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Public Financing and the Market for Long-Term Care

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Executive Summary

Concern about the effect of aging on long-term care has intensified, particularly because aging has been accompanied by several changes that spur long-term care output, including growth in demand subsidies, declining fertility rates, rising female labor-force participation, and the deregulation of entry barriers to the nursing home industry. This article summarizes our previous work on how economic forces govern the demand for and supply of care, and extends it by discussing how they are affected by public subsidies for long-term care. Aging many times may *lower* the demand for market care by increasing the *supply* of family-provided care, which substitutes for market care. This effect appears to explain important trends in the output of long-term care over the past thirty years. We document the exponential growth of public financing over the past several decades and use our previous framework to argue that part of this growth would have occurred even if eligibility for public subsidies had been held constant. Private demand growth, by raising the private price of nursing home care, provides incentives for people to qualify for public assistance and expands the share of total demand that is publicly financed. Endogenous eligibility and the private price pressure induced by aging have helped contribute to the explosion in Medicaid budgets.

I. Introduction

In many countries around the world, the demographic transition into reduced fertility and mortality has forced the private and public sectors to grapple with the care of rapidly aging populations. Since 1960, the share of the U.S. population above 65 years of age has grown substantially, from about 9 percent to 14 percent. Even so, both the level and growth of this share are lower in the United States than in other developed countries. For example, in many European nations, the elderly population accounts for nearly one-fifth of the total population, and growth in this share has been larger than in the United States over the

past few decades. As the elderly population has grown, the share of public spending on long-term care for the elderly has grown as well, both in absolute terms and as a share of total health spending. In 1960, public expenditure on long-term care in the United States accounted for only 2 percent of health care spending, but in 1996 it accounted for 10 percent.[1]

Concern about the growing importance of long-term care has been reflected in several major public policy trends over the past few decades. First, the share of output financed publicly through Medicaid has grown enormously, from about 23 percent of 1972 nursing home bed-days to about 75 percent of 1991 bed-days.[2] Second, toward the mid-1980s, entry and investment barriers in the nursing home industry, erected by Certificate of Need Laws, were relaxed considerably; the resulting increase in the supply of nursing home beds also served to expand the output of long-term care.[3] These public policies have served to expand the demand for and the supply of nursing homes.

Surprisingly, however, the public expansion of nursing home care has not boosted the use of nursing homes by as much as one might have expected, as is evident in figure 3.1.[4] The figure compares the growth since 1971 in current nursing home residents to the growth in the population over the age of 75.[5] From figure 3.1, we learn that growth in nursing home residents has *rapidly* decelerated since 1971, in spite of roughly constant rates of elderly population growth: specifically, in the mid 1970s, the resident population grew at a 4.8 percent annual rate; by the early 1980s, this annual growth rate had plummeted by almost two-thirds, to 1.7 percent; finally, in the late 1980s to early 1990s, the growth rate dropped further, to about 0.4 percent. This sharp deceleration has occurred in spite of relatively stable growth rates for the elderly population: the population over 75 has grown at a roughly constant annual rate of 2.7 percent for the past two decades. During the 1970s, the resident population grew twice as quickly as the elderly population, but during the 1980s and early 1990s, the resident population grew at less than half the rate of population. In fact, per capita output contracted so sharply during the 1980s that it more than offset the per capita growth that occurred during the 1970s. It is remarkable that, from 1971 to 1995, per capita output fell by almost 20 percent overall, in spite of a concerted attempt by policymakers to expand the availability of nursing home care.

The trend toward publicly subsidized long-term care, coupled with the decelerating demand for it, raises two questions about the impact

