
HIDDEN OVERHEAD COSTS: IS CANADA'S SYSTEM REALLY LESS EXPENSIVE?

by Patricia M. Danzon

Prologue: *Canada's provincial health insurance scheme is a source of endless fascination to policymakers advocating health system reform. Whether one is an advocate or a detractor of Canada's plan as a model for the United States, an important issue that engages the antagonists is how much it costs to operate compared with America's pluralistic and mostly private health insurance approach. The measurement of such administrative expenses by various parties has brought to policymakers attention the trade-offs that exist whichever way a system is organized. However, there is no consensus on the nature and magnitude of these trade-offs. In this paper, Patricia Danzon, the Celia Moh Professor of Health Care Systems and Insurance at the University of Pennsylvania's Wharton School, examines the overhead costs of alternative health care systems, asserting that existing comparisons are grossly misleading. She compares overhead costs under monopoly public insurance and competitive private insurance markets in general but draws on actual experience in Canada and the United States for empirical evidence. Danzon concludes that private health insurance has built-in incentives to minimize its total overhead costs, while public health insurance constrains total budgets but ignores real social costs, including the time patients must wait for treatment and the lost productivity that results. Danzon holds a doctorate in economics from the University of Chicago. She turned to health economics while working at The RAND Corporation from 1973 to 1979. Danzon is the author of a book entitled *Medical Malpractice: Theory, Evidence, and Public Policy* (Harvard University Press). She also coauthored a paper published in *Health Affairs* (Spring 1991) entitled "A Plan for 'Responsible National Health Insurance'."*

After comparing health care spending in the United States with budget-constrained health care systems such as Canada's, a number of analysts have noted recently that the measured costs are lower in Canada. They then conclude that a monopoly public insurer that imposes budget constraints on providers is more efficient at delivering insured medical care than competitive private insurance markets are. This conclusion assumes that the benefits are similar and that measured costs accurately reflect real social costs. But a more careful analysis of how private and public insurers operate finds hidden benefits in private insurance and hidden costs in monopoly public systems. Accurate comparison of total costs and benefits of private and public insurance systems raises important conceptual and measurement questions that this paper can only begin to answer. The main purpose here is to lay out a more appropriate conceptual framework for thinking about overhead costs and to point out why existing comparisons are grossly misleading.

Much of the criticism of private insurance focuses on its allegedly higher overhead costs. Estimates of the overhead costs of private insurers in the United States range from 11.9 to 34.4 percent of benefit payments, compared with roughly 1 percent for public insurance in Canada. In addition, the existence of many diverse plans is said to add wasteful expense for providers. Steffie Woolhandler and David Himmelstein estimate that overhead and billing expenses accounted for 25–48 percent of expenditure on physician services in the United States in 1987, compared with 18–34 percent in Canada; they estimate hospital administration at 20.2 percent of hospital costs in the United States, compared with 9 percent in Canada.¹

These accounting measures are misleading, partial estimates of the full overhead costs of delivering insured medical services by way of private or public insurance. Any insurer, private or public, must perform three functions: collect premiums, monitor and pay for services (control moral hazard), and bear the risk that is not eliminated by the law of large numbers. In private insurance markets, the cost of performing these functions appears as accounting overhead of premium collection, claims administration, return on capital, and so forth.

The methods used by public insurers to perform these same functions generate lower observable accounting costs but much higher hidden costs. This reflects in part the fact that government can use fiat to force people to pay taxes, accept prices and restrictions on services, and bear risk, whereas private insurers must induce voluntary participation of consumers, providers, and suppliers of capital. A full analysis of why government tends to choose mechanisms that result in hidden rather than explicit costs is beyond the scope of this paper; the quick answer is that it reduces line-item budget costs of the program because the hidden

costs are off-budget. The more limited objectives here are to point out the hidden costs imposed by public insurers that are the analogue of the overhead costs incurred under private insurance, and to present a more accurate but still very rough estimate of the true overhead costs of the Canadian system relative to the U.S. system.

Existing empirical studies compare Canada's Medicare with private insurance as it currently operates in the United States. But the relevant comparison for the national health insurance debate in the United States is between a monopoly public system and a private insurance system with government intervention only where necessary to achieve goals of efficiency and equity. Such a system would eliminate wasteful distortions present in the current U.S. system but would assure that coverage is universal and affordable. My colleagues and I have described such a system elsewhere, but to estimate its overhead costs would be speculative.² The conceptual discussion here compares overhead costs under monopoly public insurance and competitive private insurance markets in general but draws on actual experience in Canada and the United States for empirical evidence. Since my focus is on overhead costs, I do not attempt to measure all inefficiencies that result from U.S. tax and regulatory policies that are neither essential nor desirable features of a well-designed private insurance system. In particular, I do not address the hidden costs of the tax subsidy to employer contributions, as it affects the price, quantity, and quality of medical care.³ I also do not attempt to measure losses from less-than-optimal coverage of the uninsured. However, in discussing the empirical estimates of overhead costs of U.S. private insurance, I point out (without attempting to quantify) where current tax and regulatory policies tend to result in higher overhead costs than would occur in a well-designed private insurance system.

Components Of Overhead In U.S. Private Insurance

Woolhandler and Himmelstein, and others following them, first estimate overhead as a percentage of benefit payments in both countries and then convert this to a measure of overhead dollars per capita.⁴ This biases the comparison against the country with higher benefit payments per capita: the same overhead percentage applied to larger benefits per capita yields higher overhead dollars per capita, simply reflecting the fact that delivering additional benefits entails some additional overhead cost. To avoid this bias, I make comparisons here in terms of percentage of either premiums or benefit payments, not dollars per capita.

