Nordic Journal of Political Economy

Volume 30 2004 Pages 79-90

Social Insurance of Short Spell Sickness?

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This paper looks at social insurance of short term absence from work. The chief concern is with efficiency properties of full coverage. That arrangement is reviewed and criticized here in light of received theory. A main point is that positive loading of the premium implies less than full coverage. Concerns with optimal risk sharing also pull in the same direction. Besides, full coverage creates problems with moral hazard. The possibilities to self-insure over time are emphasized.
Keywords: risk sharing, coinsurance, deductible, non-insurable risk, Pareto efficiency, mutual insurance, arbitrage, adverse selection, moral hazard.
JEL classification: D82, G22, J32, Z13.

Suppose a new flue – or another transient, minor health problem – occasionally constrains you to stay briefly away from work. Should you – or your employer or society at large – in such circumstances secure you full reimbursement of the resulting wage loss?

Insurance of that sort were indeed offered in the former Soviet Union, and it is still part of social security in some European countries (including Norway[1]). Clearly, so extreme a policy affects supply, demand and productivity of labor – as well as incentives.

So, there are ample reasons to inquire about its appropriateness and impacts. In particular, I ask here: *What does full coverage indicate about the actuarial fairness of the premium? How does such a policy fare in terms of risk sharing? Why is there no coinsurance? What does absence of a deductible reveal in terms of risk aversion? Will the policy provide efficient mutual insurance? Are worries with hazard well accounted for?*

Concerning these and other questions I shall assemble some observations, each

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1. The actual Norwegian regime, as of January 21, 2002, gives the employee the right to be absent 8 consecutive days from work, maintaining full wage, without a doctor's certification of illness. Such absence can accumulate to 24 days a year.

inviting strong doubts about the efficiency of full insurance. The arguments that follow are simple, but ought not be overlooked. Few, albeit some, results collected below are original. In fact, most appear well known, but scattered in the literature.

The paper is organized as a review of chief theoretical results contrasted with a specific insurance treaty. That sort of review should interest *three* sorts of readers. *First* come policy oriented analysts, willing to scrutinize an existing arrangement. *Second* in line are insurance economists or actuaries concerned with the operation and justification of systems already in place. And *third,* there are social scientists interested in theoretical perspectives on the efficiency and equity of distributional schemes. While some sections are technical, others are not. The reader can skip sections that appear not to his heart, pick others freely, and still take home a message or two.

There is, however, a generality to the paper that goes beyond the particular instance of short spell sickness. Indeed, the paper bears on full (private or social) insurance of recurrent but relatively small losses. For an example, suppose your new bicycle is stolen every so often and never recovered. To protect against that repeated and notable, yet minor loss you might arrange ex ante for complete indemnity. In fact, full theft insurance is available in some bicycle shops. Should you reasonably by it? Plainly, if the premium is fair or subsidized, any risk averse, rational, bicycle-owner would purchase full coverage. He might moreover, opt to park his bicycle unlocked.

The silliness of providing such insurance seems to preempt this paper. Objections are indeed straightforward, even trivial, not worthy of closer scrutiny. Discussed here, however, is a *mandatory* contract, affecting solidarity and redistribution. Given the observed use and effects of that contract, I find it important to voice some concerns with its design, efficiency, and welfare impact.

Is Full Coverage a Good Choice?

It appears reasonable and realistic to presume, from here on, that most agents dislike risk. How will such agents behave if offered full insurance? Mossin (1968) already addressed that issue:

Proposition 1. (On purchase of full insurance)
• *If the agent is strictly risk averse, he is willing to pay more than the actuarially fair premium for full coverage.*
• *However, only if the premium does not exceed the actuarially fair level, will he purchase full coverage.*
• *If moreover, his absolute risk aversion decreases, his willingness to pay for insurance decreases as he becomes more wealthy.*

