

ARIZONA STATE UNIVERSITY MAIN / EAST

GENERAL STUDIES PROGRAM COURSE PROPOSAL COVER FORM

Courses submitted to the GSC between 2/1 and 4/30 if approved, will be effective the following Spring.

Courses submitted between 5/1 and 1/31 if approved, will be effective the following Fall.

(SUBMISSION VIA ADOBE.PDF FILES IS PREFERRED)

DATE 5-1-2008

- 1. ACADEMIC UNIT: Economics
2. COURSE PROPOSED: ECN 335 South Asia and the World Economy 3
3. CONTACT PERSON: Name: Michael Ormiston Phone: 965-7350
Mail Code: 3806 E-Mail: michael.ormiston@asu.edu

- 4. ELIGIBILITY: New courses must be approved by the Main Campus Curriculum Subcommittee and must have a regular course number.
5. AREA(S) PROPOSED COURSE WILL SERVE. A single course may be proposed for more than one core or awareness area.

Core Areas

Awareness Areas

- Literacy and Critical Inquiry-L
Mathematical Studies-MA CS
Humanities and Fine Arts-HU
Social and Behavioral Sciences-SB
Natural Sciences-SQ SG

- Global Awareness-G
Historical Awareness-H
Cultural Diversity in the United States-C
(Note: one course per form)

- 6. DOCUMENTATION REQUIRED. (1) Course Description (2) Course Syllabus (3) Criteria Checklist for the area (4) Table of Contents from the textbook used, if available
7. In the space provided below (or on a separate sheet), please also provide a description of how the course meets the specific criteria in the area for which the course is being proposed.

CROSS-LISTED COURSES: [X] No [] Yes; Please identify courses:

Is this a multisection course?: [X] No [] Yes; Is it governed by a common syllabus?

Dr. M. Ormiston, Assoc. Chair

Handwritten signature of Michael B. Ormiston

Chair/Director (Print or Type)

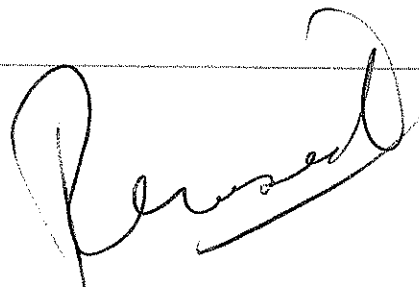
Chair/Director (Signature)

Date: May 1, 2008

Handwritten note: Revised + Resubmitted

Phyllis Lucie

From: Michael Ormiston
Sent: Tuesday, September 16, 2008 9:38 AM
To: Phyllis Lucie
Subject: FW: ECN 335-SB
Attachments: mcoverecn335.pdf; checklist-wsbECN335.pdf



Attached is what I sent (as well as the supporting materials) which is what I got from the web site. I don't know what else he is referring to.

Dr. Michael B. Ormiston
Associate Chair Department of Economics
Chair of the WPCSB Undergraduate Committee
Professor of Economics
W. P. Carey School of Business
Arizona State University
Tempe, Arizona 85287-3806
Phone: 480-965-7350
FAX: 480-965-0748

From: Sergio Quiros
Sent: Monday, September 08, 2008 3:48 PM
To: Michael Ormiston
Subject: ECN 335-SB

General Studies Designation

DATE: September 8, 2008

TO: Michael Ormiston

FROM: Phyllis Lucie, General Studies Program Office

SUBJECT: General Studies Mandatory Review –**Revise & Resubmit**

I regret to inform you that the General Studies Council and the Social and Behavioral Studies Subcommittee did **not** approve the following General Studies course proposal for the SB designation at the August 26, 2008 General Studies Council Meeting:

ECN 335 SOUTH ASIA AND THE WORLD ECONOMY

9/16/2008

The subcommittee for Social and Behavioral Studies provided the following rationale for the denial:

The check sheet is incomplete—only the cover sheet is included. The more detailed “explain in detail” section needs to be included as well. Also it is insufficient in the “identify documentation submitted” section to say “syllabus/course outline/text/lecture notes.” Please be more specific.

Note for the contact person next time: when printing PowerPoint lectures it is not necessary to use a whole sheet of paper for individual slides. It makes the file unnecessarily thick. Try printing “handouts” with six slides per page instead.

Please contact me at 480-965-0739 if you have any questions.

PL/SQZ

Arizona State University Criteria Checklist for

SOCIAL AND BEHAVIORAL SCIENCES [SB]

Rationale and Objectives

The importance of the social and behavioral sciences is evident in both the increasing number of scientific inquiries into human behavior and the amount of attention paid to those inquiries. In both private and public sectors people rely on social scientific findings to assess the social consequences of large-scale economic, technological, scientific, and cultural changes.

Social scientists' observations about human behavior and their unique perspectives on human events make an important contribution to civic dialogue. Today, those insights are particularly crucial due to the growing economic and political interdependence among nations.

Courses proposed for General Studies designation in the Social and Behavioral Sciences area must demonstrate emphases on: (1) social scientific theories and principles, (2) the methods used to acquire knowledge about cultural or social events and processes, and (3) the impact of social scientific understanding on the world.

Proposer: Please complete the following section and attach appropriate documentation.

ASU--[SB] CRITERIA					
A SOCIAL AND BEHAVIORAL SCIENCE [SB] course should meet all of the following criteria. If not, a rationale for exclusion should be provided.					
YES	NO		Identify Documentation Submitted		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Course is designed to advance basic understanding and knowledge about human interaction.	Syllabus/course outline/course outline/text/lecture notes		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Course content emphasizes the study of social behavior such as that found in: <table border="0" style="width: 100%; margin-left: 20px;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> • ANTHROPOLOGY • ECONOMICS • CULTURAL GEOGRAPHY • HISTORY </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> • LINGUISTICS • POLITICAL SCIENCE • SOCIAL PSYCHOLOGY • SOCIOLOGY </td> </tr> </table>	<ul style="list-style-type: none"> • ANTHROPOLOGY • ECONOMICS • CULTURAL GEOGRAPHY • HISTORY 	<ul style="list-style-type: none"> • LINGUISTICS • POLITICAL SCIENCE • SOCIAL PSYCHOLOGY • SOCIOLOGY 	Syllabus/course outline/course outline/text/lecture notes
<ul style="list-style-type: none"> • ANTHROPOLOGY • ECONOMICS • CULTURAL GEOGRAPHY • HISTORY 	<ul style="list-style-type: none"> • LINGUISTICS • POLITICAL SCIENCE • SOCIAL PSYCHOLOGY • SOCIOLOGY 				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Course emphasizes: <p style="margin-left: 20px;">a. the distinct knowledge base of the social and behavioral sciences (e.g., sociological anthropological).</p> <p style="text-align: center; margin-left: 40px;">OR</p> <p style="margin-left: 20px;">b. the distinct methods of inquiry of the social and behavioral sciences (e.g., ethnography, historical analysis).</p>	Syllabus/course outline/course outline/text/lecture notes		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Course illustrates use of social and behavioral science perspectives and data.	Syllabus/course outline/course outline/text/lecture notes		
		THE FOLLOWING TYPES OF COURSES ARE EXCLUDED FROM THE [SB] AREA EVEN THOUGH THEY MIGHT GIVE SOME CONSIDERATION TO SOCIAL AND BEHAVIORAL SCIENCE CONCERNS:			
		• Courses with primarily fine arts, humanities, literary, or philosophical content.			
		• Courses with primarily natural or physical science content.			
		• Courses with predominantly applied orientation for professional skills or training purposes.			
		• Courses emphasizing primarily oral, quantitative, or written skills.			

Outline for Class Lectures

Aug. 21 (Tue)	Background information on South Asia and its relevance in today's world
Aug. 23 (Thu)	Characteristics of South Asian Economy
Aug. 28 (Tue)	Agrarian Economy and Economic Growth
Aug. 30 (Thu)	Malthusian Theory of Economic Growth
Sep. 04 (Tue)	Implication of Malthusian results for South Asia and rest of the world
Sep. 06 (Thu)	Capital accumulation and Economic Growth
Sep. 11 (Tue)	Solow Model of Economic Growth
Sep. 13 (Thu)	Implication of Solow results for South Asia and rest of the world
Sep. 18 (Tue)	Income Disparity and Economic Growth
Sep. 13 (Thu)	Human capital accumulation and Economic Growth
Sep. 25 (Tue)	Implication of human capital accumulation for South Asia and rest of the world
Sep. 27 (Thu)	Review of Issues related to Economic Growth in South Asia
Oct. 02 (Tue)	Midterm Exam
Oct. 04 (Thu)	Theory of Comparative Advantage and Trade
Oct. 09 (Tue)	Theory of Comparative Advantage and Trade
Oct. 11 (Thu)	Comparative Advantage in South Asia vs. rest of the world
Oct. 16 (Tue)	Specific Factors and Trade
Oct. 18 (Thu)	Specific Factors and Income Distribution
Oct. 23 (Tue)	Specific Factors, Trade and Income Distribution in South Asia vs. rest of the world
Oct. 25 (Thu)	Resource availability and Trade
Oct. 30 (Tue)	Resource availability and Income Distribution
Nov. 01 (Thu)	Resource availability, trade and income distribution in South Asia vs. rest of the world
Nov. 06 (Tue)	Project Presentation and Group Discussion
Nov. 08 (Thu)	Project Presentation and Group Discussion
Nov. 13 (Tue)	Project Presentation and Group Discussion
Nov. 15 (Thu)	Project Presentation and Group Discussion
Nov. 20 (Tue)	Trade Policy: welfare implication of trade intervention
Nov. 27 (Tue)	Trade Policy: welfare implication of trade intervention
Nov. 29 (Thu)	Import Substitution vs. Export Promotion policies in South Asia
Dec. 04 (Tue)	Review of International Trade and Policy
Dec. 11 (Tue)	Final Examination

