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Dynamics of Family and Elderly Living Arrangements in China: New Lessons Learned from the 2000 Census[*]

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Abstract

The analysis in this article is based on micro data sets of the Chinese 2000, 1990, and 1982 censuses. The percentage of three-generation family households in 2000 increased considerably as compared to 1990 and 1982; the proportion of two-generation nuclear family households substantially dropped by about 17% in 2000 as compared to 1990. Such change, however, does not mean that Chinese families are returning to the more traditional structure. This is mainly caused by the demographic effects: given that most old parents still live with one married child (although declining), generations born after the early 1970s who have

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much fewer siblings have a smaller chance of moving out of the parental home to form an independent nuclear family household when they reach the family formation stage. In fact, the one-person and one-couple-only households have been increasing quickly; average household size decreased significantly; the proportions of elderly who did not live with children and elderly-couple only households substantially increased in 2000 as compared to 1990. We conclude that the family transformation in contemporary China was caused by the tremendous fertility decline and by significant changes in social attitudes and economic mobility related to co-residence between old parents and adult children.

Introduction

China's economy has been rapidly growing and Chinese society has been dramatically changing since the early 1980s, when economic reform and the open-door policy were launched. Previous studies based on the 1982 and 1990 census data have shown that, while family household size has reduced substantially, Chinese family household structures and the traditional norm regarding the living arrangements of the elderly were relatively stable in the 1980s.[1] In the tremendously changed economic and social environment, what were the dynamic changes in Chinese family households and the living arrangements of the elderly in the 1990s? This paper sheds light on such questions concerning the main aspects of family dynamics, using the micro data files of the 2000, 1990, and 1982 censuses with a sample size of more than one million persons for each of the three data sets.[2]

Coale combined and analysed the 1982 one-per-thousand fertility survey data and the 1953, 1964, and 1982 census data on the numbers of persons by sex and single year of age up to age 100.[3] He concluded that the data passed a series of stringent tests of accuracy and consistency. Other scholars who have analysed Chinese 1982 census and survey data have reached similar conclusions.[4] Underreporting of births has, however, become more serious in the 1990s;[5] this underreporting has contributed to the underestimation of family household sizes and the fact that the ratio of persons aged 10–20 enumerated in the 2000 census to those aged 0–10 enumerated in 1990 was abnormally high (1.046). A common explanation among demographers in China is that census enumerations have become increasingly difficult since the early 1980s (after the market economic reforms were launched) because (1) many more people are moving around; (2) administrative control of the census-taking was significantly weaker in

the 2000 and 1990 censuses under the market economy than in the 1982 census, when the planned economy was still in place, so that an accurate count of the "floating population" could not be guaranteed. For example, based on the post-census sampling surveys, the officially published net undercount rate of the 2000 census (1.81% — still not very high as compared to other countries) was three times as high as that of the 1990 census (0.6%), while the 1982 census had a net over-count rate of 0.15 per thousand. We must therefore keep this issue in mind, especially when analysing family household size, although it may not significantly affect our analysis of family household types and living arrangements of the elderly, who do not usually move around.

The concept of family household (*jiating hu*) used in this paper refers to a unit that consists of co-residing persons related through marriage, blood or adoption, and also includes co-residing non-relatives.[6] The nuclear family household includes the two-generation households consisting of parents plus children and is also classified as the one couple & children, single parent & children and separated parent & children nuclear family households. The three-generation (including those with more than three generations[7]) extended family household includes the stem extended units, which contain no married siblings living together, and the combined extended units, which have at least two married siblings and their spouses living together. We do not distinguish stem extended family households from combined extended family households in this paper, because combined extended family households are very rare in contemporary China.[8]

The next section outlines the general trends of population ageing in the context of the Chinese family system and explains why the dynamics of family households and elderly living arrangements are analysed in a single paper. The third and the fourth sections present the general patterns and dynamic changes of family household sizes and types as well as the living arrangements of the elderly since 1982. The fifth section discusses the rural-urban differentials in 2000 (the census data classify population and households as rural, town, and city; we combine town and city into "urban" to simplify the presentation). Rural-urban distinctions will not be included in the cross-time (1982, 1990, vs. 2000) comparative analysis, to be presented in the third and fourth sections, because of the incompatibility of rural-urban data across time. This incompatibility is a result of two factors: (1) the rural-urban definitions in the census data sets are based primarily on administrative boundaries that differed substantially in 1982, 1990 and 2000, and (2) the age and family structures of the large number of persons

who migrated from rural areas and resided in urban areas at later dates differ substantially from those of the previous urban residents of earlier dates. While we present mainly a demographic analysis, the socio-economic and cultural background as well as some explanations of the patterns and dynamic changes in Chinese family household and elderly living arrangements will also be discussed.

Background: Family Dynamics, Population Ageing, and Living Arrangements of the Elderly

In 2000, 20.1% of all family households in China had at least one elderly member aged 65+. According to the latest population projection by the United Nations under the medium mortality assumption,[9] the percentage of elderly aged 65+ in China is expected to increase from 7% in 2000 to 15.7% in 2030, and 22.7% in 2050. In 2000, there were about 93 million elderly persons aged 65 and over. By 2030 and 2050, there will be 235 million and 334 million elderly people in China, respectively. The number of oldest old aged 80+ in China is expected to climb from about 12 million in 2000 to 27 million in 2030 and 100 million in 2050. The proportion of the oldest old among elders aged 65+ will increase from 13% in 2000 to 30% in 2050.[10] The average annual rate of increase of the oldest old in 2000–2050 is expected to be around 4.4% in China, Mexico, and India, and 2.2–2.8% in the United States, Canada, Japan, Germany, and France.[11] The annual rate of increase of the oldest old worldwide is about twice as great as that of the entire elderly population aged 65+.

The oldest old are much more likely to need assistance in daily living, as compared to the younger elderly. The Chinese Longitudinal Healthy Longevity Survey (CLHLS) data show that the prevalence of disability in Activities of Daily Living (ADL) increases dramatically from less than 5% at age 65–69 to 20% at age 80–84, and 40% at age 90–94.[12] Torrey estimated that the costs of long-term care for the oldest old aged 80+ is 14.4 times as high as that for younger elders aged 65–74.[13]

The rapid population ageing and the fact that family is the most important institution for old age support in China indicate the importance of including elderly living arrangements in the analysis of family dynamics.[14] Because the increase in oldest old aged 80+, who are most likely to need help, is much faster than that of any other age group, we must pay special attention to them. Furthermore, analysing the dynamics of elderly living arrangements would more directly and accurately reveal the

changes in Chinese family structure than looking at only the proportions of three-generation extended vs. nuclear family households,[15] which are affected by both attitude/behaviour changes and the fertility decline that occurred more than 20 years ago, as will be discussed later. We therefore devote a substantial portion of this paper to analysing the dynamic changes in elderly living arrangements since 1982 and break down the elderly population into two broad groups of younger elders aged 65–79 and the oldest old aged 80+.