Are these assertions relevant? As said, I think it safe to assume that typical agents be risk averse (even regarding minor, relative infrequent losses). Even more, I posit here that they be strictly averse, but less so when accumulating more wealth.[2] Also, since the operation of any insurance agency comes at a certain cost, the premium charged typically exceeds, or it should exceed, the actuarially fair level. Consequently, viewing the three bullets above, one may expect that the concerned parties demand some insurance, albeit not full coverage – and less of it as they become better off. In contrast, and as a matter of fact, I observe that unions of workers insist on complete reimbursement of minor wage

2. There are indications that the very poor might have different risk attitudes; see Banerjee (2000).

losses. Also observable is that members and spokesmen of those unions have steadily become more prosperous. Do these observations overthrow the empirical validity of Proposition 1? No, not at all. It merely reveals the simple circumstance that the insurance at hand is subsidized.

Is the Risk Sharing Efficient?

In general it seems prudent that contracting parties agree on *efficient* arrangements. Efficiency simply means that they underwrite a treaty which leaves no room for improving the lot of one party without inflicting losses on the other.

In our context suppose an insurance policy is agreed upon which stipulates indemnity $I(x)$ to be paid by the employer (or insurance provider) to the employe in case of wage loss The first party (the employer) has wealth W, *utility function* $U(\cdot)$ and receives a premium π from the second party (the worker) who holds wealth w and *utility function* $u(\cdot)$. For good and obvious reasons I tacitly assume that $0 \leq I(x) \leq x \geq -$ and that any utility function be concave, smooth, and strictly monotone. In addition, suppose here that $u''(\cdot) < 0$.This last assumption is reasonable: It simply says that the insured party is strictly risk averse (although maybe moderately so). Efficiency then entails existence of a positive constant such that marginal utilities are always equal for the two parties:[3]

$$U'(W + \pi - I(x)) = \mu u'(w - \pi - x + I(x)) \quad \text{for all losses } x. \tag{1}$$

Equation (1) comes from maximizing the Pareto-like objective

$$E\{U(W + \pi - I(x)) + \mu u(w - \pi - x + I(x))\}$$

with respect to $I(\cdot)$, the positive parameter μ being the relative welfare weight ascribed to the insured. Note that the employer (or insurer) could be risk neutral.

Proposition 2. (Risk sharing and coinsurance (Moffet, 1979)) *It follows from* (1) *that* $0 < I'(x) < 1$. *Thus concerns with efficiency implies some degree and form of* ***coinsurance****.*

Full coverage for short spell sickness is certainly not up to the standard recommended by Proposition 2. This fact notwithstanding, the extreme outcome $I(x) = x$ might become explicable by assigning zero welfare weight to the employer. However, absent dictatorial power to the proletariat, such rulings are hardly defendable.

Proposition 2 advocates that partial self-insurance be built into a good policy. Specifically, it seems reasonable that the insured agent fully covers a first, lower part of the risk. That is, up to a certain level D he must fend for himself. Thus, he would hold a *cap-loss policy* of the type $I(x) = max\{x - D, 0\}$ where $D > 0$ is called the *deductible*. A problem appears here though: The cap-loss format violates (when differentiable) the above result $0 < I'(x) < 1$. Operating expenses for the insurance business change the picture, however. As seen next, they set things right:

Should there be a Deductible?

As noted, some existing insurance policies for short spell sickness offer full coverage, require no coinsurance, and demand no deductible. Can such policies reasonably be justified?

3. Quite reasonably, one could posit that *no loss yields no indemnity* – that is, $I(0) = 0$ – to have $\mu = U'(W + \pi)/u'(w - \pi)$.

