the data we use requires the assumption that net exits from the labor force at older ages (age 50 and above) are indicative of some form of retirement. Examining transitions into and out of a wider variety of economic activity statuses, such as specific occupation or sector of employment, unemployment, illness or infirmity, and retirement, would surely give a clearer picture of the nature of temporal and regional differences in labor force exits among the elderly. However, the absence of consistent data precludes cross-national analysis at this more detailed level. Second, because economic activity status is a time-varying characteristic (unlike educational attainment or children ever born, which are relatively constant at older ages), the forward survival procedure will not provide a complete picture of labor supply dynamics. Net transition rates calculated using the procedure described above do not allow us to separately examine the processes of labor force exit and entry (or reentry). We are therefore unable to observe gradual labor force withdrawal, which may include periods of unemployment, part-time work, and occupational changes (e.g., Ruhm 1990; Clark & Ogawa 1997). It is also not possible to observe the reasons for labor force withdrawal (i.e., whether it was voluntary or involuntary). Third, differences in the definition of economic activity across countries (see Table 1), along with differences in the degree of completeness in enumeration between countries and across censuses within countries make strict comparability difficult.[7] However, within the bounds of these data limitations, this procedure does provide a broad picture of the differences and similarities across countries in levels and trends.

Trends in net labor force transition rates

In this section, we describe how net labor force transition rates vary across time, countries, and cohorts. Throughout this discussion we refer to negative

Table 2a. Male net labor force transition rates, 1970–1980

Age group 1970	Age group 1980	Survival ratio	Economically active 1970	Economically active 1980	Expected active 1980	Difference	Transition rate
Philippines							
40–44	50–54	0.868	737,000	631,000	639,716	−8,716	−12.743
45–49	55–59	0.836	641,000	520,000	536,127	−16,127	−27.781
50–54	60–64	0.787	493,000	339,000	387,775	−48,775	−117.248
55 & Up	65 & Up	0.537	951,000	391,000	510,273	−119,273	−117.754
Singapore							
40–44	50–54	0.895	52,975	43,281	47,392	−4,111	−85.418
45–49	55–59	0.838	42,466	26,146	35,580	−9,432	−274.929
50–54	60–64	0.789	33,287	15,652	26,259	−10,607	−433.478
55 & Up	65 & Up	0.571	48,814	14,648	27,885	−13,237	−417.163
Taiwan							
40–44	50–54	0.972	483,898	429,861	470,474	−40,613	−88.892
45–49	55–59	0.939	392,162	299,585	368,357	−68,772	−198.836
50–54	60–64	0.924	263,912	153,021	243,777	−90,756	−435.351
55 & Up	65 & Up	0.641	336,154	99,224	215,501	−116,277	−534.143
Thailand							
40–44	50–54	0.971	753,100	674,944	731,589	−56,645	−79.332
45–49	55–59	0.921	579,800	458,568	534,262	−75,694	−145.794
50–54	60–64	0.882	449,100	278,694	396,265	−117,571	−323.089
55 & Up	65 & Up	0.630	777,400	277,072	489,656	−212,584	−403.205

net transition rates as 'net exit rates'. It is important to remember, however, that these are aggregate measures of change in labor force participation and, as such, do not provide any information about individual transition probabilities. Given the large differences in male and female labor force participation across the life course, we present results separately by sex.

Male net transition rates

Tables 2a and 2b present the net labor force transition rates for men in the four countries for the periods 1970–1980 and 1980–1990, respectively. The negative relationship between age and labor force participation rates shown in Figures 1–4 is reflected in net exit rates that increase monotonically (i.e., become increasingly negative) with age. One exception to this pattern is Singapore where the net exit rate for the oldest group is smaller than that