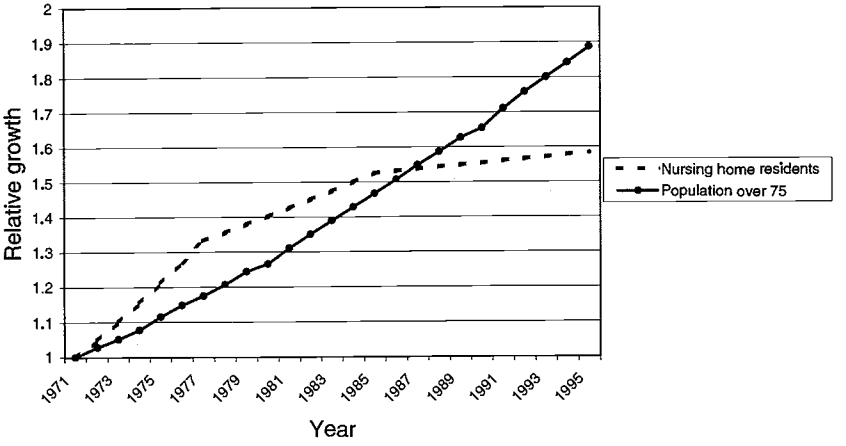

Figure 3.1
Relative growth of nationwide nursing home residents versus relative growth of elderly population
Source: Lakdawalla and Philipson 1999.

of aging on the growth of long-term care markets. First, why did the per capita output of long-term care increase substantially during the 1970s but decline even more substantially thereafter? From 1971 to 1991 overall, the per capita output of nursing home care actually declined somewhat, in spite of dramatic increases in public subsidies for nursing homes. Second, if public financing has not significantly raised per capita output, how has it otherwise changed the market for long-term care? This article summarizes our previous analysis of the forces governing the impact of aging on long-term care markets[6] and extends it by examining the impact of public demand subsidies.

Figure 3.1 suggests that aging alone is an insufficient explanation for trends in nursing home output: the elderly population has grown at a constant rate, but rates of growth in nursing home output have varied enormously. Therefore, we focus not on aging itself but on two related forces that affect the demand for nursing home care: the overall disability of the elderly population and the rate of marriage among the elderly. Naturally, when disability rises, the demand for nursing home care rises. When the rate of marriage rises, however, the demand for nursing home care falls because a spouse can function as a caregiver at home and thus represents a ready *substitute* for nursing home care. Healthy aging not only lowers nursing home demand but also raises the supply of substitutes for nursing home care. Our previous research argued that rising per capita output during the 1970s appears to be

explained by substantial reductions in the rate of marriage and the lack of significant reductions in disability. In contrast, falling per capita output during the 1980s seems to be explained by declining disability and stable rates of marriage. By means of these two forces, growth in the elderly population, or aging, can actually *lower* demand for nursing home care, as appears to have been the case. If the healthy elderly population grows more rapidly than the disabled population, the per capita supply of healthy caregivers rises and nursing home demand falls. Similarly, if the population of elderly males grows more rapidly than the population of elderly females, the per capita supply of spousal caregivers rises and nursing home demand falls.

We extend our earlier analysis by discussing how these arguments are affected by public financing. We first document the growth in public financing over the last forty years and then break it down into its component parts. We show that public expenditures have grown nearly ten times as rapidly as private expenditures on nursing homes and that nearly all of this growth can be attributed to growth in the relative quantity of public bed-days, rather than growth in its relative price. Therefore, the share of consumers affected by subsidization has grown extensively. We argue that this growth is not entirely due to eligibility expansion and that part of this exponential growth would have occurred in the presence of constant eligibility because eligibility is endogenous. Individuals can make themselves eligible by distorting their savings and consumption, and "spending down" to qualify for subsidies. Endogenous eligibility coupled with the upward pressure on private prices induced by aging may be partly responsible for the exponential growth in Medicaid budgets. We also analyze how this endogenous spread of subsidization has changed the relative importance of health and marriage in governing nursing home output. If nursing homes are heavily subsidized, the presence of alternatives to nursing home care, like spouses, becomes much less significant. For example, if nursing homes are not subsidized, a spouse may be willing to quit work and care for an ailing mate, but this may not be true if they are heavily subsidized. We discuss the impacts of public demand subsidies on the long-term care market.

II. The Slowing Demand for Long-Term Care

Here we summarize our previous analysis (Lakdawalla and Philipson 1999) of why per capita output initially rose during the 1970s but con-

tracted even more sharply during the 1980s and 1990s. We cannot look to public subsidies or Certificate of Need legislation alone as explanations because they should have resulted in uniform expansion of nursing home output. We also cannot look to aging alone because a constant rate of growth in the elderly population has coincided with wide variation in the growth rates of nursing home output. Instead, our analysis suggests several other important economic forces that have increased the availability of substitutes for nursing home care. This analysis reveals that aging can actually lower the demand for nursing home care. It also helps us understand why the 1970s differed so sharply from the 1980s and helps isolate the economic changes that generated these differences.