A second fallacy is to use the expense ratio (ratio of expenses to claims payments) reported by private insurers as an estimate of their overhead costs. For example, the Citizens' Fund reports that administrative, mar-

keting, and other overhead expenses of commercial insurers accounted for \$14.9 billion in 1988, compared with \$44.5 billion in claims payments.⁵ The resulting expense-to-claims ratio of 33.5 percent is interpreted as a measure of insurers' inefficiency. This fails to recognize the administrative functions that commercial insurers perform for self-insured employer plans. By 1990, 59 percent of employers self-funded their group health plans, including 37 percent of firms with under 500 employees.⁶ Commercial insurers that provide administrative services to self-funded employer plans necessarily have a high reported expense-to-claims ratio because claims payments appear as a cost on the balance sheet not of the insurer but of the self-insured firms.⁷

The national health accounts estimate the overhead of private insurance as 10.5 percent of premiums, or 11.7 percent of benefit payments, for 1987. Exhibit 1 breaks down these administrative overhead components by size of firm. By contrast, overhead of public insurers in Canada is 0.9 percent of total spending, or roughly 1 percent of benefit payments.⁸ Overhead for U.S. private insurers is estimated as the difference between premium payments and benefit payments, adjusted for dividends and other retroactive premium adjustments.⁹ This difference includes premium taxes (roughly 2.3 percent), return on capital (roughly 3.5 percent), and investment income (1.5 percent) for commercial insurers and some Blue Cross/Blue Shield plans. These components should be netted out for purposes of fair comparison with overhead of a public insurer.¹⁰ Premium taxes are a pure transfer to state governments. Investment income is a return to policyholders for advance payment of premiums. Return on capital is netted out because of the difficulty of estimating the analogous cost for public insurers.¹¹

With these adjustments, private insurance in the United States—including commercial insurers, the Blues, other plans, and self-insurers—

Exhibit 1
Administrative Expense Breakdown For U.S. Conventional Insurance Plans, As Percentage Of Incurred Claims

Number of employees	Claims administration	General administration	Interest credit	Risk and profit	Commissions	Premium taxes	Total
1 to 4	9.3%	12.5%	-1.5%	8.5%	8.4%	2.8%	40.0%
5 to 9	8.6	11.2	-1.5	8.0	6.0	2.7	35.0
10 to 19	7.2	9.2	-1.5	7.5	5.0	2.6	30.0
20 to 49	6.3	6.6	-1.5	6.8	3.3	2.4	25.0
50 to 99	4.3	4.8	-1.5	6.0	2.0	2.2	18.0
100 to 499	4.1	4.0	-1.5	5.5	1.6	2.3	16.0
500 to 2,499	3.9	3.2	-1.5	3.5	0.7	2.2	12.0
2,500 to 9,999	3.8	1.4	-1.5	1.8	0.3	2.2	8.0
10,000 plus	3.0	0.7	-1.5	1.1	0.1	2.1	5.5

Source: Congressional Research Service, "Costs and Effects of Extending Health Insurance Coverage" (Report prepared for the House Committees on Education and Labor and Energy and Commerce and the Senate Special Committee on Aging, 1988). Estimates by Hay/Huggins Company based on underwriting practices of major insurers.

entails an overhead rate of roughly 7.6 percent of benefit payments, net of premium taxes, return on capital, and investment income. Although this exceeds the reported overhead rate of 0.9 percent for Canada, the picture changes if one adjusts for major hidden costs in Canada. I return to this point later.

In a world of perfect information and cost-free transactions, it might be accurate to say that overhead expenditures of insurers are pure waste. But in the real world, where obtaining information and negotiating and enforcing contracts is costly, such expenditures can serve a useful function. In competitive markets, private insurers incur overhead cost only to provide benefits or to help avoid even larger costs to policyholders.

Medical underwriting. Medical underwriting, the process of determining clients' medical risk, is one of the most frequently criticized features of competitive private insurance markets. But it accounts for less than 2 percent of claims costs, largely because self-insured or experience-rated firms, which cover the majority of privately insured individuals, do not use it.¹² Medical underwriting is most common in the individual and small-group markets, which account for only roughly 25 percent of all privately insured individuals.¹³ Moreover, the view that underwriting is pure waste from a social perspective is overstated, because risk rating of premiums can discourage risky or unhealthy lifestyles.

Eliminating medical underwriting implies cross-subsidies from people who use little medical care to those who use much care, not all of whom are in poor health or have low incomes. If the social objective is greater equality of income after expenditures for health insurance, this can be achieved more fairly by subsidizing the cost of health insurance for high risks through general revenues than by arbitrary cross-subsidies to high risks from low risks who happen to be in a community-rated insurance pool.¹⁴ Thus, objections to underwriting under the status quo result from the failure of other policies to make coverage affordable to the poor and high risks, rather than from a waste that is intrinsic to private insurance.

Claims administration. Claims administration is the largest overhead component, accounting for 3–4 percent of benefit payments. This reflects the costs of monitoring and paying claims in fee-for-service plans; costs of information systems to monitor patients' and providers' use in managed care plans; and costs of implementing provider-targeted incentive systems in health maintenance organizations (HMOs).

This category is often erroneously viewed as pure waste, since it involves denying coverage and imposes costs on patients and providers. However, benefits accrue from controlling incentives to overuse medical care when the patient is insured (moral hazard). Insurance, whether private or public, provides financial protection by reducing the point-of-purchase prices of medical care to patients. This creates incentives for

patients to use services that are worth less than their full cost. Providers tend to be willing to comply, since this best serves the interests of the individual patient in the short run and (in conventional insurance) also benefits the provider's pocketbook. But because premiums for the group must cover the full cost, consumers benefit in the long run if insurers control use of care that is not worth its cost.

Private insurers compete by devising ways to control moral hazard more cost-effectively, including structured copayments, utilization review, case management, selective contracting with preferred providers, and provider-targeted financial incentives such as capitation and other risk-sharing forms of prospective reimbursement. The costs of implementing these strategies appear as claims administration costs to insurers, providers, and patients. The increase in overhead expense during the 1980s noted by Woolhandler and Himmelstein is not surprising, since it was a time of intense innovation in strategies to control moral hazard.¹⁵ But the offsetting benefit of spending to control moral hazard is the reduction in deadweight loss (difference between premium cost and value of benefits) that occurs if use is unconstrained. In a competitive environment, insurers incur costs to control moral hazard only as long as this yields at least equivalent savings from control of overuse.¹⁶ The total overhead cost of insurance, from the patient's perspective, is measured overhead plus deadweight loss from moral hazard.

Competition creates incentives for insurers to minimize this total overhead cost (administration expense plus deadweight loss). There is no reason to believe that resulting costs would be socially excessive, in the absence of other distortions. However, the current tax subsidy to employer contributions subsidizes spending on insurance overhead and medical services. Spending on claims administration under the status quo is therefore likely to be excessive and higher than it would be if open-ended tax subsidies were eliminated. With this caveat on account of the tax subsidy, the emerging dominance of point-of-service plans (where copayments vary according to consumers' choice of providers) is strong evidence that consumers differ in their willingness to accept copayments or limited choice of providers, that this differs by type of medical service, and that many consumers are willing to pay slightly higher administrative costs brought on by this level of complexity.

Burden on providers and patients. Operating a system of diverse, complex insurance plans also entails higher overhead costs for providers and consumers than would a single uniform system. Some have viewed these costs as additional waste. However, the magnitude of these costs has been exaggerated, and the offsetting benefits have been ignored.

