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The economics of long-term care: a survey

1. Introduction and motivation

If health care expenditure has been arising rapidly during the past decade in industrial countries, that on long-term care (LTC) has been exploding. For example, in Germany the tax on the wage bill for financing mandatory LTC insurance was 0.4 percent in 1996 when the scheme was initiated while at present (2005), it stands at 1.7 percent. In the United States, the share of LTC expenditure in total health care expenditure (HCE) was 10 percent in 1992 and 9.2 percent in 2003, or some 1.3 percent of GDP.

For the importance of LTC expenditure alone, the economics of LTC should be of some interest. However, this task proves to be a big challenge to economic theory. Compared to conventional microeconomics, the analysis of individual health behavior is already particularly difficult. Individuals do not simply sacrifice health in return for other goods. Rather, they compromise their chances of being healthy in the future in the turn for some other objectives. This calls for a probability formulation from the beginning [see e.g. Zweifel and Breyer (1997), ch. 3]. Alternatively, analysis of investment into health requires dynamic optimization tools, as pioneered by Grossman (1972) and applied by Wagstaff (1986) and Lindgren (2005). The particular challenges to the analysis of LTC (and by implication, policy) lie in the following. First, disclosing one's helplessness (which defines an LTC case) is something else than disclosing a health condition to a physician. In addition, helplessness is of two types. The less delicate one is the loss of productivity in non-market work due to physical limitations. However, there is a second type, the inability to make decisions, Alzheimer disease being the typical example. Here, lack of accountability creates considerable difficulty in economics, which presupposes that decision makers are able to consistently order alternatives in terms of preference. This is a feature of LTC shared with mental disorders (Zweifel, 1994).

Against this background, this contribution seeks to attain the following objectives. (1) It seeks to discern the decision makers involved in an LTC episode (neglecting the fact that the majority of these episodes end in death). (2) Using a decision tree as the organizing principle, the objectives and constraints of

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these decision makers are stated. The implications of economic modeling are expounded and confronted with empirical evidence where available. This gives rise to a third objective, which is to (3) inform policy. Here a fundamental question needs to be answered first, viz. whether there are (negative) external effects burdening society that might justify public intervention, e.g. the introduction of mandatory LTC insurance. If this question is answered in the affirmative, there are several policy issues surrounding LTC, such as the regulation of service providers and the role of informal care.

The plan of this contribution is as follows. Section 2 is devoted to a general description of an LTC episode, proceeding along a decision tree in analogy to the one used in Zweifel and Breyer (1997, ch. 1). In this way, the decision makers involved can be characterized in general terms, starting from the individuals as potential and effective LTC cases, moving to family members and relatives as informal care-givers and on to physicians, social workers, and LTC institutions. Section 3 reports on recent attempts at modeling the behavior of these decision makers and elaborating predictions in terms of observable phenomena. These predictions are also confronted with available empirical evidence. Section 4 contains first a review of the nature and importance of external effects likely to accrue along the LTC decision tree to conclude that society may be affected by some of its members ending up in extreme poverty shortly before the end of their lives. In view of this finding, suggestions for LTC policy are offered, raising issues such as whether making LTC insurance mandatory is advisable or whether a voucher solution might be preferred, or whether attempts at regulating quality of services provided by LTC institutions has the potential of actually being in the interest of beneficiaries.

2. A stylized LTC episode

A stylized LTC episode is depicted as a flow diagram in figure 1. Its first node is the individual who has to decide whether or not to disclose his or her condition. In the case of disclosure, he or she usually approaches a relative or a friend. Very often, the relative is a child, typically the daughter who provides informal care [in the case of the United States this share is estimated at 70 percent; see Norton (2000); similar figures apply to e.g. Germany and Switzerland]. Another way is to rely on some form but non-medical help from the beginning, e.g. a lay helper. Still another alternative is to seek help from a physician. While LTC is not a response to a medical problem (a real cure for dementia not being available for the time being) but has to do with failure to organize one's non-market activities, physicians can be expected to "medicalize" the problem.