Table 2b. Male net labor force transition rates, 1980–1990

Age group 1980	Age group 1990	Survival ratio	Economically active 1980	Economically active 1990	Expected active 1990	Difference	Transition rate
Philippines							
40–44	50–54	0.921	971,000	877,000	894,264	−17,264	−18.684
45–49	55–59	0.842	832,000	673,000	700,683	−27,683	−36.788
50–54	60–64	0.822	631,000	449,000	518,564	−69,564	−128.822
55 & Up	65 & Up	0.583	1,250,000	542,000	728,902	−186,902	−208.596
Singapore							
40–44	50–54	0.938	64,913	55,021	60,881	−5,860	−97.720
45–49	55–59	0.940	52,414	35,509	49,283	−13,774	−313.320
50–54	60–64	0.871	43,281	20,803	37,679	−16,876	−526.684
55 & Up	65 & Up	0.639	56,448	18,226	36,075	−17,849	−478.051
Taiwan*							
40–44	50–54	0.929	435,528	369,365	404,671	−35,306	−87.728
45–49	55–59	0.909	414,304	305,715	376,539	−70,824	−196.728
50–54	60–64	0.864	429,861	228,377	371,467	−143,090	−434.767
55 & Up	65 & Up	0.658	551,830	166,302	363,118	−196,816	−548.133
Thailand							
40–44	50–54	1.046	1,007,661	1,022,670	1,053,624	−30,954	−30.492
45–49	55–59	0.992	868,357	792,300	861,462	−69,162	−83.295
50–54	60–64	0.964	674,944	472,559	650,386	−177,827	−309.937
55 & Up	65 & Up	0.689	1,014,334	421,407	699,143	−277,736	−386.889

* Taiwan's 1990 economically active population is calculated by adding the difference between total population and civilian population to the economically active civilian population.

of the immediately preceding age group. Between 1970 and 1980, the net exit rate for the 50–54 → 60–64 year old age group was 433 per thousand economically active, while the net exit rate for the 55 & Up → 65 & Up age group was 417 per thousand. In the next period, the net exit rates for these same age groups were 527 and 478, respectively.

The figures in Tables 2a and 2b provide some limited evidence of a trend toward earlier retirement for men in the Philippines and in Singapore. Net transition rates for all age groups in these countries are more negative in the second period. For the most part, however, these changes are very small. The 22% increase in the net exit rate for the 50–54 → 60–64 year old age group in Singapore is one of the largest changes. There are also large increases in net exits for the 40–44 → 50–54 and 45–49 → 55–59 year old age groups in the Philippines (47% and 32%, respectively), but these are changes from very low

Table 3a. Female net labor force transition rates, 1970–1980

Age group 1970	Age group 1980	Survival ratio	Economically active 1970	Economically active 1980	Expected active 1980	Difference	Transition rate
Philippines							
40–44	50–54	0.909	386,000	372,000	350,816	21,184	55.894
45–49	55–59	0.882	347,000	290,000	305,991	−15,991	−50.207
50–54	60–64	0.834	277,000	188,000	230,923	−42,923	−184.615
55 & Up	65 & Up	0.569	433,000	180,000	246,482	−66,482	−216.907
Singapore							
40–44	50–54	0.956	8,354	9,156	7,989	1,167	133.295
45–49	55–59	0.915	6,589	4,987	6,028	−1,041	−179.855
50–54	60–64	0.894	5,864	3,381	5,243	−1,862	−402.812
55 & Up	65 & Up	0.667	10,792	4,015	7,199	−3,184	−430.067
Taiwan							
40–44	50–54	0.954	104,308	69,792	99,507	−29,715	−341.356
45–49	55–59	0.944	75,989	41,071	71,757	−30,686	−524.278
50–54	60–64	0.969	46,366	18,638	44,924	−26,286	−808.750
55 & Up	65 & Up	0.671	46,808	10,915	31,423	−20,508	−710.566
Thailand							
40–44	50–54	1.015	628,500	527,377	637,928	−110,551	−191.285
45–49	55–59	0.968	486,800	335,168	471,091	−135,923	−330.726
50–54	60–64	0.913	364,300	190,683	332,688	−142,005	−511.745
55 & Up	65 & Up	0.678	554,900	168,591	376,002	−207,411	−573.362

initial levels. The most notable feature of the transition rates in Thailand, and particularly in Taiwan, is their stability over the two intercensal periods. In both countries, the largest net exits from the labor force during both ten-year periods were experienced by the oldest age group, those progressing from age 55 and older to age 65 and older. In aggregate, slightly more than one of every two economically active Taiwanese men and slightly less than one of every two economically active Thai men in this age group exited the labor force between censuses.