Woolhandler and Himmelstein estimate that physician and clerical staff time accounts for 25–48 percent of physicians' total billings in the

United States, compared with 18–34 percent in Canada.¹⁷ The higher estimate for the United States assigns all of the difference in physician overhead except medical liability to excess administrative costs and is almost certainly too high, as Woolhandler and Himmelstein acknowledge. In Canada, office-based physicians employ fewer nonphysician personnel, capital, and supplies because the physician fee schedule is designed to discourage the performance of procedures in physicians' offices. Physicians can bill only for evaluating procedures, not for the "technical" component that covers input costs other than the physician's time, to discourage the proliferation of capital equipment to ambulatory settings.¹⁸ By contrast, the U.S. reimbursement system permits fees that cover the cost of these items required to perform in-office procedures; this is reflected in higher total nonphysician input costs for U.S. office-based physicians. Thus, the lower figure of 25 percent is probably a more accurate measure of insurance-related costs for U.S. physicians, which may be compared with 18 percent for Canada.

Regardless of the empirical estimates, it seems plausible that insurance that controls moral hazard through price- and information-based strategies (the U.S. approach) will entail higher reported overhead costs for providers than does insurance that relies on patient time and other nonprice forms of rationing (the Canadian approach), and that these provider overhead costs may increase with the diversity of insurance plans. Yet there is good reason to believe that the costs of the complexity and diversity of coverage in competitive insurance markets have more than offsetting benefits. Control of moral hazard through price- and information-based strategies requires time and effort of patients and providers—filling in forms and proving that services were medically justified, appropriately priced, and covered by the terms of the insurance contract. But insurers cannot ignore these costs and treat the time of providers and patients as a free resource. On the contrary, competition forces insurers to internalize costs that they impose on patients and providers; these costs influence the prices patients are willing to pay and the terms on which providers are willing to participate.

Thus, the diversity of insurance plans that emerge in competitive insurance markets reflects the diversity of patients' preferences between premiums, copayments, paperwork, and restrictions on freedom of choice; and the willingness of providers to trade off among higher reimbursement, freedom of practice style, and administrative expense. The more homogeneous patients' preferences are, the more likely that a provider can achieve the desired patient load with only one type of plan.

Excessive diversity and costs can arise if insurance markets are imperfectly competitive, for example, because consumers and providers are imperfectly informed about each plan's true "quality." For example, if

Plan B's utilization review requires different procedures than Plan A's but they are operationally equivalent, there is no allocative benefit from adding Plan B, and any additional cost from adding Plan B is waste. But competitive pressures tend to reduce waste from excessive diversity. A "me-too" Plan B that was considering entering the market would minimize costs and be more attractive to providers if it simply copied Plan A's forms and strategies. Remaining diversity costs are further reduced by intermediaries that consolidate forms, utilization review programs, and so on, if differences are truly spurious. The technologies of moral-hazard control are still evolving; thus, the cost of maintaining a diversity of plans may fall from its current level. This is no different from the life cycle of any new technology-competition to develop cost-effective models continues until a long-run equilibrium is reached with a product/price mix that reflects the diversity of consumers' preferences.

The potential for excessive diversity exists in all markets but is not normally considered a reason to prefer a public monopoly. The propensity for excessive entry into the market is directly related to the potential monopoly profits, but this is not significant in health insurance, because regulatory barriers to entry are generally low and because self-insurance is a feasible option even for moderate-sized employers. Consumer information *ex ante* may be imperfect, but this is reduced by the role of benefit managers, agents, and experience. Indeed, consumers gain information from experience much more rapidly with health insurance than with other forms of insurance where claims are less frequent.

However, two features of the existing U.S. health care system increase the likelihood of excessive diversity. First is the tax subsidy to employer contributions, which effectively subsidizes insurance overhead as well as medical services. Second is state regulation of commercial insurers, which together with the Employee Retirement Income Security Act (ERISA) exemption has contributed to the proliferation of separate plans, as employers increasingly self-insure to avoid the costs of state-mandated benefits, high-risk pools? free-choice laws, and other regulatory constraints.¹⁹ The number of plans and systemwide costs may therefore be excessive, if each plan entails some fixed costs. However, since costs imposed on providers are internalized to employer-sponsored plans, excessive proliferation of distinct types of plans should not occur. In fact, many employers use standard plans.

The flip side of higher overhead costs accompanying a health care market that offers choices among plans is that diverse consumer preferences are better satisfied than if all consumers must accept a uniform public plan. There probably is excessive diversity and some wasteful overhead in current U.S. private health insurance. But this is caused largely by tax and regulatory distortions. Absent these distortions, there

is no more reason to expect excessive diversity in health insurance than in other financial service markets.

The presumption that insurers internalize paperwork costs that they impose on patients and providers does not apply to Medicare and Medicaid; costs that these programs impose on providers may therefore be excessive. Because this cannot be factored out, reported overhead costs of U.S. providers overstate the costs attributable to private insurance.

Risk and profit. The risk and profit component of private insurer overhead reflects return on capital held as a buffer against unanticipated economywide shocks to aggregate losses. The adequacy of these buffer funds relative to liabilities is frequently used to measure the quality of an insurer. The return on capital is therefore a cost of supplying “quality” insurance in a world where macroeconomic factors are uncertain.

Public insurers face similar risks, but most public programs do not hold adequate buffer funds. Unanticipated shocks to the loss distribution are simply shifted to taxpayers, through tax increases or reductions in other government programs, or are borne by patients or providers through limits on service or delayed reimbursement. In the United States, the increase in tax rates to shore up the Medicare Hospital Insurance trust fund illustrates shifting risk to taxpayers; Medicaid budget caps that have resulted in delayed or partial reimbursement of providers are a way of shifting risk to providers and to patients, if providers become less willing to take Medicaid patients.

In Canada, provincial governments have absorbed deficits of hospitals that are unwilling or unable to stay within their budgets, thereby shifting costs to either taxpayers or other program beneficiaries, depending on how the overall provincial budget is brought into balance.²⁰ Physician expenditure targets shift risk to providers and to patients, if physicians reduce hours of work as they approach expenditure ceilings. The reported overhead of public insurers does not reflect these risk-bearing costs that are shifted to taxpayers, providers, or patients.