Physicians in turn are confronted with a "make or buy" decision. One of the "buy" alternatives is to refer the "patient" to some social welfare institution; another is to call on a nursing home. The "make" alternative amounts to try a medical treatment. After some time, the "patient" may still end up in a

hospital although the underlying condition is not medical at all. Therefore, the next decision maker in line is the hospital. Its decisions have important financial consequences in view of the high capital intensity (both in terms of physical capital and human capital) of its operations. Specifically, in the context of an LTC case, the hospital decides whether to continue treatment in its own facilities or to refer the patient, typically to a nursing home.

For the ensuing analysis, likely objectives of the decision makers involved will be posited (see figure 1). Many of their objectives may be non-financial; however a typical lesson from economic theory is that since budget and time constraints must be met, behavioral implications do not differ too much even if such objectives are relevant.

3. The decision makers involved in an LTC episode

3.1 The individual as a potential demander of LTC

In his review, Norton (2000) states, “The theory of demand for long-term care is straightforward. The most important factor is of health status, which determines need, and the out-of pocket price relative to the price of close substitutes.” This view is not shared in this contribution. In fact, Norton’s statement assumes that the decision to be an LTC case is similar to the decision to be an “ordinary” medical patient. However, contrary to disclosing a health condition, admitting that one likely is an LTC case has important consequences in terms of autonomy and accountability.

It may be worthwhile to recall that at the concepted level, LTC is not a medical problem (although often medicalized for reasons given below). The reason is that for the time being there is no therapy available, with the exception of drugs that postpone the onset of the next stage of Alzheimer disease by a few months [Nocera et al. (2003), chs. 1 and 2]. Rather, an LTC case can be defined in terms of a permanent loss of productivity in the non-market domain. The first type of loss are physical limitations [usually measured in the guise of activities of daily living (ADL) that cannot be performed anymore]. This results in a loss of autonomy which however still leaves scope for making a contribution to the joint production of the household.

The second type of LTC is much more serious. It entails the loss of decision-making capabilities. This is in effect a mental disorder resulting in a lack of accountability, which poses a major problem both at the theoretical and the policy level. For economic theory, the crucial assumption that the agent considered is capable of ordering alternatives in a consistent way cannot be maintained anymore. This also implies that (contrary to the case of ordinary medical care), “patients” cannot be relied upon to at least chose

their preferred agent. This raises the important question of who constitutes the least imperfect agent of a non-accountable individual. Apart from this “who?” issue, this frequently also involves “when?”, “where?”, and “how?” dimensions. Comparing five alternatives, ranging from relatives and friends to psychiatric institutions, Zweifel (1994) concludes that a family member or close friend is the best agent because these persons may still be able of interpreting scrambled preference statements in the light of previously valid preference orderings. However, as will be shown in section 3.2 below, even family members are not perfect agents of LTC patients.

The view that disclosure constitutes a difficult decision is supported by the observation that Alzheimer patients try for several years to hide their status [Lemke and Perren (2005); Mittelman et al. (2003)]. While still mentally accountable, they realize that their helplessness will require the intervention of an agent whom they know to be imperfect. Therefore, disclosing their condition is something they want to delay as much as possible. Individuals may also be afraid of the burden they impose on others as an LTC case (a rare consideration in the case of “ordinary” medical care). König and Zweifel (2005) find that Alzheimer patients worry a lot about the burden they impose on their care-giving spouses, causing them to exhibit a willingness-to-pay for relieving that burden that exceeds their willingness-to-pay to be cured. Thus, quite generally costs and benefits tend to be more comprehensive and complex in the case of the demand for LTC services than in the demand for medical care.