Dancing with Giants

China, India, and the Global Economy

Edited by

L. Alan Winters and Shahid Yusuf

Contents

iii

xi

Background Papers xiii

Acronyms and Abbreviations xv

CHAPTER 1 Introduction: Dancing with Giants 1

L. Alan Winters and Shahid Yusuf

CHAPTER 2 China and India Reshape Global Industrial 35

Geography

Shahid Yusuf, Kaoru Nabeshima, and Dwight H. Perkins

CHAPTER 3 Competing with Giants: Who Wins, Who Loses? 67

Betina Dimaranan, Elena Ianchovichina, and Will Martin

**CHAPTER 4 International Financial Integration of China 101
and India**

Philip R. Lane and Sergio L. Schmukler

**CHAPTER 5 Energy and Emissions: Local and Global Effects 133
of the Giants' Rise**

Zmarak Shalizi

**CHAPTER 6 Partially Awakened Giants: Uneven Growth in 175
China and India**

Shubham Chaudhuri and Martin Ravallion

CHAPTER 7 Governance and Economic Growth 211

Philip Keefer

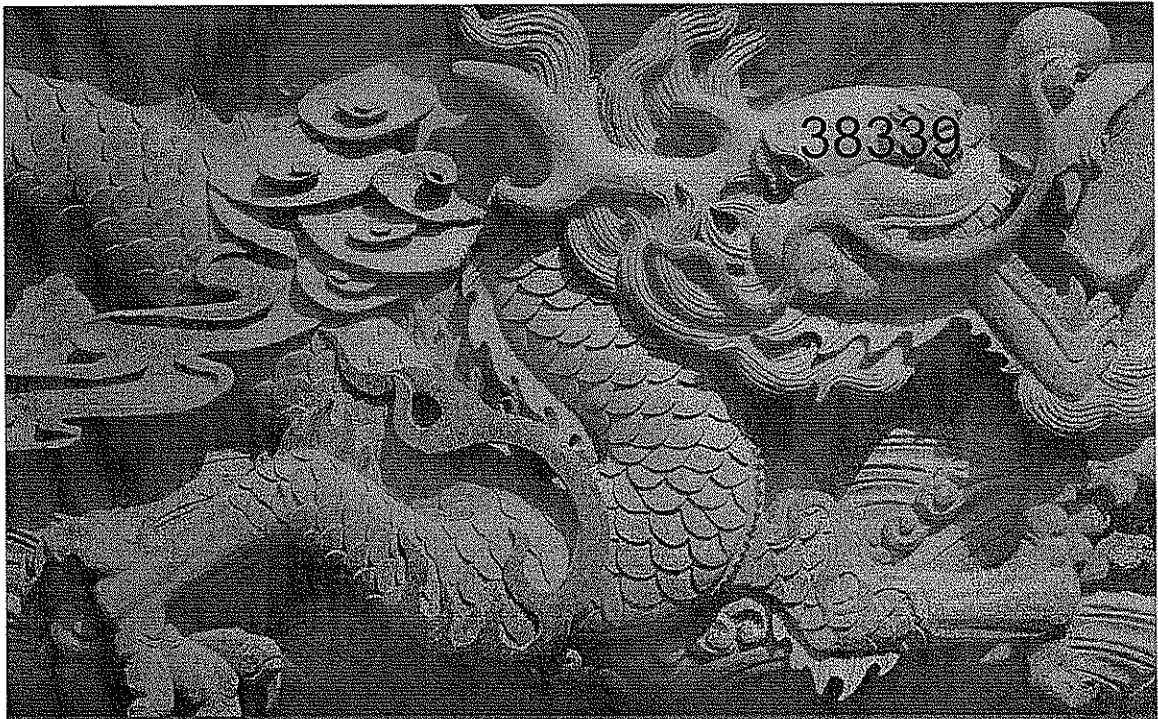
References 243

Index 265

Foreword vii

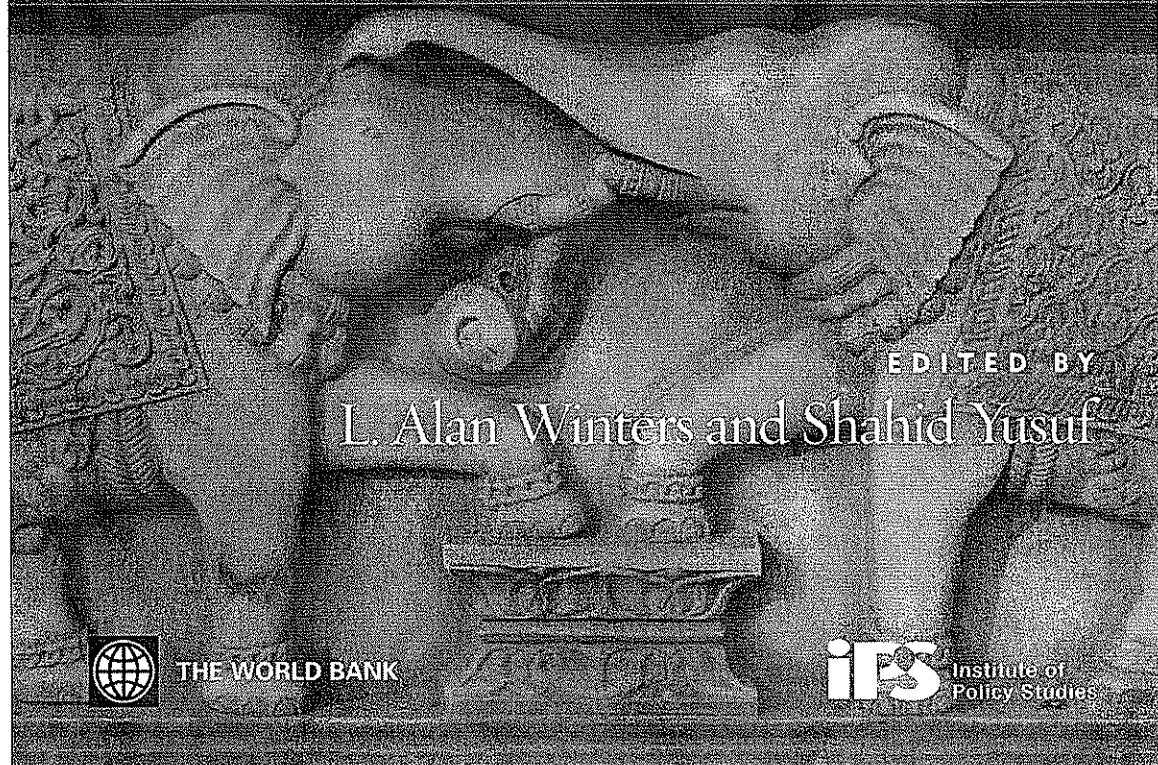
Contributors x

Acknowledgments



DANCING WITH GIANTS

CHINA, INDIA, AND THE GLOBAL ECONOMY



EDITED BY
L. Alan Winters and Shahid Yusuf



Dancing with Giants

China, India, and the Global Economy

Edited by

L. Alan Winters and Shahid Yusuf

A copublication of the World Bank and the Institute of Policy Studies (Singapore)

©2007 The International Bank for Reconstruction and Development / The World Bank and The Institute of Policy Studies.

The International Bank for Reconstruction and Development / The World Bank
1818 H Street NW
Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org
E-mail: feedback@worldbank.org

The Institute of Policy Studies
29 Heng Mui Keng Terrace #06-06
Singapore 119620
Tel: +65 6215 1010
Fax: +65 6215 1014
Internet: www.ips.org.sg
E-mail: ips@ips.org.sg

All rights reserved.

1 2 3 4 5 11 10 09 08 07

This volume is a product of the staff of the International Bank for Reconstruction and Development / The World Bank. The findings, interpretations, and conclusions expressed in this volume do not necessarily reflect the views of the Executive Directors of The World Bank or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgement on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this publication is copyrighted. Copying and/or transmitting portions or all of this work without permission may be a violation of applicable law. The International Bank for Reconstruction and Development / The World Bank encourages dissemination of its work and will normally grant permission to reproduce portions of the work promptly.

For permission to photocopy or reprint any part of this work, please send a request with complete information to the Copyright Clearance Center Inc., 222 Rosewood Drive, Danvers, MA 01923, USA; telephone: 978-750-8400; fax: 978-750-4470; Internet: www.copyright.com.

All other queries on rights and licenses, including subsidiary rights, should be addressed to the Office of the Publisher, The World Bank, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2422; e-mail: pubrights@worldbank.org.

ISBN-10: 0-8213-6749-8

eISBN-10: 0821367501

ISBN-13: 978-0-8213-6749-0

DOI: 10.1596/978-0-8213-6749-0

RCB Registration No.: 198704059K

Library of Congress Cataloging-in-Publication data has been applied for.

The Institute of Policy Studies (IPS) is a think-tank dedicated to fostering good governance in Singapore through strategic policy research and discussion. It focuses on Singapore's domestic developments and its external relations. It takes a multidisciplinary approach in its analysis, with an emphasis on long-term strategic thinking. IPS began operations in 1988. Key activities include research projects, conferences, and publications.

The institute's mission is threefold:

- Analysis: To analyze policy issues of critical concern to Singapore and contribute to policy development
- Bridge-building: To build bridges among diverse stakeholders, including government, business, academia, and civil society
- Communication: To communicate research findings to a wider community and generate a greater awareness of policy issues

Cover design: Rock Creek Creative, Bethesda, Maryland, United States.

