despite the fact that these institutional arrangements have often been claimed to have a major role in ensuring these countries' remarkable performances compared with those of the United States and the United Kingdom.

This is a book which members of the New Right and other proponents of the freer workings of markets will love, for in essence it involves a restatement of many of the themes familiar from Adam Smith, embellished with modern legal perspectives and work in the field of competitive strategies and agency theories of the firm. I doubt that 'Green' economists will be similarly enamoured with it: Rosenberg and Birdzell write as though they would frown upon the efforts of, for example, primitive tribesmen in Malaysia who are trying to blockade the logging companies whose activities are destroying their lifestyles and the local ecosystem. But, then, they see 'nothing in the underlying sources of Western economic growth to foreclose the prospect of continued growth' (p.333): their faith in the ability of the market to come up with technological solutions to economic problems knows no bounds.

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Financial Incentives and Entrepreneurial Medicine: Problems and Solutions *by J. Richardson*
School of Health Administration, Sydney, 1987, pp.vi + 127.

This monograph involves a discussion and analysis of the relationship between a health sector's institutional structure and its economic efficiency. Although some structures are conducive to efficiency while others are not, the book focuses on particular institutional arrangements in Australia which are conducive to a higher cost health system than need be. To this end, the phrase 'incentive medicine' is used to describe diagnostic and therapeutic practices which deviate from hypothetical ideals because of the financial incentives built into Australia's institutional structure.

Excluding the introduction and conclusion, and a somewhat tangential chapter on American health maintenance organisations, the book is organised into two major parts. The first part (entitled 'Problems') identifies structural arrangements which may be lowering economic efficiency in Australia's health sector. I say 'may be' because the author is quite adamant in pointing out that the evidence in support of this conclusion has either not been subjected to statistical tests of significance or is anecdotal in nature. It seems that the inefficiency is considered a problem not primarily because of empirical evidence that it exists, but because of *a priori* deductions suggesting that it should exist.

The problems highlighted in the first part of the book are first, excessive provision of services to patients by doctors in their offices, second, excessive numbers of diagnostic (and, in particular, pathology) tests, and third, excessive numbers of referrals by physicians in private hospitals and clinics. There is also concern about excessive reliance on 'high tech' procedures, although this does not become clear until somewhat late in the book.

For each problem highlighted, there is an extensive discussion on the structural arrangements which are conducive to inefficiency. Doctors in their offices are

paid through fee schedules which promote manipulation of the length and number of consultations, and the excessive treatment of patients under conditions of small patient loads. Pathologists face a payment arrangement which encourages them to generate more business by covertly fee-splitting with primary practice doctors. Of course, when the two types of doctors function in a single institutional setting, as in clinics and private hospitals, the fee-splitting and increased profit associated with extensive diagnostic testing is internalised, making the practice all that more likely.

Not only in respect to pathology, but also in respect to most dimensions of medical practice, private hospitals and clinics have more potential capacity for providing service-intensive care than do doctors in surgeries, and will do so if faced with a fee-for-service pricing arrangement that makes this profitable. Perversely enough, when these organisations exploit their additional capacity to look for and resolve a number of problems unknown to patients at the time of initial consultations, they not only generate more profit but an impression that they are superior quality providers. Over time, these organisations compete by attempting to expand the capacity to provide 'comprehensive' care, and this often is where the technology-cost problem enters. Each organisation continually strives for the most recent and most expensive equipment, even if its style of care does not initially justify this. After the equipment is purchased, the style is then modified in order to justify the acquisitions financially.

The second major part of the book (entitled 'Possible Solutions') discusses how each of the above problems might be resolved via public policy. As far as excessive provision of services by doctors in their offices is concerned, the suggestion is to adopt a simplified two-part fee schedule in place of the complex one currently in existence. The first part of the new schedule would provide a doctor with a given amount of pay per hour of time allocated, whatever he might be doing. The second part would cover the average variable costs of all ingredients and inputs used in the provision of services.

In respect to pathology, there are two alternative, and fairly detailed, policy recommendations. In both recommendations the basic idea appears to be to provide GPs and other primary contact doctors with fixed periodic sums for their pathology requirements, and then encourage these practitioners to subcontract their entire requirements to one or more laboratories for a predetermined sum determined through an auctioning (or market) process.

In respect to private hospitals and clinics, the recommendation is to replace the present payment arrangements with a diagnostic related grouping (DRG) payment arrangement, analogous to that being introduced in the United States.