This increased complexity becomes evident as soon as the source of care is considered. In the case of care provided by some public institution, the aspect of placing a burden on someone in the family or a friend is not of much relevance. Rather, individuals concerned fear a loss of autonomy since public institutions providing LTC often come close to being closed institutions, almost like prisons. On the other hand, price is practically zero in this case, which may explain that in the United States at least, formal LTC provided by public institutions is thought to be of low quality. In other countries such as Denmark, there is much less stigma or fear of loss of autonomy associated with the use of public institutions, while in countries such as Germany and Switzerland, the traditional public homes for the poor have become nursing homes that cater to everyone except the upper middle class and the rich.

3.2 Relatives and friends as providers of LTC services

There has been some research into the particular agency relationship involving a family member, particularly a son or a daughter. Nocera and Zweifel (1996) model the decision-making situation of a child who trades off working for money against providing informal care (which serves to put off admission to a home, thus preserving a possible bequest). The utility function posited reads

$$U = U\{C(L,X), L, Z\} \quad (1)$$

Here, C denotes consumption services, L leisure, and Z informal care. Consumption services are the outcome of a production process that uses both leisure L and consumption goods X. A person with a high (marginal) productivity $C_X := \partial C/\partial X$ is productive in his or her use of consumption goods. The price of consumption goods is normalized to one. Utility is increasing in consumption services and leisure but may be decreasing or increasing in informal care Z provided.

Turning to the restrictions, total time T may be spent on leisure, work, and caregiving A. Income is derived from wage earnings, given by the wage rate w times time at work ($T - L - A$). For the ensuing analysis, one adds a lump-sum payment for informal care M, where M is the value that compensates for informal care. Total (notional) income therefore is given by

$$Y = w(T - L - A) + M \quad (2)$$

Finally, for simplicity the amount of caregiving Z is a function only of the time devoted to caregiving, such that $Z = Z(A)$. Some persons are more efficient at caregiving than others, implying that their $Z_A := \partial Z/\partial A$ has a large value.

The model can be solved to find the value dM/dA that keeps the child interested in caregiving. Again for simplicity, the lump-sum payment M is assumed to be small relative to income, thus making changes in leisure and hence hours worked negligible. In that event, changes in A are largely reflected in time available for leisure, i.e. $dL/dA \approx -1$. Comparative statics then yields the following expression for the reservation wage [see Nocera and Zweifel (1996) for details],

$$\frac{dM}{dA} = w - \frac{U_Z Z_A}{U_C C_X} - \frac{dL}{dA}\left(\frac{U_L}{U_C C_X}\right) \quad (3)$$

The reservation wage of the caregiver thus equals the market wage rate w less adjustment for other factors. However, it is generally positive. A sufficient condition for this is that the marginal utility of caregiving is non-positive ($U_Z \leq 0$), the other three derivatives contained in the second term being positive. The third term is always negative because dL/dA is negative and the multipliers are positive. Therefore, a negative value of U_Z increases the reservation wage. Conversely, only a person who derives an extraordinary amount of utility from caregiving ($U_Z >> 0$) would not have a positive reservation wage.

The reservation wage therefore depends on the wage rate w, the marginal rate of substitution between consumption and caregiving U_Z/U_C , the marginal productivity of caregiving Z_A, the marginal

productivity of goods in consumption C_X, the marginal rate of actual substitution between time spent on caregiving and leisure time dL/dA, and the marginal rate of substitution between consumption and leisure U_L/U_C. In all, eq. (3) suggests a regression equation that is approximately linear in logs (Nocera and Zweifel, 1994). The empirical evidence is mixed. A survey among relatives of LTC individuals effected in 1993 was the basis of an econometric study showing that daughters do in general have a positive reservation wage. However, not all the factors shown in eq. (3) perform as predicted.

