

# The Swedish Patient Compensation System: Myths and Realities<sup>1</sup>

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## I. Introduction

The Swedish compensation system for medical injuries has been suggested as a possible model for medical malpractice reform in the United States and in other countries.<sup>2</sup> Patient compensation in Sweden is provided by the Patient Compensation Insurance (PCI), a voluntary, contractual administrative mechanism that provides compensation without proof of provider fault. The discipline of medical providers is handled by a separate Medical Responsibility Board (MRB). The frequency of claims filed per physician is at least 50% higher under the PCI than under the U.S. medical malpractice system, but the PCI is widely accepted by the medical profession. The PCI costs roughly \$2.38 per capita, or 0.16% of health care costs in Sweden, whereas U.S. medical malpractice insurance premiums account for 1–2% of (higher) health care expenditures, more than a 10-fold difference. Administrative overhead is 18% of total PCI premiums, compared to roughly 60% in the United States. Recent proposals in the United States for a rule of no-fault (strict) enterprise liability for medical injuries cite the PCI's low overhead rate as evidence of the potential savings from switching from a negligence rule to a causation-based rule of liability.<sup>3</sup> In this regard, the PCI has also been compared to strict enterprise liability under workers' compensation, which also has a lower overhead percentage than tort liability.<sup>4</sup>

The purposes of this paper are three. First, it provides a brief description of the structure and experience of the PCI and the MRB. Second, it explains the PCI's low overhead, using a simple model of optimal litigation effort. This model challenges the conventional wisdom that the PCI's low overhead derives from a no-fault rule of liability. More generally, any analogy between no-fault as applied in the PCI and no-fault systems of strict liability—either workers' compensation or strict enterprise liability for medical injuries—is misplaced. On the contrary, the PCI experience illustrates that a causation-only test for compensability is neither necessary nor sufficient for low overhead costs. Rather, the PCI achieves low overhead costs by foregoing any attempt at deterrence. The MRB, which is totally decoupled from the PCI, is ineffectual. In general, low overhead is a very misleading indicator of the efficiency of any insurance system.

A third purpose of this paper is to examine lessons from the PCI for a proposed contractual alternative for medical injuries.<sup>5</sup> The fact that patients and providers overwhelmingly opt into the PCI rather than tort suggests that it offers a Pareto-superior alternative. However, contractual options are constrained by transactions

costs and by the distribution of income, which depend on the status quo tort regime and other institutional factors. Thus other countries with very different tort and health care institutions could not expect to adopt the PCI model with similar results. In general, statutory tort reform and voluntary contracting are complements, not substitutes. Moreover, whether the PCI will survive the opening up of Swedish insurance and health care markets to greater competition remains an open question.

Parts II and III of this paper outline the structure of the PCI and MRB and summarize claims experience.<sup>6</sup> Part IV presents a simple model of litigation effort to explain the PCI's low overhead rate. Part V uses a bargaining model to explain why patients and providers may have opted for this type of compensation system, despite its apparent inconsistency with theories of optimal liability regimes. Part VI concludes the article. Where possible, the PCI is compared to the U.S. medical malpractice system, as the most extreme tort regime.

## **II. Structure of the Swedish Patient Compensation Insurance**

The PCI is a supplementary insurance for medical injuries that is added to compensation provided through other social and collective insurances. The basic Swedish social insurance scheme covers all citizens for medical expense and wage loss due to illness or injury, regardless of cause. Medical care is organized and largely financed at the county council level, with services provided through public hospitals and clinics. There is a small but growing network of private practitioners.

Sweden's fault-based system of tort liability for medical providers resembles medical malpractice liability in the United States in its basic structure, but the Swedish tort system has changed little during the last century<sup>7</sup> and is much less favorable to plaintiffs in several respects. Contingent fees, which shift risk from plaintiffs to attorneys, are illegal. The custom-based standard of care has allegedly acted as an obstacle to plaintiffs, because of difficulty in obtaining expert testimony.<sup>8</sup> The standard of proof (roughly a 75–85% threshold probability) is higher than the "preponderance of the evidence" standard applied in the United States. Swedish tort benefits are subject to full collateral source offset, and payments for pain and suffering are at relatively modest levels, based on a schedule.<sup>9</sup> Trial is by judge, whereas given the choice in the United States, most litigants opt for a jury.

The PCI was established in 1975 by voluntary contract between the county councils and a consortium of insurers, in order to preempt the threat of statutory expansion of tort liability, possibly to a form of strict liability.<sup>10</sup> Private practitioners entered into similar contracts and a voluntary contractual Pharmaceutical Insurance (PI) was established in 1978. The motivating political concern was lack of patient access to tort compensation: Only about 10 patients per year received compensation for medical malpractice.<sup>11</sup> The PCI provides a simple, administrative source of compensation for a subset of medical injuries. Although patients retain the right to sue in tort under traditional negligence rules, tort claims have been extremely rare until recently.

### *Definition of a Compensable Injury*

An injury is compensable if (1) by "the preponderance of the evidence" it was caused by medical care, and (2) either the treatment was not medically justified or the injury could have been avoided, given customary care. The PCI requires no proof of fault

or negligence of an individual provider. Thus from the physician's perspective, the PCI is truly no fault. From the patient's perspective, however, the criteria of compensability are quite similar to traditional custom-based tort standards.<sup>12</sup> Medical causation is a necessary but not a sufficient condition. Normal, and even most abnormal, risks of standard medical care are explicitly not compensable. The criteria for compensability are defined in some detail in writing and are revised periodically, balancing pressures for compensation against cost control.