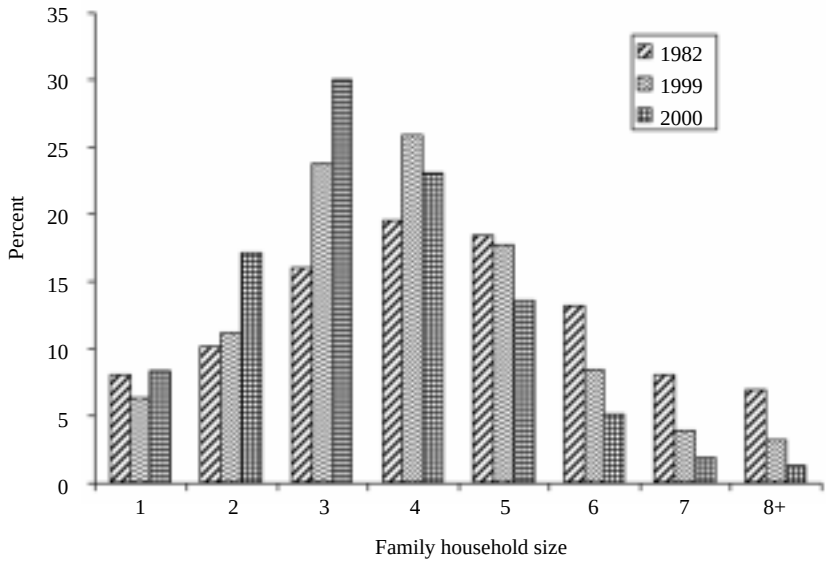
Family Household Dynamics, 1982–2000

Chinese Family Household Size Is Steadily Decreasing

In 1982, four- and five-person households constituted the largest share of the total number of family households, and six-or-more-person households made up 28% of the total number. In 2000, however, three-person households constituted the largest percentage share (30%), with the four-person household becoming the second most common size of household (23%). Large households were no longer common in 1990 and 2000 — six-or-more-person households constituted 15.4% in 1990, and further decreased to only 8.1% in 2000 (see Figure 1).

The average family household size in China was 5.6 in 1930–1940, 4.3 in 1953, 4.3 in 1964, and 4.36 in 1982; it was 3.94 in 1990, having dropped below 4.0 for the first time and decreased 9.6% as compared to 1982; it further decreased to 3.45 in 2000, a 12.4% reduction as compared to 1990. The average annual decrease rates of the average size of Chinese family households were 1.26% and 1.36% in the periods 1982–1990 and 1990–2000, respectively. As mentioned earlier, the under-enumerations, especially the underreporting of births and the serious problems in counting the floating population, were more severe in the later censuses than in the earlier ones; this has contributed to the underestimation of family household sizes. Thus, the decline in the Chinese family household size, as shown by the 2000 and 1990 census data, was exaggerated. After taking into account the officially published net over-count rate (0.015% in 1982) and net undercount rates (–1.81% in 2000 and –0.06% in 1990) based on the post-census sampling surveys, and assuming that there was mis-enumeration of family household members but no mis-enumeration of entire family households,[16] the adjusted average family household sizes in 1982, 1990 and 2000 were 4.35, 3.942 and 3.51 respectively;[17] and the

Figure 1: Family Household Size Distributions, 1982–2000



adjusted average annual decrease rates of family household size in China in 1982–1990 and 1990–2000 were 1.29% and 1.15%, respectively.

Although the above adjustment may not be accurate, since the census net undercount rates may be underestimated, it is clear that Chinese family household size is steadily and substantially decreasing due to dramatically decreased fertility and changes in people's attitudes, which are tending to favour smaller family households. Through comparing reductions of the average number of children aged 0–14 per family household and reductions of average family household size in 1982, 1990, and 2000, Guo estimated that 85.5% and 59.4% of the decrease in average family household size in 1982–1990 and 1990–2000, respectively, were attributed to the decreasing number of children per family household.[18] This indicates that the effects of fertility decline on the shrinking of the Chinese family household size was smaller in the later period of 1990–2000 than it was in the earlier period of 1982–1990.

Although Chinese family households have maintained typical Asian characteristics, in that three-generation extended family households still constitute a relatively large proportion (to be detailed later) of household types, Chinese family households in 2000 were already substantially

smaller than those of many other developing countries in Asia. For example, the average family household size in India was 5.27 (per the Indian 2001 census), which is 1.5 times larger than that in China in 2000.

One-person and One-couple Only Households Have Been Rapidly Increasing

One-person households in 2000 and 1990 accounted for 8.3% and 6.3% of all households, respectively (see Table 1). In 1982, the proportion of one-person households was 8.0%. In fact, however, not all reported one-person

Table 1: Family Household Types: Cross-time Comparisons in 2000, 1990, and 1982, and Rural-urban Comparisons in 2000

	Rural-urban combined			2000 rural vs. urban	
	1982	1990	2000	Rural	Urban
One-generation households					
One-person only	8.00	6.30	8.30	7.74	9.78
One-person & others	1.00	0.64	0.97	0.89	1.13
One couple only	4.69	6.42	12.70	11.46	15.15
One couple & others	0.23	0.16	0.32	0.24	0.47
Subtotal	13.92	13.52	22.28	20.33	26.54
Two-generation households					
One couple & children	52.02	57.72	48.67	48.70	50.16
Single parent & children	6.56	5.17	3.79	4.02	3.55
Separated parent & children	7.44	4.38	3.40	3.60	3.16
Subtotal of nuclear households	66.02	67.27	55.86	56.32	56.87
Other two-generation households	0.56	0.23	0.97	1.14	0.71
Subtotal of two-generation households	66.58	67.50	56.83	57.46	57.58
Grandparent(s) & grandchildren	0.70	0.67	1.89	2.11	1.57
3+ generation households					
Excluding grandparent-grandchildren household	18.80	18.30	19.00	20.10	14.32
Including grandparent-grandchildren household	19.50	18.97	20.89	22.21	15.89
Grand total	100.00	100.00	100.00	100.00	100.00
Average household size	4.36	3.94	3.45	3.62	3.16