Contents

Foreword		vii
Contributors		x
Acknowledgments		xi
Background Papers		xiii
Acronyms and Abbreviations		xv
CHAPTER 1	Introduction: Dancing with Giants	1
	<i>L. Alan Winters and Shahid Yusuf</i>	
CHAPTER 2	China and India Reshape Global Industrial Geography	35
	<i>Shahid Yusuf, Kaoru Nabeshima, and Dwight H. Perkins</i>	
CHAPTER 3	Competing with Giants: Who Wins, Who Loses?	67
	<i>Betina Dimaranan, Elena Ianchovichina, and Will Martin</i>	
CHAPTER 4	International Financial Integration of China and India	101
	<i>Philip R. Lane and Sergio L. Schmukler</i>	
CHAPTER 5	Energy and Emissions: Local and Global Effects of the Giants' Rise	133
	<i>Zmarak Shalizi</i>	
CHAPTER 6	Partially Awakened Giants: Uneven Growth in China and India	175
	<i>Shubham Chaudhuri and Martin Ravallion</i>	
CHAPTER 7	Governance and Economic Growth	211
	<i>Philip Keefer</i>	
References		243
Index		265

Figures

Figure 1.1	China and Previous Growth Spurts Compared	9
Figure 2.1	Product Structure of Exports	40
Figure 2.2	Product Structure of Imports	41
Figure 3.1	Exports of Goods and Nonfactor Services as a Share of GDP	70
Figure 3.2	Share of Commercial Services in Total Exports	71
Figure 3.3	Composition of Services Exports	72
Figure 3.4	Export Shares in China and India, 2001	80
Figure 4.1	Net Foreign Asset Positions, 1985–2004	106
Figure 4.2	International Financial Integration: Sum of Foreign Assets and Liabilities	108
Figure 4.3	Top Foreign Asset and Liability Holders, 2004	110
Figure 4.4	Selected Financial Sector Indicators	114
Figure 5.1	Primary Energy Use of Coal and Total CO ₂ Emissions from Fossil Fuel Consumption, China and India, 1980–2003	141
Figure 5.2	Air Quality Comparison, Selected World Cities, 2000	143
Figure 5.3	Increase in Crude Oil Use Relative to First Quarter 2001, Various Countries	147
Figure 5.4	OPEC Spare Production Capacity	148
Figure 5.5	China's and India's Shares of World Oil Consumption and Trajectory of World Oil Prices, BAU and BAU-H Scenarios	159
Figure 5.6	Extent of Energy and Emission Decoupling in the Case of Final Energy Consumption	165
Figure 6.1	Growth and Poverty Reduction, 1981–2003	176
Figure 6.2	Growth Rates at the Subnational Level	182
Figure 6.3	Sectoral GDP Growth Rates, 1980–2003	184
Figure 6.4	Growth Incidence Curves for China (1980–99) and India (1993–99)	189
Figure 6.5	Trends in Income Inequality, 1978–2003	190
Figure 6.6	Growth Rates at the Subnational Level Plotted against Initial Poverty Rates	196

Tables

Table 1.1	Gross Domestic Product in Six Large Economies	6
Table 1.2	Comparative Industrialization	8
Table 1.3	Trade in Goods and Services for Six Large Economies	15
Table 1.4	Shares in World Consumption of Primary Commodities	16
Table 2.1	China's and India's Shares of World Exports	36
Table 2.2	China's and India's Shares of World Imports	36

Table 2.3	Households Owning High-income Consumer Durables in China, 2004	38
Table 2.4	Households Owning Selected Assets in India, 2001	39
Table 2.5	Industry Exports as a Percentage of Total Exports, China and India	50
Table 2.6	Indicators of All State-owned and Non-state-owned Enterprises in China, by Industrial Sector, 2004	52
Table 3.1	Composition of Nonfuel Imports and Exports by Broad Economic Classification, 1992 and 2004	73
Table 3.2	Top 25 Exports for China and India, 2004	74
Table 3.3	Impact of India's Integration with the World Economy, 2020	79
Table 3.4	Output, Factor Inputs, and Population Projections, 2005–20	83
Table 3.5	Changes in Key Economic Indicators as a Result of Global Growth, 2005–20	85
Table 3.6	Welfare and Trade Changes as a Result of Global Growth, 2005–20	86
Table 3.7	Impact of Improved Growth and Quality Exports in China and India, Relative to Base, 2020	87
Table 3.8	Manufacturing Output: Effects of Improved Growth and Quality Exports in China and India, Relative to Base, 2020	90
Table 3.9	Industry Effects of Improved Sectoral Productivity Growth in China and India, Relative to Base, 2020	95
Table 3.10	Export Volume Changes under Various Scenarios, Relative to Base, 2020	98
Table 4.1	Composition of Foreign Assets and Liabilities, 2004	105
Table 4.2	Asymmetries in the International Balance Sheet, 2004	109
Table 5.1	Energy Balance in China and India, 1980–2003	136
Table 5.2	Changes in Energy Intensity in China, India, and the United States	137
Table 5.3	Sectoral and Fuel Shares of Energy Consumption in China and India	157
Table 5.4	Summary of ALT Scenarios Relative to BAU for China and India, 2005–50	164
Table 5A.1	Energy Balance, 1980–2003	170
Table 6.1	Poverty Reduction and the Sectoral Composition of Growth	185
Table 6.2	Poverty Reduction and the Urban–Rural Composition of Growth	187
Table 7.1	Correlates of Growth, 1980–2004	215

Foreword

Hardly a day passes without a newspaper article, television show, or Internet blog story about the rise of China and India in the global economy. There are many reasons for this public interest. Never before have such large economies—with a combined population of 2.3 billion—grown so fast for so long: GDP growth in China averaged 9.1 percent over the last decade, and India averaged 6.1 percent. Some people are fearful: Will China and India dominate the world economy? Will they consume the earth's scarce resources? Will they bid down wages elsewhere? Others are curious: Can China and India sustain such impressive growth rates, especially in light of perceived fragilities (China's financial sector and India's public debt being notable examples)? Others seek lessons: Noting that neither China nor India is pursuing an "orthodox" model of development, they want to know how these economies did it, and whether there are lessons for other developing countries.

Because of this heightened interest among the general public, media coverage of China and India tends to emphasize the human dimension—stories comparing a factory worker in China with a software designer in India, or interviews with foreign investors comparing the two countries' prospects, or pictures contrasting the booming worlds of Shanghai and Mumbai with abject poverty in rural China and India.

Dancing with Giants considers the story from a different vantage point. It takes a dispassionate and critical look at the rise of China and India, and asks some difficult questions about this growth: Where is it occurring? Who is benefiting most? Is it sustainable? And what are the implications for the rest of the world? By bringing to bear the best available data and analytical tools, the book can provide answers that are much more nuanced than the typical news story. To take one example, the book demonstrates that, despite their similar size, the two Giants are not the same—China's role in the global economy is much greater than India's, with important implications for other countries.

Dancing with Giants considers whether the Giants' growth will be seriously constrained by weaknesses in governance, growing inequality, and environmental stresses, and it concludes that this need not occur. However, it does suggest that the Chinese and Indian authorities face important challenges in keeping their investment climates favorable, their inequalities at levels that do not undermine growth, and their air and water quality at acceptable levels. Discussion of how these issues affect the Giants has relevance as well to policy makers elsewhere. For example, despite their very different structures and traditions of governance, both countries have generated effective constraints on executive power, and that has played an important role in their growth.

Dancing with Giants also considers China's and India's interactions with the global trading and financial systems and their impact on the global commons, particularly with regard to climate. Examining the effects that they will have on the economic circumstances and fortunes of other countries, the various chapters find that

- The Giants' growth and trade offer most countries opportunities to gain economically. However, many countries will face strong adjustment pressure in manufacturing, particularly those with competing exports and especially if the Giants' technical progress is strongly export-enhancing. For a few countries, mainly in Asia, these pressures could outweigh the economic benefits of larger markets in, and cheaper imports from, the Giants; and the growth of those countries over the next 15 years will be slightly lower as a result.
- The Giants will contribute to the increase in world commodity and energy prices but they are not the principal cause of higher oil prices.
- The Giants' emissions of CO₂ will grow strongly, especially if economic growth is not accompanied by steps to enhance energy efficiency. At present, a one-time window of opportunity exists for achieving substantial efficiency improvements if ambitious current and future investment plans embody appropriate standards. Moreover, doing so will not be too costly or curtail growth significantly.
- From their relatively small positions at present, the Giants will emerge as significant players in the world financial system as they grow and liberalize. Rates of reserve asset accumulation likely will slow, and emerging pressures will encourage China to reduce its current account surplus.

Developed as a collaborative venture among the World Bank's research department and East and South Asia regions, and the Institute of Policy Studies

in Singapore, this book is an important contribution to the global campaign for poverty reduction. With about a third of the world's poor people living in China and India, these countries' performance will be critical to alleviating global poverty. Moreover, the fact that China and India have been able to lift hundreds of millions of people out of poverty in the past few decades provides hope for the rest of the world. *Dancing with Giants* provides knowledge that will help turn that hope into reality.

François Bourguignon

Chief Economist and Senior Vice President, World Bank

Shantayanan Devarajan

Chief Economist, South Asia Region, World Bank

Homi Kharas

Chief Economist, East Asia and Pacific Region, World Bank

Contributors

Shubham Chaudhuri is Senior Economist, East Asia and Pacific Poverty Reduction and Economic Management Department, World Bank.

Betina Dimaranan is Research Economist, Center for Global Trade Analysis, Purdue University.

Elena Ianchovichina is Senior Economist, Economic Policy and Debt Department, PREM Network, World Bank.

Philip Keefer is Lead Economist, Development Research Group, World Bank.

Philip R. Lane is Professor of International Macroeconomics and Director of the Institute for International Integration Studies, Trinity College.

Will Martin is Lead Economist, Development Research Group, World Bank.

Kaoru Nabeshima is Economist, Development Research Group, World Bank.

Dwight Perkins is Harold Hightings Burbank Research Professor of Political Economy, Department of Economics, Harvard University.

Martin Ravallion is Senior Research Manager, Development Research Group, World Bank.

Sergio L. Schmukler is Senior Economist, Development Research Group, World Bank.

Zmarak Shalizi is Senior Research Manager, Development Research Group, World Bank.

L. Alan Winters is Director, Development Research Group, World Bank.

Shahid Yusuf is Economic Adviser, Development Research Group, World Bank.

Acknowledgments

This book contains the output of a joint project between the East Asia, South Asia, and Development Economics Vice Presidencies of the World Bank, and the Institute of Policy Studies, Singapore (IPS). It was conceived as part of the background for the World Bank's September 2006 annual meetings in Singapore, titled "Asia in the World: The World in Asia." The project was directed by L. Alan Winters (director of the Development Research Group) in consultation with Arun Mahizhnan (deputy director of IPS), Shantayanan Devarajan (chief economist for South Asia), Homi Kharas (chief economist for East Asia and Pacific), and Shahid Yusuf (economic adviser, Development Research Group) of the World Bank.

Each of the chapters has drawn on input from many scholars, including papers commissioned from Chong-En Bai, Richard N. Cooper, Renaud Cras-sous, Betina Dimaranan, Joseph P. H. Fan, Masahisa Fujita, Vincent Gitz, Nobuaki Hamaguchi, Meriem Hamdi-Cherif, Jean-Charles Hourcade, Jiang Kejun, Louis Kuijs, Philip Lane, David D. Li, Sandrine Mathy, Taye Mengis-tae, Deepak Mishra, Devashish Mitra, Randall Morck, Victor Nee, Deunden Nikomborirak, Gregory W. Noble, Xu Nuo, Sonja Opper, Ila Patnaik, Dwight H. Perkins, Olivier Sassi, Ajay Shah, T. N. Srinivasan, Shane Streifel, Beyza Ural, Susan Whiting, Steven I. Wilkinson, Lixin Colin Xu, Bernard Y. Yeung, and Min Zhao. We are grateful to all these authors. Most of their papers are available on the *Dancing with Giants* Web site (<http://econ.worldbank.org/dancingwithgiants>).