A monopoly public system does eliminate the firm-specific risk related to market share and risk selection. However, the risk related to macro factors remains and is shifted to individuals who are not specialized in risk bearing, in contrast to private insurers that diversify through capital markets. Indeed, risk bearing in public systems is particularly inefficient, to the extent that risk is shifted to patients and providers who incur other losses that are positively correlated with the shock to the public medical system. For example, an economic downturn may leave a patient unemployed and unable to find a doctor if public deficits have stalled reimbursement through public programs. The real social cost of risk therefore actually may be higher in public systems.

The more common argument, that monopoly insurers have lower

costs of risk and other functions because of the larger risk pool, is inconsistent with the evidence. In any competitive market, if there are significant economies of scale, large firms tend to drive out smaller firms over time. However, the survival of both small and large insurers indicates that scale economies from risk pooling are eliminated at fairly small scale or can be achieved through reinsurance. For the critical insurance functions related to control of patient and provider moral hazard, scale economies are probably exhausted at quite small scale. The fact that Medicare contracts out its claims administration to local intermediaries and is attempting to enroll beneficiaries in private HMOs instead of developing its own is further evidence suggesting that national insurers do not have a significant scale advantage over local insurers.²¹

Overhead Costs Of Monopoly Public Insurers

A monopoly public insurer must perform the same basic functions as a private insurer: collecting premium revenues, paying providers, controlling moral hazard, and adjusting to nondiversifiable risks. But the full costs of performing these functions are understated in reported measures of overhead costs. Also omitted are deadweight costs (forgone net benefits) from forcing everyone to have the same level and type of insurance and other production and consumption distortions that should be viewed as overhead costs of the health insurance system.

Hidden costs. Public insurers generally use a much more limited range of strategies to pay providers and control moral hazard than private insurers use. There is striking similarity in these cost-control mechanisms among Canada, Germany, and Japan, where physicians remain independent private contractors and hospitals are quasi-private, not-for-profit entities.²² All three countries pay physicians according to a fee schedule that has not kept pace with inflation; patient copayment is minimal (zero in Canada); and very little use is made of information-based systems, utilization review, managed care, or provider risk sharing. Physician expenditure targets have been added in some Canadian provinces and in Germany, to control unbundling of services and increases in service volume in response to low fees. Canada controls hospital spending by annual budget caps for operating revenues and direct control over capital acquisition. By using provincewide fee schedules, with no patient copayments and essentially no provider- or patient-specific information systems, Canada has achieved lower reported insurer and provider overhead costs than have U.S. private insurers.

But the public insurer imposes hidden costs of moral-hazard control on patients that are the analogue of private-sector claims administration expenses. These hidden costs include excessive patient time costs that

result from proliferation of multiple short visits in response to controls on physicians' fees; diminished productivity and quality of life from delay or unavailability of surgical procedures; and loss of productivity due to underuse of some medical inputs.²³ Rough estimates suggest that these hidden overhead costs of public insurers exceed the measured overhead costs of private insurance. This is not surprising, since monopoly public insurers have weaker incentives than private insurers to minimize overhead borne by patients and providers.

Patient time costs. Because of physicians' adjustments to fee schedules that have not kept pace with inflation, patients in Canada and Japan must make multiple visits to receive the services previously provided in a single visit. This reduction in real services per physician encounter, increase in number of encounters, and resulting increase in patient time costs is one mechanism used to ration the excess demand created by making care free to patients. The scant evidence from Canada confirms this hypothesis. In Quebec, in the two years immediately after the introduction of universal health insurance, home visits dropped by 63 percent, telephone consultations fell by 41 percent, physician time spent per office visit declined by 16 percent, and office visits rose by 32 percent.²⁴ Nevertheless, physicians' relative net income increased over 30 percent in the same period.²⁵ In Japan, the increase in patient time costs is more dramatic because fee controls have been more stringent. Physician visits last roughly five minutes, and the Japanese average twelve visits to the physician each year—roughly three times as many as Americans, whose average visit length is fifteen to twenty minutes.

Victor Fuchs and James Hahn report that in 1985 real resources used per physician visit were 34–46 percent lower in Canada than in the United States and that Canadians made more visits per capita.²⁶ They conclude that Canadians receive more physician services and that the services are produced more efficiently. An alternative interpretation of these data is that the average duration of visit is shorter in Canada and that medical services are produced with a lower ratio of physician time and other medical inputs relative to patient time, because this is a rational response to constraints on reimbursement for physicians and a zero money price to patients. Unfortunately, these alternative interpretations cannot be resolved because the average length of physician/patient encounter is not reported in this study and, more fundamentally, because the real health benefits per visit cannot be measured.

Thus, when public insurers eliminate price- and information-based mechanisms to control insurance-induced moral hazard, the main devices that ration excess demand for physician services appear to be reduction in "quality" (medical resources per visit) and increase in patient time costs. Time costs rise because each visit entails fixed costs of

travel and some waiting in the office, regardless of the duration of the visit. These excess patient time costs are excluded from the national health accounts, and thus from public visibility; their magnitude depends on the price elasticity of demand for physician services and on whether rationing by time price allocates services to those who benefit most. Using an estimate of demand elasticity for general practitioner (GP) services of 0.2, excessive patient time costs are 10–110 percent of total expenditures on physician services, assuming that care is rationed to the highest-valued uses.²⁷ If rationing by patient time costs is relatively inefficient at selecting out medically needy cases, another hidden cost from rationing care without price- or information-based systems is that more serious medical complaints may go untreated.

Several objections may be raised to the conclusion that hidden costs of excess patient time and forgone benefits under nonprice rationing may equal or exceed total expenditures on physician services. First, should not a fair comparison include patient time costs under private insurance? The answer is no. The measure here is excess time costs, over and above the efficient level required to receive medical care in a well-designed, competitive private insurance system. Of course, the mix of patient time and physician inputs under current U.S. private insurance is unlikely to conform to this benchmark, because of the tax subsidy and other distortions. But because the tax subsidy applies to medical and insurance inputs, not to patient time, there is more likely to be excessive use of medical inputs relative to patient time in the United States, and these input costs are already included in the national health accounts. Thus, there is no reason to add an estimate of excess patient time costs to the estimate of U.S. overhead. A second objection is that rationing by time rather than money price is more equitable. However, equity objections to using prices to control overuse are more efficiently addressed with income-related subsidies to assure that the poor can afford insurance coverage.

In conclusion, monopoly public insurers that tightly control physician fees while not charging patients for care and eliminating information-based rationing incur significant hidden costs; they also underuse physician time if expenditure constraints are binding. The mix and the magnitude of these hidden costs depend on physicians' ability to circumvent the fee controls and maintain hourly earnings and on the exact methods for rationing the excess demand when care is free. But under reasonable estimates of demand elasticities, these costs could be at least as large as reasonable estimates of overhead costs of U.S. physicians.

