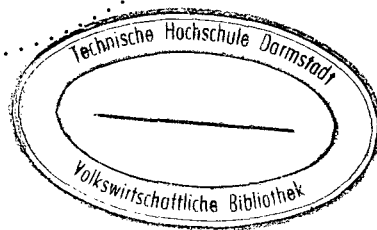
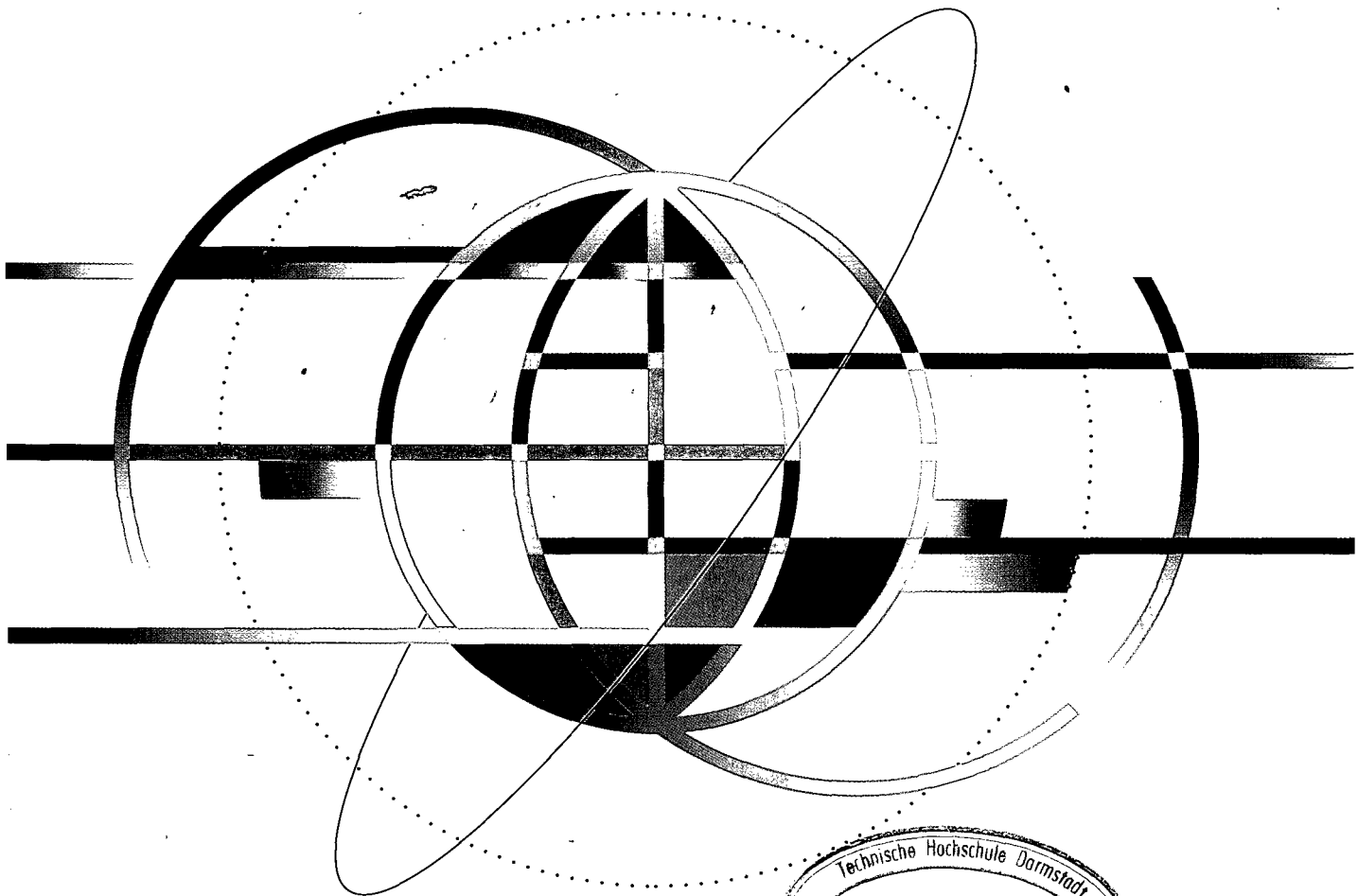


