

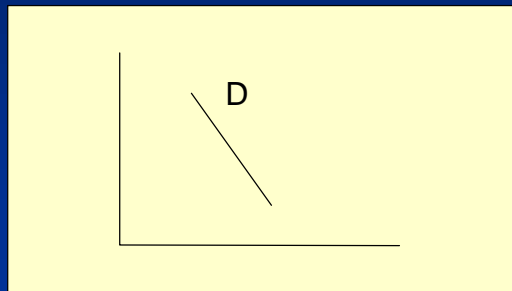
Economics For Health Policy

Physicians

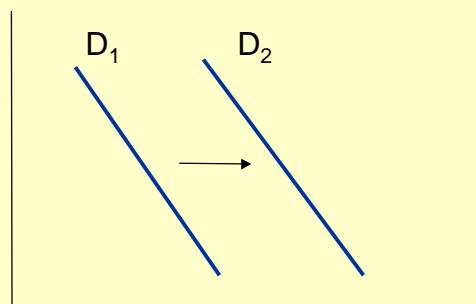
THE DEMAND FOR PHYSICIAN
SERVICES AND
SUPPLIER-INDUCED DEMAND

The Demand For Physician Services

We can think, to begin with, of the demand for physician services in the same way as we think about the demand for other services; as downward-sloping, neither perfectly elastic nor perfectly inelastic



The Idea Of Supplier-induced Demand



But most economists believe that physicians are able to *induce* demand for their services; in other words, rather than recommend to the patient precisely that treatment which the patient would choose if the patient knew what the doctor knows, they recommend more treatment in order to increase their own income.

Why Does It Matter?

If physicians can induce demand for their own services, then:

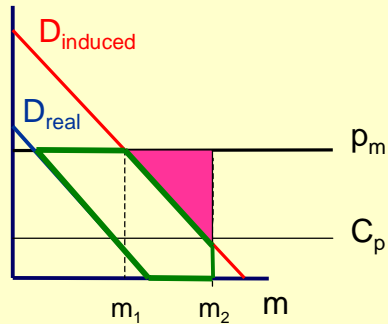
- Markets are not working as economists normally conceptualize them
- The welfare loss arising from moral hazard, and indeed all measures of welfare based on demand curves, are cast into doubt
- Changes in physician supply may not have the expected effect on price
- Changes in physician fees imposed by third-party payers may backfire

The first two of these consequences are of particular importance for health economists, a number of whom have tried to argue that SID does not exist. The last two consequences have direct relevance to health policy

SID MEANS MARKETS ARE NOT WORKING

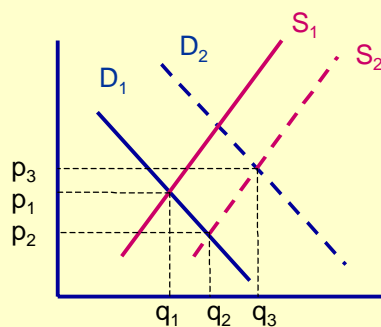
- If SID exists, then the market for physician services is even further from the ideal of a perfectly competitive market - and in a more fundamental way than insurance makes it
- In fact standard economic theory makes no allowance at all for the possibility that the supplier would influence the position of the demand curve

WHAT DOES WELFARE LOSS MEAN IF DEMAND DOES NOT REFLECT PATIENT PREFERENCES?



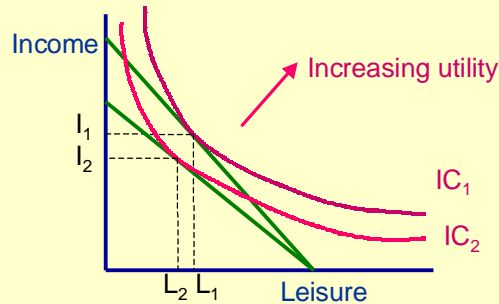
The pink shaded triangle corresponds to the welfare loss from lowering the price of care from p_m to C_p . But this assumes that patient demand reflects patients' own marginal utilities - how much they value varying levels of medical care at different prices. If the demand curve is really D_{real} , then the area enclosed in a thick green line is additional welfare loss - resources expended that do not benefit patients. But there is no way to estimate it!