As in medical care, the presence or absence of insurance coverage is expected to be crucial because LTC insurance lowers the net price of formal care to a potential demander of LTC services. However, it also changes the trade-off faced by a relative or especially a son or daughter who considers providing informal care. Zweifel and Strüwe (1996a) theoretically show that LTC insurance and bequests create conflicting incentives for potential providers of informal LTC. Specifically, LTC insurance, by protecting the available bequest against the financial consequences of admission to a (private) nursing home, undermines the parent's scope for controlling the behavior of the child through the bequest.

Indeed, when the introduction of compulsory LTC insurance was debated in Germany in 1995, surveys revealed that the elderly "beneficiaries" were opposed presumably because they feared the moral hazard effects in their children. Likewise, willingness-to-pay for LTC insurance in Switzerland, to be financed by a surcharge of CHF 50 per month by the more than 50-year-olds, has been found to be negative rather than positive in a market experiment fielded in 2003. Even among the younger population groups, the proposal met with a negative rather than positive willingness-to-pay. Compensation demanded on average is some 9 percent, and among the 50^+, even 17 percent of average health insurance premium [Telser et al. (2004), p. 65].

In another theoretical analysis, Zweifel and Strüwe (1996b) find that LTC insurance is dominated by trust savings. The argument is that savings serve to accumulate wealth, which can be used to control the behavior of the offspring, while LTC insurance again results in a loss of influence for the parent.

Eisen and Mager (1996) also construct a two-period model but emphasize the strategic interactions in a family consisting of several children. As usual, it is assumed that the (product of the) distances from the respective threat points are maximized. The first-order conditions read,

$$\frac{Z_H}{1-\alpha} + Z_{\tilde{H}} a^j = \frac{U_L}{U_C} = \frac{U_W}{U_C}\left(w^j - p_H\right) \qquad (4)$$

On the left-hand side, Z_H symbolizes the marginal productivity of time (hours) on caregiving [equivalent to Z_A in eq. (3)]; however, its relevance depends on the extent that the alternative "formal care" would have to be paid out-of-pocket, α symbolizing the rate of copayment in LTC insurance. The second term

on the left-hand side of eq. (4) denotes the productivity of total hours of informal LTC provided by the family ($\tilde{H}$), with $\tilde{H} = \sum a^j \cdot H^j$. Accordingly, a^j is the productivity-weighted share of the *j*-th member of the family. On the whole, the expression on the right-hand side amounts to the marginal return to hours spent on LTC for the parent, taking into account the possible presence of LTC insurance.

On the right-hand side of eq. (4), there are two expressions for marginal cost. Starting with the last equality, this is the marginal rate of substitution between wealth (W) and consumption, taking into account that the net contribution to income and hence wealth is given by the difference ($w^j - p_H$) between the wage rate earned and the opportunity cost of providing LTC. Alternatively, the marginal cost of informal care can be written as the marginal rate of substitution between leisure and consumption (U_L/U_C). Evidently, this is very close to eq. (3) in that much the same parameters appear. However, the model by Eisen and Mager does come up with additional insights in that it predicts that increased parent wealth strengthens their bargaining position and that an increase in the price of formal care weakens parents' bargaining position, causing the amount of informal care to decrease. By way of contrast, an increase in the wage rate of family member *j* increases the bargaining power not only of *j* (if performing market work) but of all children together. Finally, an increase in LTC coverage ($1 - \alpha$) strengthens the bargaining power of parents (and even more so than an increase in their wealth). This is a puzzling result because it is at odds with the prediction (confirmed by survey evidence) that LTC coverage induces moral hazard on the part of children. However, the model by Eisen and Mager neglects moral hazard effects.

3.3 Lay helpers as providers of LTC services

The behavior of lay helpers has been less studied than that of family members. However, predicted effects should not differ very much from those derived for a relative except for the fact that lay helpers usually cannot expect to obtain a share of the bequest. Also, their marginal utility of caregiving [U_Z in eq. (3)] may be less marked if positive. This means that compensation asked by lay helpers for providing care should be higher than for family members ceteris paribus. However, lay helpers may be more productive than relatives in providing LTC services, calling for a larger value of Z_A in eq. (3). Therefore, the net difference with regard to the compensating wage rate dM/dA is ambiguous.