Data sources: Figures in Tables 1, 2, 3, 4 are derived from the 2000, 1990, and 1982 censuses micro data files.

households in 1982 contained a person living alone. Some residents of reported one-person households actually lived with family members, but registered as an independent household with a separate household registration booklet. In the 1970s and early 1980s, very low efficiency in the collective agriculture production system resulted in shortages of food, which led to a system of food rationing. In addition to the main food ration, other low-priced subsidiary foodstuffs such as meat, fish, and eggs were primarily supplied on the basis of the household registration booklet as a unique means of identification. This led some people who actually lived with their family members to register as a separate household. Although the census instructions indicated that household membership reports should not be based on the household registration booklet, it is obvious that not everyone followed this rule. Therefore, serious over-counting of one-person households occurred in 1982. Such biases resulted in the State Statistical Bureau's adjustment of the urban average family household size enumerated in the 1982 census from 3.84 to 3.95, through a post-census sample check. The rural household size was not adjusted, but a similar bias (which might be smaller) existed in the rural areas, as well, in the 1982 census. Such biases were much less serious in 1990 and were eliminated in 2000 because the food rationing system was basically dismantled in 1990 and was entirely gone by 2000. Therefore, we believe that proportion of one-person households in 2000 has substantially increased as compared to both 1990 and 1982. The increase is particularly remarkable — 31.7% — in the period 1990–2000. This is probably due mainly to the increase of the mean age at first marriage among those who left the parental home to work and live independently. According to the national fertility surveys data collected by the State Family Planning Commission, the female mean age at first marriage increased from 21.7 in 1990, to 23.1 in 1996, and 23.6 in 1999.[19] An increase in the divorce rate among those who did not live with children might also have contributed to the large increase in the one-person household share in the 1990s.[20]

One-couple only family households accounted for 12.7% of the total number of households in 2000, which was 2.0 times as high as that in 1990, and 2.7 times as high as that in 1982 (see Table 1). The average annual rate of increase in the percentage of one-couple only households was 5.7% in the period 1982–2000. This dramatic increase is due mainly to considerably more elderly couples living without their children (to be discussed later) and some urban couples delaying childbearing in 2000 as compared to 1990 and 1982; the increasing number of young couples in the cities who

choose to remain childless (i.e., the "Double Income, No Kids": "*Ding-Ke Jiating*") may also be a contributing factor. For example, based on sociological and anthropological field observations, some people have estimated that the number of "Double Income, No Kids" family households in Chinese cities was about one million by the end of the 1990s, several times higher than that of 10 years ago.[21]

Although increasing quickly, the percentages of Chinese one-person and one-couple only households are much lower than those in Western countries. For example, the one-person and one-couple only households in the United States in 2000 constituted 28.9% and 25.7% of the total number of households, being 2.9, and 1.9 times as high as the Chinese ones, respectively. There are three main reasons why the percentages of one-person and one-couple only households in China are much lower than those in Western countries. First, many fewer Chinese remain never-married for life. Second, most Chinese couples, especially the majority who live in rural areas, have their first child as soon as possible after marriage; very few couples remain permanently childless. Third, and to be discussed in more detail later, most elderly Chinese, especially those who have no spouse, live with their children. The percentage of elderly living alone in China is much lower than that in Western countries. Although one-couple only (without co-residing children) households among elderly persons in China are increasing, they remain much less common than in Western countries.

Decreasing Percentage of Two-generation Nuclear Family Households since 1990

The proportion of two-generation nuclear family households in 1990 increased slightly as compared to 1982, but dropped substantially, by about 17%, in 2000 as compared to 1990. The nuclear family households of one-couple & children, single parent & children, and separated parent & children in 2000 decreased by 16%, 27%, and 17%, respectively, as compared to 1990 (see Table 1). In general, the substantial decrease in nuclear family households is due to the large increase in one-couple only and one-person households, as well as an increase in the percentage of three-generation extended family households, to be discussed below. In particular, the decreasing percentage of single-parent family households at a time when the divorce rate in China is increasing may be occurring because most divorces involve couples who have no children or whose

children have already left home,[22] and because of high remarriage rates and the decreasing widowhood rate. This is only preliminary speculation, however, and deserves further investigation.

About 7.4%, 4.4%, and 3.4% of the total family households in 1982, 1990, and 2000, respectively, were nuclear households with a separated parent (see Table 1). Most separations in China are due to work-related reasons, rather than to pre-divorce. Among separated parent households, around 85% comprised those with the father working in another town or city, and the children living with their separated mother. In their study using the 1982 census data and the 1987 population survey data, Goldstein, Guo and Goldstein also found that during spousal separation, women often assumed the household headship.[23] The restrictive household residence registration system in China contributed to the existence of such separated-parent households. A person who is employed in a city or town may need to wait for years to get a permit to officially migrate and register his or her spouse and children in the town or city. Such separations were still quite significant, but had been reduced by more than half in 2000 as compared to 1982 (see Table 1) because it is now much easier to obtain an urban residence permit for family reunion reasons.

Percentage of Three-generation Extended Family Households Had Increased in 2000 as Compared to 1990 and 1982

It is interesting to note that 0.71%, 0.67% and 1.89% of the total number of family households in 1982, 1990, and 2000, respectively, are households with grandparents living with grandchildren without the middle generation present (abbreviated to grandparent-grandchildren households hereafter). The percentage of grandparent-grandchildren households in 2000 was nearly three times as high as that in 1990, but the adult mortality rate was lower at the later date. Thus, we believe that grandparent-grandchildren households are due mainly to the fact that the middle generation (parents) is away for job reasons. This phenomenon became relatively common after the economic reforms, especially in the late 1990s, because more young and middle-aged couples have gone to southern and eastern coastal areas to take higher-salary jobs, leaving their children to live with grandparents in their hometowns. It seems that such grandparent-grandchildren households are more similar to three-generation extended households than to nuclear households. The reason is that the middle generation is financially responsible for their children (and most likely for

their parents, as well) and visit home frequently to see their children and parents.