We define long-term care as the continuing care of an individual with a chronic disability. Our discussion is premised on the fact that nursing home care is only one form of long-term care. Disabled people may also receive care in their homes, for example, from healthy family members or friends. This alternative has important implications for nursing home demand. The increasing availability of substitutes for nursing home care can play an important role in slowing the growth in nursing home output. We focus on two particular determinants of substitute care: the health of the elderly and the rate of marriage among the elderly. Improvements in elderly health lower the demand for nursing homes in two ways: they alleviate the need for long-term care, but they also provide more healthy people who could potentially provide care at home, outside a nursing home setting. Similarly, increases in the rate of marriage lower the demand for nursing homes because a spouse represents a ready substitute for nursing home care. The rate of marriage will increase among the elderly if the share of elderly males rises: because elderly males are scarce relative to females, expansion in the supply of males allows couples to stay married longer.

If the longevity of elderly males rises while the longevity of elderly females is constant, the per capita demand for nursing homes will *fall*. Couples will stay married longer, and the rate of marriage rises. Observe that the per capita demand for nursing homes may fall, even though overall longevity rises. Second, if the elderly spend additional years in good health and no additional years in disability, the incidence of disability in the population will fall, even though longevity rises. In this case also, an increase in longevity coincides with a decrease in the per capita demand for nursing home care. An important point here is

that healthy aging not only affects the demand side of the long-term care market but also the supply side.

Aggregate changes in elderly health and in the share of elderly males appear to explain why the 1970s look so different from the 1980s. Essentially, during the 1970s, the share of elderly males dropped sharply and brought down with it the rate of marriage. This drop helps explain why per capita output grew so much. During the 1980s, however, the share of elderly males stabilized, but there were substantial improvements in the health of the elderly. This change pushed down the per capita output of nursing home care. A quick look at the aggregate statistics illustrates the point. In the early 1970s, the male population over age 75 grew at a mere 1.7 percent annual rate, while the female population grew at a 3.4 percent annual rate; this disparity accounted for the dramatic rise in per capita market care output witnessed during the 1970s. By the early 1980s, this huge imbalance had been largely wiped out because the male population was then growing at a 2.6 percent annual rate while the female population was growing at a 2.9 percent rate. As the 1980s progressed, the male population growth rate caught up to and eventually even surpassed the female population growth rate. During the 1970s, the ratio of males to females, which roughly represents the share of women married, fell from 0.64 in 1970 to 0.55 in 1980 for the over 75 age group.[7] As a result of this decline, there were about 900,000 more unmarried elderly women in 1980 than there would have been at the 1970 rate of marriage. This increase in widowhood, substantial in relation to the 1.4 million nursing home residents in 1980, helped push up per capita output for market care during the 1970s. On the other hand, improvements in elderly health were not very significant during the 1970s[8] but substantial during the 1980s. During the 1980s, increases in the relative health of the elderly have served as a significant force slowing the rate of growth of market care. In 1981, the incidence of disability among the population over 75 was 31.9 percent, while in 1991, this rate fell to 28.1 percent.[9] Since there were about 13.5 million people over age 75 in 1991, there were roughly half a million fewer disabled persons over 75 in 1991 than there would have been absent the disability reduction. This reduction in disability would have substantially lowered the 1991 nursing home population of 1.5 million people.[10]