#### *Compensation*

The PCI offers benefits comparable to those available through tort in order to deflect tort claims. Compensation follows tort principles of full compensation for economic loss with scheduled payments for noneconomic loss based on the claimant's age and injury severity. As in the Swedish tort system, there is full offset of benefits payable from other public and mandatory insurances, which in Sweden provide very comprehensive coverage of wage loss and medical expense. Payment levels for noneconomic loss are modest by U.S. and even most European standards<sup>13</sup> and are payable only if there is a physical injury.

#### *Administration*

To file a claim, the patient completes a simple form, often with the assistance of hospital or clinic personnel. Claims are administered by the monopoly consortium of insurers.<sup>14</sup> Patients may appeal from the insurer's decision to a Patient Claims Panel that includes two patient representatives and two provider representatives. The panel's decisions are merely advisory but have been followed by the insurer consortium in the relatively few cases (roughly 10%) in which the panel rules against the consortium. The patient may further appeal to binding arbitration under the general Swedish arbitration system. Proceedings of the panel and arbitration are closed to the public and the press,<sup>15</sup> and the evidence is usually submitted in writing, with oral presentation requiring special permission. Medical experts are used as independent advisers to the insurer or panel, at their discretion, rather than as representatives in an adversarial process. Patients typically do not have attorney representation unless the case goes to arbitration. Contingent fees are banned.

#### *Financing*

The PCI is financed by premiums paid by county councils and by private physicians and other professionals. Premiums are assessed on a flat per-capita basis for each county council, regardless of claims experience. These assessments are adjusted retroactively as costs are incurred, including full pass-through of the insurers' expenses. Thus the functions of the insurer consortium are purely administrative: It retains none of the underwriting and risk-bearing functions that are fundamental to liability insurance in competitive insurance markets.

#### *Deterrence*

The PCI was designed to provide compensation without regard to deterrence. Individual providers suffer no moral blame, financial loss, or reputation loss as a result of

successful claims. Although clinics and hospitals are informed about their claims experience, the responsible individuals and the causes of the avoidable injury are not identified. The PCI database so far lacks sufficiently detailed information to be used for risk management. Patients can file claims with the MRB, which, following investigation, may result in a reprimand or a warning to the provider. This has no financial consequence for the physician or the patient. No information flows between the MRB and the PCI. This decoupling of compensation and deterrence is said to be necessary to maintain physician cooperation in patient compensation through the PCI.

### III. Claims Experience

#### *Claim Frequency*

The number of claims filed per year increased steadily from 682 in 1975 to 4799 in 1985,<sup>16</sup> then dropped to an average of 3317 per year for 1986–1991. Espersson (1992) estimates that about 5500 claims were filed in 1992.<sup>17</sup> This is a huge increase relative to 10 paid claims a year under the pre-1975 tort system, and much more than the 1000–1500 annual filings initially projected for the PCI.<sup>18</sup> The proportion receiving payment declined from 55% for the period 1975–1986 to 18% for claims filed during 1986–1991 (Table 1) but is estimated at 40% for 1992.<sup>19</sup> The decline in claim filings and in percent compensated during the late 1980s suggests that standards of compensability were significantly tightened.<sup>20</sup> The 1992 estimates imply some relaxation.

Claim frequency is roughly 21 claims per 100 physicians per year, or 50% higher than the U.S. figure of 13–16 claims per 100 physicians.<sup>21</sup> These estimates are approximate because the Swedish system does not allocate claims to specific personnel, and figures for the United States differ across regions and over time.

#### *Claim Severity*

The average payment per paid claim (claim severity) and its rate of growth cannot be calculated from the available data.<sup>22</sup> However, reports for specific years indicate much lower payment levels than in the United States. For 1987 Rosen et al. (1992)

TABLE I. Number and cost of claims under the PCI

	<i>Jan. 1975– July 1986</i>	<i>July 1986– Dec. 1991</i>	<i>Jan. 1975– Dec. 1991</i>
Total claims	44,647	18,243	62,890
Resolved	40,306	18,666	58,972
Number compensated	22,252	3,354	25,606
(% of resolved)	55.2	18.0	43.4
Denied compensation	18,054	15,312	33,366
(% of resolved)	44.8	82.0	56.6
Total cost of payout <sup>a</sup> (SEK)	478m	380m	858m
Cost per paid claim (SEK)	21,226	113,298	33,508

Sources: Oldertz (1986, p. 655–656) footnote 11; Espersson (1992, p. 23–24) footnote 19.