What risk attitudes do they display? On this account, Arrow (1963) proved the following

Proposition 3. (Coverage only above a deductible) *If any insurance policy is available at a premium which depends merely on its actuarial value, then it becomes optimal for a risk-averse buyer to secure himself coverage – and in fact, full coverage – of own loss only above a deductible minimum.*

Thus the agent takes full self-insurance up to a *deductible D.*[4]

For any indemnity schedule $I(\cdot)$, marketed at premium π the *loading factor* l is defined implicitly by $\pi := (1 + l)\, EI(\mathcal{L})$, $\mathcal{L}$ denoting here the loss. Plainly, a positive loading, if any, serves to cover administrative expenses in the insurance business. Drèze (1981) related D to $l > 0$, and to the agent's *relative risk aversion* His analysis provided the following bounds and insights:[5]

Proposition 4. (Bounds on relative risk aversion) *Consider a risk-averse agent with smooth concave utility function* $u(\cdot)$ *and wealth who faces risk* $\mathcal{L}$ *and who can get cap-loss indemnity* $I(\mathcal{L}) := \max\{\mathcal{L} - D\}$ *at a premium* $\pi = \pi(EI(\mathcal{L}))$ *which depends only on the actuarial value* $EI(\mathcal{L})$. *Let* $Y := w - \pi - D$ *denote his income after deduction D. Then his* ***relative risk aversion*** $R(Y)$ *is bounded below at the threshold income* Y *as follows:*

$$R(Y) := -\frac{Yu''(Y)}{u'(Y)} \geq \frac{l}{1+l}\,\frac{Y}{D}.$$

Equivalently, in terms of the ***relative risk tolerance*** $T(Y) := 1/R(Y)$ *it holds that*

$$T(Y) \leq \frac{1+l}{l}\,\frac{D}{Y}.$$

Consequently, a choice $D = 0$ *would reflect infinite relative risk aversion – or equivalently, zero risk tolerance – on the part of the buyer.*

The upshot here goes as follows: *Full wage reimbursement during short spell sickness reflects that workers are* ***infinitely risk averse****. Equivalently, they have* ***no risk tolerance*** *whatsoever when it comes to wage loss of short duration.*

Such attitudes appear neither reasonable nor plausible. Full coverage can hardly be justified by commonly observed risk attitudes. One observation suffices to put things right, namely the presence of subsidies, making $l < 0$.

Still, could not full reimbursement be justified in terms of additional, *non-insurable* risk? I doubt it. Nonetheless, I shall pursue that argument next.

Should the Value of Leisure be Insured?

Given the prevalence of insurance loading ($l > 0$) – legitimized by administrative costs in insurance – why do we still observe contracts with complete coverage? Their very existence seems to speak against Mossin's Proposition 1.

Doherty and Schlesinger (1983) offered a way out of this paradox. They found that

4. Related studies include Drèze (1981), Gollier (1992), Huberman et al. (1983), Ermoliev and Flåm (2002), Pashigan et al.(1966), Raviv (1979), and Smith (1968).
5. Relative to the threshold income $Y := w - \pi - D$ Dreze used the approximation
$u'(w - \pi - x) \approx u'(Y) - (x - D)u''(Y)$
for the domain $x \leq D$. Closer inspection reveals that the inequality
$u'(w - \pi - x) \geq u'(Y) - (x - D)u''(Y)$
suffices in that domain. But the last inequality is satisfied automatically for a concave smooth $u(\cdot)$.

presence of a supplementary, *non-insurable risk* might induce risko-phobe agents to arrange for full indemnity even at an actuarially unfair tariff. Intuitively, this result hinges upon a positive association between two types of risks: one insurable, the other non-insurable. That is, when the insurable risk is up (down), so is the non-insurable one as well.