While nuclear family households are still the mainstream in Chinese society, extended family households with three or more generations also constitute a relatively large proportion: 18.8%, 18.3%, and 19.0% (excluding grandparent-grandchildren households) or 19.5%, 18.97%, and 20.89% (including grandparent-grandchildren households) in 1982, 1990, and 2000, respectively (see Table 1). Slightly more than one quarter of the Chinese population live in households of three or more generations.[24] The extended family household was the second most prevalent family household type in the country. The proportion of three-generation extended family households in China in 2000 was about 5.2 times higher than that in the United States in the same year.[25]

The proportion of three-generation extended family households (excluding the grandparent-grandchildren households) in 2000 increased by 3.8% and 1.1% as compared to 1990 and 1982, respectively. If we include the grandparent-grandchildren households, the proportion of three-generation extended family households in 2000 was higher than those in 1990 and 1982 by 10.1% and 7.1%, respectively. Was the family household structure in China in 2000 more traditional than those in 1990 and 1982? This seems unlikely, because it is contradictory to the expected changes in attitudes/behaviour induced by the rapid socio-economic development and the opening to the outside world that are occurring in China today. This puzzle will be discussed and clarified after the analysis of the dynamic changes in the living arrangements of the elderly.

Dynamic Changes in the Living Arrangements of the Elderly, 1982–2000

Co-residence with Children Declined Considerably among the Younger Elderly but Remained almost Unchanged among the Oldest Old from 1990 to 2000

As shown by data from the 1982, 1990, and 2000 censuses (see Tables 2, 3 and 4), the majority of elderly Chinese men and women lived with their children ("children" includes grandchildren hereafter, unless otherwise specified), intergenerational support within families being currently the major source of old age security and care in Chinese society.[26] The proportions of both the younger elderly and oldest old who co-resided with

Table 2: Living Arrangements of Entire Elderly Population Aged 65+: Cross-time Comparisons in 2000, 1990, and 1982, and Rural-urban Comparisons in 2000

	Rural-urban combined			2000 rural vs. urban	
	1982	1990	2000	Rural	Urban
Males					
Living alone	10.7	8.3	8.4	8.7	7.7
With spouse only	16.9	20.7	28.8	26.3	33.7
With spouse & others, not with children	0.8	0.5	0.7	0.7	0.8
With spouse & children	39.9	40.6	37.4	36.5	39.0
With children, not with spouse	28.0	27.0	22.6	25.6	16.8
With others, not with spouse & children	2.2	1.8	1.7	1.9	1.3
Institution	1.5	1.1	0.4	0.3	0.7
Grand total	100.0	100.0	100.0	100.0	100.0
Subtotal of living with spouse	57.6	61.8	66.9	63.5	73.5
Subtotal of living with children	67.9	67.6	59.9	62.1	55.8
Females					
Living alone	13.7	10.8	10.7	9.8	12.4
With spouse only	10.6	13.4	19.1	17.9	21.3
With spouse & others, not with children	0.4	0.3	0.4	0.3	0.6
With spouse & children	16.2	19.6	22.4	22.8	21.7
With children, not with spouse	57.5	54.3	46.2	48.1	42.6
With others, not with spouse & children	1.4	1.2	0.9	0.9	1.0
Institution	0.3	0.4	0.3	0.2	0.4
Grand total	100.0	100.0	100.0	100.0	100.0
Subtotal of living with spouse	27.2	33.3	41.9	41.0	43.6
Subtotal of living with children	73.6	74.0	68.7	70.9	64.4

children in 1990 remained almost unchanged or changed very little, as compared to 1982. The proportions of younger male and female elderly aged 65–79 who co-resided with children in 2000, however, were reduced by 12.7% and 8.8%, respectively, as compared to 1990. From 1990 to 2000, the proportion of male oldest old aged 80+ who lived with children decreased by 0.3%, but the proportion of female oldest old in this category increased by 1.0%. Among the entire male and female elderly populations aged 65+, the proportion of those living with children dropped by 11.4% and 7.2%, respectively, in 2000 as compared to 1990. This indicates that the traditional prevalence of co-residence between elderly parents and adult children declined in the 1990s, perhaps due to an increasing tendency on the part of younger and healthy elderly parents to prefer to live

Table 3: Living Arrangements of Younger Elderly, Aged 65–79: Cross-time Comparisons in 2000, 1990, and 1982, and Rural-urban Comparisons in 2000

	Rural-urban combined			2000 rural vs. urban	
	1982	1990	2000	Rural	Urban
Males					
Living alone	10.3	7.9	8.0	8.4	7.2
With spouse only	17.1	21.2	30.2	27.7	35.0
With spouse & others, not with children	0.8	0.5	0.7	0.7	0.8
With spouse & children	41.7	42.7	39.1	38.3	40.7
With children, not with spouse	26.4	24.9	19.9	22.7	14.6
With others, not with spouse & children	2.1	1.8	1.8	2.0	1.3
Institution	1.5	1.1	0.4	0.3	0.6
Grand total	100.0	100.0	100.0	100.0	100.0
Subtotal of living with spouse	59.7	64.4	70.0	66.7	76.4
Subtotal of living with children	68.1	67.6	59.0	61.0	55.2
Females					
Living alone	13.0	10.1	10.2	9.4	11.9
With spouse only	11.7	15.0	21.7	20.4	24.0
With spouse & others, not with children	0.4	0.3	0.4	0.3	0.6
With spouse & children	18.0	22.2	25.4	25.9	24.4
With children, not with spouse	55.2	50.9	41.3	43.0	37.9
With others, not with spouse & children	1.3	1.1	0.8	0.8	0.8
Institution	0.3	0.3	0.2	0.2	0.3
Grand total	100.0	100.0	100.0	100.0	100.0
Subtotal of living with spouse	30.2	37.6	47.5	46.7	49.1
Subtotal of living with children	73.2	73.1	66.7	68.9	62.3

independently of their children, and to more adult children having migrated away from their elderly parents for job reasons. Based on data collected from the China Health and Nutrition Longitudinal Survey conducted in eight provinces, Chen also found that there was a trend of decline in co-residence between old parents and their adult children from 1991 to 1997,[27] and the rate of the decline differs by age cohorts. Similar changes in elderly living arrangements were also found in a survey study on ageing conducted in 1992–1994 in Beijing,[28] and in the three cross-sectional surveys on urban families conducted by the Sociology Institute of Chinese Academy of Social Sciences in 1982, 1993, and 1997.[29]

It is clear that the female elderly are more likely to live with their children (see Tables 2, 3, and 4) than are the male elderly; the gender