We have benefited from discussions with the authors of the background papers, the chapter authors, and many other scholars around the world, but particular mention should be made of Suman Bery, Richard N. Cooper, Yasheng Huang, and T. N. Srinivasan, who were external reviewers for the whole manuscript; of Shantayanan Devarajan, Shahrokh Fardoust, Bert Hoffman, and Homi Kharas, who commented on the whole internally; and of Richard Baldwin, Priya Basu, Maureen Cropper, David Dollar, Subir Gokarn, Takatoshi

Ito, Henry Jacoby, Kapil Kapoor, Faruk Khan, Laura Kodres, Aart Kraay, Louis Kuijs, Franck Lecocq, Jong-Wha Lee, Jeff Lewis, Assar Lindbeck, Simon Long, Guonan Ma, Robert McCauley, Tom Rawski, Mark Sundberg, and Hans Timmer, who read parts of the manuscript. Audrey Kitson-Walters has provided excellent logistical support, and Trinidad Angeles and Andrea Wong provided equally excellent budgetary support.

Susan Graham, Patricia Katayama, Nancy Lammers, Santiago Pombo, and Nora Ridolfi have guided the publication, and Christine Cotting provided editorial services. We are grateful to all of them.

Chapters of the book have been discussed at the following venues and events: the World Bank China Office; "China and Emerging Asia: Reorganizing the Global Economy," World Bank headquarters; "Increased Integration of China and India in the Global Financial System," Indian Council for Research on International Economic Relations (ICRIER)–World Bank conference and "Dancing with Giants," ICRIER; the Center for Pacific Basin Studies' 2006 Pacific Basin conference (Federal Reserve Bank of San Francisco); "Production Networks and Changing Trade and Investment Patterns: The Economic Emergence of China and India and Implications for Asia and Singapore," the National University of Singapore SCAPE–IPS–World Bank workshop; "Rethinking Infrastructure for Development," the World Bank's Annual Bank Conference on Development Economics (Tokyo, May 2006); and "The Elephant and the Dragon" conference (Shanghai, July 2006). We are grateful to all participants for their useful feedback.

None of these people is responsible for the book's remaining shortcomings.

Background Papers

- Bai, Chong-En. "The Domestic Financial System and Capital Flows: China."
- Cooper, Richard N. "How Integrated Are Chinese and Indian Labor into the World Economy?"
- Crassous, Renaud, Jean-Charles Hourcade, Olivier Sassi, Vincent Gitz, Sandrine Mathy, and Meriem Hamdi-Cherif. "IMACLIM-R: A Modeling Framework for Sustainable Development Issues."
- Fan, Joseph P. H., Randall Morck, Lixin Colin Xu, and Bernard Yeung. "Does 'Good Government' Draw Foreign Capital? Explaining China's Exceptional FDI Inflow."
- Fujita, Masahisa, and Nobuaki Hamaguchi. "The Coming Age of China-Plus-One: The Japanese Perspective on East Asian Production Networks."
- Kuijs, Louis. "China in the Future: A Large Net Saver or Net Borrower?"
- Lane, Philip. "The International Balance Sheets of China and India."
- Li, David D. "Large Domestic Non-Intermediated Investments and Government Liabilities: Challenges Facing China's Financial Sector Reform."
- Mengistae, Taye, Lixin Colin Xu, and Bernard Yeung. "China vs. India: A Microeconomic Look at Comparative Macroeconomic Performance."
- Mishra, Deepak. "Financing India's Rapid Growth and Its Implications for the Global Economy."
- Mitra, Devashish, and Beyza Ural. "Indian Manufacturing: A Slow Sector in a Rapidly Growing Economy."
- Nee, Victor, and Sonja Opper. "China's Politicized Capitalism."
- Nikomborirak, Deunden. "A Comparative Study of the Role of the Service Sector in the Economic Development of China and India."
- Noble, Gregory W. "The Emergence of the Chinese and Indian Automobile Industries and Implications for Other Developing Countries."
- Patnaik, Ila, and Ajay Shah. "The Interplay between Capital Flows and the Domestic Indian Financial System."
- Streifel, Shane. "Impact of China and India on Global Commodity Markets: Focus on Metals and Minerals and Petroleum."

Srinivasan, T. N. "China, India, and the World Economy."

Whiting, Susan H. "Growth, Governance, and Institutions: The Internal Institutions of the Party-State in China."

Wilkinson, Steven I. "The Politics of Infrastructural Spending in India."

Zhao, Min. "External Liberalization and the Evolution of China's Exchange System: An Empirical Approach."

Acronyms and Abbreviations

AGE	applied general equilibrium
ALT	alternate scenario
BAU	business-as-usual scenario
BAU-H	business-as-usual scenario with high growth variant
BERI	Business Environment Risk Intelligence
CGE	computable general equilibrium
CO ₂	carbon dioxide
CPC	Communist Party of China
EFTA	European Free Trade Association
EU25	25 countries of the European Union
FDI	foreign direct investment
FYP	five-year plan
GDP	gross domestic product
GE	General Electric
GIC	growth incidence curve
GTAP	Global Trade Analysis Project
GtC	giga tonnes of carbon
HIC	high-income country
HS	Harmonized System
ICRG	<i>International Country Risk Guide</i>
IEA	International Energy Agency
IIT	Indian Institute of Technology
IMF	International Monetary Fund
IT	information technology
LCD	liquid-crystal display
LIC	low-income country
mbd	million barrels per day
MFA	Multifiber Arrangement
MIC	middle-income country

MNC	multinational corporation
Mtoe	million tons of oil equivalent
NA	national accounts
NBS	National Bureau of Statistics
OPEC	Organization of the Petroleum Exporting Countries
PC	personal computer
PPP	purchasing power parity
R&D	research and development
SITC	Standard International Trade Classification
TFP	total factor productivity
TVE	township and village enterprise
USEIA	U.S. Energy Information Administration
WHO	World Health Organization
WTO	World Trade Organization

All dollars are U.S. dollars unless otherwise noted.

Introduction

Dancing with Giants

L. Alan Winters and Shahid Yusuf

China and India share at least two characteristics: their populations are huge and their economies have been growing very fast for at least 10 years. Already they account for nearly 5 percent and 2 percent of world gross domestic product (GDP), respectively, at current exchange rates. Arguably, China's expansion since 1978 already has been the largest growth "surprise" ever experienced by the world economy; and if we extrapolated their recent growth rates for half a century, we would find that China and India—the Giants—were among the world's very largest economies. Their vast labor forces and expanding skills bases imply massive productive potential, especially if they continue (China) or start (India) to invest heavily in and welcome technology inflows. Low-income countries ask whether there will be any room for them at the bottom of the industrialization ladder, whereas high- and middle-income countries fear the erosion of their current advantages in more sophisticated fields. All recognize that a booming Asia presages strong demands, not only for primary products but also for niche manufactures and services and for industrial inputs and equipment. But, equally, all are eager to know which markets will expand and by how much. Moreover, the growth of these giant economies will affect not only goods markets but also flows of savings, investment, and even people around the world, and will place heavy demands on the global commons, such as the oceans and the atmosphere.

This book cannot answer all these questions, but it contains six essays on important aspects of the growth of the Giants that will, at least, aid thinking about them. Its principal aim is to highlight some of the major implications of the Giants' growth for the world economy and hence for other countries,

2 DANCING WITH GIANTS

drawing on new research and on the burgeoning literature concerning China and India: it is about dancing with the Giants without getting one's toes stepped on.¹ Three chapters focus on the Giants' interactions with other countries (via the evolution of their industrial capabilities, their international trade, and the international financial system), two chapters consider possible constraints and influences on their growth (inequality and governance), and one chapter combines the analysis of local constraints and global perspectives (on energy and emissions).

The question underlying the analysis is very simple. China and India account for about 37.5 percent of world population and 6.4 percent of the value of world output and income at current prices and exchange rates;² as their per capita production and consumption approach levels similar to those of today's developed economies—a standard to which, broadly speaking, both Giants aspire—major effects on global markets and global commons seem inevitable. We ask whether a continued rapid expansion of economic activity through 2020 is feasible, whether there are any hints about the form it will take, and how any such expansion will impinge on other countries. The last question is analyzed via the Giants' impact on global markets, systems, and commons rather than via their bilateral links with other countries. The effects on any individual country largely will be related to the nature of its engagements with these systems.³

Of course, the Giants will not grow in isolation—indeed, they probably never will contribute more than a minority share of world growth—so this raises a definitional question about what we mean by “the effects of the Giants' growth.” In the two chapters in which we analyze the question formally, we postulate a plausible growth path to 2020 for everybody (which has implications for, say, world prices or carbon emissions), and then ask about the implications of “a bit more” growth for the Giants. One of these chapters uses a standard computable general equilibrium model to translate assumptions about future factor accumulation and technical progress into a picture of the world in 2020. It then increases the Giants' growth by about 2 percentage points per year after 2005 and calculates the resulting differences in the flows of goods and services between economies, the structure of production, and

1. One of the questions most commonly asked of World Bank country economists is, what does the rise of China and India mean for my country?

2. Unless stated otherwise, statistics in this chapter come from the World Bank's *World Development Indicators*.

3. We consider only tangible dimensions of impact, including services, but, of course, China and India also may influence norms, tastes, business models, and so forth.

economic welfare. The other chapter uses a different model, incorporating a detailed energy sector and endogenous technical progress, to explore energy/emissions scenarios up to 2050. It then similarly explores the consequences of adding about 2 percentage points per year to the Giants' growth.