In our previous article (Lakdawalla and Philipson 1999), we present more formal empirical evidence suggesting that growth in these two

quantities, elderly health and the share of elderly males, reduces nursing home output. First, using data for a panel of counties on nursing home residents and population, we test the prediction that increases in the share of males decrease per capita market output. We find evidence consistent with our predicted effects and in particular with the surprising negative effect of male aging on market care: a ten-percentage-point increase in the ratio of men per women appears to reduce the per capita stock of nursing home residents by as much as 16 percent. Next, we investigate whether or not the aggregate evidence on the gender ratio effect is consistent with individual-level evidence. At the individual level, we found that disability status and marital status were the two most important predictors of whether an individual entered a nursing home. Not surprisingly, able people almost never enter nursing homes, while severely disabled people nearly always do. However, marital status has a quantitatively large effect on nursing home entrance. The presence of a spouse *more than halves* the probability of nursing home entrance. This result is found to apply to all but the most severely mentally impaired elderly and to most elderly parents. These individual-level results are quite consistent with the findings of other authors. Cutler and Sheiner (1994) and Börsch-Supan et al. (1991) find that being married significantly lowers the probability of being in a nursing home. Cohen et al. (1988) find that married people are less likely ever to enter a nursing home, are likely to have fewer nursing home entrances, and are likely to spend fewer days per year in a nursing home. Börsch-Supan (1990) finds that the loss of a spouse is the life event *most likely* to trigger nursing home entrance; specifically, the loss of a spouse increases *more than tenfold* the probability of transition from independent to institutional living.

Finally, we use our estimated effects to explain the aggregate trends depicted in figure 3.1. First, we use our panel county-level estimates of the effect of changes in the gender ratio. From these estimates, we calculate that aggregate changes in the gender ratio explain nearly all (roughly 95 percent) of the per capita growth in nursing home output from 1971 to 1980. Changes in the gender ratio are found to be much more significant in explaining per capita output growth than the massive Medicaid expansion that took place during the 1970s. Second, we use our individual-level estimates of the effect of changes in disability. From these estimates, we calculate that improvements in disability during the 1980s explain over 80 percent of the decline in the

per capita output of nursing home care that took place during that decade.

III. The Rise of Public Nursing Home Subsidies

To get a sense of the magnitude of the growth in public spending, consider figure 3.2.[11] Over the past forty years, public expenditures on nursing home care have grown much more rapidly than private expenditures. Even the rate of growth has been consistently higher for public expenditures. Overall, public expenditures have grown ten times more rapidly than private expenditures since 1960. This result reflects more than just the lower initial value of public nursing home expenditures. We can see this from figure 3.3.[12] This figure shows growth in public and private expenditures since 1971. In 1971, the baseline values for public and private spending were fairly similar: $2.16 billion in public nursing home expenditures and $2.85 billion in private expenditures. In spite of the similar initial values, public expenditures grew more rapidly than private expenditures. The periods of the most rapid divergence between private and public spending were the early to middle 1970s and the late 1980s to 1990s. There was some convergence during the Reagan administration of the early 1980s. By the end of the entire twenty-five-year period, however, public expenditures had grown nearly twice as quickly as private expenditures.

Most of the divergence between public and private spending can be attributed to relative growth in the quantity of public bed-days rather than relative growth in public prices. Figure 3.4 shows the relative growth since 1971 in prices paid by Medicaid residents and non-Medicaid residents.[13] The price paid per day of care has actually risen more rapidly for private payers than for Medicaid payers. In fact, over this twenty-year period, private prices grew about twice as quickly as Medicaid prices. From about 1980 onward, the growth in private prices has been much more rapid than the growth in Medicaid prices.

Thus, it is not surprising that there has been substantial growth in the quantity of Medicaid bed-days relative to non-Medicaid bed-days. Figure 3.5 illustrates this trend.[14] Medicaid bed-days have grown by nearly a factor of four over this twenty-year period, while non-Medicaid bed-days have actually fallen, in absolute terms, by about one-quarter.