A standard example comes with an employer who may loose more than his insurable opportunity cost when sickness obliges him to be absent from his firm. The productivity of his employees is then likely to be lower, and that loss can hardly be covered by insurance.[6]

Now, what about similar short-term absence among employees? *Besides the insured risk, do fixed-wage workers face other positively correlated, non-insurable risks that could justify full coverage of the insurable one?*[7]

As said, the basic and insurable risk is here the worker's wage loss, stemming from short-duration sickness and resulting absence from paid work. Such sickness comes in diverse degrees of severity, however, ranging from light indisposure to full work-inability. If the agent is only mildly hit, his value of attending leisure remains positive. The worker is thus, in principle and reality, exposed to a composed, two-stage risk: *First*, he may fall sick and thereby, if absent from work without insurance, loose his salary. *Second*, during work absence his illness might – or might not – be so severe as to fully block desirable, alternative activities. So, there is the prospect of reaping some value of leisure.[8]

To formalize, suppose a worker enjoys smooth, strictly increasing, strictly concave utility $u(r)$ of monetary revenue r. When working, he receives daily wage He faces a risk of short-term (S for sickness for sickness) causing income loss

$$X := \begin{cases} x > 0 & \text{with probability } p_S > 0 \\ 0 & \text{with probability } 1 - p_S. \end{cases}$$

The part $I(X) \in [0, X]$ of that loss can be recompensed via insurance, available at premium $\pi := (1 + l)ps$ per unit covered. As customary, l is called the *loading factor*. It usually is positive and reflects the costs of the insurance provider. Of particular interest are contracts of the form $I_f(X) := fX$, with $f \in [0,1]$ denoting the fraction of loss reimbursed. The purchase cost of $I_f(\cdot)$ is $(1 + l)\, fE(X)$.

Leisure tends to have positive monetary value. However, if a worker is forced by accidental illness to stay briefly away from paid work, then most likely his value of leisure is less than usual. One can hardly exclude though that occasionally, in some situations, a positive benefit accrues to the unfortunate, sick worker. That benefit, in the form of valuable leisure, may be construed as a partial recompense for bad luck. I shall model this feature by introducing uncertainty about the economic value of leisure as perceived during sickness and/or absence from paid work. Specifically, let

$$\mathcal{L} := \begin{cases} L > 0 & \text{with probability } p_L > 0 \\ 0 & \text{with probability } 1 - p_L. \end{cases}$$

6. This simple observation prompts an immediate question: Why are employers not offered insurance for short spell sickness?
7. Waiters and porters come to mind here. When sick, they experience a loss of wage and tips. I note that persons facing such conditions have good incentives cover themselves fully – and to show up at work. So, the focus of this paper is on fixed wage workers who obtain no extras.
8. For example, he can read, clean his car, or do some house work.

Table

scen	(X, L)	wage without insur.	wage with insur.	probability
1:	(0,0)	w	$w - P$	$1 - p_S - p_L + p_S p_{L\|S}$
2:	$(x,0)$	$w - x$	$w - P - x + I(x)$	$p_S\ (1 - p_{L\|S})$
3:	$(0,L)$	$\max\{w, L\}$	$\max\{w, L\} - P$	$p_L - p_S p_{L\|S}$
4:	(x,L)	$w - x + L$	$w - P - x + L + I(x)$	$p_S p_{L\|S}$

The risk (lottery) $\mathcal{L}$ is here seen as non-insurable. No relation between the risk X and $\mathcal{L}$ is assumed apart from the reasonable one that $p_{L|S} > 0$. I naturally posit that $w > L$. As usual, rational purchase of insurance assumes the form of optimization:

maximize $Eu\,(w - P - X + L + I(X))$ subject to $I(X) \in [0, X]$,

where $P := (1 + l)\,EI(X)$ is the total premium for indemnity schedule $I(\cdot)$. Four scenarios, labelled $s = 1, \ldots, 4$, must be kept in mind here. These correspond to which – or how many – risks have materialized. Their nature and probabilities are spelled out in the table above.