In the long run and in aggregate, economies adjust fairly smoothly, so we expect the precise baseline chosen for these exercises to have rather little effect on the impact of the incremental growth. However, it is possible that there are critical economic and ecological thresholds, which mean that an extra 2 percentage points of annual growth from the Giants would have different effects, depending on whether they were introduced into a world already growing at, say, 2 percent or at 4 percent a year. For example, the supply of oil might act as a constraint, or faster growth might sufficiently increase incentives for innovation that this constraint becomes nonbinding. But, of course, no one knows whether and where such thresholds exist, so we proceed by assuming a plausible base and exploring a plausible increment, elaborating them with qualitative discussion where this seems appropriate.

The other chapters on the effects of the Giants' growth take a less quantitative approach. One describes current and foreseeable developments in industrial capability so as to identify sectors of likely future strength—and hence competitive advantage. It stresses the behavior of specific firms and sectors in promoting the very rapid changes in manufacturing and services capabilities in China and India, and hence supplements the more formal, model-based analysis of comparative advantage noted above. Another chapter quantifies the Giants' engagement in the international financial system and considers the factors—mainly their domestic policy reforms—that will influence it in the future. In the absence of predictions about such reforms, however, we eschew trying to make precise quantitative estimates of future financial stocks and flows.

The remaining two chapters are even farther from quantifying the future, but nonetheless address important factors underlying the Giants' growth. The first reviews the evidence on the Giants' poverty reduction, increasing inequality, and economic growth. It argues that increasing inequality could constrain growth—especially in China—and that governments should take steps to address it.⁴ Precisely how they do so (for example, by trying to boost agricultural incomes or by encouraging migration out of rural areas) could affect

4. It is true that income inequality rose in the United Kingdom and the United States during their industrializations, without these trends being viewed as a constraint on growth. However, the scant evidence suggests that the increases were less than in China (for example, see Lindert [2000]). Furthermore, both technology and social norms were different then, and prevailing growth rates were lower, even for the most successful economies.

trade and hence the rest of the world. The last chapter similarly reviews past evidence—this time on governance and the investment climate—and concludes that, although problems of governance need not constrain growth in the Giants, certain fragilities exist. Both of these chapters are consistent with continuing rapid growth, but they identify circumstances in which it could be slowed.

From this discussion it will be clear that none of the chapters in this book makes unconditional predictions about the Giants or the world economy; rather, each chapter analyzes one aspect of growth and discusses, quantitatively or qualitatively, the type of factors that one should consider in projecting its continuation or its effects. Similarly, although the chapters all deal with the same events, they do not adopt a single analytical framework or data set. Analysis requires simplification, and the requisite simplifications vary from topic to topic. Likewise, different topics require different data and data sources, which often are somewhat at variance. Because we cannot produce a single statistical view of the Giants, we use data appropriate to each topic without seeking to impose an appearance of perfect mutual consistency. Except for the case of energy and emissions, our time horizon is the period between 2005 and 2020, long enough to identify longer-run trends and inform policy making over the next few years but, we hope, short enough not to be overwhelmed by the uncertainties of technology and politics.

We treat both China and India together as Giants because the essays are mainly concerned with the way in which the global economic environment facing *other countries* is evolving. From this perspective, the analytical apparatus required is similar for both China and India. We are not asserting, however, that the two Giants themselves are similar or that they have similar prospects. Indeed, as is noted below, even their scales are different over the 15 years that we consider. In some cases we will distinguish between the implications of Chinese and Indian growth for global outcomes or between the challenges they face in achieving growth, but for many other purposes we will refer to them collectively as the Giants.

The remainder of this introduction starts by observing that the Giants matter to the rest of the world because they are growing and because they are integrated or integrating with the global economy. It briefly discusses the forces shaping their growth and contrasts that growth with previous growth spurts in the world economy and with growth stimuli emanating from other countries; that is, it seeks to put the Giants in perspective. It next provides a brief overview of subsequent chapters, passing from industrial capability and inter-

national trade (that is, how the Giants' growth may be diffused through the world via goods and services markets); through their interactions with international financial markets, energy markets, and emissions; to the possible constraints to growth emanating from the environment, inequality, and the challenges of governance. Finally, we summarize the challenges that the growth of the Giants poses to governments of other countries, according to their different endowments and economic circumstances.

Much has been written about China's period of exceptional economic growth and India's recent takeoff, which space considerations deter us from discussing here. In a few cases, looking back is essential to looking forward, but except in such cases and where we need to measure growth rates from an historical point, we ignore these fascinating histories.⁵ Thus, in this chapter we concentrate on where the Giants are now and where they are going.

Economic Growth

We are interested in the Giants because they are large and growing (and are expected to continue to do so), and because their growth impinges on other countries via their international transactions. This section considers the first of these reasons: How large and dynamic are the Giants, how does their growth compare with others' growth, and what determines the nature of their growth?

Putting the Giants in Perspective

We start by comparing the Giants with other large economies currently and in 2020. For comparing poverty or even economic welfare across countries, it is sensible to use purchasing power parity (PPP) exchange rates; but for assessing the effect of one economy on another, current actual exchange rates provide a better basis. Such international effects must operate via the international transfer of goods, services, or assets; given that the latter are tradable, their prices do not vary dramatically across countries, so PPP adjustment is not appropriate. The GDP data in table 1.1 suggest that China is perhaps one-

5. Among the many economic histories available, see Naughton (1995), Srinivasan (2003b), Panagariya (2004), Rodrik and Subramanian (2005), Frankel (2005), Friedman and Gilley (2005), Wu (2005), and Branstetter and Lardy (2006).

Table 1.1 Gross Domestic Product in Six Large Economies
percent

Economy	Share of world GDP (2004 \$ and exchange rates)		Average annual real growth rates		Average contribution to world growth	
	2004	2020	1995–2004	2005–20	1995–2004	2005–20
China	4.7	7.9	9.1	6.6	12.8	15.8
India	1.7	2.4	6.1	5.5	3.2	4.1
United States	28.4	28.5	3.3	3.2	33.1	28.6
Japan	11.2	8.8	1.2	1.6	5.3	4.6
Germany	6.6	5.4	1.5	1.9 ^a	3.0	3.3
Brazil	1.5	1.5	2.4	3.6	1.5	1.7
World	100.0	100.0	3.0	3.2	100.0	100.0

Source: World Bank 2005b, *World Development Indicators*.

Note: Average growth rates are calculated as the average of annual real growth rates (US\$ constant 2000) for the period. Similarly, average contributions are calculated as the average of annual contributions. The calculation for the period 2005–20 is based on GDP in 2004 and the projected growth rates.

a. The World Bank projects an annual growth rate of 2.3 percent for the 25 countries of the European Union plus the European Free Trade Association, from which we derive the figure for Germany.

sixth as large as the United States in current dollars, and that India is one-sixteenth as large. In terms of impact, a given proportionate shock emanating from Germany or Japan would outweigh one from China, let alone one from India.

Turning to the growth of output and income, China and India have performed very strongly since 1995, especially compared with other large economies (see column 3 of table 1.1). China accounted for 13 percent of the world growth in output over 1995–2004; and India accounted for 3 percent, compared with the United States' 33 percent, whose slower growth rate is offset by its much higher starting share in 1995. Looking forward, the table projects GDP growth to 2020 based on the World Bank's central projections for the world economy as of early July 2006.⁶ These projections are offered not as predictions but as plausible assumptions from which we can start to think about

6. It is very likely that these projections will be revised somewhat in *Global Economic Prospects 2007*. As argued above, however, the analysis of the effects of the Giants' growth is largely independent of the precise base to which it is applied. The projected decline in growth rates relative to recent experience reflects expert opinion as of early 2006, based on views about future accumulation, labor force growth, technical progress, and policy reform.

the relative magnitudes of the Giants' growth. The corresponding growth rates in factor inputs and productivity are given in table 3.4 (chapter 3).

The projections have China growing at an annual average of 6.6 percent over the period 2005–20 (an aggregate increase in output of 162 percent), and India growing at 5.5 percent a year (124 percent)—modest rates relative to the last decade but still formidable. The projections assume robust growth elsewhere (world average of 3.2 percent annually), so they imply a somewhat conservative view of the increase in the Giants' share of the world economy—from 4.7 percent to 7.9 percent for China, and from 1.7 percent to 2.4 percent for India. On these figures, the Giants account for larger shares of world growth in real terms over 2005–20 than over 1995–2004, but not dramatically so.⁷ It is important to note, however, that these projections of real growth hold exchange rates constant at 2004 values. As the Giants become more affluent, the prices of their nontraded services and their equilibrium exchange rates will increase. Thus, by 2020 the Giants' shares at 2020 prices will exceed those in column 2 of table 1.1, probably substantially.⁸ Nonetheless, over the time horizon we are dealing with, the Giants will not come to dominate the world economy. A given proportional change in North America or Western Europe, for example, still will be quantitatively larger.

It also is relevant to note that emerging economies' growth rates are typically more volatile than industrial countries' rates. As emerging economies become relatively larger in the world economy, this volatility will impinge more strongly on others, and unless it is negatively correlated with other growth shocks, overall volatility will increase slightly.

A different perspective on the Giants' growth comes from historical data. Looking at China's takeoff from 1979, one can compare its progress with previous large industrializations. (India's progress is too recent to be analyzed in this way.) Table 1.2 considers the United Kingdom and the United States over the 18th and 19th centuries, drawing on Maddison's (2003) statistics. Although, unfortunately, those statistics are in PPP terms and available only

7. If China's and India's growth rates were raised to 8.6 percent and 7.3 percent, respectively, as assumed in alternative simulations in chapter 3 and more in line with local predictions and plans, and if the world growth rate were reduced to 3.0 percent, China's and India's shares of GDP in 2020 would increase to 10.9 percent and 3.2 percent and their contributions to growth to 20.1 percent and 5.5 percent, respectively.

8. If we had applied these methods (that is, applied constant price growth rates to initial shares) to Japan over the period 1965–95, its share of world GDP would have appeared to rise from about 4.3 percent to 6.6 percent. In current prices, the increase was to 17.6 percent!