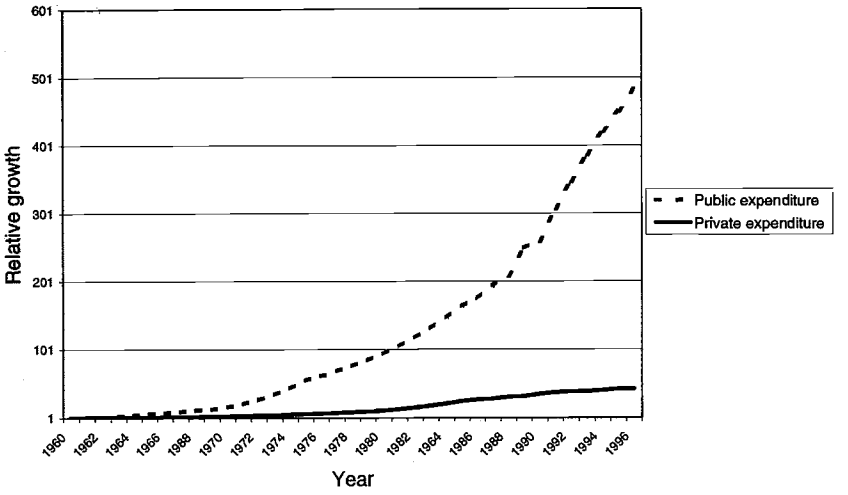

Figure 3.2
Growth in public and private expenditures on U.S. nursing home care, 1960–1996

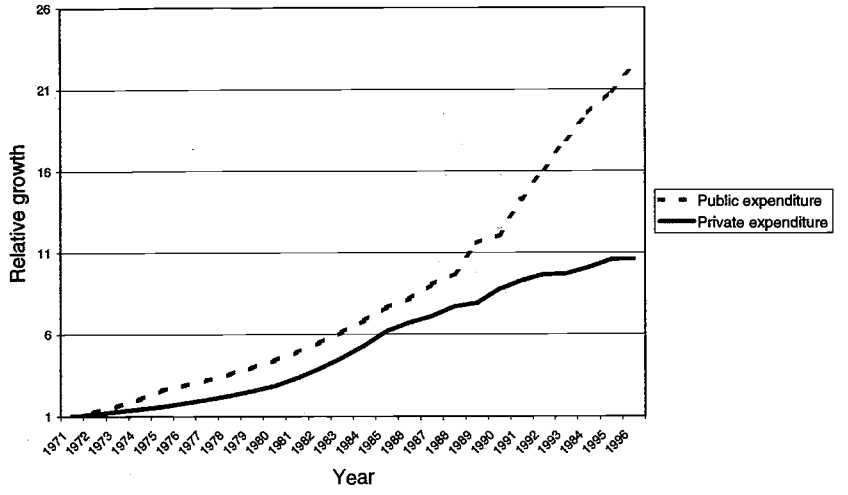

Figure 3.3
Growth in public and private expenditures on U.S. nursing homes, 1971–1996

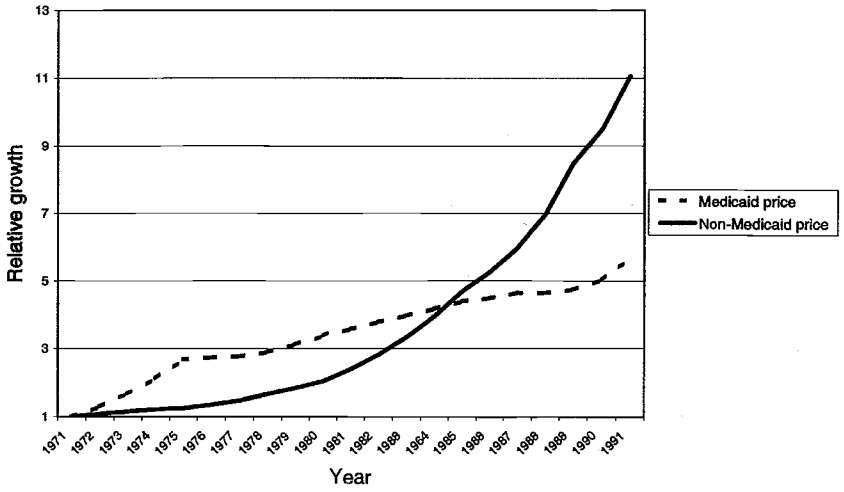

Figure 3.4
Growth in Medicaid and non-Medicaid nursing home price paid per day, 1971–1991