<sup>a</sup>Total cost and total cost per paid claim are summations of current SEK. Without conversion to constant SEK, they understate the current value of total payout since 1974.

report an average cost per paid claim of SEK 38,000 (US \$5,429), and SEK 680,000 (US \$97,143) for the most severe disability category (over 30% disability).<sup>23</sup> For the United States, the mean payment per paid claim was roughly \$120,000 in 1986, although the median was much lower.<sup>24</sup>

Pain and suffering accounts for 74% of total payments made by the PCI and the PI (Table 2). This reflects the comprehensive coverage of economic loss through other social insurance. The great majority of claims are minor. Only 4% of paid claims involved permanent disability of more than 30% or death,<sup>25</sup> but these cases accounted for 41.6% of compensation paid for injuries that occurred in 1987. This concentration of payments in a very small percentage of severe injury cases is comparable to the United States, where 5% of paid claims receive 49% of dollars paid.<sup>26</sup>

#### *Appeals and Tort Claims*

The number of appeals to the Advisory Panel increased from 2.5% of claims resolved prior to 1986 to 4.1% of claims resolved through 1991 (Table 3). Over the same period the number appealed to arbitration increased sixfold but is still very low in absolute terms (33 of the 58,972 resolved claims). Of the 990 appeals to the panel, the panel concurred with the consortium in about 90% of cases and reversed in 10%. This percentage has remained stable over time. The plaintiff's chances of winning at arbitration have remained roughly 20%. The number of tort claims has also increased, from 5 through 1986 to 35 through 1992.<sup>27</sup> The plaintiff has won in three cases, lost in seven, and the remainder are still undecided.<sup>28</sup>

TABLE 2. Percentage distribution of cumulative payout under PCI and PI by category of loss

	<i>Jan. 1975– July 1986</i>	<i>Jan. 1975– Dec. 1991</i>
Pain and suffering	68	74
Income loss	15	13
Medical costs	15	11
Death	2	2
Total	100	100

Sources: Oldertz (1986) footnote 11; Espersson (1992) footnote 19.

TABLE 3. Appeals, arbitration, and tort claims: cumulative

	<i>Jan. 1975– July 1986</i>	<i>Jan. 1975– Dec. 1991</i>
Appeals to panel	990	2,440
(Percent of resolved claims)	2.46%	4.14%
Arbitration	5	33
(Patient win)	(1)	(6)
Tort claims	5	35

Sources: Oldertz (1986) footnote 11; Espersson (1992) footnote 19.

### *Premiums*

PCI premiums were roughly SEK 16.7 (US \$2.38) per capita, or 0.16% of health care spending, which was SEK 11,000 (US \$1,571) per capita in 1989.<sup>29</sup> By contrast, medical malpractice insurance premiums in the United States are 1–2% of total health care spending, or roughly a 10-fold difference as a proportion of health expenditures, which are larger in the United States.<sup>30</sup> The higher claim frequency in Sweden is thus more than offset by lower claim severity, due to collateral source offset (which is cost shifting, not real cost reduction), lower payments for pain and suffering, and lower overhead.

### *MRB Claims*

The number of complaints filed with the MRB—roughly 1,400 per year<sup>31</sup>—is about one fourth of the 5,500 annual filings with the PCI. Of these MRB claims, roughly 60% are deemed to have sufficient substance to be taken up by the board, and 10–15% receive some sanction.

Comparing the number of paid PCI claims with the number of patient-initiated MRB filings provides a very rough measure of the loss in deterrence that results from decoupling compensation from deterrence. If all cases compensated by the PCI involved some medical error, and noting that 25% of MRB claims were not potentially compensable, since the only allegation was impolite treatment, there is a large gap between the roughly 2,200 compensated PCI claims per year, 600 cases reviewed by the MRB (with allegations beyond impolite treatment), and 80–120 that result in a reprimand or warning. This discrepancy, roughly 1 sanctioned MRB case per 20 compensated PCI claims, provides a measure of the loss in potential deterrence that results from separating discipline and compensation in Sweden.<sup>32</sup>

Comparing the number of sanctioned MRB claims in Sweden with the number of paid malpractice claims in the United States (assuming that 50% of the 16 malpractice claims per 100 physicians in the United States result in payment to the plaintiff), the frequency of MRB claims per 100 physicians in Sweden is about one third of the frequency of malpractice claims per 100 physicians in the United States. The number of sanctioned MRB claims is about 11% of the number of paid malpractice claims per physician in the United States. This contrasts with a rate of PCI claims for compensation that is 50% higher in Sweden than in the United States. Of course, these comparisons do not indicate the success of either system in sanctioning or deterring true negligence, because the number of negligent injuries is not known and cannot be inferred directly from the number of claims.<sup>33</sup>

## **IV. Overhead Costs**

The administrative cost of the PCI was 18% of premium in 1992; this implies that over 80% of PCI insurance premiums reaches patients as compensation, compared to roughly 40% of the U.S. malpractice insurance premium.<sup>34</sup> The Swedish figure would probably be even lower if costs and benefits paid under social insurance were included. However, these figures are misleading because they focus on compensation and omit the deterrence functions of the tort system. The information generated and deterrence signals sent by the PCI and MRB combined are surely less than in the U.S. tort system, although whether these deterrence benefits outweigh the higher costs is an open question.