Finally, in relation to technology, the recommendation is basically to adopt a planning approach, with the states responsible for medium scale and medium cost processes (like chemotherapy and magnetic resonance imaging) and the central government responsible for the large scale and extremely expensive processes (like liver and bone marrow transplant procedures). As far as the medium scale technologies are concerned, there is also a suggestion that the state governments should receive fixed annual amounts from the central government for finance, regardless of how much is spent. In this way, the state governments would be forced to make technology decisions in the context of bearing full marginal costs for the decisions involved.

It is easy enough to summarise the 'incentive medicine' arrangements and solutions that constitute the core of Ricrardson's book. It is more difficult to assess the appropriateness of the policies recommended. A major problem in

making the assessment is that the first part of the book provides the impression that there is little empirical evidence of excessive health care servicing in Australia, despite features of the pricing arrangements that are conducive to this. For most economists, this provokes an attitude of "if it ain't broke, don't fix it". Yet the second part of the book generates the impression of a need for numerous public policy changes, even though making changes in this context could easily become the public policy equivalent of 'excessive servicing'!

The rule of thumb about not acting unless there is solid evidence suggesting a need for change is particularly pertinent when the public policy modifications in question have known flaws and weaknesses. In this context, I found Richardson's recommendation of DRG reimbursement for private hospitals and clinics on the basis that 'there is no sensible alternative available for the immediate future' (p. 58) somewhat surprising. The problems with DRG reimbursement in practice are quite horrendous, providing hospitals with incentives to select patients with expensive health problems (when given a choice) and, for any given patient, to select the least expensive therapy available, regardless of its merit on clinical grounds. It is virtually impossible to eliminate these problems through fine tuning of the payment categories, which leads me to suspect that DRG reimbursement in the US will eventually be perceived as a failed experiment. However, this will only become known as the volume of hype declines and the empirical evidence starts to emerge in some quantity.

In the meantime, is it prudent for Australia to mimic the US by experimenting with DRG payment arrangements? In large part, I suppose, it depends on how bad the current Australian situation is. In this context I will simply mention that I am personally on record as advising Canadian policymakers to be extremely cautious about replacing global funding methods for hospitals with bureaucratically defined (as opposed to market determined) DRG based fees-for-services. The same precautionary advice may also be appropriate for Australian health policymakers.

After DRGs, the other controversial public policy proposal in the book concerns pathology. I read the specific details of the two recommended alternative procedures for marketing primary practice physicians' pathology requirements several times, without becoming convinvced that either procedure would be necessarily institutionally viable or without its own set of adverse financial effects. On the institutional side, it seems that either procedure would require a fair amount of coercion and monitoring by the state, activities which may not be politically viable or technically feasible, although I leave it to readers with a better grasp of Australian social conditions than I have to make the ultimate assessment on this matter. On the financial side, contracting out physicians' pathology requirements in the aggregate may simply substitute the problem of insufficient testing for the problem of excessive testing; and it is not possible to say *a priori* which situation is better.

If Richardson's public policy proposals with respect to private hospitals and pathology are controversial, exhibiting potential for lowering as well as increasing economic efficiency, his proposals for reducing excessive reliance on 'high tech' procedures are more conventional. Central planning, at a regional as well as a national level, has been perceived for a long time as the best way of eliminating unnecessary duplication of facilities among competing, or potentially competing, hospitals and health care institutions. But if the proposals are standard, the empirical evidence that they work, without auxiliary policies to modify incentives in the hospitals, is disappointing. At the provincial government level, Canada

has had the arrangement which Richardson recommends at least since 1977, and Canada continues to complain about the empire building of its hospitals with respect to high technology facilities, at least as much as do most other developed countries. Admittedly, on the other side of the coin, Canada does seem to do better than the US in this regard, which gives the policy proposal some credence.

The policy proposal by Richardson which I find most attractive, perhaps because I find myself recommending it from time to time, concerns the modifications to the payment arrangements for primary practice physicians. Placing these doctors on hourly fees, supplemented only by charges to recoup variable input costs, has two major advantages over current fee-for-service arrangements. It promotes equal levels of profitability for competing therapeutic interventions as far as medical practitioners are concerned, and it makes medical prices meaningful to patients as well as to doctors. Both these advantages mean that the market should be more efficient at yielding clinically optimal therapeutic decisions at minimal average production costs.