A difference of importance for policy is that in general a lay helper cannot refer a patient directly to a source of formal LTC, such as a physician, the public service, or a home. Rather, he or she has to cancel the (often implicit) contract with the "patient" or a relative. This difference, however, may be more theoretical than real because the "patient" may fall back on a relative or a physician, the public service,

or a home. Alternatively, the relative concerned typically will often shift the burden on to one of the providers of formal help.

3.4 Physicians as providers of LTC services

Quite often, it is a physician to whom the individual concerned discloses his or her status. This raises the issue of physician referral decisions. Usually, this is seen as part of a general patient selection decision that consists of three elements, viz. creaming (selecting patients to be admitted), skimping (on quality for unwanted patients), and dumping (sending a patient elsewhere) [see Ellis (1998)]. However, Zweifel (1981, 1982) still seems one of a few to explicitly model the referral decision, taking also into account uncertainty. His model consists of the following equations,

$$EU = E\left[U\left(Y,I,L\right)\right] = \int_0^1 U\left[Y\left(\bar{s}\right),\quad I\left(\bar{s}\right),\quad L\left(\bar{s}\right)\right]F)s,\bar{s})ds \quad \rightarrow \text{max. S.T.}$$

$$Y = qtP$$

$$P = \int_0^c h\left(qr,w,s\right)\cdot F\left(s,\bar{s}\right)ds$$

$$I = \int_0^c \left[\,p\left(s,0\right) - p\left(s,t\right)\right]\cdot h\left(qr,w,s\right)\cdot F\left(s,\bar{s}\right)ds$$

$$L = t - tP \qquad (5)$$

Thus, the physician is seen as an expected utility maximizer, with utility dependent on income from the *Y*, an ethical variable *I*, and leisure *L*. Patients are drawn from a density function $F(s,\bar{s})$, with $\bar{s}$ denoting the mean (unknown) severity level that characterizes location and shape of $F(\cdot)$. Income is given by an implicit wage rate *q*, average time spent on a patient *t* (such that $q \cdot t$ equals the billed amount per case), and the number of patients treated *P*. Now *P* crucially depends on the so-called critical severity level *c* beyond which the physician refers a patient to a specialist, a hospital, or possibly a nursing home in the present context.

The critical severity level *c* works as follows: From the density function $F(\cdot)$, the physician draws patients according to the filter $h(qr, w, s)$, which depends on the net price of physician time paid by the patient (with *r* symbolizing the rate of coinsurance imposed by health insurance), other non-health influences such as wealth and gender *w*, and the severity of the condition *s*. The ethical variable *I* also

depends on the value of the critical severity level c as set by the physician. It amounts to the physician's contribution to the chances of survival, with $p(s, 0)$ symbolizing the probability of death given that the patient does not receive treatment, and $p(s, t)$ the probability of death with t hours of treatment. Finally, leisure time is simply the difference between total time available T minus time worked in the practice, $t \cdot P$.

The three decision variables are c, the critical severity level, q, the implicit wage rate, and t, average time spent per patient. Clearly, physicians face several tradeoffs. By setting c high, they can generate more income but must sooner or later reduce the time spent per patient, which causes them to lose out on ethics because their contribution to survival (or more generally, health) decreases. Or else, they can ration their services by setting the implicit wage rate q high, which means ordering X-rays, lab tests from their own office, and selling drugs on their own account (which is legal in parts of Switzerland). Of course, while possibly increasing income from practice, increasing q has ethical consequences too because fewer patients of the population $F(\cdot)$ seek help given that the net price they have to pay is high.