SID AFFECTS THE RELATION BETWEEN PHYSICIAN SUPPLY AND PRICE



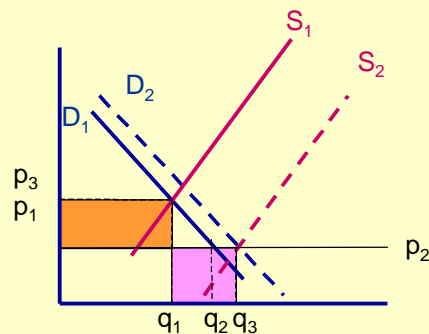
In a physician services market where physicians can set prices, initial equilibrium is p_1, q_1 . An (exogenous) increase in the number of physicians would have been expected to lower prices to p_2 and increase quantities to q_2 . By increasing demand to D_2 , however, physicians can not only increase quantity, but push price even beyond p_1 .

SID AFFECTS THE EFFECTIVENESS OF FEE CONTROLS: (1) THE INCOME-LEISURE TRADE-OFF



Self-employed physicians must trade-off extra income against hours of leisure. The indifference curves IC_1 and IC_2 show combinations of income and leisure hours between which a physician is indifferent. A reduction in fees causes the income-leisure possibilities line to shift inward. The physician's optimum then shifts from I_1, L_1 to I_2, L_2 - the physician has given up some leisure to mitigate her drop in income. With a fixed number of patients, this will mean shifting supply outwards - and inducing demand.

SID AFFECTS THE EFFECTIVENESS OF FEE CONTROLS: (2) SHIFTS IN SUPPLY COMBINED WITH INDUCED DEMAND



In a physician services market where physicians can set prices, initial equilibrium is p_1, q_1 . An imposed reduction in fees to p_2 could result in an increase in quantity not just to q_2 , but even to q_3 through a further shift in supply and some demand inducement as well. The shaded pink area is only a bit smaller than the orange area, indicating that the reduction in fee had a smaller effect on physician fee expenditures than might have been expected.

EVIDENCE: INCREASES IN PHYSICIAN/POPULATION RATIO ASSOCIATED WITH GREATER UTILIZATION AND HIGHER FEES

- Fuchs (1978): 10% increase in surgeon/population ratio associated with 3% increase in per capita utilization, and increased prices: 7% decrease in surgeon workload, combined with smaller decline in income.
- Other studies have reported similar results
- But does this kind of association necessarily mean there is demand inducement?

ALTERNATIVE EXPLANATIONS

- Physicians are attracted to urban areas; there is more demand for their services there - lower time costs to obtain care; also, physicians have more time, so they provide higher-quality services.
- Pauly and Satterthwaite (1981): consumers in urban areas, where physician density is higher, have more difficulty ascertaining physician reputations and prices; physicians can take advantage of this by charging higher fees. (But this does not explain the higher utilization.)
- In the end the evidence for inducement from such cross-sectional studies is equivocal

WHY WOULD PHYSICIANS NOT INDUCE DEMAND INDEFINITELY?

- Evans (1974): Target income hypothesis. Physicians have a target income and induce demand in such a way as to attain that income (or at least, try to).
 - But: where would target income come from?
- Physicians feel a moral compunction (disutility) from inducing too much demand
- Patients can detect excessive induced demand and shop for another physician; physicians know this and this restrains them.

DISTINCTIONS AMONG SERVICES

- It does seem clear that physicians, if they do induce demand, could only do so for some services
- For example, they could induce demand for repeat visits, but not initial visits
- Among surgical procedures, the indications for some are quite clear (e.g., appendectomy), for others less so (e.g., hysterectomy).
- Welch, Verrilli et al. (1996) found evidence that per capita volumes of high-consensus procedures are similar between Canada and the U.S., while those of low-consensus procedures are higher in the U.S.