There are also clear and consistent cross-national differences in the levels of net labor force exits. In both periods, the absolute values of net transition rates are highest at all ages in Taiwan and Singapore, intermediate in Thailand, and substantially lower in the Philippines.

Table 3b. Female net labor force transition rates, 1980–1990

Age group 1980	Age group 1990	Survival ratio	Economically active 1980	Economically active 1990	Expected active 1990	Difference	Transition rate
Philippines							
40–44	50–54	0.939	538,000	506,000	505,328	672	1.287
45–49	55–59	0.854	492,000	393,000	420,054	−27,054	−61.139
50–54	60–64	0.842	372,000	280,000	313,064	−33,064	−101.423
55 & Up	65 & Up	0.622	658,000	303,000	408,955	−105,955	−220.510
Singapore							
40–44	50–54	0.940	21,544	21,719	20,246	1,473	68.095
45–49	55–59	0.988	13,892	11,613	13,724	−2,111	−165.536
50–54	60–64	0.963	9,156	5,970	8,821	−2,851	−376.967
55 & Up	65 & Up	0.734	12,383	5,731	9,092	−3,361	−371.094
Taiwan*							
40–44	50–54	0.962	125,247	124,124	120,437	3,687	29.570
45–49	55–59	0.948	97,493	86,534	92,397	−5,863	−63.719
50–54	60–64	0.912	69,792	52,828	63,646	−10,818	−176.448
55 & Up	65 & Up	0.682	70,624	36,988	48,146	−11,158	−207.375
Thailand							
40–44	50–54	1.068	828,723	842,209	884,886	−42,677	−51.082
45–49	55–59	1.016	710,215	625,509	721,413	−95,904	−143.599
50–54	60–64	0.987	527,377	344,799	520,683	−175,884	−403.322
55 & Up	65 & Up	0.739	694,442	276,787	513,379	−236,592	−487.201

* Taiwan's 1990 economically active population is calculated by adding the difference between total population and civilian population to the economically active civilian population.

Female net transition rates

Tables 3a and 3b present net labor force transition rates by age for women in each of the four countries. Although there are some similarities with men, the trends in female transition rates exhibit interesting differences. As with men, there is a negative relationship between age and labor force participation. However, this relationship is less regular than for men and, in many cases, begins only with the 45–49 → 55–59 year old age group. Net transition rates for the 40–44 → 50–54 year old group are positive in both periods in the Philippines and Singapore and in the second period in Taiwan. It is likely that these positive net transition rates for the youngest age group reflect the net labor force entry of women who are either returning to or

entering the labor force for the first time as their childrearing responsibilities decline.

A second major gender difference is the trend toward lower net exit rates for females. This trend, which is visible in all countries except the Philippines, suggests that, in aggregate, women are working longer now than in the past. This is particularly true for women in Taiwan. Taiwanese women aged 40–44 → 50–54 exited the labor force with a net transition rate of 341 per thousand between 1970 and 1980, but during the 1980–1990 period net labor force exit does not begin until ages 45–49 → 55–59, at which point the net transition rate is only 64 per thousand economically active. Declines in net exit rates also occur in Singapore and Thailand, but to a much lesser extent than in Taiwan.

In contrast to the cross-national trends for men, there are no clear patterns for women. The only consistent cross-national difference is that net exit rates for the three oldest age groups are lowest for women in the Philippines. The absence of consistent cross-national differences reflects the large increases in the labor force participation of women in Singapore and Taiwan (Figures 2 and 3).

Decomposition of net labor force transition rates

To provide speculative interpretations of the observed changes in net labor force transition rates, it is informative to isolate the different components of these rates. As mentioned above, net labor force transition rates may be reexpressed in terms of labor force participation rates. The Appendix shows that net transition rates may be expressed as the ratio of the change in labor force participation rates between two points in time for a given cohort to the mean labor force participation rate at the two points for the same cohort. From this decomposition, it is clear that very different patterns of economic activity may be represented by net transition rates of similar magnitudes. For example, net exit rates of similar size might reflect a small decrease in labor force participation in combination with a relatively low mean labor force participation rate or a large decrease in labor force participation in combination with a relatively high mean labor force participation rate. When offering interpretations of the patterns in net transition rates described above, it is therefore important to realize that the same net transition rate may describe two qualitatively distinct situations. Table 4 presents the numerators and denominators of this decomposition for each of the net transition rates shown in Tables 2 and 3.