With several auxiliary restrictions [detailed in Zweifel (1992), ch. 5], the comparative static result with regard to an increase in the rate of coinsurance is $dc/dr > 0$. This means that if the rate of coinsurance is increased, physicians tend to set their severity symptom level higher, retaining a few marginal patients, that otherwise would have been referred elsewhere. This can be translated to the case of LTC by noting that LTC being a nonmedical condition, the physician can do relatively little for a LTC "patient". This may be modeled by defining the impulse $d\gamma > 0$, that reflects the difference between an LTC and a "normal" case, with

$$\partial\left[p(s,0) - p(s,t)\right] / \partial\gamma < 0 \qquad (6)$$

The likely comparative static result is $dc/d\gamma < 0$, which means that in the case of LTC "patients", physicians are more likely to refer because their contribution to the chances of good health is smaller than in the case of non-LTC patients.

Of course, this does not answer the question of where the physician is likely to refer an LTC case. A fully ethical practitioner would likely replace $p(s, 0)$ in eqs. (5) and (6) by $p(s, e)$, where e denotes the expected value of effort provided in an alternative setting.

3.5 Hospitals as providers of LTC services

Especially when the initial contact is with a physician, the LTC "patient" may end up in a hospital although the need for LTC emanates from a loss of productivity in the non-market domain rather than from a loss of health calling for medical treatment. The management of a hospital is assumed to be interested both in the volume of services (or utilization of its capacity) and the quality of services provided [a standard assumption ever since Newhouse (1971); however, see Sloan (2000) for a formulation where hospital profit also plays a role]. Then, the issue becomes whether treating an LTC "patient" contributes more or less to these objectives than admitting a truly medical one. Quite likely, the answer to this question depends on the situation. If hospital management is hard put to generate revenue by filling existing capacity, its own critical severity level $\tilde{c}$ will be high. Thus, it will retain LTC "patients" in this situation, causing hospital HCE to increase. If however the decision is to refer, the path of referral may lead back to a relative, a public service institution (such as a day care institution), or a nursing home.

3.6 Public service institutions as providers of LTC services

The next alternative to examine is a public service institution. The objectives of these institutions are not too clear. According to the public choice literature, budget maximization, subject to the constraint of sufficient political support by political authorities, might be relevant (Zweifel, 2005). Of course, this does not preclude the welfare of inmates being an objective as well as soon as reputational effects play a role. However, violation of objectives of this type rarely triggers important sanctions, especially if mental rather than physical limitations are the cause of the need for LTC services. This is why Zweifel (1994) assigned public institutions the lowest rank of the agents considered. Quite generally, there does not seem to be much research into the behavior of these institutions, likely due to their limited economic importance. Moreover, their referral decision is of minor interest compared to the destination of these referrals. According to stylized facts, few clients are sent back to a physician; rather the usual pathway is to a nursing home.

3.7 Nursing homes as providers of LTC services

The nursing home industry has been researched in considerable detail. The point of departure was the introduction of certificate-of-need regulation by the U.S. legislature in 1974. Feder and Scandon (1980) found that first, incumbent nursing home providers stepped up capacity before the implementation of this regulation. Second, regulated supply combined with Medicaid rates below private pay rates to cause inefficiency in the allocation of nursing home care since Medicaid beneficiaries with heavy care needs

did not obtain access. Third, there is some evidence of a lower quality of care due to reduced Medicaid rates. Fourth, certificate-of-need regulation possibly does not even restrict supply in the long run. Indeed, between 1981 and 1991, the number of beds rose in just about all states of the United States, causing the total number to increase from 1.4 mn to 1.7 mn.