Table 1.2 Comparative Industrialization*GDP at PPP prices*

Factor for comparison	China, WDI 1978–2004	China, Maddison 1978–2003	U.K. 1700– 1820	U.K. 1820– 70	U.S. 1820– 70	U.S. 1870– 1913
Industrializer's initial share (%)	2.9	4.9	2.9	5.2	1.8	8.8
Industrializer's annual growth (%)	13.3	7.5	1.0	2.1	4.2	3.9
World annual growth (%)	6.8	3.1	0.5	0.9	0.9	2.1
Growth differential	6.6	4.4	0.5	1.2	3.3	1.8
Number of years	26	25	120	50	50	43

Sources: World Bank 2005b, *World Development Indicators*; Maddison 2003.

for specific dates, they do suggest that neither country administered such a large shock to the global economy as has China. According to column 1, starting with 2.9 percent of world income, for 26 years China has grown an average of 6.6 percentage points per annum faster than the world economy. According to column 2, the country had an initial share of 4.9 percent and a growth differential of 4.4 percentage points. Historical growth rates were much lower, even for booming countries, and the nearest parallel to China was the United States over the period 1820–70, during which time the differential was 3.3 percentage points a year for 50 years (with a lower starting share).⁹ In absolute terms, the Industrial Revolution was a revolution because, for the first time, it was possible that average per capita incomes might double in a couple of generations. In the United States' heyday, incomes more than doubled in a single generation; and at the Giants' current growth rates and life expectancies, incomes would rise a hundredfold in a generation!

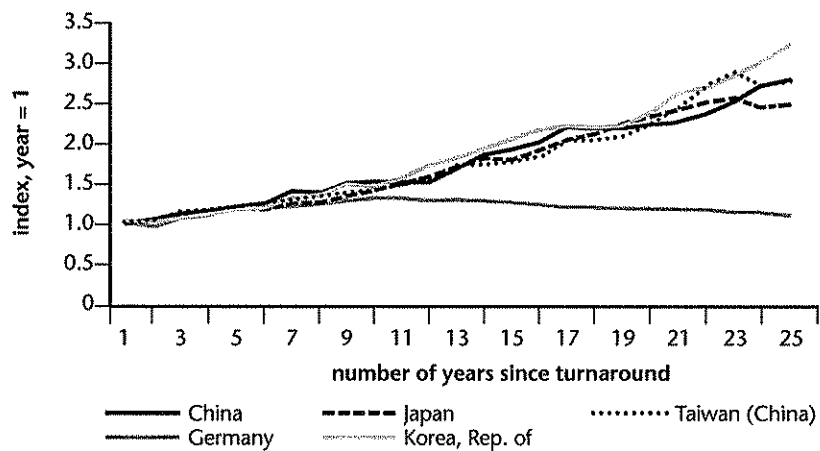
Figure 1.1 offers the same analysis for more recent experiences, again using Maddison's data. (His data for China have been challenged as too conservative over growth—see Holz [2006].) Taking 1950 (the earliest point from which annual data are available) as the start of the growth spurts in the Federal Republic of Germany, Japan, and Taiwan (China); 1962 for the Republic

9. Because we cannot choose peak and trough years precisely, we undoubtedly overstate the difference between China and the others, but it is unlikely that our qualitative conclusion is wrong: $(1 + 0.065)^{26}$ exceeds $(1 + 0.033)^{50}$.

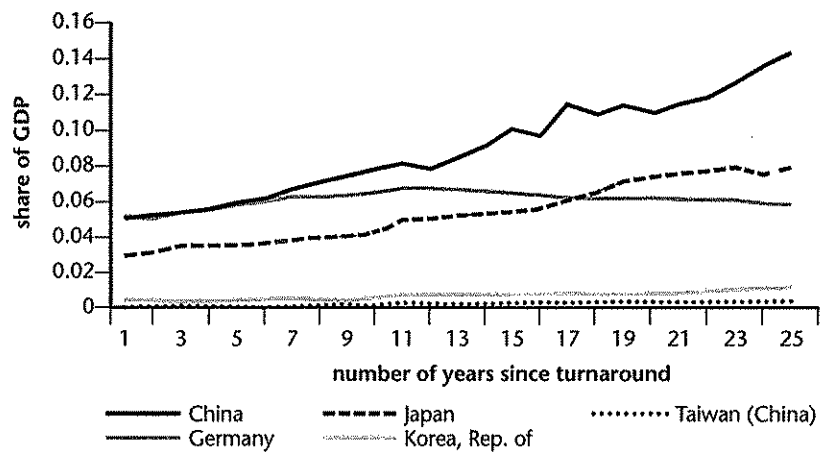
of Korea; and 1979 for China, we plot (figure 1.1a) the growth of output relative to world output (again at constant, PPP prices) taking the starting year as 1, and (figure 1.1b) the evolution of the target economy's share of world output.

Figure 1.1 China and Previous Growth Spurts Compared

a. Index of growth relative to world



b. Evolution of share of world GDP



Source: Maddison 2003.

Japan, Korea, and Taiwan (China) all recorded domestic growth in excess of China's growth over their "first" 25 years, and Germany recorded rather less after the first 12 years, although in this case 1950 may be too late a starting point. After normalizing by world growth (that is, investigating the target economy's growth relative to the world's growth over its growth spurt [figure 1.1a]), all economies except Germany show fairly similar trends, at least for 20 years. In absolute terms, however, Korea and Taiwan (China) were tiny when their growth started, and even Japan, with an initial 3 percent share of world GDP, was smaller than China. Thus, in terms of an expanding share of world output, China's growth spurt has been much greater than any other spurt yet seen.

If we had data at actual prices rather than in PPP terms, China's initial share would have been much smaller and Japan's share would have been somewhat smaller, so the comparison would have been less extreme. Recall, however, that Maddison's (2003) data on China may be too conservative, and that Japan's growth spurt tailed off after 20 years. Although Japan's growth resumed in the 1980s, that country never achieved more than 9 percent of world GDP at PPP, whereas China already accounts for 14 percent.

These simple numbers suggest, indeed, that China's industrialization has been uniquely large, and this brings us only to the present. Projecting forward suggests an even larger shock to other economies. Moreover, it might be important that China and India are growing in a world that already may be pushing against the limits of resource availability. Although one might reasonably expect technical progress to continue to raise output per capita, one cannot deny that the global commons—frontier land, the oceans, the atmosphere—are under pressure.

If we do a similar exercise in terms of exports, the story is slightly different. Putting aside Korea's astronomical rate of export growth (50 times more than world exports over 43 years), China's export growth relative to the world's export growth was much the same as that of other countries for 25 years, edging into top place thereafter. In terms of shares of world exports, however, Germany had the greater increase (from 3.2 percent to 10.5 percent over 25 years, compared with China's increase from 0.8 percent to 7.3 percent and Japan's increase from 1.3 percent to 7.2 percent). China's share, of course, is expected to increase further in the future, whereas Germany's and Japan's shares fell away, and both of those were recovering rather than emerging economies. Hence, even in terms of exports, China is arguably the largest shock we have seen thus far, and its growth and that of India are projected to continue. In

short, even though China is not the dominant force in the world economy, the shock it is administering to the world is unprecedented. Clearly, interest in the Giants is well justified.

Accounting for Growth

Now we turn briefly to the underpinnings of the growth rates assumed above for the Giants. The sources of growth include the growth of the workforce, the accumulation of physical and human capital tempered by any diminution of natural capital, the rate of technical change, and the allocation of resources across activities. The contribution of these sources to actual growth in China and India is affected by the incentive structure implicit in their domestic environments (for example, the functioning of factor and product markets, the breadth of access to these markets, economic and social infrastructure, and a range of policies) and by the nature and extent of their integration with world markets. We do not analyze the Giants' domestic environments or factor accumulation in any detail, taking as given projections of their likely magnitudes from other sources. We do need to ask briefly what those projections are, however, so that we may understand the nature of their growth.

In both Giants, population growth has been slowing and is expected to continue to do so. China's population grew by only 0.6 percent a year during 2000–05, to reach 1.32 billion¹⁰; it is expected to peak in 2032 and decline thereafter.¹¹ India's population grew by 1.4 percent in 2000–05, reaching 1.10 billion, and its growth is expected to slow to 0.7 percent a year between 2030 and 2040 (by which time it will have overtaken China). These trends reflect sharply lower fertility, with people age 15–64 accounting for 71 percent in China in 2005, falling to 69 percent in 2020 and to 62 percent in 2040. The corresponding percentages for India are 63 percent in 2005, and 67 percent in 2020. China's decline in the work cohort is likely to be at least partly offset by increasing employment participation rates, but India's younger profile is one reason to believe it will start to close the income gap by the second quarter of the century.

China has increased its urban population share from 21 percent in 1981 to 43 percent in 2005 (Cooper 2006), with absolute declines in the rural popula-

10. A billion is 1,000 millions.

11. For comparability we use United Nations population projections rather than local ones.

tion. Moreover, much rural employment is nonagricultural. Nonetheless, agriculture still accounts for approximately 45 percent of employment and industry accounts for 22 percent, so despite the importance of sectoral reallocation in China's past growth, we still see it as a potent force for the future. This is especially so given that agriculture accounts for a far lower share of GDP (13 percent) than of employment. Urbanization was much slower in India—from 23 percent to 28 percent over 1981–2001—with the number of rural residents increasing by more than 200 million. Agriculture provided 59 percent of employment in 2000 and industry provided only 16 percent. Again there is plenty of scope (and need) for future reallocation in India.

Given its size and its importance in poverty alleviation (see below) agriculture will remain an important sector in both Giants, even though the main drivers of growth will be elsewhere. In China, yields already are quite high and agricultural land is under pressure from urban and road expansion, so future growth will depend significantly on new crops and increased marketization. In India, the need for growth is greater but so is the scope. Indian yields are generally low, even by developing-country standards, and agriculture is hamstrung by poor infrastructure and excessive regulation (FAO 2006). Recent growth has been respectable in the sector, and achieving our projected growth rates (let alone those foreseen in official Indian plans) will require at least as much in the future.

Both China and India have made significant advances in basic education in the last two decades. In 2000, adult literacy was 84 percent in China and 57 percent in India, and youth (ages 15–24) literacy rates were 98 percent and 73 percent, respectively. Moreover, both countries are accumulating human capital rapidly, with secondary school enrollment rates of 50 percent and 39 percent, respectively, in 1998 (UNDP 2002, pp. 183–84). By 2005, India was producing 2.5 million new university-level graduates per year, 10 percent of whom were in engineering (Cooper 2006); China produced 3.4 million graduates, including 151,000 with postgraduate degrees (*Chinese Statistical Abstract* 2005, pp. 175–76). By 2004, approximately one-fifth of the relevant age cohort in China was entering tertiary education (Cooper 2006), although, as noted above, the cohort itself is already beginning to decline.