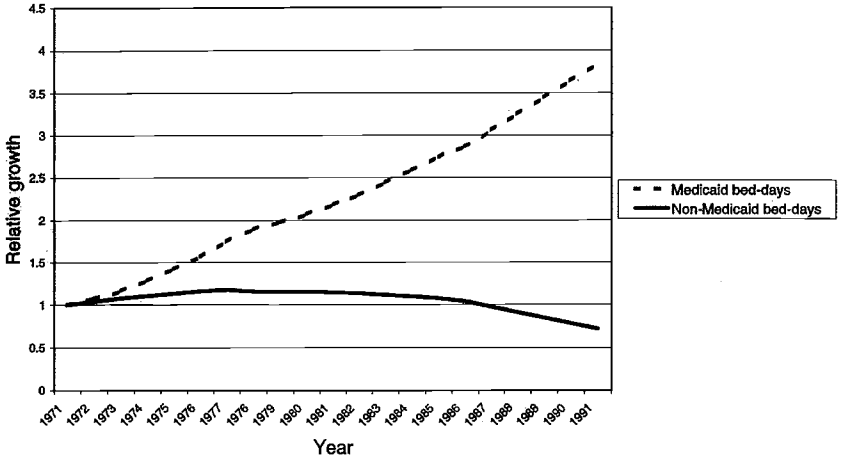

Figure 3.5
Growth in bed-days for Medicaid and non-Medicaid payers, 1971–1991

The expansion in the quantity of output subsidized has been substantial and rapid. Public expenditures have grown much more quickly than private expenditures because the quantity of subsidized bed-days has grown more quickly than private expenditures. In fact, the only source of growth for private expenditures has been significant growth in private price per day. It is possible that the market has been segmented into a small group of high-quality consumers who pay privately and a much larger group of lower-quality consumers who pay publicly through Medicaid. The private portion of the market is now so small that it can be composed entirely of consumers with a substantial quality preference.

IV. Public Financing and Long-Term Care

The previous section documented the dramatic expansion, over the past thirty years, in public subsidies for nursing home care. This section argues that increases in the *total* demand for nursing home use have driven up the share of subsidized demand. As the private price of nursing home care rises, people have a greater incentive to qualify for public subsidies. In addition, subsidization has made the effect of disability more important and the effect of marriage less important.

The Causes of Public Financing Growth

Someone who is not eligible for Medicaid can distort their intertemporal consumption by "spending down" resources to become eligible. This distortion could happen in one of several ways: primarily through spending down or otherwise concealing their wealth, but perhaps also by spending resources on lobbying the government to expand the eligibility rules.[15] Every individual thus has three long-term care choices: privately financed nursing home care, publicly financed nursing home care, or being cared for at home. As the quantity demanded of each choice changes with their relative prices, the value of distorting consumption behavior rises. The price pressure induced by aging thus raises the value of eligibility.

First, consider the effect of aging if the share of males falls, which occurred during the 1970s. When spousal caregivers become scarce, the net price of home care will rise. Furthermore, the increased per capita demand for nursing home care pushes up the private market price for care. Therefore, female aging induces substitution toward public

financing. During the 1970s, the share of males fell, suggesting that publicly financed output should have become more attractive. We can thus partly understand the 1970s expansion in public financing as a substitution away from home care and away from privately financed nursing home care. It was made possible at least in part by the reduction in the share of elderly males.

Next consider the effect of aging if the gender ratio and the incidence of disability are held constant. In this case, the per capita demand for nursing home care is constant: even though the elderly population rises, each elderly person has access to the same number of healthy family caregivers. Therefore, the net price of home care faced by each disabled person remains constant. As the elderly population grows, however, the overall demand for nursing home care must rise and must push up the private nursing home price. Privately financed nursing homes become more expensive relative to home care and relative to public financing. Aging thus increases home care and tends to encourage substitution toward public financing. This force would have had a tendency to push up public financing during the 1980s, although it could have been offset by the reductions in disability that occurred during that decade. Overall, it is likely that demand rose according to figure 3.4, which shows expansion in the price of nursing home care. This is one possible explanation of why public subsidies continued to expand during the 1980s.

Subsidies and the Demand for Long-Term Care

In a highly subsidized environment, the effects of gender and disability change. The growth in public financing has made the gender effect less important and the disability effect more important. Thus, it is likely that in such an environment, marriage will come to play an increasingly smaller role in the demand for nursing home care. Lakdawalla and Philipson (2000) provide some evidence for the declining importance of marriage over time. They show that estimates of the marriage effect based on 1980s data badly underpredict the growth in per capita demand that occurred during the 1970s. On the other hand, estimates based on 1970s data predict this growth almost perfectly. These results seem consistent with a diminishing effect of marriage over time.

