THE ECONOMICS OF INFORMATION TECHNOLOGY

Also by Paul Jowett

PARTY STRATEGIES IN BRITAIN (*with David Butler*)

The Economics of Information Technology

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Preface

This book analyses the development of Information Technology (IT) at both the microeconomic and macroeconomic level. At the microeconomic level, individual firms, universities and research laboratories in Britain, Europe, the USA and Japan are the principal focus of attention, whereas, at the macroeconomic level, investigations are made and comparisons drawn between the countries' differing national efforts and the key role their governments have played in stimulating these. Whilst the scope of this book is broad, its objective is specific: to identify the principal economic determinants of success for companies and countries working in the field of IT, and to explain why certain companies and countries have performed better at times than others.

The reasons for writing a book on the economics of IT are many. The most obvious is that IT has become a major new, fiercely competitive, and rapidly changing world industry – one which has applications in all three traditional economic sectors (primary, secondary and tertiary), one which almost every developed (and to a certain extent underdeveloped) nation has sought to enter, and one whose strategic potential is immense. This in itself makes the IT industry a worthy subject for economic analysis.

Writing a book on such a broad and all-encompassing subject has not been easy. Because of the lack of any existing competent introduction to the subject, this book has a distinctly historical slant. Only by reviewing the origins and subsequent development of this new industry can one discern trends on the basis of which future projections about the industry's structure and strategic importance can be made. This book does not offer a complete history of the economics of IT. What it does is to select particular examples of the development of IT, from various countries, which illustrate most clearly the trends and determinants of success at that time. Thus, the reader is provided not with an historical summary, devoid of any economic theory, but with a stimulating and dynamic applied economic analysis of an exciting industry.

No attempt has been made to relate this applied analysis directly to existing economic theory, and the reasons for this are twofold. Firstly, the traditional economic theory of entry barriers, collusion between rivals and the effect of technical change on market structure, neither accurately or adequately describes the dynamic IT industry. Secondly, the modification of existing, and development of new, theories, although of academic interest and importance, lies beyond the scope and objectives of this book, which is intended to appeal to as large an audience as possible, including non-specialists. In addition, no attempt has been made to investigate the present and future impact of IT on other sectors of the economy, since a task as difficult and complex as this would, in itself, provide ample scope for a second book.

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We are also very grateful to Mrs Kathleen Rothwell, who diligently proof-read the book for us. Any errors which remain are, of course, our own.

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PAUL JOWETT
MARGARET ROTHWELL

Abbreviations and Acronyms

ACARD	Advisory Council on Applied Research and Development
AI	Artificial Intelligence
AT&T	American Telephone and Telegraph
BAe	British Aerospace
BT	British Telecom
BTG	British Technology Group
CADDIA	Cooperation in Automation of Data and Documentation for Imports/Exports and Agriculture
CD – ROM	Compact Disk – Read Only Memory
CEPT	Conférence Européene des Administrations des Postes et des Télécommunications
CGR	Compagnie Générale de Radiologie
CSA	Computer Services Association (UK)
DARPA	Defence Advanced Research Projects Agency (USA)
DBS	Direct Broadcasting by Satellite
DEC	Digital Equipment Corporation (USA)
DES	Department of Education and Science (UK)
DM	Deutsche Mark
DoD	Department of Defense (USA)
DoI	Department of Industry, pre-1983 (UK)
DTI	Department of Trade and Industry, post-1983 (UK)
ECU	European Currency Unit
EEC	European Economic Community
ESPRIT	European Strategic Programme of Research and Develop- ment in Information Technology
ETL	Electrotechnical Laboratory (Japan)
FGCS	Fifth Generation Computer Society (Japan)
GEC	General Electric Company (UK)
GLC	Greater London Council
IBM	International Business Machines (USA)
IC	Integrated Circuit
ICL	International Computers Limited (UK)
ICOT	Institute for Fifth Generation Computer Technology (Japan)
ICT	International Computers and Tabulators (UK)
IKBS	Intelligent Knowledge Based Systems
IPR	Intellectual Property Rights
IRC	Industrial Reorganisation Corporation (UK)
IT	Information Technology

ITT	International Telephone and Telegraph
JECC	Japanese Electronics and Computer Company
JEIDA	Japanese Electronics Industry Development Association
JVC	Victor Company of Japan (subsidiary of Matsushita)
K	1000 bits
LSE	London School of Economics
MCC	Microelectronics and Computer Technology Corporation
MEP	Member of the European Parliament
MISP	Microelectronics Industry Support Programme
MIT	Massachusetts Institute of Technology
MITI	Ministry of International Trade and Industry (Japan)
MMI	Man Machine Interface
MoD	Ministry of Defence (UK)
NCR	National Cash Register (USA)
NEB	National Enterprise Board (UK)
NEC	Nippon Electric Company (Japan)
NEDC	National Economic Development Council (UK)
NTT	Nippon Telephone and Telegraph (Japan)
PABX	Private Branch Exchange
PIPS	Pattern Information Processing Project (Japan)
PROLOG	AI Programming Language
QC	Queen's Counsel
R&D	Research and Development
RAM	Random Access Memory
RCA	Radio Corporation of America
SIA	Semiconductor Industry Association (USA)
SERC	Science and Engineering Research Council (UK)
SNA	Systems Interconnect Architecture
SRC	Semiconductor Research Cooperative (USA)
STARS	Software Technology for Adaptable and Reliable Systems (USA)
STC	Standard Telephone and Cable (UK)
STELLA	High Speed Data Transmission Project (EEC)
UK	United Kingdom
US(A)	United States (of America)
VCR	Video Cassette Recorder
VHS	JVC's VCR system
VHSIC	Very High Speed Integrated Circuit
VLSI	Very Large Scale Integration