Advantages of a single buyer. The evidence from Canada, and more strikingly from Japan, that tight physician fee schedules lead to excess patient time costs, is also relevant to the claimed advantage of a monop-

oly public insurer in exercising monopsony (single-purchaser) power. Monopsony power could yield a distributional gain with no efficiency loss if a monopsony public insurer could control physicians' fees and incomes without any adverse effect on the supply of physicians. Evidence to support this view is the fact that average net income of physicians is lower in Canada (\$82,740) than in the United States (\$132,300, in 1987 U.S. dollars); nevertheless, the number of physicians per capita has increased as fast in Canada as in the United States, and the average number of applicants per medical school opening is 4 in Canada (1.6 in the United States)²⁸

However, the relevant measure of physician supply depends on value added per physician, as well as number of physicians. Ineffective use of monopsony power simply distorts the input mix and leads to excessive patient time costs. Effective exploitation of monopsony power tends to reduce hours of work per physician, resulting in a loss of productivity. This loss can be avoided only if physician hours are totally inelastic in response to reduction in revenue per hour or if a monopsony public insurer can devise a system of reimbursement that extracts any monopoly rent (defined as returns in excess of opportunity cost) without affecting marginal incentives. Both of these conditions seem unlikely. Even if physicians earn monopoly rents in competitive private insurance markets, it is extremely difficult to design reimbursement systems that tax away these rents without reducing incentives to work. Low fee schedules and expenditure targets do not do it.²⁹

The evidence that lower physician incomes have apparently not adversely affected applications to medical schools in Canada relative to the United States does not prove that low fees have extracted monopoly rents without affecting productivity per physician. The income measure relevant to the decision to apply to medical school is the expected lifetime return on investment in medical training, relative to other career alternatives. This relative return may be higher in Canada for several reasons: costs of medical training there are more heavily subsidized than in the United States; expected hours of work may be shorter; medical liability has less of an adverse effect, since the rate of malpractice suits is five times higher in the United States than in Canada; and expected returns and risk on other careers may differ.³⁰ The relevant question is whether a given level of physician effort can be obtained at lower social cost with a monopsony public insurer or with a system that relies on (undistorted) competitive private insurance markets, holding constant the malpractice climate and opportunities in other careers. A simple comparison of average annual incomes and number of applicants to U.S. and Canadian medical schools cannot answer this question.³¹

Hidden costs of rationing hospital care. In Canada, each hospital

negotiates an annual global operating budget with the provincial government. Capital expenditures are funded from a variety of sources, but approval is required from the same provincial agency that contributes a major share of the funding. These expenditure controls have resulted in a much slower growth of capital and labor inputs per hospital day (“service intensity”) in Canada than in the United States, reflecting nursing hours, use of operating rooms, and capital-embodied technologies. Total hospital costs per capita are lower in Canada, although the number of admissions per capita and length-of-stay are 5.2 percent and 52 percent higher, respectively, in Canada than in the United States.³²

However, access to acute care services is more limited in Canada. More hospital beds in Canada are occupied by elderly patients with average length-of-stay of over sixty days, despite waiting lists for acute care admissions. This is in part a predictable response to the incentives facing hospital administrators and employees under fixed budget constraints. If they increase the rate of surgical procedures, they receive no more revenue with which to purchase additional supplies or nursing time. Thus, increasing the number of acute care patients, given the fixed budget, simply adds to the stress and workload of existing staff. Conversely, hospital administrators and nonphysician personnel suffer no revenue loss (except to the extent that next year’s budget is related to this year’s admissions) and can enjoy an easier life if they keep the hospital beds full of long-term patients whose daily requirements are relatively low or if they prolong length-of-stay for acute care patients. This is another example of increasing patient time costs relative to medical inputs in response to tight limits on provider reimbursement.

Robert Evans and colleagues tend to dismiss the increasing “rhetoric of underfunding, shortages, excessive waiting lists, and so on” as “part of the process by which providers negotiate their share of public resources—including their own incomes. . . . Since the boy always cries wolf (and must do so, given the political system of funding), one does not know if the wolf is really there. The political dramatics should not lead external observers into believing that the wolf is always at hand.”³³

However, recent survey evidence confirms that average wait and number of people waiting have increased, representing a real social cost.³⁴ The results are based on a survey of a random sample of specialists in British Columbia, for six common procedures performed by each specialty. The survey finds that while the average wait for some procedures such as mastectomy is as short as two weeks, most procedures require waits of at least three months, and some require up to ten months. These findings refute the common allegation that waiting lists are artificially inflated by duplicative bookings or voluntary waiting.

This evidence may be biased upward because the survey was taken

roughly six months after a nurses' strike. On the other hand, the estimates may be biased downward for Canada as a whole, for several reasons. First, British Columbia has a higher ratio of physicians per capita than other provinces, and each physician is therefore likely to have a shorter queue. Second, surveys derived from physicians or hospitals cannot reflect those patients who are discouraged by the wait or by their GP from seeking specialist care. This bias is likely to be more serious in rural areas. Third, random sampling of physicians, without stratification to reflect regional differences in physician/population density, will tend to oversample physicians in areas of high physician/population density, where waits per person are likely to be relatively short,

Steven Globerman and Lorna Hoyer estimate the "income loss" associated with queues by multiplying the estimated total weeks waiting by the percentage of patients in each specialty who were "experiencing difficulty in carrying on their work or daily duties as a result of their medical condition."³⁵ This product is then multiplied by the average weekly industrial earnings for 1989. The resulting estimate is \$132 million, or 0.2 percent of provincial gross domestic product (GDP) for that year, which they note is roughly equal to the total wages and salaries lost due to strikes and lockouts in that year.

This income-loss measure understates real economic costs of involuntary waiting for hospital procedures. A more complete measure would include all loss of productivity; reduction in "quality of life," including physical and psychological pain and suffering; and increased use of other inputs—for example, the additional time of other family members in caring for an elderly person who cannot get a hip replacement.³⁶

If waiting for surgery accounts for 0.2 percent of GDP in British Columbia, and if hospital expenditures are roughly 3 percent of GDP, this represents 7 percent of hospital expenditures. A more complete measure could be as great as Woolhandler and Himmelstein's estimated difference in overhead costs (9 percent Canadian, 20.2 percent U.S.).³⁷ Since some of U.S. hospitals' spending on information systems improves patient care (and a significant part is related to Medicare), these rough numbers suggest that Canada's methods of rationing result in hidden costs that could be at least as great as the more visible costs of billing, utilization review, and other activities of U.S. private insurers.