For simplicity let p_s, u_s, u'_s, denote the probability, the utility, and the marginal utility, respectively in state (or scenario) $s = 1, \ldots, 4$. To find a most desirable indemnity schedule $I(\cdot)$ amounts a priori to

maximize $Eu = p_1 u_1 + \cdots + p_4 u_4$ with respect to the insuranse policy $I(\cdot)$,

subject of course to $0 \le I(x) \le x$ for all x. For the argument assume full coverage $I(x) = x$ is optimal whence $P = (1 + l)p_S x$. One may then argue that[9]

$$(1 + l) \le \frac{(1 - p_{L|S})u'_2 + p_{L|S}u'_4}{(1 - p_S p_{L|S})u'_2 + p_4 u'_4} \text{ when } I(x) \equiv x\,. \quad (2)$$

Note that $u'_2 > u'_4$ and $p_{L|S} > p_4$. Therefore (2) implies $l < 0$ whence we have

Proposition 5. (On partial insurance). *Suppose short spell sickness occasionally provides a positive monetary value of associated leisure; that is, suppose* $p_{L|S} > 0$ *with* $L > 0$. *Then the loading of insurance premium must be negative to justify full coverage for short-term sickness.*[10]

9. Since the objective is concave, full cover $I(x) = fx$ with $f = 1$ is optimal iff $\frac{\partial}{\partial f} Eu \mid_{f=1} \ge 0$, that is, iff
$$-p_1\pi u'_1 + p_2(1-\pi)u'_2 - p_3\pi u'_3 + p_4(1-\pi)u'_4 \ge 0 \text{ when } I = x.$$
Now $I(x) = x$ yields $u'_1 = u'_2 = u'_3$. Therefore the preceding inequality amounts to
$$[-(1 - p_S p_{L|S})\pi + p_2]\,u'_2 + p_4(1-\pi)u'_4 \ge 0 \text{ when } I = x,$$
which can be reformulated as
$$\pi \le \frac{p_2 u'_2 + p_4 u'_4}{(1 - p_S p_{L|S})u'_2 + p_4 u'_4} \text{ when } I = x$$
or equivalently as (2).

10. Note that this claim did not presume any sort of correlation between the two risks. The reason is that increased value of leisure has no consequence when at work (scenario $s = 3$).

Proposition 5 might, at first blush, seem counter-factual. It is not! It perfectly fits a setting where employees, or their unions, think short spell sickness insurance is subsidized (or ought be so). In fact, as of now, so it is in Norway.

I conclude this section, on the coupling between work and leisure, by mentioning a fairly extreme but interesting case. Suppose someone – say, a young man – enjoys so robust and perfect health that his risk of short spell sickness is negligible during a specified period. Suppose also that the same person faces great uncertainty (or simply large variability) in the monetary value $\mathcal{L}$ of his leisure. Being guaranteed take-home wage w he obtains on the average Eu $(\max\{w, \mathcal{L}\})$. Thus, while intending to insure his labor income, one has in fact insured the value of his leisure. Admittedly, this arrangement is peculiar and rather hard to justify. To reinforce the absurdity suppose the person at hand is risk neutral with respect to income. He obtains a payoff (or utility) $\max\{w, \mathcal{L}\}$ which is *convex* in $\mathcal{L}$. For that reason he would be willing to *pay* for increased uncertainty. There is no reason whatsoever to offer him insurance for short spell absence. A fortiori, he would hesitate in joining a mutual insurance company. Other workers, of more common sort, might want to join that company. Why and how? I address that question next.

Does Constant coverage fit Mutual Insurance?

Many workers are members of a productive cooperative. Others could, at least ideologically, be conceived of as such. Random fluctuations in factor availability, including labor, are then problematic. For mitigation of stochastic ups and downs the members could pool their resources. Pooling must be generated and upheld by compensations (side payments). For its viability the underlying payment scheme had better be efficient, incentive compatible, and "equitable". To serve these ends cooperative game theory advocates that a so-called *core solution* be implemented. Such a solution amounts to specify individual compensations that induce overall efficiency and encourage no party to defect or protest.

In mutual insurance what determines a core solution? It turns out that, in essence, only two things come into play: first, the aggregate (pooled) risk; second, the "aggregate", "representative" preference; see Baton and Lemaire (1981), Borch (1962), Lemaire (1990), Magill and Quinzii (1996). Broadly speaking, the contracting party who, with relative ease, can carry risk will do so and thereby be compensated by the others. If members differ in risks and attitudes, the sharing will neither be uniform nor egalitarian. Most important, if systematic risk still remains in the aggregate, it cannot be eliminated at the level of each and every individual.