Table 4: Living Arrangements of the Oldest Old Aged 80+, 1982–2000

	Rural-urban combined			2000 rural vs. urban	
	1982	1990	2000	Rural	Urban
Males					
Living alone	16.2	13.0	11.6	11.2	12.5
With spouse only	13.6	15.4	17.9	16.0	22.3
With spouse & others, not with children	0.6	0.4	0.6	0.5	0.8
With spouse & children	19.4	20.5	23.0	22.7	23.5
With children, not with spouse	46.2	47.6	44.9	48.0	37.7
With others, not with spouse & children	2.8	2.0	1.4	1.1	1.9
Institution	1.2	1.2	0.7	0.4	1.4
Grand total	100.0	100.0	100.1	100.0	100.0
Subtotal of living with spouse	33.7	36.3	41.5	39.3	46.6
Subtotal of living with children	65.6	68.1	67.9	70.8	61.2
Females					
Living alone	18.4	14.9	13.2	12.2	15.3
With spouse only	2.9	3.7	5.0	4.8	5.6
With spouse & others, not with children	0.2	0.2	0.2	0.2	0.3
With spouse & children	3.0	4.0	6.3	6.5	5.8
With children, not with spouse	73.5	74.9	73.4	74.7	70.6
With others, not with spouse & children	1.8	1.5	1.3	1.2	1.6
Institution	0.3	0.7	0.5	0.4	0.7
Grand total	100.0	100.0	100.0	100.0	100.0
Subtotal of living with spouse	6.1	8.0	11.6	11.5	11.7
Subtotal of living with children	76.5	78.9	79.7	81.2	76.4

differentials tended to increase in 2000 as compared to 1990 and 1982. This is because elderly women are more likely to be economically dependent and widowed; they are also more likely to be requested by their children to live together to take care of grandchildren.

Declining Percentage of Those Living Alone and Substantially Increasing Percentage of Those Living with Spouse Only

As shown in Table 3, the percentage of those living alone declined between 1982 and 1990 but remained unchanged from 1990 to 2000 among the younger elderly (see Table 3), but declined steadily from 1982 to 1990 and from 1990 to 2000 among the oldest old (see Table 4). This is probably due to the declining mortality rate of elders' spouses and increasing remarriage

rates among the elderly. The increase in remarriage rates among elderly persons is a result of social reform and the development of mate-matching services in the late 1980s and 1990s. The reform aimed to protect the rights of the elderly, including the right to remarry, which in traditional Chinese society was often violated by the intervention of children and other family members. Rapid economic development accompanied by substantial improvements in the standard of living has led to a decrease in death rates in old age.

Note that both younger elderly women and oldest old women are much more likely to be widowed and thus live with children, without a spouse, or even alone (see Tables 2, 3 and 4). On the other hand, elderly women are economically more dependent. Therefore, the disadvantages experienced by women in marital life and family household living arrangements are substantially more serious than those of men at an advanced age.

The proportion of those living with only a spouse among the younger elderly and among the oldest old increased steadily from 1982 to 2000. Such an increase was especially large from 1990 to 2000: 42.9% and 44.7% among male and female younger elderly; 16.2% and 35.1% among male and female oldest old, respectively. It seems that substantially more elderly couples in China today live by themselves, due either to a preference for independence or to the mobility of their children. This has caused a substantial decrease in the percentage of those living with children, especially among the younger elderly.

While the proportion of elderly persons who live with only a spouse increased substantially in the 1990s, it is still much lower than that in Western countries. The proportion of the Chinese elderly who live with children is much higher than that in Western countries. For example, the percentage of male and female elderly aged 65+ who live with only a spouse in the United States in 2000 were 61.1% and 33.6%, respectively, figures which were 2.1 and 1.8 times higher than those for China in the same year. The percentages of male and female elderly aged 65+ who lived with children in China in 2000 were 3.7 and 3.5 times higher than their counterparts in the United States in 2000.[30]

Rural-Urban Differentials of Family Household Structure and Elderly Living Arrangements in 2000

Three-generation extended family households (including grandparent-grandchildren households) constituted 22.2% of the total number of family

households in the rural areas, in contrast to 15.9% in urban areas in 2000. The rural prevalence of three-generation extended family households was 1.4 times as high as that in urban areas (see Table 1). One-person households and one-couple only households in rural areas were substantially less common than those in urban areas (see Table 1). The average sizes of family households in Chinese urban and rural areas in 2000 were 3.2 and 3.6, respectively. The main factors that resulted in such substantial differentials of family household sizes between the Chinese urban and rural sectors are that fertility in urban areas is much lower than that in rural areas and the rural-urban family structural differentials are large, as described above. Rural Chinese family households are more traditional than their urban counterparts, since the pace of socio-economic development and the changes in people's attitudes about co-residence between parents and adult children in rural areas is substantially slower than those in urban areas.

The percentage of single-parent nuclear family households in urban areas was 3.6%, which is lower than that in rural areas (4.0%). We believe that this is due mainly to two factors. The first is that the remarriage rate in urban areas is higher than it is in rural areas. A Cox regression multivariate hazard model analysis has shown that the relative risks of remarriage after divorce and widowhood were 8.2% and 14.6% higher in Chinese urban areas than those in rural areas.[31] The second factor is that the widowhood rate among adults in rural areas is substantially higher than that in urban areas, due to the relatively high mortality rate and lower remarriage rate in rural areas. The combination of the higher rural widowhood rate and the higher remarriage rate in the urban areas has resulted in the lower proportion of single-parent nuclear family households in urban areas. The percentage of separated-parent nuclear family households in rural areas in 2000 was 3.6%, while it was 3.2% in urban areas. This difference exists because more rural people moved to cities for higher-income jobs, leaving their spouses and children in their hometowns.

The last two columns of Tables 2, 3, and 4 also present rural-urban percentage distributions of the living arrangements of elderly persons aged 65+, 65–79, and 80+ in 2000. Since the rural-urban differentials among the younger elderly and the oldest old are rather similar, we will focus our discussion on the living arrangements of the rural and urban elderly population aged 65+ (presented in the last two columns of Table 2). The proportions of elderly men who live with children in rural and urban areas in 2000 were 62.1% and 55.8%, respectively, and the corresponding figures for women were 70.9% and 64.4%, respectively (see Table 2).

Obviously, the rural elderly are more likely to live with their children than their urban counterparts are.

In the Chinese censuses, the householders' child and the child's spouse are coded in one category of "child," so it is impossible to distinguish between married sons and married daughters who live with their parents. Thus, we have to rely on other data sources to examine the living arrangements with sons versus daughters. According to the 2002 Chinese Healthy Longevity Survey, which sampled 4,897 younger elders aged 65–79 and 11,163 oldest old aged 80+ in 22 provinces,[32] the percentages of those living with a daughter (among those living with children) were 14.8% among the younger elderly aged 65–79 and 11.3% among the oldest old aged 80+ in rural areas. The corresponding figures for the urban areas were 20.4% among the younger elderly aged 65–79 and 23.3% among the oldest old.