In the model proposed (among others) by Gertler (1989), nursing homes with a given bed supply $\bar{x}$ can set private price p and quality of care q to maximize profits π,

$$\max_{p,q} \pi = px(p,q) + r\left(\bar{x} - x(p,q)\right) - c\left(q \middle| \bar{x}\right). \tag{7}$$

Here, Medicaid reimbursement is denoted by r and cost, by $c(\cdot)$. The signs of the first derivatives are $x_p < 0$, $x_q > 0$, and $c_q > 0$. The first-order conditions for profit maximization with respect to private price and quality of care are given by

$$\frac{\partial \pi}{\partial r} = 0 \Rightarrow (p - r)x_p + x = 0; \tag{8}$$

$$\frac{\partial \pi}{\partial q} = 0 \Rightarrow (p - r)x_q - c_q = 0. \tag{9}$$

Their standard interpretation is that the nursing home sets the marginal revenue from a change in private price and quality of care, respectively to be equal to pertinent marginal cost. Rewriting eq. (8), one obtains for the pricing decision,

$$r = p + x_p \cdot = p\left(1 + \frac{1}{\varepsilon_{xp}}\right), \quad \varepsilon_{xp} := \frac{x_p}{(x/p)}. \tag{10}$$

On the left-hand of equation (10), one has the marginal revenue from a Medicaid "patient", whereas on the right-hand side, this is the opportunity cost of admitting such a case, given by the marginal revenue of a private patient (which in turn depends on the price elasticity of demand ε_{xp}). From this, one may solve for the private price,

$$p = \left(\frac{\varepsilon_{xp}}{1 + \varepsilon_{xp}}\right) r. \tag{11}$$

If demand is elastic (i.e. ε_{xp} less than – 1), then the private price is not much greater than the Medicaid rate because the nursing home cannot raise its private price without losing a great deal of private

demand. However, when ε_{xp} approaches – 1, then the private price greatly exceeds the Medicaid rate. For the United States, Nyman (1989) estimates the price elasticity of formal LTC to be –1,7.

Comparative static predictions are somewhat ambiguous. Considering an increase in the Medicaid rate $dr > 0$, the tendency for dp/dr is to be positive, provided that the demand reaction to price does not depend on quality (implying $\pi_{\pi q} = 0$) or if it depends positively on quality (i.e. $\pi_{\pi q} > 0$). Interestingly, the quality reaction might therefore be a counter-intuitive $dq/dr < 0$. This obtains if $\pi_{\pi q} = 0$ or if $\pi_{\pi q} < 0$. The reason may be that all residents, including those covered by Medicaid, benefit when the quality of care rises. However, only private residents pay for quality because Medicaid by assumption sets the rate independently of quality.

Once more, not much is known about the referral decision by nursing homes. One reason is that most residents do not leave the home alive, although there may be periods during which they can go back to their homes. At this juncture, Werblow et al. (2005) found a puzzling detail in their refined analysis of the cost of dying. Whereas with increasing age, most components of HCE are constant or even decrease with increasing closeness to death, this does not hold true for the component ‘physician visits’ to nursing home residents. Indeed, especially among deceased residents of nursing homes, age continues to be an important determinant of HCE. This suggests that attending physicians may try to provide ever more intensive care to deathbound residents (whereas hospitals do not seem to engage in such behavior).

4. Perspectives on LTC policy

Evidently, policy has a great influence on processes and outcomes in the LTC domain. However, from an economic point of view, an issue that needs to be clarified first is whether public intervention is justified. The classical reasons of course are external effects, public goods, and increasing returns to scale resulting in natural monopoly. External effects constitute the only possible reason for public intervention in the case of LTC services (Felder and Zweifel, 1994). Old individuals may end up in poverty due to the need to finance LTC services. This poverty has a negative external effect on rich members of society. However, potential donors fear free riding by their likes, who are tempted to abstain from giving, knowing that someone else takes care of the problem. The solution is to force everyone to contribute through a tax. Note that this does not imply that the government must engage in the production of LTC services (which is the case when e.g. a city operates a nursing home), production of LTC services usually being provided more efficiently by private agents.