QA 33491 / 76

World
Development
Report

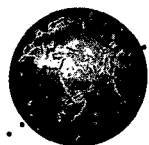
Knowledge for Development



PUBLISHED FOR THE WORLD BANK
OXFORD UNIVERSITY PRESS

1998/99





Contents

OVERVIEW	1
PART ONE NARROWING KNOWLEDGE GAPS	
1 The Power and Reach of Knowledge	16
2 Acquiring Knowledge	26
3 Absorbing Knowledge	40
4 Communicating Knowledge	56
PART TWO ADDRESSING INFORMATION PROBLEMS	
5 Information, Institutions, and Incentives	72
6 Processing the Economy's Financial Information	81
7 Increasing Our Knowledge of the Environment	99
8 Addressing Information Problems That Hurt the Poor	117
PART THREE POLICY PRIORITIES	
9 What Can International Institutions Do?	130
10 What Should Governments Do?	144
Technical Note	157
Bibliographical Note	159
Appendix: International Statistics on Knowledge	178
SELECTED WORLD DEVELOPMENT INDICATORS	183
BOXES	
1.1 Institutional innovations to diffuse health knowledge in Costa Rica	18
1.2 Knowledge in the East Asian miracle—an ongoing debate	21
1.3 Growing faster with knowledge	23

2.1	ISO 9000: Signaling quality and improving productivity	28
2.2	How to attract technical knowledge through trade and foreign investment—and how not to	29
2.3	Korea: The success of a strong interventionist state	32
2.4	TRIPs in a nutshell	33
2.5	IPRs, investment, and technology transfer.	34
2.6	Providing local compensation when bioprospecting strikes gold	35
2.7	Changing the way Brazil does research	37
2.8	Building a better bean: How women farmers in Colombia and Rwanda outdid the researchers	38
2.9	Why better biomass stoves sold in Rwanda	39
3.1	Raising the potential for children to learn	42
3.2	Mathematics, science, and engineering studies may spur growth	43
3.3	Korea's heavy investment in human capital.	44
3.4	Grading the teachers: Varying perceptions of school quality in Vietnam.	50
3.5	From providing training to providing information	51
3.6	Income-contingent loans for tertiary education in Australia and New Zealand	53
3.7	<i>The African Virtual University</i>	55
4.1	From the transistor to the integrated digital network.	58
4.2	How information technology helped control river blindness	60
4.3	How Singapore became the world's most efficient port	62
4.4	Teleconferencing to raise awareness of the year 2000 problem	63
4.5	Telecommunications liberalization receives a global push.	65
4.6	Pressure to reform accounting rates for international calls	66
4.7	Competition before privatization in Ghana's telecommunications services	68
5.1	Addressing information failures in India's milk market	73
5.2	The credit market in Chambar, Pakistan.	75
5.3	Is sharecropping associated with lower yields?	77
6.1	Technology eases credit decisions	84
6.2	Value-at-risk: An approach to risk assessment	85
6.3	Trading without banks: Money surrogates in the Russian Federation	87
6.4	Shareholders' rights and enterprise efficiency in the Czech privatization	92
6.5	Deposit insurance and risk taking.	94
6.6	Better bank regulation in Argentina	96
7.1	The slow evolution of knowledge about climate change.	102
7.2	Uncertainty, irreversibility, and the value of information	103
7.3	Public information for pollution control in Indonesia	106
7.4	Integrated pest management in Indonesia	108
7.5	Strengthening environmental management to boost performance.	109
7.6	<i>Building on local knowledge to monitor and understand deforestation</i>	110
7.7	Creating markets: The U.S. sulfur dioxide permit trading program	111
7.8	Information and pollution control incentives from capital markets.	113
7.9	Information, community pressure, and adoption of clean technology in Ciudad Juárez, Mexico	114
7.10	Disseminating knowledge on sustainable irrigation in Brazil	115
8.1	Education and the mass media: A powerful combination.	120
8.2	Trust and health services in Brazil's Ceará State	122
8.3	Why are poor farmers slow to adopt new technologies?	123
8.4	Mutual insurance.	124