Two interesting observations based on these survey figures deserve attention. First, on the one hand, a large majority of the oldest old live with adult sons,[33] but on the other hand, a considerable proportion of them live with adult daughters. Second, many more urban elderly (either younger elders or the oldest old) live with daughters than their rural counterparts do. According to the In-Depth Fertility Surveys conducted in 1985–1987, the percentage of women who lived with their own parents after marriage in the two largest cities, Shanghai and Beijing, was about 2.3 times as high as in the other nine provinces, where the rural population was the majority.[34] It is clear that the traditional idea of relying on sons for old age care is much less popular in urban areas, and is changing with urbanization in China. With rapidly declining fertility, the opportunity for future Chinese elderly to choose to live with adult sons will be greatly reduced. Increasing numbers of old people in urban areas accept living, or even prefer to live, with a daughter if necessary and possible, since daughters are more likely to provide better care than sons. This gives us hope that the traditional preference for sons in China may be reversed if urbanization is accompanied by appropriate social programmes that aim to raise the status of women and encourage old persons to live with their daughters.

The proportions of urban elderly men and women who lived with only a spouse in 2000 were higher than those of their rural counterparts by 28.1% and 26.4%, respectively. The proportion of urban elderly women living alone is higher than that in rural areas by 26.5%. But the proportion of urban elderly men living alone is 11.5% lower than that in rural areas (see Table 2). Again, higher widowhood rates and lower remarriage rates in rural areas than in urban areas might contribute to this phenomenon.

Discussion and Conclusion

It is relatively easy to understand the remarkable rural-urban differentials of family household size, structure, and elderly living arrangements in China, as described above, given the fact that the level of socio-economic development in urban areas is much higher than that in the rural areas and urban fertility is much lower than rural fertility. It is, however, not so straightforward to understand why the percentage of three-generation extended family households in 2000 increased considerably as compared to 1990 and 1982 and the percentage of two-generation nuclear family households dropped substantially, by about 17%, in 2000 as compared to 1990. Do such changes in the composition of three-generation extended versus nuclear family households mean that Chinese families are returning to a more traditional structure? Our answer is "No." In fact, Chinese families are in transition: the percentages of one-person and one-couple only households have been increasing quickly; average household size has decreased significantly; the proportions of the elderly who did not live with children and of elderly couple-only households substantially increased in 2000 as compared to 1990.

We believe that the increase in the percentage of three-generation extended family households and the reduction in nuclear family households (as shown by the 2000 census data) reflect the demographic impacts of low fertility on family household structure in the context of Chinese cultural tradition. Those born under the low fertility regime (after the early 1970s) have a much smaller number of siblings, as compared with those born before the early 1970s, when fertility was very high. Given that the Chinese tradition that most parents live with one married child is still in place (although declining), generations born after the early 1970s, who have many fewer siblings, will have a smaller chance of moving out of the parental home to form an independent nuclear family household when they reach the family formation stage. Consequently, at the population level, the percentage of nuclear family households would decrease and the percentage of three-generation extended family households would increase. The percentage of three-generation extended family households in 1990 was somewhat lower than that in 1982, but considerably higher in 2000 than in 1990. The demographic effects of the dramatic fertility decline in the 1970s on the increasing percentage of three-generation extended family households and the decreasing percentage of nuclear family households was not yet being felt in 1990, since those born in the 1970s had not yet

reached the family formation stage; the effects did appear in the 2000 census data, however, because those born in the 1970s had reached the family formation stage by the time of the 2000 census.

When fertility is and continues to be below the replacement level,[35] as has been the situation in China since the early 1990s, the proportion of nuclear family households will increase when those children born in the regime of the below-replacement fertility level reach the family formation stage, even if the desirability of / preference for co-residence between old parents and adult children does not change much. At that time, some old parents will not be able to live with a married child due to the shortage of adult children. Demographic influences of the below-replacement fertility of the 1990s on the increasing proportion of nuclear family households and the decreasing proportion of three-generation extended family households due to the shortage of adult children will start to have an effect after 2010, when those children born in the regime of the below-replacement fertility regime (post-1990) have reached the age of family formation.

The demographic effects of dramatically declined fertility on the composition of three-generation extended vs. nuclear family households in China, as qualitatively outlined above, were verified quantitatively and predicted by Zeng Yi in an article published in 1986 and based on family status life table simulation analysis, as well as a highly simplified and easily understandable numerical example.[36] The Chinese 2000 census data has confirmed what Zeng Yi predicted some 17 years ago.

The 2000 census data have shown that the proportions of the elderly who did not live with children and of elderly-couple only households have substantially increased; this reconfirms that the increase in the proportion of three-generation extended family households in 2000 as compared to 1990 and 1982 does not indicate that the Chinese family is returning to a more traditional structure; the increase in three-generation family households is due to the demographic impacts of largely reduced fertility since 1970. The data also show that an analysis of the living arrangements of the elderly would more directly and accurately reveal family dynamics in the context of the Chinese cultural tradition, and that looking at changes in the proportions of three-generation extended vs. nuclear family households alone would result in misleading conclusions.

Note that the Chinese family household has tremendously changed from a larger unit to a smaller one and the distribution of family household types and elderly living arrangements had changed considerably in 2000 as compared to 1990. We believe that this phenomenon was caused by the

tremendous decline in fertility, together with substantial changes in social attitudes and economic mobility related to co-residence between old parents and adult children. Clearly, the government's policy on birth control is one of the preeminent causes of the family revolution in China, characterized mainly by the trend toward much lower fertility, later marriage, and smaller household size. This is, in general, in agreement with the arguments of Wolf: the changes in Chinese family households are due both to direct government intervention and to individual behaviour changes induced by socio-economic development.[37] This conclusion is consistent both with that of Zhao, which is based on micro-simulations of historical Chinese families: family household structures are strongly influenced by demographic conditions (availability of kin) and cultural/social norms;[38] and with the theme of the determinants of elderly living arrangements proposed by Kobrin and Goldscheider: demographic availability, economic feasibility, and normative desirability.[39]

Rapid socio-economic development and urbanization may further increase people's preference for independent living. The previous severe housing shortage has been and will continue to be relieved through housing reform based on the market economy, which will allow more young people to live away from their parents.[40] Increasing migration and job mobility will separate more old parents from their adult children. In the cultural context of Chinese society, however, filiality (*xiao*) has been a cornerstone for thousands of years and is still highly valued. The philosophical concept of filiality includes not only respect for older generations, but also the responsibility of children to take care of their elderly parents. Such ethnic and cultural traditions have been playing and will continue to play crucial roles in the provision of care for the elderly and in family household formulation. Also, the rural elderly, who constitute a large majority of the Chinese elderly population, still rely on their children for care in old age; this situation is unlikely to change substantively in the near future.