It may therefore be efficient for the government to organize the financing of LTC services. Again, this need not be an insurance solution, although e.g. Germany did introduce compulsory LTC insurance in 1996, and Switzerland is about to do the same at the time of writing (2005). The downside of the insurance solution is that it decreases the marginal price of the good in question [for a detailed analysis of LTC insurance, see Meier (1998)]. This causes willingness-to-pay to be heavily inflated. For instance, if the maximum daily rate an individual would be willing to pay out of pocket for staying at a nursing home is $50 and the rate of coinsurance is (a rather high) 20 percent, the market rate can be as high as $250 to still be acceptable for this individual. Since supply is usually not infinitely elastic with regard to price, this increase in willingness-to-pay sooner or later drives up not only quantity but also price. This is exactly what has been observed in Germany since 1995, with expenditure on LTC more than quadrupling within a decade.

In order to avoid this moral hazard effect (which is well known from health insurance), Zweifel and Felder (1994) and Zweifel et al. (1994) propose a voucher solution. The value of such a voucher could be conditioned on the severity of the limitation, measured e.g. by the activities of daily living (ADL) index. Minor limitations would trigger a means-tested voucher of low value, while needy individuals with many limitations would receive a voucher of high value. In both cases, beneficiaries would be able to exercise full consumer sovereignty by opting for the LTC institution (or the source of LTC services of their choice, such as family members, friends, or lay helpers). However, higher-quality services whose price exceeds the value of the voucher would have to be out of pocket. Since the marginal price is not lowered, moral hazard is not a problem (although in the political arena, there may well be pressure to continuously increase the value of the voucher).

It becomes clear that more must be known about the political process surrounding health policy in general and LTC policy in particular, e.g. the formation of coalitions that lobby for private production of LTC services, an insurance solution, or an ever higher value of a LTC voucher.

5. Summary and conclusion

The point of departure of this contribution is the notion that the demand and supply of LTC services is more complex than generally acknowledged. The flow diagram of figure 1, depicting a stylized LTC episode, illustrates the point. Its initial node is the “patient’s” decision to disclose his or her condition, which is not medical (since no treatment of LTC is available at present) but relates to a loss of nonmarket productivity, possibly combined with a loss of accountability. Contrary to the great majority of medical conditions, disclosure of one’s LTC condition often causes a disruption of relationships inside and outside the family and therefore tends to be postponed.

The flow diagram also shows that the rate of an LTC “patient” importantly depends on the first agent contacted. Family members, while far from being perfect agents, can be counted upon to bear with their affected parent up to a point where the burden of caregiving becomes quite high. The reason may be that by deferring admission to an (expensive) nursing home, they protect their own future bequest. Clearly, the introduction of LTC insurance cannot but weaken this effect. In technical terms, LTC insurance serves to lower the “critical severity level” that triggers the referral decision. Lay helpers from outside the family can be expected to have a lower critical severity level to begin with since they usually have no claim to the bequest.

A similar decision has to be made by physicians, who however have two more decision variables at their disposal, viz. time spent on the patient (a quality variable contributing to an ethical objective but costly in terms of leisure) and an implicit wage rate (a high value enhancing income from practice while detracting from the ethical objective). A pertinent model predicts a lower critical severity level for LTC cases than for “normal” cases because the physician cannot contribute much to the chance of good health to begin with. Still, the physician’s referral decision may cause the “patient” to end up in a hospital –where management in turn has to decide about referral, usually to a nursing home.

Besides public service institutions typically providing day care services, it is the nursing home that constitutes the principal source of formal LTC. Existing research points to the possibility of counter-intuitive effects in that an increase of the rate paid by the public purse (Medicare in the case of the United States) may actually serve to lower rather than increase the quality of services provided.

Economic theory also points out to the fact that policy should be concerned about the external costs surrounding LTC only. Through financial arrangements, the objective should be to prevent old people from ending up in poverty because they have to pay for LTC services. Whether LTC insurance or a voucher solution is the way to go remains an important question of future research.

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Figure 1: Stylized LTC episode