companies in the years ahead is to forge links with marketing departments and to become integrated into company budgeting and forecasting processes. Applied demand analysis has a strategic role to play in a competitive environment, ranging from the conventional types of elasticity estimation in traditional markets to the identification of new markets. The possibilities are vast. It only requires imagination, hard work — and some humility — on the part of economists and demand analysts" (p. 270).

'Restructuring' of telecommunications has hampered demand studies "as much of the demand data that had previously been available to the public became proprietary" (p. 3). In the US, research is being facilitated by the National Telecommunications Demand Study (NTDS), an on-going study of the demand for services provided by local companies which is a joint undertaking of INDETEC, Inc. CA., PNR & Associates, PA. and Taylor. The data set from this study has more than two million observations on both business and residential customers.

The studies of economists and demand analysts reported and commented upon by Taylor reflect a high degree of specialisation. Perhaps the most productive research, in this reviewer's opinion, will come through the cooperative investigation of the dynamics of information exchange. Taylor points to, e.g., a need to understand how communities-of-interest form (p. 268, n.19) but we can go further, adding how such communities cohere and disintegrate; how new information goods and services are adopted; how calls create need for further calls; how business (and more generally, organisational) needs for information are shaped and managed. To do so, we shall have to recognise the diversity in real world information and information processes and devise a rich taxonomy of information to replace the present all-purpose notion.

These lines of inquiry might enable us to cast light upon the much debated direction of causality in the telecommunications/growth process. Telecom economics can be informed by information economics and the joint product of their efforts might help provide the elusive theory of learning so much needed in economics.

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The Economics of Intellectual Property in a World without Frontiers *by Meheroo Jussawalla* (Greenwood Press, Westport, Connecticut, 1992), pp.158 ISBN 0 313 27620 X.

This book deals with two important developments in the world. The first is the global flow of information generated by information technology (IT). The second, which stands in sharp contrast to the first, is the creation of an international regulatory framework to deal with the rights of ownership in information.

These two developments cut across each other in important ways giving rise to many regulatory, economic and political issues. Jussawalla mentions many of these, including the following. Property rights, as both Adam Smith and Jeremy Bentham observed, help to create certainty of expectations. The grant of property rights in information, it might be thought, would encourage investment in the creation of information. The problem is that property rights enable a price to be charged for information and this in turn means that the distribution of propertised information will be sub-optimal. Property in expression has serious implications for freedom of speech. Governments or private owners of information may choose to rely on copyright in order to prevent the circulation of information they consider damaging. Developing countries have an interest in keeping down the propertisation of information flows for this makes the cost of their economic development cheaper.

Jussawalla's conclusions are not entirely clear for much of the book is a description and survey of the issues raised by the global trade in services and information rather than a detailed analysis of any one of these. Despite suggesting at one stage that effective intellectual property protection would "promote international trade and transfer of technology" (p 51) her conclusion suggests that property protection for IT products with a short life cycle is likely to produce a net welfare loss (see p 103). She also, correctly, suggests that competitive market structures and processes will continue to stimulate innovation in the information technology industry.

The book is certainly ambitious in its scope. Chapter 2 deals with, amongst other things, economic theories of regulation, public choice and public goods insofar as they relate to intellectual property and information. Chapter 3 deals with the important role of the General Agreement on Tariffs and Trade (GATT) in helping to bring about a set of minimum international standards for intellectual property protection. (At the time this book was written the Uruguay GATT round was still being negotiated). Chapter 4 attempts the Herculean task of describing the intellectual property systems of 13 countries including the United States, Japan and England. Chapter 5 deals with the problems that technology poses for those who trade in information. Chapter 6 contains the conclusion. There is also an interesting mathematical appendix by Hajime Oniki which proposes a model of a socially optimal institution for the protection of information. Unlike other attempts in this area it takes seriously the transactions costs of maintaining an intellectual property regime.