8.5	Addressing information problems to provide credit to the poor in southern India	125
8.6	Delivering pensions to the poor in South Africa	127
9.1	Plow ahead or prune back? The challenges facing the CGIAR	131
9.2	Can contingent lending spur efforts toward an AIDS vaccine?	132
9.3	Knowledge and institutions for managing the environment	133
9.4	Maintaining roads by building institutions in Africa	135
9.5	The African Economic Research Consortium: A successful experiment in capacity building	137
9.6	Bilateral-multilateral cooperation to promote global knowledge sharing	139
9.7	Knowledge management at the World Bank	140
9.8	Sharing knowledge at OneWorld Online	141
9.9	Knowledge partnerships for the environment	143

FIGURES

1	R&D spending and GDP per capita	2
2	Cost trends in optical fiber transmission	3
3	Cereal yields by developing region	4
4	Growth in yields for principal cereals	5
5	Cropland planted with new wheat varieties	6
1.1	Infant mortality and real income per capita	17
1.2	Trends in real GDP per capita in Ghana and the Republic of Korea	22
1.3	Real semiconductor content of the U.S. economy	24
2.1	Productive efficiency in firms in three African countries	27
2.2	Goods in international trade by level of technological intensity	28
2.3	Trends in FDI flows in developing countries	30
3.1	Child mortality by educational attainment of the mother	41
3.2	Illiteracy by gender and level of income	46
3.3	Shares of public educational subsidies received by rich and poor households in two African countries	46
3.4	GNP per capita and mathematics test scores	47
3.5	Ratios of private to public education costs and test score achievement in four countries	47
3.6	Public sector shares of primary and secondary enrollments	48
3.7	Public education spending and mathematics test scores	49
4.1	Economies ranked by share of the telephone network digitized	59
4.2	Telephone density and mobile phone penetration	59
4.3	Telephone density, queuing for telephone service, and income per capita	64
4.4	Growth in telephone main lines under differing market conditions in Latin America	67
4.5	Ratios of urban to rural telephone density, by region	69
6.1	Financial structure of economies by income level	83
6.2	Factors leading to financial development and growth	90
6.3	Accounting standards and GNP per capita	90
7.1	The pressure-state-response framework	104
7.2	Genuine saving in Ecuador	105
7.3	Genuine saving in selected world regions	105
7.4	Deviations from normal weather patterns and crop yields in Latin America	107
7.5	Acid deposits above critical loads in Asia: The RAINS model	110
8.1	Poverty by developing region	118

8.2	Share of the poor in consumption of knowledge goods in Bulgaria and South Africa	120
8.3	Distribution of welfare benefits by household income in Jamaica	121
8.4	Grameen Bank lending and schools run by Grameen Bank groups	128
9.1	Aid flows and GDP per capita in Vietnam	136
10.1	Trends in GDP in six former Soviet republics	155

TABLES

1.1	Household spending per capita by level of education in Peru	18
1.2	Decomposition of cross-country variance in growth rates	19
1.3	Gross enrollment rates in primary school in selected economies	20
1.4	Share of high-technology goods in manufacturing value added and exports in high-income economies . . .	24
4.1	Product and geographical composition of the world information technology market	58
4.2	Selected indicators of information and telecommunications penetration by country income level	63
5.1	Assets and income of borrowers and nonborrowers in Nakhon Ratchasima Province, Thailand	79
6.1	Ranking of legal systems on strength of protections and enforcement	91

APPENDIX TABLES

A.1	Tertiary enrollments by field of study	179
A.2	Assessment of legal infrastructure	181