In sum, the future trends of possible changes in Chinese family structure and elderly living arrangements will be determined by demographic factors such as the dramatic fertility decline after 1970 (the results of which are already being felt) and the influences of people's strategic choices about how to live under improved socio-economic conditions,[41] as well as the Chinese cultural tradition of the Confucian emphasis on filiality, which has very deep roots.[42] Given the cultural background, we believe that Chinese families will not entirely give way to the Western pattern even when there is exceptionally rapid socio-economic

development. A reference point is that in Japan, which has a somewhat similar cultural background to that of China, the proportion of the elderly living with children declined from 87.3% in 1960 to 54.3% in 1997.[43] These data demonstrate a more than one-third reduction of co-residence in 37 years, but more than one-half of Japanese elderly were still living with their children in the late 1990s, when Japan had already become the second most advanced economic power in the world. We suspect that the Chinese family structure and social attitude/practice of co-residence between old parents and adult children may not alter dramatically in the near future, but will change gradually and persistently.

The present analysis, which is based on micro data files (all of which have huge sample sizes), from the latest and previous censuses, documents the current status (including very large rural-urban differentials) and dynamics of family structure and elderly living arrangements in China, and offers demographic explanations. Due to restrictions of the cross-sectional data and the demographic focus/approach, this study, however, has limitations in identifying the socio-economic causal mechanisms for explaining behaviour changes, such as why considerably more elderly did not live with their children in 2000 as compared to 1990. Multivariate causal analysis of mechanisms for family dynamics needs to be done using longitudinal family household survey data, which are not yet available. We hope that this data will become available in the near future.

Notes

1. Michel Cartier, "Nuclear Versus Quasi-Stem Families: The New Chinese Family Model,"*Journal of Family History*, Vol. 20 (1995), pp. 307–27; Zeng Yi, "A Demographic Analysis of Family Households in China, 1982–1995," *Journal of Comparative Family Studies*, Vol. 33, No. 1 (2001), pp. 15–34.
2. Because of the huge sample size (one-per-thousand of the total population of China) of the micro census data sets and our use of the aggregate measures in this article, we believe that it is not necessary to perform statistical tests for evaluating the differentials across time, sex, broad age groups of the younger elderly and the oldest old and rural-urban sectors.
3. Ansley J. Coale, *Rapid Population Change in China, 1952–1982* (Washington, DC: National Academy Press, 1984).
4. Vaino Kannisto, "Features of the 1982 China Census from an International Standpoint," in *A Census of One Billion People: Papers for International Seminar on China's 1982 Population Census*, edited by Chengrui Li (Boulder, Colorado: Westview Press, 1986), pp. 37–52; Louis Kincannon and Judith

Banister, "Perspectives on China's 1982 Census," in ibid., pp. 288–312; Y. C. Yu, "The Reliability of China's 1982 Population Census," in ibid., pp. 269–87.

5. Zeng Yi, "Is Fertility in China in 1991–92 Far Below the Replacement Level?" *Population Studies*, Vol. 50, No. 1 (1996), pp. 27–34.
6. We exclude discussions on institutional households and living arrangements that include persons living in long-term care units, military installations, correctional and penal institutions, dormitories of schools and universities, religious institutions and so forth, since we are not sure whether the census micro data sets can adequately represent the institutional population.
7. Family households consisting of four or more generations constituted only 3.9% of the three and more generation extended family households, or a negligible 0.7% of all kinds of family households in 2000 (see Population Census Office and National Bureau of Statistics, *Tabulations on the 2000 Population Census of the People's Republic of China*, Vol. 1 [Beijing: Zhongguo tongji chubanshe, 2002], Table 5-1).
8. The two-, three-, four- and more generation combined extended family households, in which at least two married siblings and their spouses live together, constitute 0.1%, 1.0%, and 0.1% of the total number of family households in 1990, respectively. Obviously, combined extended family households still exist, but have become very rare in contemporary China.
9. United Nations (UN), *World Population Prospects. The 2002 Revision Volume I: Comprehensive Tables* (New York: United Nations, 2002); UN, *World Population Prospects. The 2002 Revision Volume II: Sex and Age* (New York: United Nations, 2002).
10. Ibid.
11. Ibid.
12. The Chinese Longitudinal Healthy Longevity Survey (CLHLS) was conducted in 22 provinces, autonomous regions, and municipalities: Liaoning, Jilin, Heilongjiang, Hebei, Beijing, Tianjin, Shanxi, Shaanxi, Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shangdong, Henan, Hubei, Hunan, Guangdong, Guangxi, Sichuan, Chongqing. The population in these 22 provinces constitute about 85% of the total population in China. An introduction to the CLHLS and some research findings based on CLHLS data can be found in: Zeng Yi, James W. Vaupel, Xiao Zhenyu, Zhang Chunyuan and Liu Yuzhi, "Sociodemographic and Health Profiles of Oldest Old in China," *Population and Development Review*, Vol. 28, No. 2 (2002).
13. Barbara Boyle Torrey, "Sharing Increasing Costs on Declining Income: The Visible Dilemma of the Invisible Aged," in *The Oldest Old*, edited by Richard M. Suzman, David P. Willis and Kenneth G. Manton (New York: Oxford University Press, 1992), pp. 381–93.
14. Dudley L. Poston and Chengrong Charles Duan, "The Current and Projected Distribution of the Elderly and Eldercare in the People's Republic of China,"

Journal of Family Issues, Vol. 21 (2000), pp. 714–32; Xiaomei Pei and V. K. Pillai, "Old Age Support in China: The Role of the State and Family," *International Journal of Aging & Human Development*, Vol. 49, No. 3 (1999), pp. 197–212; X. Chen and M. Silverstein, "Intergenerational Social Support and the Psychological Well-being of Older Parents in China," *Research on Aging*, Vol. 22, No. 1 (2000), pp. 43–65; R. J. Sun, "Old Age Support in Contemporary Urban China from Both Parents and Children's Perspectives," *Research on Aging*, Vol. 24, No. 3 (2002), pp. 337–59.