Looking at the figures for men, net exit rates in the Philippines and Thailand are lower in both periods primarily because of smaller declines in labor force participation for the 45–49 → 55–59 and 50–54 → 60–64 year old

Table 4. Decomposition of net transition rates

Sex – age group	A: Change in labor force participation rate				B: Mean labor force participation rate*				C: Net transition rate = (A/B)∗1,000			
	Philippines	Singapore	Taiwan	Thailand	Philippines	Singapore	Taiwan	Thailand	Philippines	Singapore	Taiwan	Thailand
Men, 1970–1980												
(40–44)–(50–54)	−0.013	−0.085	−0.084	−0.076	1.051	0.996	0.948	0.959	−12.743	−85.410	−88.891	−79.332
(45–49)–(55–59)	−0.029	−0.255	−0.179	−0.139	1.061	0.927	0.900	0.955	−27.781	−274.922	−198.836	−145.793
(50–54)–(60–64)	−0.123	−0.356	−0.339	−0.286	1.045	0.821	0.779	0.885	−117.247	−433.461	−435.348	−323.089
(55 & Up)–(60–64)	−0.189	−0.259	−0.321	−0.302	1.063	0.620	0.601	0.748	−177.754	−417.139	−534.145	−403.205
Men, 1980–1990												
(40–44)–(50–54)	−0.019	−0.094	−0.085	−0.028	1.017	0.962	0.967	0.913	−18.684	−97.727	−87.893	−30.492
(45–49)–(55–59)	−0.039	−0.268	−0.180	−0.075	1.052	0.854	0.914	0.903	−36.788	−313.317	−197.302	−83.295
(50–54)–(60–64)	−0.130	−0.401	−0.345	−0.248	1.009	0.762	0.791	0.800	−128.822	−526.697	−435.459	−309.938
(55 & Up)–(65 & Up)	−0.203	−0.237	−0.295	−0.243	0.975	0.495	0.538	0.628	−208.596	−478.052	−548.374	−386.889
Women, 1970–1980												
(40–41)–(50–54)	0.031	0.026	−0.091	−0.144	0.551	0.195	0.266	0.752	55.893	133.306	−341.358	−191.285
(45–49)–(55–59)	−0.027	−0.030	−0.116	−0.239	0.547	0.168	0.220	0.724	−50.207	−179.799	−524.280	−330.725
(50–54)–(60–64)	−0.100	−0.062	−0.129	−0.321	0.539	0.155	0.159	0.627	−184.613	−402.914	−808.756	−511.746
(55 & Up)–(65 & Up)	−0.094	−0.051	−0.057	−0.234	0.434	0.118	0.080	0.408	−216.908	−430.122	−710.571	−573.361
Women, 1980–1990												
(40–44)–(50–54)	0.001	0.024	0.009	−0.036	0.563	0.354	0.300	0.710	1.287	68.097	29.371	−51.082
(45–49)–(55–59)	−0.036	−0.041	−0.017	−0.098	0.583	0.246	0.258	0.680	−61.139	−165.552	−63.899	−143.598
(50–54)–(60–64)	−0.057	−0.066	−0.036	−0.232	0.563	0.175	0.206	0.575	−101.423	−376.903	−176.684	−403.322
(55 & Up)–(65 & Up)	−0.099	−0.036	−0.020	−0.169	0.449	0.097	0.095	0.347	−220.509	−371.056	−207.664	−487.201

* Mean labor force participation rates greater than one are possible because the denominator is the twice the total population at time 2, which may be less than the sum of the total population at time 1 and the total population at time 2.