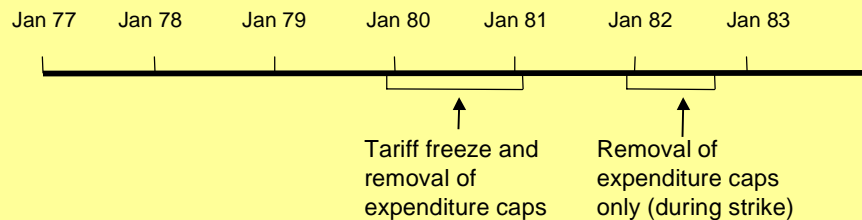
OTHER LINE OF EVIDENCE: RESPONSES TO FEE CHANGES

- Several studies have looked at the effects of changes in fees (absolute, or changes in relative fees) and also global expenditure caps
- Overall, these studies provide much more compelling evidence that physicians are able to influence demand for their services

EFFECTS OF A TARIFF FREEZE AND OF EXPENDITURE CAPS IN QUEBEC

- Lise Rochaix (1993) examined the effects of a concurrent 15-month tariff freeze and removal of quarterly expenditure caps (Nov 1 1979 to Jan 31 1981), and a subsequent 9-month period with only removal of expenditure caps, which coincided with a physician strike (Dec 1 1981 to Aug 30 1982).
 - The quarterly expenditure caps were set so as to discourage “workaholic” physicians from billing beyond a threshold amount over a quarter; above the threshold fees are reduced by 75%
- This in a setting where great majority of physician incomes comes from fee-for-service (94.5% in 1978, 87.8% in 1983)

SEQUENCE OF EVENTS

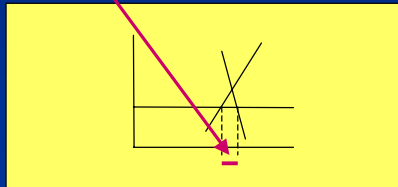


THEORETICAL MODEL

- Two-stage budgeting model:
 - Stage 1: Physicians trade-off leisure and income (as in previous graph). Decision affected by wage rate.
 - Stage 2: Having decided on an activity rate, physicians must choose levels of individual procedures.
- Rochaix estimates an econometric model for each stage

SAMPLE OF PHYSICIANS

- 677 GPs in the Montreal area who were in full-time practice in 1974 and continued to practice throughout 1977-1983
- As there is a high physician to population ratio in Montreal, the quantity of services delivered is likely to be determined mostly by physicians - *not* a situation of excess demand



DATA

- Physician characteristics from annual questionnaire: age, sex, postal code, hours worked per week over the year, % time in different activities
- Monthly data on numbers of procedures used by each physician - up to 50 types of service per month per physician
- Data on the CLSC area where the physician practices, in 1980 - to characterize clientele

PHYSICIAN SUBGROUPS

- G0: 86 outlier physicians: worked few hours and had very low incomes
- G1: 360 physicians whose incomes were above the minimum threshold, but below the negotiated target income
- G2: 119 physicians with incomes above the target income but below the ceiling less 10%
- G3: 112 physicians with incomes above the ceiling less 10%. These are the physicians who are affected by the ceiling.

ESTIMATION STRATEGY

- Stage 1: Actual monthly numbers of services, weighted by 1980 fees (measure of activity level): regressed on measure of fee level within the cohort, and variables common with stage 2.
- Stage 2: Quantity of each procedure (thus, many analyses) regressed on: price of procedure, overall fee level (these 2 indicate relative attractiveness of this procedure relative to others), and common variables.
- Common variables: dummy variables for July and December, variables representing the interventions, and a variable representing the 3rd month of every quarter

RESULTS - 1

- Stage 1: All income groups increased activity rates (as measured here, see below) during the tariff freeze (5% increase for G2, for example - or \$20 per month); roughly similar magnitude of response at all income groups, with an overall increase of 6%.
- Stage 2: Focus on 3 major medical examination (Q50), complete medical examination (Q52), and ordinary medical examination (Q1). Represent 60% of GP activity taken together. During tariff freeze, for all income groups, there is a decline in Q1, and an increase in Q50 and Q52 that more than compensates for the decline in Q1.

RESULTS - 2

- Overall volume effect of ceiling deregulation: The 7% overall increase in activity levels for the high-income group appears attributable mostly to the tariff freeze (5%), but also to a smaller extent (2%) to the removal of the expenditure cap.
- Only the high-income physicians reduced activity levels, as well as specifically quantities of Q0, Q50 and Q52.
- The reduction in volume by high-income physicians was not compensated by a corresponding increase in volume by the other physicians - the ceiling did not have the redistributive effect intended.

