

BOOK REVIEWS

Industrial organization of high technology markets. The internet and information technologies, by Stefano Comino and Fabio Manenti, Cheltenham, Edward Elgar, 2014, 297 pp., £85 (hardback), ISBN 978-1-88347-292-5

Readers familiar with the economic literature on innovation and technological change will be disappointed if they search *Industrial Organization of High Technology Markets* for a definition of high technology along the lines proposed by the *Frascati Manual* (OECD, 2002). The authors use a different definition in relating high technology markets to the ‘main economic aspects related to Information and Communication Technologies’. Do not get me wrong, the contribution of the book is still valuable: there have been few good books on this subject since the path-breaking *Information Rules* (Shapiro and Varian, 1999). Shy (2001) and Belleflamme and Peitz (2010) are honourable exceptions. Standard economic texts have examined (in later versions) the impact of these high technology markets on industrial organization (Tirole, 1990) or business economics (Varian, 1990). What encourages the reader to use this book is that it introduces different key concepts in the area of network economics. These are generally not discussed in the traditional literature and include such concepts as the pace of innovation and technological change, and role of government intervention (anti-trust and regulation) in facilitating progress in network industries. A key issue not addressed in the book is how radical innovations which have come from other sectors are developing in these industries.

The book contains eight chapters based on papers the two authors have published in a variety of journals in the area of industrial organization and the economics of innovation and technological change. In the introductory chapter, the authors define information and communication (ICT) industries in terms of four characteristics: large economies of scale, presence of network effects, high innovation rates, and substantial switching costs. These characteristics are the reason – according to the authors – that market efficiency is not achieved in digital markets. For example, the presence of large economies of scale leads to a market situation in which prices do not converge to marginal cost of production: ‘if they do, companies cannot compensate the fixed costs they incur’ (p.8). The authors go on to pose an interesting question: ‘Why are digital markets so far from efficiency despite satisfying many of the conditions required for perfect competition to emerge?’ (p.18). This question is interesting as a common assumption in the area of digital markets has been that market efficiency will improve if more and more companies provide their products and services online. Based on examining the Varian (1980) model of sales, the authors conclude that even if search costs are negligible in digital markets, price dispersion will remain a long-lasting phenomenon because of commercial strategies of retailers which lead to less market transparency among consumers. In addition, the authors examine the strategic behaviour of firms in digital markets aimed at achieving substantial market power using price discrimination, bundling and versioning, as well as pricing conditioned by purchase history. They conclude that firms are able to use more sophisticated pricing

strategies on the Internet, which allow them to price discriminate more efficiently and to identify consumer preferences better.

The authors connect the literature on path dependency with research in industrial organization on network externalities, lock-in effects and switching costs. For a long time, both strands of literature have progressed unrelated to each other with the first strand rooted in the Nelson and Winter tradition of modelling technological change (Nelson and Winter, 1982), and the second strand examining the interrelatedness of demand (Artle and Averous, 1973; Rohlfs, 1974). In the first tradition, the authors reflect on Arthur's model of path dependency and the problems related to inefficient adoption of new technologies, such as the QWERTY keyboard (David, 1985; Arthur, 1989). Unfortunately, Comino and Manenti do not provide further insights; for example, on the role of government in this process [the 'blind giant dilemma' (David, 1987)] or when technologies which lock-in are actually good enough in terms of the knowledge of the time (Liebowitz and Margolis, 1994). Switching costs are briefly discussed, but their positive effects and the role of providers are omitted (Weizsäcker, 1984).

Chapter 4 develops some surprising arguments about the consumer benefits of two-sided markets and discusses the emergence of dominant positions in these markets. It proposes that consumer benefits in two-sided markets can be larger (if there are highly asymmetric intensities of cross-side effects) under monopoly than in perfect competition. They go on to postulate that 'fiercer competition may actually hurt consumers' (p.117). There follows an interesting discussion of new concepts in the area of telecommunication economics and regulation of one-way access, such as Martin Cave's 'ladder of investment' theory, and of two-way access in 'receiving party pays' (RPP) regimes. Again, the authors develop some surprising results with respect to one-way access pricing – 'the incumbent benefits from competition in the downstream segment of the market' (p.135) – which contradict some of the traditional literature on monopoly pricing. Unfortunately, the chapter ends just when it becomes interesting, when it starts to critique ladder of investment theory and begins a critical examination of the introduction of RPP regimes in Europe.

The authors provide new insights into the *ex ante* incentives of innovators to invest in new research projects under different patent regimes (no protection and weak patents). In building on the literature on the role of the patent and trademark office (PTO) in granting patent protection, the authors conclude that a weak patent regime is socially desirable when the innovator already has large enough incentives to develop true innovation (p.201). What seems to be missing, even in the chapter entitled 'Cumulative innovation in dynamic industries', is any discussion of the dynamics in these industries.

The authors reflect on the growing research on open source software (OSS) communities. They provide a focused explanation of a particular aspect in the literature – the circumstances under which an open core strategy is more socially beneficial than proprietary software. The authors develop two criteria to characterize these circumstances: 'when either the plug-in is of sufficiently high quality or the open source community largely contributes to the development of the core' (p.236). This is certainly interesting in the light of the Microsoft case. The discussion is less successful in developing the key characteristics of OSS communities (pp.226–27), which are only partly related to non-commercial incentives, and more to the different model of innovation underlying OSS communities.

In their discussion of anti-trust, the authors tie together some of the book's threads (on incentives for innovation, intellectual property, two-sided markets) and

derive policy advice on competition policy. They propose that ‘more severe antitrust policy increases incentives to innovate if competition is not too fierce’ (p.261), and argue in favour of cross-licensing agreements involving complementary technologies (p.268). In the case of two-sided markets, the authors suggest that a more detailed merger analysis is necessary than in traditional investigations of increased market concentration (p.272).

In general, the book is an interesting read for an audience familiar with some of the issues emerging in industries affected by information and communication technologies. It has difficulties in balancing depth (in terms of analysis) and breadth (in terms of survey character) in discussing the literature in the area. Furthermore, although the book is only recently published (2014), it already needs updating on such matters as ladder of investment theory, RPP regimes, and net neutrality. However, the book still is a good review of theoretical models not addressed in other (competing) books. Moreover, the book is challenging in delineating a research agenda for a more active government policy in network markets in times favouring *laissez faire* policies in these markets. I recommend the book for advanced readers at the masters level and beyond. It is less suitable for practitioners and strategists without an advanced economics background.

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