groups and higher mean labor force participation rates for the oldest group. In other words, for the 45–49 → 55–59 and the 50–54 → 60–64 year old groups, economically active Filipino and Thai males are less likely, in aggregate, than their Singaporean and Taiwanese counterparts to cease economic activity. For the oldest age group (55 & Up → 65 & Up), the decline in labor force participation rates is similar across all four countries, but the fact that much larger proportions of Filippino and Thai males remain in the labor force until these ages means that their net exit rates continue to be lower. These patterns of net exit suggest that Singaporean and Taiwanese men cease economic activity in much greater numbers around the 'typical' retirement ages of 55 or 60. As noted above, the mandatory retirement age for most Singaporeans is 55 and corresponds to the age at which CPF savings may be withdrawn (Chan & Cheung 1997). The large net labor force exit rates in Taiwan likely reflect the retirement of government employees and men in other occupations with mandatory retirement ages and pension coverage. The smaller declines in labor force participation rates and the much higher mean level of participation in the Philippines and Thailand suggest the possibility that differences in economic structure (i.e., larger proportions self-employed or in the primary sector where work schedules are flexible and mandatory retirement regulations do not exist) and the low levels of social security coverage make retirement less of an option for elderly men in these countries.

For women, the high net exit rates during the first period in Singapore, and particularly in Taiwan, are the result of relatively small changes in labor force participation rates combined with very low mean levels of participation. The large decline in net exit rates among Taiwanese women in the second period is due to a much smaller intercensal reduction in labor force participation and is not the result of an increase in mean participation rates. This suggests that, in net, fewer Taiwanese women are leaving the labor force at older ages. In Singapore, the same appears to be true for the oldest age group. However, for women aged 45–54 at the beginning of the second period, a higher mean participation rate is the cause of the lower net exit rates. In aggregate, Singaporean women in these age groups are exhibiting greater labor force participation, not greater labor force attachment.

Conclusion

Recognizing that patterns of labor force participation at older age in rapidly aging populations are of universal importance, this study extends the analysis of retirement behavior beyond the West. We apply the forward survival method to published census data from Singapore, Taiwan, and Thailand, and to adjusted ILO data for the Philippines to examine aggregate trends in

the labor force status of older men and women. These four Asian countries share one important similarity with the countries examined in most previous research (i.e., the USA, Western Europe, and Japan): all are projected to the experience rapid population aging in the coming decades. However, they differ from the USA and other industrialized countries in many ways that have important implications for patterns of labor supply at older ages. The most important differences include: the absence of generous pension programs with universal coverage, the much greater importance of intrafamilial financial support for the elderly, lower levels of economic development, and much more rapid economic growth. These differences facilitate comparisons with the well documented trend toward earlier male labor force exit in the West. Theoretical arguments and empirical results from previous analyses suggest, on the one hand, that a trend toward early labor force exit is unlikely given the much lower levels of pension coverage and benefits. On the other hand, it is possible that rapid economic growth in combination with strong norms of intrafamilial support could contribute to a trend toward earlier aggregate labor force exit.

Increases in net exit rates for older men in the Philippines and Singapore provide some limited evidence that, as in Western countries, there has been a trend to earlier exit from the labor force for males. However, these increases in net exit rates are relatively small and labor force participation rates at older ages remain very high, particularly in the Philippines and Thailand. Changes in the labor supply of Singaporean and Taiwanese women also bear resemblance to trends observed in the West. In both countries, female labor force participation rates have increased significantly across the life course. In contrast to men, there is evidence of declining net labor force exit among older women, especially in Taiwan.

Given the highly aggregated nature of the data, the primary purpose of this analysis is descriptive. However, significant cross-national differences in the various social, economic, and demographic factors thought to affect labor supply behavior at older ages do enable us to provide some speculative interpretations of the data. For example, the fact that male labor force participation rates are lowest and net exit rates are highest in Taiwan and Singapore is consistent with explanations that stress the importance of mandatory retirement regulations, increasing educational attainment of younger workers, rapid economic growth, and declining levels of employment in the primary sector. Particularly large increases in net exit for men in Singapore hint at the importance of increased pension coverage and benefit levels.