More fundamentally, overhead cost as a percentage of premiums is meaningless as an indicator of the efficiency of an insurance system that is subject to moral hazard, that is, where the availability of insurance affects behavior and hence the frequency of injuries and claims. In competitive insurance markets, insurers have incentives to invest in loss prevention and claims control if the marginal savings (in injuries prevented or unwarranted payments averted) justifies the marginal overhead cost.<sup>35</sup> For example, if a liability insurer simply pays every claim filed at the amount requested by the plaintiff, overhead expense is minimal, benefit payments are high, and the overhead ratio is very low. Conversely, if an insurer provides loss prevention and risk management services to insureds and litigates claims that appear frivolous, this results in higher overhead, lower loss payments, and a higher overhead percentage. Efficiency may nevertheless increase (real social costs are lower) if these investments in loss control reduce the frequency of injuries and invalid claims. Thus the overhead percentage is a very misleading measure of the true social overhead, which includes the unobserved deadweight loss due to nonoptimal rates of injuries and claims.<sup>36</sup>

As argued earlier, the PCI does not owe its low overhead percentage to use of a causation-only test for compensability. A more plausible explanation derives from a simple model of expenditure on litigation as a rational investment by the litigants. The magnitude of this investment reflects expected costs and benefits. For the defense, the objective function may be written

$$\text{Min}_x p(x)A + wx,$$

where  $x$  is the input of litigation effort,  $w$  is the cost per unit,  $p$  is the probability of a plaintiff verdict, with  $p_x < 0$ , and  $A$  is the expected award at verdict. Minimizing with respect to  $x$  and rearranging yields

$$\frac{wx}{pA} = -E_{p,x}.$$

In equilibrium, the ratio of litigation expense to benefit payments is equal to the elasticity of expected payout with respect to effort,  $E_{p,x}$ . A similar relationship can be derived for the plaintiff, assuming that the objective is to maximize the expected payoff, net of attorneys' fees.<sup>37</sup> Thus, the key to reducing litigation expense is to reduce the parties' expected payoff on these investments,  $E_{p,x}$ .

Applying this simple model, the PCI owes its low overhead rate to the following several factors that reduce all parties' incentives to invest in litigation:

a. *Written rules of compensability and damages.* The use of written rules reduces uncertainty and the ability to influence the outcome, thereby reducing incentives to invest in litigation.<sup>38</sup> The contractual basis of the PCI may permit it to be both more specific than common law and more flexible in adapting to change than statutory schemes. Administration by a single consortium may result in more consistent decisions than occurs with heterogeneous judges and juries.

b. *Elimination of provider-specific liability.* Elimination of provider-specific liability, including financial responsibility and the terminology of fault, are probably the most critical features leading to prompt and nonlitigious claim resolution. Under the PCI, providers have no incentive to oppose compensation; indeed, by supporting rather than opposing the patient's case, they may actually reduce the likelihood that the patient files a disciplinary charge against them with the MRB.

Equally important is the absence of experience-rated premiums. Provider cooperation would surely be less complete and litigation more extensive if the negligence rule had been replaced by strict provider liability with experience-rated premiums, as in enterprise liability proposals. The elimination of all feedback about individual physicians from the PCI to either their employers or to the MRB eliminates indirect sanctions or reputation costs. Lack of public access to decisions or deliberations of the panel or arbitration also reduces the risk of adverse publicity for providers, making them more willing to cooperate.

Thus on the defense side, the key to low litigation expense is that individual providers have no personal stake in the outcome. They therefore invest nothing themselves and put no pressure on insurers to oppose patient compensation.

c. *Simplified procedures/limited patient rights.* The reduced factual inquiry to determine compensability, the simple administrative procedures for filing and adjudication, and relying on written rather than oral evidence reduce costs relative to formal tort proceedings.

However, these simple rules reduce litigation expense by providing patients very little opportunity for redress against the insurers' decisions. *De jure* patients can appeal to the Advisory Panel and to arbitration, or file a tort claim. But *de facto* they probably would have difficulty obtaining a medical expert; they would bear their own legal costs (unless covered by homeowners' insurance or legal aid); the lack of public access to PCI decisions and decision making probably reduces patients' information and ability to influence the system, as does the fact that oral representation is generally not permitted. Thus, the minimal litigation expense incurred by patients and low appeal rates may reflect low expected payoff from appeal, rather than a high level of satisfaction with the insurers' decisions.

However, any dissatisfaction with the PCI rarely spills over into tort litigation because the PCI is structured to offer patients a higher expected net payoff (higher probability of compensation and lower costs) than does Swedish tort. Thus Swedish patients voluntarily opt for the PCI, although their rights are very limited compared to those of a U.S. tort plaintiff.

d. *Noncompetitive liability insurance.* Operation of the PCI by a monopoly insurer consortium weakens competitive pressures to control costs by claims control and loss prevention services, underwriting, and experience rating of premiums. These services raise measured overhead costs, but total social costs should be lower due to more than offsetting reduction in injuries and invalid claim payments, and incentives for efficient administration.<sup>39</sup>

e. *Lack of competition in health care markets.* Providers' acceptance of flat-rated premiums is facilitated by the lack of competition in the health care market that prevailed in Sweden until recently. The 1992 health care reforms introduce greater freedom of choice for patients, prospective payment of hospitals, and capitation of primary care physicians, all of which increase the incentives of providers to control their own costs and to compete for patients. Cost-sensitive providers are more likely to demand experience-rated premiums and to resist the payment of claims that they deem unwarranted. The reforms are too recent to evaluate full effects. In any case, demand for experience rating may remain muted as long as PCI premiums remain low and are passed through directly in county council taxes, rather than being allocated as a cost to individual hospitals and clinics. The point here is that if other countries seek to retain deterrence and operate competitive health care and liability insurance markets, they cannot expect to match the PCI's low overhead rate.



