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Long-term care insurance, informal care, and medical expenditures ☆

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ABSTRACT

This paper provides empirical evidence on the short-run impact of government subsidies of long-term care. We apply a regression discontinuity design using administrative data from South Korea to estimate the first-year impact of subsidies for formal home and institutional care on informal care use and medical expenditures. These subsidies lead to increases in formal long-term care utilization, even when accounting for crowd out of private spending. Our main finding is that the benefits of subsidized home and facility care are heterogeneous across physical function level, and therefore that setting policy accordingly has the potential to dramatically reduce medical expenses. We also find that formal long-term care is a substitute for informal care at the intensive margin, but do not find such evidence at the extensive margin. The results suggest that publicly financed home care may have limited impact among the more able, but that it may be both more cost-effective and beneficial than institutional care for the least able.

1. Introduction

As both developed and developing countries face rapidly aging populations, policies affecting long-term care—services targeting health or personal needs for people with chronic illness or disability—become increasingly important. For example, the share of those age 65 and over in the United States is expected to increase from 13.0% in 2010 to 20.2% in 2050. For Korea, the corresponding shares are 16.5% and 38.2%. Moreover, the shares of those age 80 and over, for whom the need for long-term care is highest, are expected to double from 3.7% to 7.4% in the United States and increase severalfold from 1.9% to 14.5% in Korea.[1] At the same time, societal changes such as declining family size and rising female labor force participation are likely to reduce the availability of family caregivers. Long-term care is also costly, with public and private spending in the U.S. totaling $183 billion in 2003, or 1.6% of GDP (GAO, (2005)). Moreover, a third of Medicaid spending in 2006 went towards long-term care (CBO, (2007)).

Much of long-term care is provided informally. As needs expand and costs rise, understanding the role of informal care in meeting this escalating demand becomes increasingly important. This paper aims to shed light on an important aspect—the substitutability of formal for informal care. For example, if formal long-term care services directly substitute for—rather than supplement—informal care, the cost of provision will rise without necessarily increasing the total care received by disabled persons. This could have welfare consequences for the caregivers in terms of their participation in the labor force as well as on intergenerational household bargaining. Thus, understanding the welfare impacts will require understanding under what situations and through which services formal care substitutes for informal care. Additionally, as governments develop and refine long-term care policies, implications for economic efficiency will be substantial. Informed policies will need to assess the costs and benefits of subsidizing various types of care—in particular, home versus facility—measured both by direct costs of subsidization as well as potential costs or savings from other medical expenses.

In this paper, we study subsidies for formal home and facility care and their corresponding first-year impact on informal caregiving and medical expenditures in Korea. This study has a number of advantages that allow us to address this topic and improve upon the existing literature. First, we account for endogeneity in the choice of long-term care by using plausibly exogenous variation induced by a regression discontinuity design. Specifically, long-term care benefits in Korea are assigned based on an assessment score that is very difficult to precisely control. Second, these benefits vary at multiple cutoffs which allow us to separate the impact of home and institutional care benefits. Specifically, the first threshold set isolates the impact of just home care benefits for

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[1] Data are from Colombo et al. (2011).

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individuals who are partially dependent for some activities of daily living (ADLs) (hereafter, "more able")—for example, those who require a walking aid to move around; the second threshold allows us to measure the impact of an increase in facility care and decrease in home care among people who are partially dependent for several ADLs (hereafter, "less able")—for example, those who spend most of their daily life in a wheel chair; and the third threshold isolates the impact of an increase in home care and decrease in facility care among people who are completely dependent for several ADLs (hereafter, "least able")—for example, those who are bedridden.[2] Third, our analysis benefits from unique administrative data on formal home and institutional care, informal care, and medical expenditures.

Our main finding is that the benefits of home and facility care are heterogeneous across physical function level and therefore that setting policy appropriately has the potential to dramatically reduce medical expenses. Specifically, substantial reductions in medical expenses arise from incentivizing transitions from facility to home care for the least able. This finding is not likely culturally or context specific and is consistent with programs in the U.S. such as Money Follows the Person that seeks to transition people with Medicaid from institutions to the community. We also do not find evidence that formal long-term care is a substitute for informal long-term care at the extensive margin, but do find evidence that it does so at the intensive margin. Indeed, given that family ties tend to be relatively stronger in Korea, we argue that our results constitute a lower bound for similar effects in the U.S., and may be directly indicative of countries with relatively stronger family ties, such as many developing countries.