To understand the relationship between marriage and public financing, consider two cases. In the first case, individuals must pay

the price p to enter a nursing home, but in the second, they may enter free of charge. In addition, suppose that the net cost of providing care to a spouse at home is distributed randomly throughout the population but that it is always positive. When nursing homes are free, disabled individuals always enter nursing homes, regardless of whether or not they are married, because nursing homes are always cheaper than spousal care. On the other hand, when nursing homes cost p, the disabled enter nursing homes only if their spouses cannot provide care for less than p. In other words, when the price falls, a larger fraction of married, disabled people will enter nursing homes. At very low prices, even married people will enter nursing homes with high probabilities. Therefore, when the price is very low, being married does little to keep people out of nursing homes. High rates of public subsidies drive the price down and make the marriage effect smaller.

It is interesting to note that this analysis can also be applied in reverse to help us understand subsidies for spousal care, which may take various forms. Such reductions will intensify the effect of marriage and can offset the effect of nursing home subsidies if they are significant enough. Examples of subsidies to home care include Social Security payments, which encourage spouses to retire and care for a sick mate, or direct Medicaid payments for market-based home care. Home health care is in fact strongly complementary with care by a family member or spouse. Individuals frail enough to *require* home health aides for a chronic problem are unlikely to be able to live without family assistance as well. Ettner (1994) shows that the vast majority of home health care users also receive care from family members.

The interaction between price and disability is also important. An individual will enter a nursing home if her disability is high enough relative to market prices for care. When the price falls, people with less and less disability choose to enter nursing homes. At low prices, reductions in disability do less to keep people out of nursing homes because even the moderately disabled are choosing to enter them. Consider the extreme case where market care is free. In this case, every person with the slightest health problem will choose to enter a nursing home. Given such a situation, it would be nearly impossible to reduce the nursing home population by improving health: nursing home residents would not move out of a home unless they became entirely disability-free. In contrast, if nursing homes are very expensive, slight

reductions in disability might induce people to move out of a nursing home.

V. Conclusions

This article provided a summary of our previous work on the impact of aging on long-term care markets and has extended it to consider the impact of public financing. The per capita output of nursing home care rose dramatically during the 1970s but fell even more dramatically during the 1980s. This fluctuation was in spite of constant growth in the elderly population. We have argued that aging itself is not at the heart of nursing home output. What matters is the effect of aging on the availability of substitutes for nursing home care. We have examined in particular the effect of aging on the rate of marriage among the elderly and on the incidence of disability. Healthy aging not only affects the demand side of the long-term care market but also the supply side. When the longevity of elderly males rises more than the longevity of elderly females, the rate of marriage rises and spousal care becomes more readily available. When the elderly spend additional years in good health rather than in disability, the supply of healthy caregivers rises and home care becomes more freely available. Therefore, relative growth in the population of elderly males and in the healthy population lowers the per capita demand for nursing home care at the same time that it expands the supply of substitutes for nursing home care. During the 1970s, the share of elderly males fell dramatically. This change offers a feasible interpretation of the rapid expansion in the per capita demand for nursing homes during the 1970s. However, during the 1980s, the share of males held steady while the incidence of disability fell. This finding suggests an interpretation for the declining per capita demand for nursing homes during the 1980s.

There has been fairly continuous expansion in the share of nursing home bed-days that are subsidized. We showed that the quantity of publicly financed output has risen dramatically relative to private output, while public prices have declined relative to private prices. We suggested that expansions in the share of publicly financed output are in part the logical result of increases in private nursing home prices brought about by aging. During the 1970s, there was a huge expansion in the demand for long-term care as a result of increases in the elderly population and as a result of reductions in the share of males. This upward price pressure induced substitution toward publicly financed

output because more people were driven to make themselves eligible for subsidies. Even during the 1980s, the growth in the elderly population would have pushed up demand, as is evident in the price increases observed during the 1980s. This increase in demand would have continued to raise public financing during the 1980s. Finally, we examined the impact of this subsidy growth. Here, we argued that subsidies make the effect of marriage less important and the effect of disability more important. In a highly subsidized environment, the availability of spousal care has less of an impact on demand because nursing home care may actually be substantially cheaper than spousal care, even when a spouse is present. On the other hand, when subsidies are high, people may choose to enter nursing homes for comparatively minor disabilities. Therefore, small increases in disability may have large effects on the nursing home population.