### V. Is the PCI an Efficient Contractual Alternative?

Since patients and providers overwhelmingly opt into the PCI, it presumably offers a Pareto-improving alternative relative to the tort system. More generally, some features of the PCI are consistent with theoretical predictions of efficient contracts for injury compensation. For example, the written criteria of compensability reduce uncertainty and incentives for litigation. The structure of damage payments is generally consistent with theories of optimal compensation. Payments for pain and suffering are determined by a schedule based on the plaintiff's age and injury severity. The amount of payment for future damages is determined at the time of claim disposition<sup>40</sup> but is paid as an annuity if the award is a significant fraction of the injured person's support, with adjustment if circumstances change. However, this cannot be attributed solely to efficient contractual choice, since Swedish tort benefits follow a similar structure, and the PCI must match tort benefits in order to preempt tort claims.

Other features of the PCI are inconsistent with theoretical predictions about contractual choices for compensability and damages. Economic analyses generally conclude that compensation for pain and suffering is of relatively low or zero value.<sup>41</sup> Such theories cannot readily explain the choice to operate a system whose primary function is to pay compensation for pain and suffering. The PCI structure is also inconsistent with the prediction that the contractual choice of liability rule would be either no liability (and no compensation except from private or social insurance) or liability for willful harm or gross negligence.<sup>42</sup>

Moreover, providing compensation conditional on medical causation but with no link to deterrence is contrary to the conclusion that if compensation is the sole objective it is more efficiently provided through first-party private insurance or social insurance (Danzon, 1985, footnote 26). Indeed, since the PCI is supplementary to a general social insurance system and is financed by a per-capita premium that is ultimately funded largely through the income tax, a more efficient solution would appear to be to expand the social insurance program, thereby eliminating the cost of operating the PCI. The PCI selects for additional compensation injuries that are caused by inappropriate medical care, whereas the unlucky outcomes of disease or appropriate medical care receive only the basic social insurance. The theory of optimal compensation—and the PCI is solely a compensation mechanism—provides no justification for higher compensation, including payments for pain and suffering, depending solely on the cause of the injury.

These predictions arise in a Coasian world, with perfect information and zero transactions costs, in which the contractual alternative to tort liability would be designed to minimize the real social costs of medical injuries, including the utility costs of injuries, preventive measures, litigation, and other overhead. In reality, contracting is constrained by the income distribution implied by the prevailing tort regime, by other institutional constraints, and by transactions costs.

The PCI contractual choice can be modelled by modifying the standard model of out-of-court settlement, since settlement is a case-specific contractual choice. Assume initially that intermediaries are perfect agents and that patients and providers are homogeneous and risk neutral, with state-independent utility, so we can model the bargain as between a representative risk-neutral patient and physician. Assume full internalization of all costs and benefits. The patient's minimum ask is defined by the patient's expected tort benefits, including expected net gain from statutory expansion, minus any net change in litigation costs, plus any net change in expected future injury

costs (deterrence):

$$X_i = p_a^i A_a^i = p_t^i A_t^i - (C_t^i - C_a^i) + (D_t^i - D_a^i), \quad (1)$$

where  $X_i$  is the patient's minimum ask,  $p$  is the probability of payment conditional on an iatrogenic injury,  $A$  is the expected award,  $C$  is litigation costs, and  $D$  is expected future deterrence benefits net of prevention costs. Subscripts  $a$  and  $t$  denote the contractual and tort alternatives, respectively, and superscripts  $i$  and  $j$  denote patient and physician, respectively. The physician's maximum offer  $X_j$  is equal to the physician's expected costs of tort, plus the expected change in monetary and nonmonetary costs of litigation,

$$X_j = p_a^j A_a^j = p_t^j A_t^j + (C_t^j - C_a^j) + (D_t^j - D_a^j), \quad (2)$$

where  $D$  is the physician's psychological or nonmonetary costs of litigation. The bargaining range is

$$X_j - X_i = p_t^j A_t^j - p_t^i A_t^i + (C_t^j - C_a^j) + (C_t^i - C_a^i) + (D_t^j - D_a^j) + (D_t^i - D_a^i). \quad (3)$$

If the parties have equal expectations of the tort outcome, the bargaining range is the sum of the net reduction in litigation expenditure to both sides, plus the reduction in the physician's psychological costs, minus any reduction in expected deterrence benefits to patients:

$$X_j - X_i = \Delta C^i + \Delta C^j + \Delta D^j + \Delta D^i. \quad (3')$$

Although the potential gain from contracting out  $\Delta C^i + \Delta C^j + \Delta D^j + \Delta D^i$  is assumed here to be fixed, a more complete model would treat this as endogenous. In the absence of constraints, the parties would select the contractual alternative that maximizes these potential gains. Since these terms can be expanded to include the costs of injuries, prevention, and overhead, maximizing this bargaining range is equivalent to minimizing the full cost of injuries. Conditional on this choice, the potential for a mutually advantageous bargain is greater with larger savings in litigation costs and reduction in physicians' psychological costs under the contractual alternative, and with smaller reduction (or larger increase) in expected deterrence benefits to patients.