The prodigious growth in the number of graduates in China and India presages a significant increase in the Giants' shares of world skills and, hence, changes in their comparative advantages. The McKinsey Global Institute (2005) has suggested, however, that only about 10 percent of Chinese and Indian graduates currently would meet the standards expected by major U.S. com-

panies; and, although undoubtedly this will change over time, at present one should not think of most of these graduates as very highly skilled workers.¹²

Turning to physical capital, the GDP-weighted average rates of gross capital accumulation were 42 percent and 24 percent for China and India, respectively, over 1990–2003. China's higher rate partly reflects its more capital-intensive structure and investment in infrastructure (including housing), and helps explain its faster growth (Srinivasan 2006). It was largely financed by China's prodigious domestic savings rate, and explains perhaps half of its growth rate. Total factor productivity (TFP), on the other hand, has increased at a respectable but not spectacular 2.5 percent annually in both China and India since 1995, although the recent revisions to the GDP data will increase the former's estimate. Much of the recorded TFP growth presumably reflects the reallocation of labor from agriculture and the state sector to market activities.

A natural question about any growth projection is, what are its margins of error? Overall, we believe that the estimates reported in table 1.1 are conservative and reasonably robust, but some commentators argue that there are serious vulnerabilities arising from the environment, income distribution, and governance, among other things. Hence, after analyzing the possible consequences of our central view, we return to consider these vulnerabilities. In the remainder of this introduction, we will contextualize and summarize the chapters in the rest of the book.

International Trade

China's and India's growth affect other countries through a variety of channels, but international trade is arguably the strongest and most direct. In chapter 2, the authors consider improvements in the Giants' industrial capabilities, and the authors of chapter 3 present a model of world trade into which we fit their growth.

Trade Expansion

China's trade expansion since 1978 has been legendary; and, since the early 1990s, India also has taken off. At 5.7 percent for exports and 4.8 percent for

12. In the long run, the apparent economies of agglomeration for very highly skilled workers suggest that China or India could become poles of attraction for science and engineering. Such a situation could transform countries' relative standings dramatically.

imports, China's share of world goods and services trade exceed its GDP share (see table 1.3). This is extraordinary for such a large economy, although in part it reflects China's integration into Asian production chains. Through this integration, perhaps as much as a third of the recorded value of exports (measured gross) comes from imported inputs rather than from local value added, which is what GDP measures.¹³ With annual growth at 15.1 percent over 1995–2004, China provided almost 9 percent of the increase in world exports of goods and services (second only to the United States), and 8 percent of the increase in imports (also second to the United States).

Within these aggregates, China is a significant importer and exporter of manufactures, with market shares of 6.2 percent and 7.7 percent, respectively, in 2004. Manufactured imports comprise mainly parts and components for assembly activities and capital equipment, whereas exports substantially are finished goods. One notable feature of China's exporting has been technical upgrading. Devlin, Estevadeordal, and Rodríguez-Clare (2006) have shown how high-technology goods partly have displaced low-tech ones within the set of manufactured exports; Lall and Albaladejo (2004) forecast great competitive pressure from China at the lower end of the high-tech range (for example, autos, machinery, and electronics); and Freund and Ozden (2006) have found that China is displacing Central American exports mostly in sectors associated with relatively high-wage producing countries. Part of this upgrading reflects the import of more sophisticated components (see, for example, Branstetter and Lardy 2006), but part of it almost certainly arises from local improvements.

Even more striking is China's growth in imports of primary products. Soybean consumption has increased 15 percent a year recently, and soy and palm oil consumption by 20 percent and 25 percent, respectively (Streifel 2006). All largely are imported. China is a huge importer of fuels and minerals, accounting for nearly 40 percent of world market growth since 1995. Part of the increase in materials imports is balanced by corresponding declines in the countries from which China has displaced manufacturing, but most of the increase represents a net rise in demand: millions of Chinese consumers are starting to buy consumer durables and other goods as they grow richer, and low Chinese export prices are stimulating consumption elsewhere in the world.

13. Moreover, as Bergsten et al. (2006) have shown, much of the recent increase in the U.S. trade deficit with China is offset by declines in deficits with its neighboring supplying countries. This finding is consistent with the gradual transfer of assembly from the region into China.

Table 1.3 Trade in Goods and Services for Six Large Economies
percent

Economy	Exports of goods and services			Imports of goods and services		
	Share (2004)	Share of growth (1995–2004)	Projected growth rate (2005–20)	Share (2003)	Share of growth (1995–2003)	Projected growth rate (2005–20)
China	5.7	8.9	7.8	4.8	7.8	6.6
India	1.2	1.8	7.5	1.1	1.8	6.3
United States	11.2 ^a	10.7	3.4	16.5	24.1	3.5
Japan	5.4 ^a	-3.7	4.2	4.7	-0.8	3.5
Germany	9.1	7.7	1.8	8.2	3.6	2.0
Brazil	1.0	0.5	1.7	0.7	0.3	4.3

Source: World Development Indicators.

Note: Average contribution to growth for the period 2005–20 was calculated using projected average export growth rates.

a. 2003.

The data on the total consumption of various primary products presented in table 1.4 reinforce the importance of China and India in world commodity markets. In metals and coal, China always is ranked first, with shares of 15 to 33 percent of world consumption, and the United States is ranked second or third; in other energies, the United States is first and China is second or third. The Giants also are important consumers of agricultural commodities, and here India figures prominently, leading the world in consumption of sugar and tea.

Increasing commodity demand from the Giants obviously supports prices, other things being equal, but prices also depend on supply. Most analysts hold that, in recent years, Chinese demand has increased most metals prices be-

Table 1.4 Shares in World Consumption of Primary Commodities

Percent by volume

Commodity	China	India	United States
<i>Agriculture 2003</i>			
Wheat	15.2	13.5	5.4
Rice	29.7	21.4	1.0
Maize	17.0	2.2	32.5
Soybeans	19.2	3.7	24.0
Soy oil	24.4	6.4	25.7
Palm oil	15.8	15.3	0.6
Sugar	6.6	15.2	12.5
Tea	14.4	17.5	3.8
Coffee	0.4	0.8	16.8
Cotton	31.2	12.8	6.9
Rubber	23.5	8.4	12.9
<i>Metals 2005</i>			
Aluminum	22.5	3.0	19.4
Copper	21.6	2.3	13.8
Lead	25.7	1.3	19.4
Nickel	15.2	0.9	9.5
Tin	33.3	2.2	12.1
Zinc	28.6	3.1	9.0
Iron ore	29.0	4.8	4.7
Steel production	31.5	3.5	8.5
<i>Energy 2003</i>			
Coal	32.9	7.1	20.6
Oil	7.4	3.4	25.3
Energy (total)	12.6	3.6	23.4
Electricity generation	11.4	3.8	24.3

Source: Streifel 2006.

cause supply growth has not kept up with demand.¹⁴ The exception that (loosely speaking) proves the rule is aluminum, for which China is a net exporter and produces about 25 percent of the world total. Compared with price increases of 379 percent for copper from January 2002 to June 2006, aluminum prices have increased modestly—up only 80 percent (Streifel 2006).

India's trade in goods has not been remarkable to date, but it is starting to increase as barriers come down. The country accounted for about 2 percent in the growth of world exports and imports over the period 1995–2004. It will be significant for the evolution of prices, as the Giants' trade expands over the next few years, that the commodity compositions of India's and China's exports differ substantially. India's largest single export is gemstones (one-eighth of visible exports in 2004), but manufacturing is the largest export category and is now starting to grow strongly. The most dynamic export sector in India is information technology (IT)-enabled services for global companies, including call centers and software application, design, and maintenance. Such activities require qualified English-speaking labor, and India has an abundant, low-cost supply. The principal users of these services are U.S.-based global companies, but offshore software development contracts from Japan and Korea are expected to grow (Fujita and Hamaguchi 2006). Despite their dynamism, India's overall exports of commercial services (\$40 billion in 2004) are less than those of China (\$62 billion), although \$17 billion of India's were in communications and software (arguably the high end of the sector), compared with China's \$3.6 billion in software. However, both countries still have relatively small world shares (1.8 percent and 2.8 percent of world services exports, respectively).

Services account for only 41 percent of GDP in China (even after the recent revaluation), compared with approximately 52 percent in lower-middle-income countries, and this leaves plenty of room for growth if Chinese service providers start to master global service technology in the same way they have mastered manufacturing. In India, the service share of 51 percent is somewhat above the norm for low-income countries, and there is a dynamic export sector—business and IT services. The IT sector accounts for only 6 percent of service turnover, however, and employs perhaps 3 million people. Moreover, it tends to be focused at the low to middle end of the business (Commander et

14. Increases in some soft commodity prices also have been high (for example, rubber), but other factors appear to underlie this as well as China's growth (Streifel 2006).

al. 2004). Thus, services trade alone does not look likely to transform Indian economic performance.

Industrial Geography: The Evolution of Comparative Advantage

The key question going forward is how China's and India's international trade is likely to develop. Before getting to specific numbers, it is worthwhile to consider some qualitative trends in industrial and service capabilities: both India and China have demonstrated the ability to upgrade their performance in specific sectors, and this is the subject matter of chapter 2. As just noted, although services exports will be important for India, we do not see them pre-figuring a completely new development model; and China's appetite for primary imports seems bound to continue growing. Hence, the future pattern of manufacturing production and exports is likely to be central to development in both countries.

The principal drivers in the Giants are large domestic middle-class markets (currently about \$1 trillion per year in China and \$250 billion annually in India), and large supplies of labor supplemented, at least in China, by improving industrial capability stimulated by domestic and foreign investment. The first driver creates a base for industries with large economies of scale, and the second will tend to keep wages down and help maintain labor-intensive industries. These features combine to favor certain mid-tech and high-tech sectors, such as autos, electronics, and domestic appliances—and, in the future, pharmaceuticals and engineering. Chapter 2 documents the rapid recent advances in technology and organization, and the strong future prospects of these sectors.

In China, the continuation of low-skilled, labor-intensive manufacturing seems feasible, but not in the traditional manufacturing centers along the eastern seaboard where production costs are rising. Some adjustment undoubtedly will prompt less-skilled sectors to relocate abroad, including to India, but it also is likely that some will move to inland centers where the large agricultural reserve of labor could be trained and mobilized for industrial work. The increases in outputs and incomes following this movement inland would be part of the payoff for recent huge investments in infrastructure.