CONCLUSIONS DRAWN BY ROCHAIX

- Physicians behave strategically and have the discretionary power to shape demand according to non-medical criteria.
- But, they were not exploiting this power fully before the tariff freeze
 - Rochaix suggests they were constrained from doing so by ethical concerns

OVERALL CONCLUSIONS CONCERNING SID

- There appears to be little doubt that physicians can influence demand, for some procedures at least, to some extent
- This does cast some doubt on welfare loss calculations - although in the case of moral hazard, additional utilization induced by SID would only increase welfare loss
- Policies aimed at controlling physician expenditures, whether by limiting physician supply or by imposing fee freezes, must take this into account.

EFFECTS OF ALTERNATIVE PHYSICIAN PAYMENT MECHANISMS

ALTERNATIVE WAYS OF PAYING PHYSICIANS

- Fee-for-service is the most common method for paying physicians in Canada and the U.S. (the latter at least until recently) is fee-for-service
- Salary is another possible method, and is used by CLSCs and some HMOs in the U.S. (although in the latter case, there are usually financial incentives for reducing referrals or tests, or having high satisfaction ratings, etc.)
- Capitation is yet another possibility - as in HSOs in Ontario, or GP fundholders in Britain - fixed payment per patient, possibly adjusted according to age and sex.
- Various mixed methods are also used

MAIN EMPIRICAL FINDINGS

- Some experimental evidence that, as we would expect, more care is delivered under fee-for-service than under salary or time-based wage (Hickson, Altmeier and Perrin, 1987)
- Overall, capitation payments do not appear to reduce hospitalization:
 - Admittedly, Hillman, Pauly and Kerstein (1989): higher rates of hospitalization for patients whose doctors paid on ffs basis; but no apparent independent effect of specific incentives.
 - But Hutchison, Birch et al. (1996), and other studies, find no such effect. Hutchison et al: Ontario's HSOs do not appear to have reduced hospital utilization.
- Context appears important: with more hospital beds, community physicians can have more control on admission decisions

THE ROLE OF RELATIVE FEES UNDER FEE-FOR-SERVICE

- There is also evidence, as we would expect, that higher relative fees for certain procedures tends to increase volume for those procedures
- This was one of the anticipated benefits of implementation of the RBRVS in the United States
- The income effects of changes in fees can also induce substitutions in procedures: more complex CABGs for simpler ones, for example.
- In the U.S., there can also be responses to seek privately-insured patients in preference to Medicare patients when fee differential becomes very great

PHYSICIAN SUPPLY

DIVERGENCES IN PHYSICIAN SUPPLY POLICY BETWEEN CANADA AND THE U.S.

- 1960s and 1970s: Similar policies. In both countries, perception of a shortfall of physicians, and construction of new medical schools. Also, encouragement of development of primary care programs, more pronounced in Canada. Acceptance of international medical graduates. (24% in Canada in 1970, 30% in 1976; vs. 15% in the U.S. in 1970, 20% in 1978)
- 1980s: Divergence in policies. 1980: second Hall commission recommends restraining physician supply. Consequent reductions in medical school enrollment. In U.S., policy paralysis, and much slower decline.
- 1990s: Additional analysis (Barer-Stoddart report in rest of Canada) led to further reductions in medical school enrollment. Not so in U.S.

RESULTS TODAY

- Perception of having cut physician supply too much in Canada
 - much demand for physician services arises from new technology, which is difficult to predict
 - there has also been an increase in feminization of profession - women tend to maintain shorter hours
- Recent increases in medical school enrollment
- Canada has more appropriate mix of GPs and specialists (about 50/50), compared to about 30 GPs for 70 specialists in the U.S.
- The growth of managed care in the U.S. has exacerbated the demand for generalists as opposed to many types of specialists

CONTROLLING PHYSICIAN EXPENDITURES: SOME LESSONS (Barer, Lomas, Sanmartin 1996)

- Need to control price *and* quantity at the outset - negotiate to this end
- Set prospective rules for the size of the cap, and making adjustments in case of overspending
- Set up a “payer/physician committee”. Difficult to distribute the pain of income reductions following overspending relative to caps
- Set up an “all-payer system”. In the U.S., controls by one payer (e.g., Medicare) can result in increased expenditures for other payers.