The following simple example brings out some key points, touching upon efficiency and sharing. Suppose some solidarity-oriented, egalitarian, homogenous workshop is plagued by high frequency sickness on Mondays (or Fridays). One prototypical worker retires and is to be replaced. Two equally competent applicants knock at the entrance door. One honestly says he is just like the incumbent workers. The other can reliably prove that he is sick less (or not more) often than the average incumbent worker – and never on Mondays (or Fridays). Which candidate should be chosen? Does the anti-correlated fellow merit a bonus?

I conclude that an insurance policy for short spell sickness which offers the same, stable, stationary indemnity to everybody, irrespective of idiosyncratic or aggregate risks,

violates one or more respectable conditions. In the first place it is inefficient; in the second it leaves some group worse off than alone.

The first drawback is worrisome, but concerning the last drawback one might straightforwardly object by saying: The purpose of social security is *solidarity*. Consequently, fortunate groups should not be allowed to defect. I have much sympathy for this objection. It appears however, somewhat misplaced here. Solidarity works best for major risks, little affected by moral hazard or adverse selection. Short spell sickness is, almost by definition, a minor risk – and certainly not immune to hidden action or information. Anyway, the issue of solidarity touches on how risks should be pooled, an issue to which I turn next.

Pooling over Persons or Periods

Insurance relies, both in theory and practice, on two chief results of probability theory, namely: the *law of large numbers* and the *central limit theorem* (Henriet and Rochet, 1991). Crucial for their validity and applicability is the independence (or quite weak association) of the intervening risks. Broadly speaking, independence (or weak correlation) ensures that aggregate risks are less variable than their constituent terms might indicate. Aggregation and averaging then applies to the entire pool of risk holders – here the work force or some subclass thereof. (The insurer can then apply the central limit theorem to get good estimates of necessary reserves – and of his ruin probability.)

Probability theory points however, to another average, namely that taken over time. Under fairly weak conditions, called *ergodicity* and apparently satisfied in the case of short spell sickness, the two procedures are equivalent (Stokey and Lucas, 1989). To state this let $\mathbb{S}$ denote a finite, exhaustive list of possible states of health that regard short spell sickness. Insisting here on *transient* durations I posit that the typical worker's health situation moves randomly from state to state – and is never permanently trapped in any one of them.

Proposition 6. (Equivalence of population and time averages) *Consider a segment of the work force that is homogenous with respect to labor productivity and short spell sickness. Denote by* $\mathbb{S}$ *a finite but exhaustive set of possible states regarding short spell sickness. Suppose any member of the segment at hand, if today in state* $s \in \mathbb{S}$ *will next work day reach any state* $s' \in \mathbb{S}$ *with positive probability Then there is a unique steady state probability distribution* π_s *over* $\mathbb{S}$, *solving the system*

$$\sum_{s \in \mathbb{S}} \pi_s p_{ss'} = \pi_{s'} \quad \text{for all} \quad s' \in \mathbb{S}.$$

For any system of daily wages w_s, $s \in \mathbb{S}$ *– including work compensation, state-dependent indemnity, and insurance premium – and for any worker who experiences a random state trajectory* $s(1)$, $s(2)$,.... *over his working days* 1, 2, ..., *it holds that*

$$\sum_{s \in \mathbb{S}} \pi_s w_s = \lim_{T \to +\infty} \frac{w_{s(1)} + \cdots + w_{s(T)}}{T}.$$

Time is here discrete and metered in work days. Discounting is then fairly weak, therefore ignored – and the planning horizon is regarded as very distant. The assumption that all $p_{ss'} > 0$ can be considerably weakened. It suffices that the eventual passage, during some finite lapse of time, between any two states s, s' has positive probability; see Stokey and Lucas (1989), Theorem 11.2. Anyway, no single state $s \in \mathbb{S}$ – and no strict subset of states – can be absorbing. In other words: one

cannot get stuck in any proper part of the state space. This complies with the hypothesis that all states concerning minor, short spell health problems are recurrent and of finite duration (think of flue or pain in a tooth).