The simplest prediction is that the patient's expected payoff under the contractual alternative,  $Z$ , lies midway between the minimum ask and the maximum offer:

$$Z = p_t A_t + 1/2(\Delta C^j - \Delta C^i + \Delta D^j + \Delta D^i). \quad (4)$$

Thus if  $\Delta C^i = \Delta C^j$ , patients' expected recovery under the PCI is equal to their expected net recovery under tort, plus one half of any reduction in psychological costs to physicians net of the reduction in expected deterrence.

This model assumes that patients face the contractual choice before treatment, so all expected deterrence effects are internalized. If, as in Sweden, patients make the choice after the occurrence of an injury, any expected future deterrence benefits flowing from the choice by an individual patient are diluted over the entire patient population, so  $D_a^i$  is negligibly small. But  $D_t^i$  and  $\Delta D^i$  are also negligible, assuming negligible deterrence under the Swedish tort system.

This model implies that the contractual alternative would seek to minimize litigation costs and psychological costs to physicians. The structure of the PCI seems consistent with this model. By eliminating the concepts and inquiry into physician fault or negligence,  $D_a^i$  was reduced to zero. This eliminated provider incentives to oppose

patient compensation, thereby reducing  $C_i$  to zero. This, and changes in the administrative process, essentially eliminated  $C_a$ . Most of the gain to patients was taken in the form of an increase in  $p$ , the probability of compensation, not because the rules of compensability were radically changed but because patients gained access to compensation to which they were in theory entitled under tort, but which in practice was obstructed by high costs of litigation. There was also some modest expansion of the criteria of compensability.

It is not surprising that more expansive criteria of compensability—including basing compensation solely on the needs of the injured party, the rarity or seriousness of the complication, or failure to achieve a desired result—were rejected, as was a causation-only test.<sup>43</sup> Although the reasons given for rejecting more expansive standards—ambiguity, unreasonable cost allocation, and magnitude of cost—may well be valid, the decisions are also consistent with the hypothesis that such changes were outside the bargaining range. Similarly, any demand for increased deterrence would probably have increased litigation and psychological costs, and hence eliminated any potential gains from trade.

Nevertheless, certain puzzles remain. The fact that patients traded any attempt at deterrence for increased frequency of compensation for noneconomic loss appears inconsistent with economic theory, which predicts that such compensation is of less value than deterrence or lower taxes. Several possible explanations that are not mutually exclusive come to mind but cannot be developed here. First, the theory is wrong and attempts at deterrence are simply not worth their high litigation and psychological costs. Second, taxpayers are plausibly ignorant of net effects of the PCI, since the budget costs are largely hidden through collateral source offset, and the foregone deterrence benefits are hard to measure and are reduced by collateral source offset. Third, taxpayers and patients are not homogeneous; a political economy analysis could reveal a mismatch between the incidence of taxes, the incidence of PCI benefits, and political influence. Fourth, the insurers and county councils may have acted as poor agents, misrepresenting the potential benefits to patients from deterrence, preferring a system that assures a quiet life for providers and for the insurer consortium that designed and operates the system.

## VI. Conclusions

The total budget cost of the Swedish PCI is much lower as a percentage of gross national product or health care spending than the comparable cost of the U.S. tort system primarily for two reasons. First, the Swedish tort system shifts most economic loss to other social insurance through collateral source offset; second, because the Swedish tort system is much less generous to patients than the U.S. tort system, the PCI can offer modest payments for noneconomic loss and limited rights to patients, while still inducing them to opt into the contractual alternative.

Use of a causation-only test of compensability is neither necessary nor sufficient for the PCI's low overhead cost; hence, analogies between the PCI and strict enterprise liability are misplaced. From the patient's perspective, the criteria of compensability under the PCI are quite similar to those of a custom-based negligence rule. But from the provider's perspective, the PCI is truly no fault and no liability. Low overhead costs are achieved primarily by foregoing any link between compensation and deterrence, including the information gathering necessary for risk management and quality control. Although the MRB and other incident reporting requirements in theory provide

alternative mechanisms for sanctioning medical negligence, in practice these appear to be weak. Whether or not any loss in deterrence incentives outweighs the reduction in litigation costs is an unanswered question. However, it is this trade-off between deterrence and litigation costs that is the fundamental efficiency issue in the decision to totally decouple compensation and deterrence as in the Swedish Patient Compensation system.

Certain features of the PCI could in theory be adopted in other countries with minimal if any loss in deterrence potential. Scheduled damages could be used to reduce litigation within the tort system, as they are in Sweden, since the uncertainty-reducing advantages of written rules are largely independent of the substantive content of the rules and the forum of adjudication. However, in other countries whose tort, insurance, and health care systems are very different from those of Sweden, the bargaining range for reform is likely to rule out the more radical elements of the Swedish model as a reform option, at least with comparably low costs. Tort reform and voluntary contractual alternatives in practice are complements, not substitutes. However, if the very same elements that limit the bargaining range for contractual alternatives also apply to statutory tort reform (with further constraints to reflect the interests of attorneys), then the prospects for change seem bleak.