It may be argued that these forgone benefits are simply the result of lower resource allocation to acute care hospital services in Canada and that this should not be counted as overhead. But to the extent that people are denied access to services that would be covered if they were free to choose their own form of insurance, these lost benefits are a real cost of imposed uniformity of a monopoly system. Moreover, for any given level of resources allocated to hospital care, rationing through

waiting is likely to lead to a less efficient use of the scarce facilities than is the case with rationing through price- and information-based systems. A reimbursement system that offers no reward to providers for additional effort is also unlikely to lead to maximum output from the fixed resources. Thus, it is highly likely that limited beds and capital equipment are not being used to yield the maximum value to patients. Of course, longer hospital stays have some benefits to patients, but they have real costs. The willingness of patients in the United States to accept health insurance plans with utilization review and managed care, in return for lower premiums or better coverage of other medical services, suggests that for many, the longer stays are not worth their cost.

Missed benefits are not the only hidden cost of rationing in budget-constrained hospital systems. In Japan, low reimbursement for hospital services has resulted in such low nurse staffing levels that patients often rely on family members for meals and other “hotel” services in the hospital. These time costs are omitted from the national income accounts, as are “gifts” to physicians (roughly \$3,000 for major surgery by a well-established physician), which informally ration access to the most sought-after physicians.

In some countries, the demand for supplementary insurance provides a rough measure of the extent to which the public system constrains services below the level that people are willing to pay for. Canada does not permit private insurance of services that are covered under provincial plans and heavily penalizes physicians who serve privately insured patients. Therefore, although supplementary insurance is widely purchased in Canada, it covers only services and amenities not covered under the public system, so it is not a reliable indicator of dissatisfaction with public provision of those services. But in the United Kingdom and New Zealand, where budget constraints on the public system have been tighter, the growth in private insurance to cover services in private hospitals is a rough measure of willingness to pay for more prompt access, free choice of doctor, nicer amenities, and other services not provided by the public system. In New Zealand, over 45 percent of the population has private coverage.³⁸ But supplementary private insurance is a mixed blessing as an add-on to a monopoly public system. Private insurance does reduce the real social costs that arise when a public insurer provides less access to services than people are willing to pay for. But as actually implemented in the United Kingdom and New Zealand, supplementary insurance tends to distort production within the public system.

Hidden costs of tax-based financing. Using the tax system to collect premiums is said to be a major advantage of monopoly public insurers. But although the administrative cost of financing health insurance by raising tax rates is small, the hidden costs are large. These hidden costs

are the production and consumption losses that occur because people change their work, saving, and consumption patterns to avoid taxed activities. These costs rise along with the existing tax rate when marginal rates are increased. The real cost of raising one dollar of U.S. general tax revenue has been estimated at seventeen to fifty cents.³⁹ Even the lower estimate (17 percent of revenue raised) still significantly exceeds the costs of premium collection under private insurance.

The excess burden of raising taxes would not arise if the public system were financed by a social insurance premium or head tax; indeed, if rated on the basis of risk class, it could have the same positive-incentive effects for health lifestyles as risk-rated private insurance premiums. However, administrative costs of financing through risk-rated head taxes would be much higher than existing income and payroll tax systems. Head taxes are also generally considered distributionally unacceptable.

The excess burden from financing national health insurance in Canada may actually have been less than implied by assuming an increase in marginal tax rates, to the extent that the new program was financed by reducing other programs, rather than by raising new tax revenues. If the United States were to adopt a Canadian-style monopoly public insurance program within the Gramm-Rudman-Hollings budget constraints, the net increase in excess burden of tax-based financing would be less than (at least) 17 percent of the gross cost of the program. Obviously, there would be an offset for existing expenditures on Medicare, Medicaid, public hospitals, and other tax-financed programs that could be discontinued. Efficiency losses associated with the tax subsidy to employer contributions would also be eliminated. If net new tax needs, after netting out these savings, were financed by cutbacks in other programs, marginal excess burden would be reduced. But if the eliminated programs were targeted at the poor, as in Canada, the net benefit to the poor from introducing national health insurance would be questionable.⁴⁰

Providing universal coverage through private insurance would also entail some excess burden of raising tax revenues to assure that coverage is affordable. But these costs would be much lower than under a monopoly public system because subsidies would be limited to the poor and near-poor. For example, if subsidies equal to the cost of coverage for one-third of the population were paid, the excess burden of tax financing would be one-third as high as under a monopoly public system.

Related Factors

Reliance on U.S. research and development. Another distortion in the comparison of costs of the U.S. health care system relative to monopoly public systems is that the latter benefit from research and

development (R&D) spending in the United States. This is most obvious in the case of pharmaceuticals but also applies to other medical technologies and information systems. R&D in all of these areas entails joint costs that benefit all consumers worldwide. If costs are truly joint, then global welfare maximization would set prices proportional to marginal benefits, as reflected in demand elasticities (Ramsey pricing). Unfortunately, “true” marginal benefits for drugs are not revealed by observed demand, because patients may imperfectly understand true benefits, distorting effects of insurance, and incentives of physicians. But if willingness to pay is roughly related to income, then the United States pays more than its “fair” share of pharmaceutical R&D, because the difference in drug prices exceeds the difference in income.

The pricing of drugs in Canada may also lead to waste. Canada has reduced drug prices below U.S. prices and below the Organization for Economic Cooperation and Development (OECD) average, by compulsory licensing of drugs while they are still under patent and by aggressive generic substitution laws. To the extent that compulsory licensing results in a redistribution of monopoly profits from the patent seeker to the domestic generic-drug manufacturer, it induces waste by distorting resource allocation based on comparative advantage.

Some of the international benefits of U.S. R&D spending for some drugs and other medical technologies may be small or even negative, but on balance, benefits are surely positive. To the extent that benefits of R&D accrue to other countries that do not pay their “fair” share, the hidden benefits should be credited against U.S. health care costs in any comparison of real costs and benefits.

Other hidden time costs. The U.S. Government Accounting Office (GAO) reports that 14 percent of the differential in per capita health care spending between the United States and Canada is spending on the services of “other professionals,” including physiotherapists, podiatrists, and psychologists. These services probably have hidden benefits that are not captured in standard morbidity and mortality statistics, and they reduce the hidden patient time inputs to the production of health care. Most countries, including the United States, exhibit a high income elasticity of demand for goods and services that tend to improve the quality of life or economize on consumers’ time. Health care has both of these characteristics. As any student of basic economics knows, if a bachelor marries his housekeeper, gross national product (GNP) goes down. Conversely, if an American visits the physiotherapist, whereas a Canadian spends more time at home doing exercises, health care spending increases in the United States but not in Canada. Omitting patient time costs understates the real resources devoted to health in Canada and underestimates the benefits of higher spending in the United States.

