

3-1-2000

The Economics of Electronic Commerce

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Recommended Citation

Goffe, W. L. (2000). The Economics of Electronic Commerce. *Journal of Economic Literature*, 38(1), 151-152.

Available at: http://aquila.usm.edu/fac_pubs/4288

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readers interested in public choice theory and South Africa will probably want to read it.

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The Economics of Electronic Commerce. By Soon-Yong Choi, Dale O. Stahl, and Andrew B. Whinston. Indianapolis: Macmillan Technical, 1997. Pp. xxix, 626. \$49.95. ISBN 1-57870-014-0. *JEL 99-0249*

While "electronic commerce" in this book's title may seem to hold little interest for most professional economists, the emphasis of this book is very much on "economics." Thus, any economist interested in doing research on the economics of the Internet will likely find it useful, even, perhaps, their best starting point. This is due to the authors' heavy reliance on a broad range of economic theory in their analysis (indeed, parts may be a challenge for those with little prior economic training, so its appeal to those interested only in electronic commerce may be limited). An additional attraction is that many issues beyond electronic commerce, strictly defined, such as policy issues and research areas, are covered. They also make frequent reference to the fundamental economic literature as well as the evolving literature on electronic commerce and the Internet in general. Thus, this book goes considerably beyond "electronic commerce" in a way that will interest many economists.

The twelve chapters of this book can be organized into three sections: the first three chapters are its foundation. The first largely lays out the major topics of the book, and the second describes its focus: "digital products"; these are products that can exist in a virtual sense. This chapter describes their properties, with an emphasis on their economic aspects. This first set of chapters concludes with a discussion of the "plumbing" of the Internet, which leads into the topic of congestion pricing of Internet traffic. The offered solutions are not convincing, as they would be technologically challenging to implement.

Further, they describe congestion as worsening, but contrary data exists; it certainly runs counter to my casual experience. While not as theoretically satisfying as the mechanisms they review, firms that provide Internet connection services and manage sites certainly have strong incentives and increasingly better technology to provide sufficient bandwidth to reduce congestion for their customers. The allusion to the "tragedy of the commons" may well be misplaced since customers partly choose who carries their traffic, and sites such as <www.inversenet.com>, <ratings.miq.net> and <www.netstat.net> let users compare providers' performance. Perhaps this perspective could have been covered.

The next seven chapters deal with specifics of commerce on the Internet. One is on quality uncertainty—it can be hard to market many digital goods as they are "experience goods," and consumers have a difficult time evaluating the product without actually purchasing it. The authors offer advice to sellers facing this quandary. Another chapter offers a particularly nice overview of copyright law, economics, and history, and then applies it to the Internet. This discussion would surely interest most any economist, and in fact contains information every academic should know. One slight oversight is the omission of the "open source" movement, where software may be copied, including its "source code." Teams of programmers often work on these projects—the term "massive peer review" is sometimes seen. To be fair, while such software has been in use for years from the "GNU" and other projects, its notoriety is quite recent with the rise of the Linux operating system (indeed, the term "open source" came after the book's publication). A particularly interesting question is why profit maximizing firms contribute to such projects—for example, IBM has supplied code for the open source Apache web server (web browsers such as Netscape and Internet Explorer retrieve information from computers running such software). Some may find the popularity of open source software surprising: as of July 1999, Apache had a commanding market share of 56 percent; Microsoft is second at 22 percent.

Other chapters in this section describe how

firms might signal quality (this chapter has a considerable advertising emphasis), how consumers search for information (current Internet users will find no great surprises here), and how firms might price discriminate in this environment. The final chapters in this section deal with how the financial and electronic payments industries might change (these chapters are quite wide-ranging—they even cover monetary policy).

The two chapters making up the final section are broad ranging. The first covers various topics that policy makers and the public may have to face with the rise of the Internet, and the final chapter's appeal is obvious: "Future Directions for Economic Research." It first describes likely future technologies that form the base for future possibilities. Of key interest is "convergence"—how our various network, communication, and recording devices are merging together. The resulting impact on economic structures and processes is then detailed, and avenues for research are described. This final set of chapters is quite wide-ranging, and extends considerably beyond electronic commerce into areas many economists may find of interest.

One seeming limitation of this book is its age, as it was published in 1997. Many may have heard of "Internet years," which describe its rapid evolution, so one might assume this book is obsolete. While some of the examples are necessarily dated, and of course recent developments are missing, the book's fundamental analysis remains surprisingly sound and current. This attests to the book's long-term value and interest for those interested in the intersection of the Internet and economics.

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Asia's Computer Challenge: Threat or Opportunity for the United States and the World? By Jason Dedrick and Kenneth L. Kraemer. London: Oxford University Press, 1998. Pp. xviii, 364. \$39.95. ISBN 0-195-122011.

Asia's Computer Challenge provides an excellent overview of Asian nations' efforts in the computer industry and contributes to the ongoing debate over the key ingredients of Asia's rapid economic growth in the post

World War II period. The study analyzes how Japan, Korea, Taiwan, Hong Kong, and Singapore, defying their lack of comparative advantage in computing, set out to build competitive advantages in this sophisticated, knowledge-intensive industry. The book's primary strength is the wealth of data it provides on companies and national policies in these countries since the 1960s. No other book systematically puts this wide range of information together in such a concise, readable form. It will be enjoyed by a broad academic and corporate audience and is a must read for those interested in how these nations have emerged as international players in the computing business.

The authors explain the relative success of these Asian countries as well as their varying performance in specific market niches by focusing on five primary explanatory variables: the structure of the global computer production system; the nation's industrial policies; the structure of each nation's computer industry, particularly its mix of small, entrepreneurial firms and large companies; the history of the industry's development, including how the firms adapted themselves to the global production system; and whether the nations and firms focused on parts of the business that were characterized by increasing or decreasing returns. The analysis thus emphasizes political and economic institutions as the key explanation for the rise of Asian companies in this industry, rejecting cultural and neoclassical explanations.

For example, they explain Japan's relative success in computer mainframes and components as a result of several factors, such as entering the computing business at a good time—when there were many opportunities in the global production system and when western makers completely underestimated their potential. They highlight the importance of a strong, effective state industrial policy in supporting the industry, enabling firms to build up their capacities. Industry structure was also key to Japan's success. Huge firms dominated Japan's major industrial groups; they had the deep pockets and long-term horizons necessary to compete head on with the likes of IBM. And because the state nurtured