### Notes

1. This report is based in part on interviews with authorities at the Skandia Insurance Corporation, the Medical Responsibility Board, and leading hospital and academic personnel in Sweden. In particular, I would like to thank Anders Anell, Sven-Erik Bergentz, David Bergquist, Stefan Bjork, Carl Espersson, Ake Isaacson, Bjorn Lindgren, Ingmar Nygren, Carl Martin Roos, Arnold Rosoff, and Goran Skogh for providing information and for very helpful discussions. I thank the Swedish Institute for Health Economics at Lund for support of this research in Sweden and the Robert Wood Johnson Foundation for support under grant 18579. All opinions and any errors herein are mine. I have used the exchange rate SEK 7 = US \$1, which was roughly the rate prevailing until the end of 1992.
2. For the U.K., see P. Fenn, "Compensation for Medical Injury," in *Medical Accidents* (C. Vincent, M. Ennis, and B. Audley, eds.) Oxford University Press, 15:199-247. A similar model exists in Finland, Norway (for public providers only), and Denmark (for severe injuries only).
3. "No fault compensation for medical accidents, modeled on workers' compensation for workplace accidents, evoked considerable interest in the early seventies. . . . New Zealand adopted a version of categorical no-fault compensation for the victims of medical accidents. . . . Sweden followed suit, with a separate, self-contained patient compensation scheme (p. 132) . . . in Sweden and New Zealand, the two countries that have provided no-fault compensation for medical injuries over a decade . . . it has been possible to draw a causal dividing line without any pronounced administrative burden for the no-fault program as a whole." P. Weiler, *Medical Malpractice on Trial*, Harvard University Press, Cambridge (1991).
4. "(Sweden's nationwide patient-injury insurance program) . . . resembles Workers' Compensation plans in this country." Cooper, "Sweden's No-Fault Patient-Injury Insurance," (1976) 294 *N. Engl. J. Med.* 1268.
5. For example, R. Epstein, "Medical Malpractice: The Case for Contract," (1976) *American Bar Foundation Research J.* 87. J. E. Calfee and P. H. Rubin, "Some Implications of Damage Payments for Nonpecuniary Losses," (1992) 21 *J. Legal Studies* 371.
6. The PCI, the MRB, and the Swedish social insurance and health care systems are described in more detail in P. Danzon, "The Swedish Patient Compensation System: Lessons for the U.S.," (1994) *J. Legal Med.*, 15:199-247.

7. J. Hellner, "The Swedish Alternative in an International Perspective," in *Compensation for Personal Injury in Sweden and Other Countries* (C. Oldertz and E. Tildefelt, eds.) Juristforlaget, Stockholm (1988) p. 22.
8. Although the county councils are financially liable for claims arising in the public health system, the individual physician's reputation is at stake.
9. See note 13.
10. For background, see C. Oldertz, "The Patient, Pharmaceutical and Security Insurances," in *Compensation for Personal Injury in Sweden and Other Countries*, *supra* note 7, p. 55.
11. C. Oldertz, "Security Insurance, Patient Insurance and Pharmaceutical Insurance in Sweden," (1986) 34 *American J. Comp. Law* 635-656. Cooper estimates that there were typically two or three medical malpractice court awards per year before the PCI and perhaps 100 minor settlements made privately. Cooper (1976), *supra* note 4, p. 1269.
12. This is discussed in detail in Danzon (1994), *supra* note 6.
13. For example, the maximum payment under the PCI is currently SEK 819,500, (US \$117,071) compared to the maximum tort payment of SEK 555,000 (US \$80,000) for a permanent totally disabling injury. These maximum payment levels are far below maximum U.S. levels and have traditionally been below many other European countries. See C. M. Roos, "Ersattning för Ideell Skada-Ett Internationellt Perspektiv," (1989) 74 *Svensk Jurist Tidning* 362.
14. An inquiry has been initiated to determine whether this monopoly structure would have to be changed if Sweden joins the European Economic Community.
15. Since 1992 major panel decisions and all arbitration decisions are published.
16. C. Oldertz, "Compensation for Personal Injuries: The Swedish Patient and Pharma Insurance," Mimeo (January 16, 1989), Skandia Insurance Co., Stockholm, p. 65.
17. As of January 1992, approximately 63,000 claims had been filed with the PCI. These figures include dentistry and other professionals. Rosen and Jonsson estimate roughly 4300 claims filed and 1700 claims paid per year in 1988-1990. Rosen and Jonsson, "Patientforsakringens skadematerial som underlag for skadeforebyggande verksamhet," 1992 Projektnr 11113 (Sjukvårdens och socialvårdens planerings-och rationaliseringsinstitut, Box 70487, 10726 Stockholm. Hornsgatan 20).
18. Cooper (1976), *supra* note 4, p. 1270.
19. Espersson estimates 5500 claims filed and approximately 2200 paid for 1992. C. Espersson, "The Swedish Patient Insurance: A Descriptive Report," (Feb. 1992), Skandia Insurance Co., Stockholm.
20. For example, falls from beds would not now be compensated (personal communication with Carl Espersson, L. L. M., Secretary, the Swedish Patient Claims Panel, Nov. 1992); stricter rules were adopted for emergencies (Rosen and Jonsson (1992); *supra* note 17, Appendix 3, p. 3).
21. In 1988 there were 24,000 physicians in Sweden. Assuming 5000 patient claims per year against physicians, if all claims involved one physician, this would imply roughly 21 claims per 100 physicians per year. If some claims involved only hospital or nonphysician personnel, this number would be upwardly biased, but it could be downwardly biased if the figure for total physicians included some who were not active in patient care or if some claims involved multiple physicians. Figures in Rosen and Jonsson (1992) imply that roughly 10% of claims in 1989-90 were against dentists. This implies that 5000 of the 5500 total claims filed were against physicians. The U.S. claim frequency peaked at 16 claims per 100 physicians insured in 1988 and declined to 13 per 100 physicians in 1992.
22. The PCI reports cumulative payout data, but payments made in prior years are not converted to constant dollars. Reserves for future payment on claims already closed may not be included.
23. Rosen and Jonsson (1992), *supra* note 17, App. 3, p. 8.
24. For a comparison of claim frequency and severity in the United States, the United Kingdom, and Canada, see P. Danzon, "The 'Crisis' in Medical Malpractice: Trends in the U.S., Canada, the U.K. and Australia," (1990) 18 *Law, Medicine & Health Care* 1.
25. Cooper reports 9.5% of paid claims involved permanent disability greater than 30% or death. Cooper, "No-Fault Malpractice Insurance: Swedish Plan Shows Us the Way," (1978) 52 *Hospitals* 116. This suggests that the proportion of minor claims has increased.