Conclusions

Exhibit 2 summarizes rough estimates of a comparison between overhead costs of private insurance in the United States and the public system in Canada, adjusted to include some of the hidden costs of the Canadian system. These estimates indicate that costs associated with tax-based financing and rationing by other than price- or information-based methods may be at least as great as the parallel costs of premium collection and claims administration incurred by private insurers.

Costs of risk bearing are almost certainly no higher under private insurance, with risk diversification through capital markets, than under public insurance, which shifts risk to patients, providers, and taxpayers. However, rather than making an attempt to estimate the hidden cost of risk bearing in Canada, I excluded this component from the total for both countries. Also omitted from the Canadian total are the losses to Canadians from being forced to consume a uniform level of insurance and medical care, which for many may differ from their preferred level. These losses are partially but not fully reflected in the excess patient time costs and forgone benefits. Exhibit 2 does not include the higher

Exhibit 2
Overhead Costs Of Public And Private Insurers, As Percentage Of Claims Payments

Function	Private insurance	Public insurance
Premium collection	Commissions 1 percent	Deadweight costs of taxing > 17 percent
Control of moral hazard	Prices Information systems Provider incentives 4 percent	Physicians 10-110+ percent of physician expenditures (excess patient, time costs, and so on) Hospitals >7 percent of hospital expenditures (forgone patient benefits)
General administration	3-4 percent	1 percent
Medical underwriting	< 1 percent	0
Total (net)	7.6 percent ^a	> 45 percent ^b
Risk bearing	Return on capital 4.5 percent	Uncertainty for patients, providers, taxpayers > 4 percent
Investment income	-1.5 percent	0
Premium taxes	(2.2 percent)	0

Source: P. Damon, "Hidden Costs of Budget-Constrained Health Care Systems" (Paper presented at American Enterprise Institute Conference on Health Policy Reform, 3-4 October 1991).

^a Net of premium taxes, return on capital, and investment income.

^b Assumes physician expenditures are 30 percent; hospitals are 40 percent of total expenditures; and excess time costs are 60 percent of physician expenditures.

overhead costs borne by providers and patients in the United States, since in a well-designed private insurance market without the current tax subsidy, there would be at least equivalent offsetting benefits in providing diversity.

How might the overhead costs of private insurance change if coverage were mandatory and if a system of refundable tax credits to assure affordability replaced the current tax subsidy to employer contributions?⁴¹ Assuming tax financing of subsidies equal to one-third of the cost of coverage, premium collection costs would increase to roughly 6 percent. There would also be some enforcement costs, which should be small because enforcement would be through existing tax and welfare systems. Medical underwriting expense might increase also, but this too should be small, since most people would probably obtain coverage through employment or other groups. On the other hand, elimination of the tax subsidy and regulatory distortions would probably lead to some reduction in claims administration and general administration costs, since policyholders would face the full marginal cost of these expenses.

The empirical estimates in Exhibit 2 are necessarily very rough. Their main purpose is to illustrate my thesis that the widely discussed comparisons of overhead costs of alternative health care systems are based on a flawed conceptual framework. A simple comparison of accounting costs can be grossly misleading. The true “overhead” of a health insurance system also includes all of the hidden costs associated with financing and operating the insurance and with insurance-induced distortions in the production and consumption of medical care. Simple theory suggests that these costs would be lower in competitive private insurance markets than under a monopoly public insurer, because the public insurer has much weaker incentives than do private insurers to take into account all of the costs imposed on patients and providers. The rough empirical evidence tends to confirm that overhead costs in Canada, adjusted to include some of the most significant hidden costs, are indeed higher than they are under private insurance in the United States. Although there may well be waste in U.S. private insurance markets, this is attributable primarily to tax and regulatory factors and is not intrinsic to private health insurance.

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NOTES

1. S. Woolhandler and D.U. Himmelstein, "The Deteriorating Administrative Efficiency of the U.S. Health Care System," *The New England Journal of Medicine* 324, no. 18 (1991): 1253-1258.
2. M.V. Pauly et al., "A Plan for 'Responsible National Health Insurance'," *Health Affairs* (Spring 1991): 5-25.
3. M. Feldstein, "The Welfare Loss of Excess Health Insurance," *Journal of Political Economy* (March/April 1973): 251-280; and J. Newhouse, "Has the Erosion of the Medical Marketplace Ended?" *Journal of Health Politics, Policy and Law* 13 (1988): 263-278.
4. Woolhandler and Himmelstein, "Deteriorating Administrative Efficiency."
5. Citizens' Fund, *Premiums without Benefits: Waste and Inefficiency in the Commercial Health Insurance Industry* (Washington, D.C.: Citizens' Fund, 1990).
6. "Spotlight Report: Self-Insurance," *Business Insurance* (28 January 1991): 3-14.
7. For example, for Aetna Life and Casualty, 65 percent of their business on a claims-paid basis was administrative services only, 28 percent was under minimum premium plan arrangements, and only 7 percent was conventionally insured. See "Spotlight Report: Self-Insurance."
8. Woolhandler and Himmelstein, "Deteriorating Administrative Efficiency."
9. Premium and benefit estimates are separately derived from a variety of sources, including commercial insurers, the Blues, surveys of HMOs and self-insured firms, and provider surveys for estimates of benefit payments. Katharine Levit, Health Care Financing Administration, Office of National Cost Estimates, personal communication, September 1991.
10. Detailed appendices can be obtained from the author at Health Care Systems Department, The Wharton School, University of Pennsylvania, 204 Colonial Penn Center, 3641 Locust Walk, Philadelphia, Pennsylvania 19104~6218.
11. All insurers incur risk; however, only private insurers report its cost as an accounting return on capital. Ideally, one should estimate and include the hidden cost of risk bearing for self-insured plans in the United States and for the monopoly public insurer in Canada. Since the necessary data are not available, the alternative adopted here is to net out the cost of capital for private insurers to achieve comparability, even if it results in an understatement of true costs for all insurers.
12. The U.S. GAO reports that 56 percent of employees are in self-insured firms. The percentage of all privately insured individuals would be larger because large firms are more likely to self-insure and they cover a larger fraction of dependents. U.S. General Accounting Office, *Private Health Insurance: Problem Caused by a Segmented Market*, GAO/HRD-91-114 (Washington, DC.: U.S. GAO, 1991).
13. Although the cost of medical underwriting is small in the aggregate, it may cause significant hardship for some individuals and undermines the ability to insure against the risk of becoming high risk. However, this can be addressed by risk-rated subsidies. It does not require a monopoly public insurer or mandatory community rating. See Pauly et al., "A Plan for 'Responsible National Health Insurance'."
14. *Ibid.*
15. Woolhandler and Himmelstein, "Deteriorating Administrative Efficiency."
16. For more detail regarding this point, contact the author.
17. Woolhandler and Himmelstein, "Deteriorating Administrative Efficiency."
18. R.G. Evans, "The Canadian Health Care System: The Other Part of North America Is Rather Different" (Paper presented at the International Symposium on Health Care Systems, Taipei, Taiwan, December 1989).
19. In some states, the deficit of the high-risk pool is recouped from commercial insurers