Of the many issues raised by Jussawalla, two seem worthy of more analysis, particularly in light of the fact that the Final Act of the GATT round contains an agreement on the trade-related aspects of intellectual property rights (TRIPS). The TRIPS agreement sets in place a protectionist paradigm for intellectual property. This protectionist paradigm involves minimal use of compulsory licensing, the criminalisation of infringing conduct, increasing the term of protection for patents and establishing a trade secret regime throughout the world (not all countries protect trade secrets). While in some areas of business there are reasons to set global standards (eg aircraft safety) in other areas it is less obvious that global standardisation is a desirable outcome. Global standardisation or harmonisation exercises are almost always riddled with the real economic agendas of the participating actors. So, for instance, protectionists in a country with high labour costs will often support the standardisation of labour rights because of its implications for marginal labour costs and comparative advantage of other countries. International intellectual property protection has in recent years become dominated by the needs of those states whose economies have made the transition to a knowledge and information based economy.

The United States is probably one of the few net exporters of intellectual property in the world (see p 63) and so has much to gain from the global standardisation of intellectual property. What are the economic gains in a global, protectionist, intellectual property paradigm for countries like Australia which are net intellectual property importers? For such countries global information flows form a positive externality. It seems unlikely that the new intellectual property paradigm will through its incentive effect trigger a wave of innovation within the world. The more likely outcome is an increased transfer of wealth to the United States. In any case there should be more concrete economic analysis of the incentive effects of a global property paradigm on informational innovation. One practical benefit of such analysis is that it would help countries to respond critically to US cries for more intellectual property protection, which in the post-GATT environment are likely to go on.

Jussawalla and Oniki both raise the question of transaction costs in relation to intellectual property. Here the cost of enforcement of intellectual property rights is central. Historically, the enforcement of intellectual property law was a matter of private law. Transaction cost analysis helps to explain why principles of private international law were not seriously pursued by owners of US intellectual property. One imaginative line of argument might have been that the US Patent Act, for example, creates a statutory tort and that US courts had the jurisdiction to hear actions for infringement even where the tort was committed abroad by foreigners. Even if this line of argument had succeeded the costs of running it each time an overseas defendant infringed would have been prohibitive, not to mention the difficulties involved in getting the judgment enforced.

One of the profound shifts that has taken place with the inclusion of intellectual property in the GATT is that states will be expected to play a much greater role in the enforcement of intellectual property. There are two principal ways in which this greater involvement will manifest itself. First, states will be expected to carry out more surveillance and data gathering in order to eliminate infringement (See Article 69 of TRIPS). Second, states will have to be more active in imposing or increasing criminal liability for infringing acts. The TRIPS agreement is itself an example of much greater state involvement in the enforcement of private property rights. States having agreed to certain standards are obliged under the agreement to provide intellectual property owners with a comprehensive civil and administrative enforcement structure (See Part III of TRIPS). In short, the considerable costs of enforcing intellectual property are, in part, through the TRIPS agreement, being passed onto the state. One important issue here is whether developing countries with scarce resources should be devoting these to the creation of a specialised legal infra-structure that will, at first glance, primarily benefit a transnational clientele.

Perhaps, the most important point that Jussawalla makes is that intellectual properly rights are monopoly privileges (see p 56). This is correct in the sense that judges use the term monopoly to denote the fact that these rights are legal barriers to free trade (legal monopolies do not, however, necessarily lead to economic monopolies). Older English statutes and case law use the language of monopoly and privilege to describe these rights. It is also clear, at least in the Anglo-American legal tradition, that intellectual property rights operate as exceptions to the general policy in favour of free trade and competition. This leads to a puzzle. Why is it that the GATT, a free trade organisation, institutionalised a system of global monopoly privilege?

Jussawalla's book raises many important issues for those interested in the role of property in the global information economy. The time has come for economists to take a hard analytical look at the role that monopoly privileges ought to play in a world without frontiers.

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