Specifically, we find that among more able individuals, government subsidies for formal home care lead to an increase in its utilization, with no statistically significant impact on informal caregiving at the extensive margin, as measured by child caregiving and independent living. We do find evidence for a reduction at the intensive margin, measured by the use of short-term respite care, which provides temporary relief for the recipient's caregiver. We also do not estimate a statistically significant impact on medical expenses. Among less able individuals, increased use of facility care and decreased use of home care due to the subsidization of institutional care lead to statistically significant reductions in informal caregiving but not medical expenses. Among the least able individuals, increased home care and decreased facility care utilization lead to substantial decreases in medical spending, largely accounted for by a reduction in hospital expenses. From a policy perspective, these findings suggest that among more able individuals, home care may be reduced with minimal detriment to their health; and that among the least able, incentives to transition from facility to home care may improve quality of life and reduce program costs overall.

We explore alternative mechanisms for explaining our findings. First, we determine whether crowd out explains our lack of findings on informal care. While we find that subsidies for long-term care lead to partial crowd out of private spending on long-term care, long-term care utilization still increases overall. Thus, crowd out is not likely the sole reason for our limited findings on informal care. We also assess the impact of subsidies for long-term care on short-run mortality, as this measure is important in and of itself and in order to rule out differential mortality in affecting our estimates. We find no statistically significant differences in mortality across all thresholds. Lastly, we show that our results are robust to various checks and specifications of our estimation strategy.

The remainder of this paper is structured as follows. Section 2 provides a brief discussion of the literature and our contribution. Section 3 explains Korea's Long-Term Care Insurance program and motivates our empirical strategy. Section 4 describes the data. Sections 5 and 6 present the empirical framework and results, respectively, followed by additional robustness checks in Section 7. Section 8 provides a brief discussion and Section 9 concludes.

[2] See Table 1 for additional details on the characteristics of individuals in each grade level.

2. Literature review

This paper studies the impact of subsidies for formal home and facility long-term care on informal caregiving and medical expenditures. In doing so, it contributes to the literature on the substitutability of formal for informal care and, more generally, the cost-effectiveness of public financing of long-term care.

One issue in the related literature is that of endogeneity, such as confounding unobserved characteristics that may lead to misleading findings. For example, to the extent that formal and informal care are positively correlated with unobserved negative health shocks, a naive analysis would find them to be complements even if they were substitutes. One way to address endogeneity is through the use of instrumental variables. Using the number of adult children and presence of a daughter who has no child at home as instruments, Lo Sasso and Johnson (2002) find that frequent help from children for basic personal care reduces the likelihood of future nursing home use. Using the number of children and whether the eldest child is a daughter as instruments, Van Houtven and Norton (2004) find that informal care reduces home health care and nursing home use. Using children's gender, marital status, and distance as instruments, Charles and Sevak (2005) find that receipt of informal home care reduces the probability of future nursing home use. However, it is unclear whether the necessary exclusion restrictions would be satisfied, given the complexity of fertility decisions and bargaining over intergenerational transfers. Thus, it is useful to assess the robustness of these results through studies based on more plausibly exogenous sources of variation.

The Balanced Budget Act of 1997 induced such a source of variation. This act led to regional variation in overall decreases in Medicare reimbursement for home care services. Using this source of variation, McKnight (2006) finds resulting reductions in home care utilization that were not offset by increases in institutional care or other medical care. Using the same source of variation, Orsini (2010) and Engelhardt and Greenhalgh-Stanley (2010) find reductions in independent living, and Golberstein et al. (2009) find increases in the probability of the use of informal caregiving.

The Channeling demonstration in the U.S. provides another opportunity to assess the relationship between informal and formal home care, through randomized evaluation. This experiment sought to substitute a system of home and community care for institutional care. Christianson (1988) and Pezzin et al. (1996) assess the impact of public home care provision and find limited reductions in the care provided by informal caregivers. However, the latter paper does find a significant increase in the probability that unmarried persons live independently. This highlights the importance of considering both informal caregiving directly and independent living.

Regarding impacts on other medical expenditures, McKnight (2006) finds suggestive evidence that reductions in home health care reimbursement and utilization did not lead to increases in other medical care and were not associated with adverse health consequences; however the estimates were not precise enough to rule out a sizable impact. Evaluating the impact of Channeling on other medical expenses, Wooldridge and Schore (1988) find large reductions in nursing home use among those who were already in a nursing home at baseline but no statistically significant change on the use of hospital, physician, and non-physician medical services.

Another limitation of the existing literature is the lack of evidence on institutional care. Moreover, even though understanding the impact of institutional care on health and other medical expenses is necessary for cost–benefit analyses, very little is known at this point.[3] In addition, existing evidence on home care is limited in accounting for institutional care and in being generalizable to a broader population of the elderly.

[3] In a review paper, Ward et al. (2008) conclude "there is insufficient evidence to compare the effects of care home environments versus hospital environments or own home environments on older persons rehabilitation outcomes."