The above comments reflect my reactions to and assessments of Richardson's specific proposals for reforming pricing arrangements in Australia's health sector. However, I feel compelled to comment also, at least minimally, on the implicit methodology on which this study is based. Most health care economists, including Richardson, are agreed that the potential for converting the health sector into a set of intertwining highly competitive markets is limited. Most of these same economists are agreed that the perfectly competitive system would be a very reasonable Utopia to strive for, if it were feasible. The relevant public policy question is what to do when it is not. When addressing this problem, most analysts rather instinctively generate a set of institutional arrangements that they believe to be consistent with the competitive Utopia, and then press for these particular arrangements as practical public policy measures. Thus economists with right wing ideological beliefs press for markets that are private, industrial organisation analysts press for markets with many sellers, and medical associations press for markets relying only on fee-for-service pricing arrangements; and all these recommendations are made on the premise that, if the form of the competitive market is achieved, the efficiency and equity benefits from competition will be achieved also.

Unfortunately, the analytical underpinning of the methodology is faulty. If competition is integral to a market, then probably the particular institutional structure of that market matters little. Empirical experience tells us that competitive behaviour and results can co-exist with public finance, fewness of sellers, and/or salaried and capitation-paid workers. On the other hand, if competition is not integral to a market, then forcing reliance on only some institutional forms is irrelevant at best, and counter-productive at worst.

Let me illustrate what I mean by a specific example. I personally suspect that the arguments about the merits of paying doctors' fees-for-service *vis-à-vis* salaries in national health insurance arrangements will never be completely resolved. The reason for this is that, in a planning environment, both payment arrangements have desirable and undesirable incentive effects. Fee-for-service promotes practitioner industry, but also low quality service and excessive servicing. Salaries promote a 'nine to five' attitude on the part of doctors, but also a propensity to stress quality of work rather than quantity. These possibilities can give the planner-policymaker a real headache, and should make him/her extremely cautious about relying solely on any particular institutional form as a method of simulating perfectly competitive results without competition.

It is obviously beyond my mandate in reviewing this book to discuss what constitutes an optimal methodology in making policy prescriptions for sectors of the economy that are inherently uncompetitive. But what I have already said should provide the reader with additional insight about why I have some misgivings about Richardson's policy recommendations in respect to laboratory and private hospital services. On the other hand, I can well understand his dilemma in adopting the approach he did: I personally have found myself using the same methodology many times when it has not been apparent that a better approach was available. As far as the reader is concerned, my comments are designed only to warn that Richardson's policy prescriptions are not a final word on the subject, and not to deter the reading of a book which has many useful insights and much information about the Australian health delivery system.

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Electronics and Industrial Policy: The Case of Computer Controlled Lathes
by Staffan Jacobsson.
(Allen & Unwin, London, 1986) pp. XX + 252, $87, ISBN 0-04-338138-3.

This book is essentially a doctoral thesis, which was presented at the University of Sussex in 1985. While the doctorate was granted in economics, the thrust of the investigation is directed at technology and its implications for national development, in a fairly narrow compass, as one might expect of a contemporary doctorate. Dr Jacobsson has focussed on an interesting theme: the extension of technology, via computerised control to a traditional and important capital product, the lathe; and he has explored the implications as they affect a number of countries. It is an ambitious agenda, in which he seeks to contribute to two debates: one about the industrial impact of the electronic revolution, and the other about the industrialisation of the developing world. It is also his express claim to develop a theoretical framework at the level of the firm, relevant to an analysis of industrial policy where product differentiation applies.

Following the introduction, his second chapter provides a succinct history of the evolution of computer numerical control (CNC) lathes, and the singular growth of Japanese production. CNC lathes have made enormous inroads into the market of traditional lathes not least because Japanese manufacturers produced at the low-cost, low-power end of the spectrum, doing for the CNC lathe what Henry Ford did for the automobile, at the expense of both traditional lathes and the automatic lathe, which is less flexible than CNC. There is a useful section setting out the economics of choice between the competing designs.

The third chapter, on growth and market structure in the international industry, is much the longest in the book. It shows how Japan ousted the United States as the leading producer of CNC lathes, by volume and value, and cut down the European producers' share of world markets. To an industrial economist or microeconomist, however, his section on theoretical framework is unimpressive. Ansoff is quoted to attack the restricted focus of microeconomics, and many practitioners would agree that one needs a wider angle than some of its more