15. Zhigang Guo, "Zhongguo 1990 niandai de jiating hu bianqian" (Changes in Family Households in China in 1990s), paper presented at "2000 nian quanguo renkou pucha kexue taolun hui" (Academic Conference on the 2000 Population Census in China), 28–31 March 2003, Beijing.
16. This is the best we can do since data about the mis-counting of entire households are not available.
17. If we also consider the possible but less likely under-enumeration of entire family households (such as the one-person or two-person households), the adjusted average family household size in 1990 and 2000 would be even closer to the observed ones.
18. Guo (Note 15).
19. Ibid.
20. Zeng Yi and Deqing Wu, "A Regional Analysis of Divorce in China Since 1980," *Demography*, Vol. 37, No. 2 (2000), pp. 215–19.
21. Genchang Liu, Qiaoyun Li, Nianbing Xu and Hui Fan, "Jiushi niandai yilai woguo jiating jiegou biandong tezheng fenxi" (Analysis of Changes in Family Structure in China since 1990s), paper presented at Academic Conference on the 2000 Population Census in China.
22. Ibid.; Zeng and Wu (Note 20).
23. Alice Goldstein, Zhigang Guo and Sidney Goldstein, "The Relation of Migration to Changing Household Headship Patterns in China, 1982–1987," *Population Studies*, Vol. 51 (1997), pp. 75–84.
24. Ibid.; Cartier (Note 1); Zhigang Guo (ed.), "Renkou laolinghua zhong de jiating daiji guanxi" (Family and Intergeneration Relationships in the Process of Population Aging). Research Report of National Social Science Foundation Project (2001), 98BRK004.
25. The figures of US family household and elderly living arrangements in 2000 cited in this article are derived by us, and based on the US 2000 census micro data file using the same computer sub-programme of a package known as ProFamy, which was employed to process the Chinese 1982, 1990, and 2000 censuses micro data files. Note that census data analysis on family households and elderly living arrangements is one sub-function of ProFamy, in addition to its main function of household projection. "ProFamy: A New Method and User-Friendly Computer Software for Family Household Projection" was

presented and demonstrated at the 24th General Population Conference of the International Union for Scientific Studies of Population, held in Brazil in August 2001. The first version of the manual and software were distributed and demonstrated at the International Workshop on Family/Household Modeling and Applications, 26 July–2 August 1998 Max Planck Institute for Demographic Research, Rostock, Germany. Those who are interested in obtaining a free trial version of ProFamy may write to Dr. Zhenglian Wang at wangzl@duke.edu.

26. Ibid., and Note 14.
27. Feinian Chen, " Family Structures, Familial Relationship and Socioeconomic Changes in China and Russia," *Dissertation Abstracts International, The Humanities and Social Sciences*, Vol. 62 (2002), 3948A–3949A.
28. Peng Du, "Beijing shi laonianren juzhu fangshi de bianhua" (Changes in Living Arrangements of the Elderly in Beijing), *Zhongguo renkou kexue* (Chinese Journal of Population Science), Vol. 10, No. 3 (1998), pp. 231–40.
29. Baoju Liu, "Xiandai Zhongguo chengshi jiating jiegou bianhua yanjiu" (Research on Changes in Urban Family Structure in Contemporary China), *Shehui kexue yanjiu* (Sociology Research), No. 6 (2000), pp. 31–37.
30. Ibid., and Note 25.
31. Zeng Yi and Deming Wang. "An Event History Analysis of Remarriage in China." Selected paper for publication in *International Union for Scientific Studies of Population*, 22nd General Conference Volumes (Liege: IUSSP, 1993).
32. Ibid. and Note 12.
33. William Lavely and Xinhua Ren, "Patrilocality and Early Marital Co-residence in Rural China, 1955–85," *China Quarterly*, No. 130 (1992), pp. 378–91; Rosemary S. Cooney and Jing Shi, "Household Extension of the Elderly in China, 1987," *Population Research and Policy Review*, Vol. 18 (1999), pp. 451–71.
34. Zeng Yi, Xiaoli Li and Zhongdong Ma, "The Trend and the Model Schedule of Leaving the Parental Home after Marriage in China," in *Fertility in China* (Published by International Statistical Institute [ISI]. The Hague: ISI. 1991), pp. 421–50.
35. Below-replacement fertility level means that the average number of children per couple is less than 2.1, so the size of the children's generation is smaller than that of the parents' generation, taking into account of mortality rates.
36. Zeng Yi, "Changes in Family Structure in China: A Simulation Study," *Population and Development Review*, Vol. 12 (1986), pp. 675–703; Zeng Yi, *Family Dynamics in China: A Life Table Analysis* (Wisconsin: The University of Wisconsin Press, 1991).
37. Arthur P. Wolf, "The Preeminent Role of Government Intervention in China's

Family Revolution," *Population and Development Review*, Vol. 12 (1986), pp. 101–16.
38. Zhongwei Zhao, "Coresidential Patterns in Historical China: A Simulation Study," *Population and Development Review*, Vol. 26, No. 2 (2000), pp. 263–93.
39. F. E. Kobrin, and C. Goldscheider, "Family Extension or Nonfamily Living: Life Cycle Economic and Ethnic Factors," *Western Sociological Review*, Vol. 13, No. 1 (1982), pp. 103–18.
40. Tianji Cai, Leiwen Jiang, and Qiang Ren, "Zhufang anpai dui laonian juzhu fangshi de yingxiang" (Housing and Elderly Living Arrangements in China), paper presented at Academic Conference on the 2000 Population Census in China.
41. John R. Logan and Fuqin Bian, "Family Values and Coresidence with Married Children in Urban China," *Social Forces*, Vol. 77, No. 4 (1999), pp. 1253–82.
42. Xiaowei Zang, "Family, Kinship, Marriage, and Sexuality," in *Understanding Contemporary China*, edited by R. E. Gamer (Boulder, Colorado: Lynne Rienner Publishers, 1999), pp. 267–92.
43. P. Zhang, "Riben de hunyin yu jiating" (Marriage and Family in Japan), (Beijing: Zhongguo funü chubanshe, 1984). Ik Ki Kim and Daisaku Maeda, "A Comparative Study on Sociodemographic Changes and Long-term Health Care Needs of the Elderly in Japan and South Korea," *Journal of Cross-Cultural Gerontology*, Vol. 16 (2001), pp. 237–55.