Proposition 6 says that, within a homogeneous risk class, the frequencies of diverse, relevant events *over the population* coincide with those of a representative risk *over time*. In other words: Cross sections and time averages are equal. Consequently, for small recurrent risks, instead of pooling with others, the agent can "pool with himself." He transfers thereby money from a happy, sunny day to a less fortunate, rainy one. Instruments for doing so abound. They are usually grouped under the heading of precautionary savings; see Kimball (1990), Leland (1968), and Skinner (1988).

Possibilities for Arbitrage?

As is well known, and increasingly visible, there are close connections between insurance and finance. Both fields provide instruments for reallocating wealth or claims across states and times. A fundamental concept in finance, simpler than the notion of equilibrium, is that of *arbitrage* (LeRoy and Werner, 2001). This phenomenon refers to financial possibilities of making guaranteed pure profit. Clearly, no well-functioning financial market, and no viable economic institution, could offer such opportunities for extended periods. Bankruptcy would soon ensue somewhere.

The most simple instance of arbitrage involves merely two papers: one always yields lower net dividend than the other. If so, one had better sell the first paper and use the proceeds to buy the second. In financial jargon: Take a short position in the first to finance a corresponding long position in the second.

Does this elementary recipe apply to full insurance for short spell sickness? I think it does! One "paper" is to receive wage compensation for the dis-utility and effort that might go along with work. The alternative option is to receive the same wage, be relieved of work dis-utility and enjoy some leisure. If not subject to moral inhibition or social disapproval, the latter choice appears most attractive in any state of health. Consequently, some employees are likely to exploit such arbitrage opportunities to the full. When their behavior eventually becomes widely adopted, and maybe acquires the status of a tacit convention, deliberate absence will only be limited by imposed bounds. Competent workers become rational shirkers. What is lurking backstage here is, of course, a problem of *asymmetric information*. Most persons know their true state of health better than do others.

Is asymmetric Information accounted for?

It has by now acquired the status of common knowledge that asymmetric information causes problems for the design of efficient insurance. Those problems stem for adverse selection (hidden type) or moral hazard (hidden action). They occur when unobservable properties or actions affect economic outcomes (Salanie, 1997). In the present setting, the worker's associates can hardly ascertain whether he shirks – or has pursued activities that render him less fit for work. Therefore, to induce care and effort, the employer (or the insurer) might want to use tariffs that incorporate some degree of coinsurance. Clearly, full reimbursement for short spell sickness is at glaring variance with such arrangements.

Generally, asymmetric information calls for personalized policies, typically taking the form of non-linear indemnity schedules (e. g. by embodying a deductible). Given a menu

of such policies, a worker will choose the most desirable. Two features appear fairly robust in such a scenario: First, more comprehensive coverage will come at higher unit premium; second, more coverage will be chosen by riskier agents. Again one sees that fully egalitarian, uniform reimbursement for short spell sickness is markedly at odds with a composite menu.

The severity of asymmetric information is, of course, an empirical issue. While contract theory has developed at rapid pace, it still comprises fairly few empirical studies. As pointed out by Chiappori (2001), asymmetric information implies positive correlation between two conditional distributions. In that regard it seems interesting to relate observed short spell sickness to weather, holidays and jours de fetes. In short, there should be ample room for empirical work.

Problems with asymmetric information – that is, with *unobservables* – might/should lead one to mitigate the situation by using directly *observable* features. These had better be relevant for work absence, hard to dispute, and difficult to change. Candidate features include age, sex, working conditions, objective handicaps, number and age of dependant family members etc. When accounting for such factors, insurance contracts will become manifold and the labor force more segmented.