- that must participate in the pool. This cost must ultimately be passed on as a cost of commercial insurance. Self-insured firms are exempt from the pools.
20. R.G. Evans et al., "Controlling Health Expenditures: The Canadian Reality," *The New England Journal of Medicine* 320, no. 9 (1989): 571-577.
 21. Several studies of economies of scale in insurance have concluded that returns to scale are constant over a very large range. See N. Doherty, "The Measurement of Output and Economies of Scale in Property Liability Insurance," *Journal of Risk and Insurance* 48 (1981): 390; and R. Geehan, "Returns to Scale in the Life Insurance Industry," *Bell Journal of Economics* 8, no. 2 (1977): 497-513. Because it is impossible to measure a homogeneous unit of insurance output, estimates of scale economies based on accounting data are less reliable than the evidence from survival of small and large firms.
 22. This may reflect the greater influence of provider organizations in monopoly public systems.
 23. Of course, copayments and utilization review entail rationing. But this is efficient, given scarce resources and excess demand induced by moral hazard. Rationing by copayment entails no excess burden (other than the administrative costs already discussed); it also need not violate equity concerns, given appropriate income-targeted subsidies to assure that insurance is universally affordable. Information-based utilization review also entails no excess burden if it eliminates care that would cost more than it is worth.
 24. P. Enterline et al., "Effects of 'Free' Medical Care on Medical Practice—The Quebec Experience," *The New England Journal of Medicine* 288, no. 22 (1973): 1152-1155; and P. Enterline et al., "Physicians' Working Hours and Patients Seen Before and After National Health Insurance," *Medical Care* 13, no. 2 (1975): 95-103.
 25. W. Comanor, *National Health Insurance in Ontario: The Effects of a Policy of Cost Control* (Washington, D.C.: American Enterprise Institute, 1980). The author is indebted to Ted Frech for drawing this evidence to her attention.
 26. V.R. Fuchs and J. Hahn, "How Does Canada Do It! A Comparison of Expenditures for Physicians' Services in the United States and Canada," *The New England Journal of Medicine* 323, no. 13 (1990): 884-890.
 27. Will Manning and colleagues estimate a demand elasticity for outpatient care in the range of 0.1 to 0.3. See W. Manning et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *American Economic Review* (June 1987): 251-277.
 28. U.S. GAO, *Private Health Insurance*, 37; reports data for 1988-1989.
 29. It is sometimes argued that even if low fee schedules lead to a reduction in physicians' hours of work, this results in minimal if any net social loss, because much care provided by physicians has little real benefit. But if the net patient benefit of physicians' time is zero or negative at the margin, the efficient solution is to train fewer physicians, not to subsidize medical training and then use reimbursement constraints to discourage their work effort.
 30. Enterline et al., "Effects of 'Free' Medical Care on Medical Practice;" Enterline et al., "Physicians' Working Hours and Patients Seen Before and After National Health Insurance;" and P. Danzon, "The 'Crisis' in Medical Malpractice: A Comparison of Trends in the United States, Canada, the U.K., and Australia," *Law, Medicine and Health Care* 18, no. 1-2 (1990): 48-58.
 31. Carr and Mathewson suggest that the Canadian system has increased the real incomes of physicians, particularly specialists, in Canada relative to the United States. J. Carr and F. Mathewson, "The Effects of Regulation: Incentives and Health Insurance" (Mimeo, Institute for Policy Analysis, University of Toronto, 1991). This is consistent with the earlier evidence reported in Comanor, *National Health Insurance in Ontario*.
 32. E. Neuschler, *Canadian Health Insurance: The Implications of Public Health Insurance*

- (Washington, DC.: Health Insurance Association of America, 1990).
33. Evans, "The Canadian Health Care System."
 34. S. Globerman and L. Hoye, *Waiting Your Turn: Hospital Waiting Lists in Canada* (Vancouver: The Fraser Institute, 1990).
 35. This question was asked of the physician respondents. The average reported percentage varied from 88 percent for cardiovascular surgeons to 14 percent for gynecologists. Globerman and Hoye, *Waiting Your Turn*, 26.
 36. Globerman and Hoye's income loss estimate assigns zero value to loss of productivity for hours beyond the normal working hours (as reflected in average weekly earnings) and zero loss of real income for those patients who were not experiencing difficulty in working or other daily duties, as reported by physicians. Omitting these losses in nonmarket productivity is partially offset by assuming loss of total weekly earnings for those experiencing significant difficulties. The use of average provincial weekly wage for retirees and children as well as adults may also entail bias, as the authors note. Ideally, losses should of course be measured relative to expected productivity and well-being after surgery.
 37. Woolhandler and Himmelstein, "Deteriorating Administrative Efficiency."
 38. Expenditures on supplementary Insurance are not an unbiased measure of the value of additional services, amenities, and financial protection, to the extent that coverage of copayments induces greater use of the free public system and these costs are not reflected in private insurance premiums, On the other hand, to the extent that privately insured patients substitute private for public services, the reduction in expected benefits from the public system is like a tax on the purchase of private insurance that is not reflected in premium payments.
 39. C.L. Ballard, J.B. Shoven, and J. Whalley, "General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States," *American Economic Review* 75, no. 1 (1985): 128-138.
 40. C. Lindsay, S. Honda, and B. Zycher, *Canadian National Health Insurance: Lessons for the United States* (Roche Laboratories, 1978). The current appeal of national health insurance proposals founded on mandatory employment-based coverage is consistent with the hypothesis underlying this analysis, that political pressures tend to result in programs that redistribute resources toward middle-income groups.
 41. Pauly et al., "A Plan for 'Responsible National Health Insurance'."