The trends toward higher female labor force participation across the life course and lower net labor force exits among older women in Singapore and Taiwan are consistent with earlier findings indicating that, in industrialized

nations, female labor force participation is positively related to the level of economic development, increases in tertiary sector employment, increases in educational attainment, and decreasing family size (e.g., Oppenheimer 1970; Durand 1975; Semyonov 1980; Pampel & Tanaka 1986). While it is important to remember that the changes in net transition rates apply only to a small fraction of the elderly female population in Singapore and Taiwan, it appears that substantial shifts in labor supply behavior are taking place among older women. The change in the behavior of current cohorts of elderly women, combined with significantly higher rates of participation at younger ages suggests major changes in the economic status of elderly women in these countries and makes further analysis of the determinants of female labor force participation at older ages a matter of substantial interest.

The analysis in this paper is limited to the description and specu-lative interpretation of aggregate trends in labor force participation. Further research is needed to test explicit hypotheses regarding the changing dynamics of labor supply at older ages in these and other rapidly developing countries. Individual-level 1990 census data and other surveys are becoming available for all of the countries in this study, and analyses of these data will allow for a better understanding of the causal mechanisms determining the economic behavior of the elderly in the rapidly changing demographic and socioeconomic conditions that characterize this region.

Notes

1. Comparative analyses of the elderly in these same four countries have appeared in this journal (Asis et al. 1995) and elsewhere (e.g., Casterline et al. 1991; Christenson

    & Hermalin 1991) as part of a large collaborative project involving the University of Michigan and research institutions in the respective countries.

2. In 1998, a general pension program began providing benefits to employees in firms with 10 or more workers (Social Security Administration 1995).

3. We would like to thank an anonymous reviewer for pointing this out.

4. Gendell and Siegel (1996), in a similar analysis, employ net labor force transition calculations to estimate the average age of retirement among older Americans.

5. The figures used in this analysis are unpublished updates of the figures in International Labour Office (1990) that were provided to the authors by Richard Anker of ILO.

6. Our focus on labor force participation at older ages, combined with the relatively long (10 year) interval between observations, precludes a meaningful examination of intra-cohort change in this analysis.

7. The unusual pattern of temporal change in the labor force participation rates of Thai women is particularly worrisome. Census publications indicate that the definition of economic activity is consistent across the three enumerations, suggesting that coverage differentials may have resulted in labor force participation rates that, at all ages, are highest in 1970, lowest in 1980, and intermediate in 1990. We recognize that, as a result, net transition rates for 1970–1980 will tend to be overstated and net transitions rates for 1980–1990 will tend to be understated.

Appendix: Relationships between net transitions, transition rates, and labor force participation rates

For a given age and sex group (e.g., 50–54 year old males), let:

    TP_1 = total population at time 1

    TP_2 = total population at time 2 (i.e., 10 years later)

    AP_1 and AP_2 = economically active population at time 1 and time 2, respectively

    $\overline{AP_2}$ = expected economically active population at time 2

    $D = AP_2 - \overline{AP_2}$ = difference between observed and expected economically active populations

    TR = transition rate = $\dfrac{D}{(AP_1+AP_2)/2} \cdot 1000$

In addition, note that:

  PR_1 and PR_2 = labor force participation rate at time 1 and time 2, respectively = $\dfrac{AP_1}{TP_1}$ and $\dfrac{AP_2}{TP_2}$

and because

$$\overline{AP_2} = \frac{TP_2}{TP_1} \cdot AP_1,$$

by substitution, we have

$$D = AP_2 - \frac{TP_2}{TP_1} \cdot AP_1$$

therefore,

$$\frac{D}{TP_2} = \frac{AP_2}{TP_2} - \frac{AP_1}{TP_1} = PR_2 - PR_1$$

That is, the difference in net labor force entrants divided by the total population at time 2 equals the difference in the labor force participation rates for the two periods.

    Also, by substituting D into the equation for TR, we have

$$TR = \frac{(PR_2-PR_1) \cdot TP_2}{(AP_1+AP_2)/2} = \frac{(PR_2-PR_1)}{(AP_1+AP_2)/2TP_2}$$

This shows that the transition rate is equal to the difference in participation rates divided by the mean participation rate, with $2TP_2$ as the denominator. This is the decomposition formula used in Table 4.

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