Higher education also is booming in China, with a large share of its graduates in science and engineering and, of course, many skilled Chinese citizens who live abroad and could return. A concentration of the best Chinese brains could make China a major force in some sophisticated sectors, but the demand for skills in public service, general management, and education could

constrain the emergence of such technological or innovative leadership for some time in many sectors. One consequence of this is that China will continue to import sophisticated goods, including capital goods, from abroad.

China currently sits at the center of production networks spanning Southeast and East Asia. The policy of offering duty-free access to imports of components for exports while protecting the local producers of both intermediate and final goods for the domestic market undoubtedly encouraged Chinese openness. This policy is beginning to unwind as protection levels fall and the domestic market grows, making it more attractive to bring components manufacture closer to assembly and to the market. Thus, the biggest uncertainty probably faces the suppliers of intermediates to Chinese industry, mainly in East and Southeast Asia.

India is smaller and poorer than China (with a gross national income per capita of approximately \$3,000 PPP to China's \$5,000 PPP) and, as argued above, India has not yet proved to be a major force in international manufacturing. So far, India has had export success in textiles and clothing, and, given its abundance of unskilled labor, it seems almost bound to continue to sustain a competitive edge in these industries. It is also a growing player in pharmaceuticals, building on its base of seasoned corporations, its ample supplies of graduates, and its potentially large home market. For the same reasons, India also is acquiring a reputation in some specialized engineering and services sectors. Other major industries show potential for expansion—steel, white goods, electronics—but probably mainly for the home market over our time horizon. Thus, although one may anticipate robust growth in Indian manufacturing over the next decade, there does not appear to be a strong likelihood of “disruptive” exporting occurring.

Despite this catalog of potential successes, China and India cannot have comparative advantage in everything. What, therefore, does all of this mean for other countries? To answer this question we need an approach that is grounded more firmly in the adding-up constraints of the Giants' and world economies.

General Equilibrium

In chapter 3, the authors consider the Giants' growth and capabilities and ask how they affect world trade. A number of approaches to answering this question are possible. Some scholars focus mainly on the bilateral trade links—for example, DfID (2005) and Jenkins and Edwards (2006). These links represent

the most direct links between any two countries, but strong spillovers are likely between countries if they compete in the same third markets, even if there is no direct bilateral trade between them. Moreover, as Chinese demand grows, supply constraints will determine countries' exports to China more than their current shares of Chinese imports do.

Most studies consider global markets and compare the trade patterns of China and the studies' target countries. They argue that countries with export patterns similar to China's are likely to suffer losses as China grows, whereas those whose exports match China's imports are likely to receive a boost (see, for example, Lall and Weiss 2004; Goldstein et al. 2006; and Stevens and Kennan 2006). This also is informative for it recognizes that the principal mechanism connecting two countries' goods markets is the world market, and that, over the medium term, the exact locations where countries sell are secondary to the overall supply and demand balance. This approach, however, ignores China's main characteristic—its size. A flow accounting for, say, 1 percent of China's exports would outweigh Thailand's exports in that product even if it accounted for 5 percent of the latter's total exports. Also, because it is based solely on international trade data, this approach misses the resource constraints on China's future growth and their implications for relative prices, both of which will induce adjustments in initial patterns.

Our analysis of the trade consequences of the Giants' growth addresses these problems by using a computable general equilibrium (CGE) model. CGE models impose an internal consistency on their conclusions that requires, among other things, that trade imbalances do not grow unchecked and that demand equals supply for each good and factor of production. When considering such huge shocks as the more than doubling of the Giants' economies, this discipline is extremely important, although it comes at a cost, of course. The model has a simple constant returns-to-scale technology; productivity, labor force, and capital stock growth are all exogenous, and behavioral relationships are quite crude. Moreover, the modeling approach makes less use of detailed trade data than do the exercises discussed above, although a great deal of effort has gone into characterizing the trade links, the trade policy, the production structure, and the factor markets in 2001 (the model's base year) and into estimating the behavioral parameters in the various markets.

Chapter 3 starts by "rolling the world economy" forward from its base of 2001 to 2005, incorporating the enlargement of the European Union, the final liberalizations mandated by the Uruguay Round, India's recent liberalization, and Chinese accession to the World Trade Organization. It then postu-

lates a continuation to 2020 of India's current tariff and trade reforms, and applies exogenously given estimates of the growth of productivity and factor supplies in all countries and regions. These estimates come from the World Bank "central projections" and thus imply the growth rates shown in table 1.1. In aggregate, they lead to yearly import growth rates of 6.6 percent and 6.3 percent for China and India, respectively, and to export growth rates of 7.8 percent and 7.5 percent, respectively (see table 1.3). These rates, in turn, imply that China will provide 15 percent and 11 percent of export and import growth, respectively, for 2005 to 2020, compared with the United States' 10 percent and 15 percent and with India's 2.7 percent and 2.2 percent. The excess of export over import growth rates does *not* indicate expanding trade surpluses for China and India because relative prices change. In fact, for technical reasons we assume that current account balances are frozen at 2001 levels as a percentage of GDP: +1.3 percent for China and +0.3 percent for India. As before, we reiterate that these growth rates are not predictions but are plausible magnitudes to identify orders of magnitude and provide a base for some thought experiments.

From this base, we next ask, what if India and China grew faster by 1.9 percentage points and 2.1 percentage points a year, respectively, as a result of faster productivity improvements (in all industries)?¹⁵ This simulation gives a direct indication of the effects of the Giants' advance, and we analyze it both alone and with an added assumption that the productivity increase results in improvements in the range and quality of China's and India's export products. These improvements increase the productivity (or value) of Chinese and Indian goods for their users (or consumers), which in turn generates a real income gain for them. There are three broad effects on other countries: their exports face fiercer competition because the Giants' costs fall; their imports from the Giants become cheaper; and they benefit from aggregate demand increases, both in the Giants and from the (universal) increase in real income resulting from efficiency improvement. The balance of these forces varies from country to country, but because most countries import significant amounts from the Giants and all get a share of the increase in demand, most countries gain overall. In the simulation with growth alone, the exceptions are some Southeast Asian countries, the rest of South Asia, and Europe, which are projected to be net losers (see table 3.7, chapter 3). When we add

15. Average TFP growth increases from 1.9 percent annually in the base to 3.8 percent for India, and from 2.5 percent to 4.6 percent for China.

in the quality improvements, the Philippines' losses increase (because of their dependence on electronics in which they compete so directly with China), but every other country gains, although not by enough for Singapore and the rest of South Asia to become net gainers overall. For them, the effects of increased competition predominate.

Even for net gainers, however, not all is rosy in this particular garden. The Giants achieve major gains in their market shares in manufacturing, so most other countries experience declines in manufacturing output relative to base, especially in clothing and electronics, which are most sensitive to competition. Thus, even if the Giants' success is generally good news for other countries as a whole, there are adjustment pressures within those countries.

These results suggest that an important concern for other countries will be the extent to which the Giants, especially China, move up market into their "product space"—in terms of both products and quality within them—and this view is reinforced by simulations that restrict technical progress to the sectors identified in chapter 2 as gaining competitiveness. In these cases, world trade increases strongly because China and India receive a boost in their current exporting sectors; other countries adjust their output patterns to accommodate these shocks, often halving output in machinery and electronics and nearly doubling it in clothing, leather, and wood (again, relative to the base). As Freund and Ozden (2006) concluded for Central America, manufacturers' fears about Chinese and Indian competition often are well founded. However, only a general equilibrium analysis such as ours can show that the offsetting benefits from cheaper imports and stronger world growth are generally larger.

Modeling exercises are parables, not predictions. One should not take the precise numbers literally, and within each of our aggregates (say, electronics) there will be a wide range of effects across different products. The results do show, however, that the consequences of the Giants' rise could be large in particular sectors, but that suitable adjustments to the new circumstances could enable most countries to win.

International Financial Integration

China and India are actual or potential giants in international trade, but their positions in international finance are currently more mixed. As the authors of chapter 4 show (figure 4.3), China is the seventh-largest holder of foreign direct investment (FDI) liabilities (with 4.1 percent of the world total), and

Economics 335: South Asia and the World Economy

Professor Manjira Datta

Office: BAC 561; phone: 480-965-6433; e-mail: manjira.datta@asu.edu

Office Hours: Tue 11am-Noon, Thu 2:00-3:00pm, or, by appointment.

Objectives: This course focuses on the role of emerging South Asian economies in the global economy. South Asia has made much progress in deregulation and economic liberalization in the 1990s, but it still seems one of the least integrated regions in the world. This general trend, however, masks wide disparities among South Asian economies. Are the economic reform programs poised to translate into higher growth and development despite their regional differences? And, how does that affect the rest of the world? Different theories of trade, development and growth are discussed and their implication on South Asia and the world economy analyzed. For example, a further opening of international markets to agricultural and textile exports from South Asia promises to raise the standard of living in this region. But, farm subsidies and textile quotas in the West keep those markets restricted. What is the role of trade policy in growth and development of South Asia? Also, there is evidence that some manufacturing and service sector jobs are moving from the United States to India. Does that necessarily hurt the U. S. economy and benefit India?

Prerequisites: ECN 211 or 213, ECN 212 or 214, MAT 211 or 271 all with a grades of “C” (2.00) or higher, or be currently enrolled.

Grading: The course grade will depend on your performance in *two* in-class exams, and a group project. The midterm exam is on Tuesday, October 2 (class time) and the final exam is on Tuesday, December 11, 12:20-2:10pm. The midterm, the final exam and the group project will weigh 30%, 40% and 30%, respectively, towards the course grade. The exams will test you on your capability of critical analysis. The group project consists of a term paper, class discussions and presentation. You will have to form a group with 5/6 members. Weekly assignments will not be graded but will help you prepare for your group project. These assignments may be done as a group. Class discussions and presentations will be scheduled for November 6, 8, 13 and 15; term paper is due on the last day of class, December 4.

Course Material: *Dancing with Giants: China, India and the Global Economy* eds. L Alan Winters and Shahid Yusuf (published by The World Bank and the Institute of Policy Studies, 2007); other reading material to be assigned in class.