Naturally, the descriptive evidence examined here is only suggestive of the forces we have stressed. However, it remains unquestionable that endogenous eligibility will be an important factor in explaining the impact of aging on both the price and quantity of publicly subsidized nursing home care. As the population continues to age, these forces will become increasingly important to the study and implementation of public finance.

Notes

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1. Data are taken from OECD 1998.

2. See National Center for Social Statistics (1974) for the 1971 Medicaid data; 1991 data are based on HCIA (1996).

3. See Harrington et al. 1997.

4. The figure uses data on nursing home residents from the 1973, 1977, 1985, 1991, and 1995 National Nursing Home Surveys. (The raw data are reported in Strahan 1997.) Intermediate years are interpolated, and data for 1971 to 1972 are extrapolated, assuming constant rates of growth between observed points. Population data from 1970 to 1995 come from the National Center for Health Statistics Web site: *http://www.cdc.gov/nchswww/datawh/statab/unpubd/mortabs/pop7095.htm*. The 1971 baseline values are: 977,481 nursing home residents, and 7,877,000 people over age 75.

5. Most consumers in the long-term care market are above the age of 75. In 1995, about 17 percent of residents were 65 to 74, 42 percent between 75 and 85, and 41 percent above 85 years (National Center for Health Statistics 1995).

6. See Lakdawalla and Philipson 1999.

7. All calculations were performed using male and female age-specific population data from the 1970–1991 issues of the U.S. Department of Health and Human Services publication, *Vital Statistics of the United States*.

8. See, for example, Crimmins et al. 1997.

9. These rates are calculated from disability incidence estimates for people of ages 75–84, and over 85; all these estimates are taken from Manton et al. 1997. These estimates are converted into rates for people over 75 by using population data from *Vital Statistics of the United States*.

10. The data on nationwide nursing home residents are taken from Strahan 1997.

11. The expenditure series is constructed from data in Levit et al. 1997; Letsch et al. 1992; and Waldo, Levit, and Lazenby 1986. The base 1960 values are $100 million in public nursing home expenditures and $800 million in private expenditures.

12. The expenditure series is constructed from data in Levit et al. 1997; Letsch et al. 1992; and Waldo, Levit, and Lazenby 1986. The base 1971 values are $2.16 billion in public nursing home expenditures and $2.85 billion in private expenditures.

13. Both price series are calculated by dividing total expenditures by total bed-days. The Medicaid and non-Medicaid expenditure series are taken from Levit et al. 1997; Letsch et al. 1992; and Waldo, Levit, and Lazenby 1986. Data on total residents (converted to bed-days by multiplying by 365) are taken from the 1973, 1977, 1985, and 1991 National Nursing Home Surveys. (The raw data are reported in Strahan 1997.) The 1991 value for the share of Medicaid bed-days is taken from HCIA 1996, while the 1971 value is constructed by taking the total statewide number of Medicaid bed-days (National Center for Social Statistics 1974) and dividing this number by an estimate of total statewide 1971 bed-days from the U.S. Department of Health and Human Services 1996. Intermediate years are then linearly interpolated.

14. Data on total residents (converted to bed-days by multiplying by 365) are taken from the 1973, 1977, 1985, and 1991 National Nursing Home Surveys. (The raw data are reported in Strahan 1997.) The 1991 value for the share of Medicaid bed-days is taken from HCIA 1996, while the 1971 value is constructed by taking the total statewide number of Medicaid bed-days (National Center for Social Statistics 1974) and dividing this number by an estimate of total statewide 1971 bed-days from the U.S. Department of Health and Human Services 1996. Intermediate years are then linearly interpolated.

15. The idea of endogenous lobbying effort is explored more fully in Becker 1983.

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