Should everybody be offered the same policy?

If one insures different risks by one and the same policy, transfers will flow from good to less good groups. In our setting risks are indeed different: the propensity to fall sick during a short spell is not uniform across the work force. So, how should social insurance adapt to diversity and inhomogeneity? One solution, viz. the one actually chosen in Norway, is to ignore, for the very laudable purpose of solidarity, all queries about self-selection and tailor-made products. Then, tacitly or implicitly, one accepts uniform insurance of short spell sickness as a desirable, albeit somewhat inefficient mechanism for distributing income from lucky to unlucky citizens.

I do not refute this option. But I find it somewhat easy and lacking in argument. Could not other instruments serve better? To wit, many personal features, bearing on short spell absence, are immediately visible, non-alterable, and immune to asymmetric information. As said, relevant features include age, sex, working conditions, care-load etc. One might then, still with due consideration of solidarity and reasonable transfers, design diverse insurance schemes for short spell sickness. For example, it appears reasonable and justifiable to offer parents with infant children, and persons with handicapped dependants, better contracts than others without. Admittedly, I am ill prepared, and this is not the place, to engage that discussion in greater detail.

Concluding Remarks

Social insurance of minor, recurrent losses – such as short spell loss of wage – must be seen and evaluated from at least *four* viewpoints. *First*, risk – when construed as a state-dependent commodity, allocated over time and contingencies – has some aspects of a private commodity bundle. *Second*, there are contractual arrangements and challenges that must be investigated as such. *Third*, one cannot avoid questions about equity and solidarity. *Fourth*, social insurance is an institution. It reflects and affects values and conventions in society at large. Could it happen that some contracts weaken good and widespread attitudes? I shall conclude by briefly addressing each of these four aspects.

First, an insurance policy, in offering contingent indemnities, may fit the Arrow-Debreu general notion of a private commodity traded in competitive equilibrium. Just like financial assets, the underlying treaty transfers wealth across states and time. To the extent that this view point is fitting, it indicates that agents exposed to small, infrequent, recurrent risks can tackle the related inconveniencies by precautionary savings. The ergodic nature of the underlying phenomenon tells that time averages serves the same purpose as population averages. In extremis, this speaks for self-insurance. The problems with asymmetric information then become less pressing.

Second, insurance treaties are *contracts*, written under *asymmetric information,* and they suffer from *incompleteness*. Therefore their design and implementation remains a challenge and potentially, a source of dispute. Since insurance generally is beset with *moral hazard* (hidden action) and *adverse selection* (hidden type), this last view seems most appropriate. The Arrow-Debreu optic simply ignores these crucial features. So, in theory and practice, the specific design of short spell sickness insurance had better rely on insights offered by *information economics* and *theories of contracts.* Those insights all stress the importance of risk sharing or coinsurance. I have indicated here above that on major accounts the full coverage regime that currently prevails in Norway, falls significantly short of reasonable requirements. Plainly, why should young healthy persons, having no dependent family, be offered the same contract as individuals with small children and care-needing parents?

Third, whether by intention or not, insurance of short spell sickness redistributes income across various groups and risks. In that capacity it qualifies as object of scrutiny for theories of social justice. Those theories apply at best though, to risks that affect major faculties and options. It seems doubtful whether short-spell work incapacity – say, during a day or two – falls directly into such categories. At least one might beg leave to doubt it.

Fourth, in addressing widespread material wants, much of social theory and practice acknowledges the value and ethics of work. Long ago Max Weber emphasized the great respect Calvinism showed for everyday work. Later studies on value systems stress their dynamic features (Lindbeck and Nyberg, 1999). Regarding the dynamics of work ethics it seems risky to let the individual, economic value attached to showing up at work (at best) equal that of absence.[11]

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11. Absenteeism, not being the chief issue here, is discussed in many papers; see for example Barmby and Treble (1989), Brown (1999), and Nilsson (2001).

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