26. P. Danzon, *Medical Malpractice: Theory, Evidence and Public Policy*, Harvard University Press, Cambridge (1985).
27. There have been no tort claims for pharmaceutical injuries since 1978.
28. Several claims involving neonatal injuries have already been compensated by the PCI, and negligence has been conceded. The tort claims seek compensation for private in-home care rather than institutional care.
29. This calculation assumes that for 1991, total PCI premium was SEK 145m. Espersson (1992), *supra* note 20. The population was 8.7 million. "Fact Sheets on Sweden," The Swedish Institute, Box 7434, S-103 91 Stockholm. Rosen and Jonsson (1992), *supra* note 17, report premium payments for damages incurred in 1990 of SEK 97m, but this may exclude future payments for permanent injuries. As of 1986, total annual premium for hospitals was SEK 82m (or US \$1.43 per capita population); annual premiums for private physicians, physical therapists, and dentists were SEK 355 (US \$51), SEK 240 (US \$34), and SEK 800 (US \$114), respectively. Oldertz (1986), *supra* note 11, p. 655.
30. These figures are not fully comparable because of differences in the accounting for injuries incurred but not reported and reserves for future payments.
31. M. Kriisa, "Swedish Malpractice Reports and Convictions," (1990) 2 *Quality Assurance in Health Care* 329.
32. This is an upper bound on number of foregone disciplinary actions if some paid PCI claims would not be compensable under a negligence rule, but it is an underestimate if the deterrent value of MRB sanctions is less than that of a negligence inquiry.
33. For evidence on gaps between injuries and claims see P. Weiler, H. Hiatt, J. Newhouse, W. Johnson, T. Brennan, and L. Leape, *A Measure of Malpractice: Medical Injury, Malpractice Litigation, and Patient Compensation*, (1993), Harvard University Press, Cambridge, MA.
34. P. Danzon (1985), *supra* note 26.
35. P. Danzon, "Administrative Costs: A New Look at an Old Issue," (1992) working paper; P. Danzon, "Hidden Costs: Is Canada's System Really Less Expensive?," (1992) 11 *Health Affairs* 21.
36. In practice, of course, some litigation expense incurred in competitive insurance markets is to gain strategic advantage or deny valid claims, with no net social benefit.
37. This model assumes that competition forces attorneys to act as good agents for their principals. Danzon shows that this condition holds even if the attorney is paid a contingent fee. P. Danzon, "Contingent Fees for Personal Injury Litigation," (1983) 14 *Bell J. Econ.* 213.
38. Espersson concludes that roughly 50% of claims are relatively easy to adjudicate, 15% are very difficult, and the remaining 35% are somewhat difficult. Such judgments are not unambiguous evidence of the clarity of the standards of compensation because of significant changes in the costs and benefits of litigation to both parties. Insurance claims adjusters in the United States might also find their decision making simple if they had the discretion enjoyed by PCI claims adjusters. The fact that roughly 60% of the claims filed are denied payment suggests that the PCI standards are far from clear to patients.
39. Of course, with imperfect information some of these insurer activities may lead to denial of valid claims, and this entails social loss.
40. See, for example, S. A. Rea, Jr., "Lump Sum vs. Periodic Damage Awards," (1981) 10 *J. Legal Studies* 131.
41. For example, P. Danzon, "Tort Reform and the Role of Government in Private Insurance Markets," (1984) 13, *J. Legal Studies*: 517 (1984) 27 *J. Law & Econ.* 115; Calfee & Rubin (1992), *supra* note 5.
42. Epstein (1976), *supra* note 5. It is possible that the PCI criteria of compensability in practice are interpreted as a gross negligence standard. However, the PCI lacks the deterrent function that is essential for a gross negligence standard to be potentially optimal. Moreover, since claim frequency is 50% higher under the PCI than under U.S. standards of ordinary negligence and percent paid is similar in the two systems, this suggests that the PCI is broader in practice than a gross negligence standard.
43. Oldertz (1988), *supra* note 10, p. 59. Whereas the PCI specifically rejected low probability as a criterion of compensation, this was a critical element in compensability under the New Zealand Accident Compensation scheme and has been proposed for no-fault in the United States. P. Danzon, "Radical Alternatives for Medical Malpractice: Lessons from Sweden and New Zealand," (March 1993), working paper.