

Public Disclosure Authorized

Report No. 37858-SAS

# South Asia Growth and Regional Integration

December 2006

Poverty Reduction and Economic Management Sector Unit  
South Asia Region

Public Disclosure



Public Disclosure Authorized

Public Disclosure Authorized

Document of the World Bank

---

## ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	LNG	Liquefied Natural Gas
APEC	Asia-Pacific Cooperation	MFN	Most Favored Nation
C&F	Charges and Freight	MNC	Multinational Corporations
CDC	Commonwealth Development Corporation	MSEB	Maharashtra State Electricity Board
		NTBs	Non Tariff Barriers
CMT	Cut Make Trim	OECD	Organization for Economic Co-operation and Development
CSI	Customs Security Initiatives		
DPC	Dabhol Power Corporation	PLF	Plant Load Factor
EAP	East Asia and Pacific	PPAs	Power Purchase Agreements
EDI	Electronic Data Interchange	PTAs	Preferential Trade Areas
EIA	Energy Information Agency	RFID	Radio Frequency Identification
FDI	Foreign Director Investment	RGPL	Ratnagiri Gas and Power Pvt. Ltd
GCR	Global Competitiveness Report	SAARC	South Asian Association for Regional Cooperation
GDP	Gross Domestic Product		
GNI	Gross National Income	SAFTA	South Asia Free Trade Agreement
GoAP	Government of Andhra Pradesh	SCCI	SAARC Chamber of Commerce & Industry
GSDP	Gross State Domestic Product		
HubCO	Hub Power Company	SEBs	State Electricity Boards
ICDs	Inland Container Depots	SMEs	Small and Medium Enterprises
ICT	Information and Communication Technology	TCF	Trillion Cubic Feet
		TFP	Total Factor Productivity
IFIs	International Financial Institutions	TTCs	Trade Transaction Costs
IPPs	Independent Power Producers	UNCAD	United Nations Conference on Trade and Development
ISO	International Standards Organization		
ISPS	International Ship and Port Facility Security Code	WAPDA	Water and Power Development Authority
		WBES	World Business Environment Survey
KAM	Knowledge Assessment Methodology	WCO	World Customs Organization
KEI	Knowledge Economy Index	WCY	World Competitiveness Yearbook
LFPR	Labor Force Participation Rate	WTO	World Trade Organization

Vice President:	Praful C. Patel, SARVP
Director:	Alastair J. McKechnie, SAC01
Sector Director:	Sadiq Ahmed, SASPR
Sector Manager:	Ijaz Nabi, SASPR
Task Manager:	Ejaz Ghani, SASPR

## TABLE OF CONTENTS

<b>1. South Asia’s Growth and Regional Integration: An overview .....</b>	<b>1</b>
<i>Introduction</i> .....	1
<i>Is Growth Sustainable</i> .....	4
Sources of Growth .....	5
Cost of Doing Business .....	7
Institutions .....	8
Knowledge .....	13
Infrastructure .....	19
<i>Is Regional Integration Desirable</i> .....	22
Agglomeration Benefits .....	22
Trade .....	24
Lowering the Infrastructure Constraint through Regional Cooperation .....	28
<i>Conclusion</i> .....	31
<b>2. Economic Growth in South Asia: A Growth Accounting Perspective .....</b>	<b>33</b>
<i>Introduction</i> .....	33
<i>Growth in South Asia: An Overview</i> .....	33
Output Growth versus Living Standards .....	34
<i>Growth Accounts</i> .....	36
Investment Rates Versus Capital Accumulation .....	42
Educational Attainment: A Labor Quality Index .....	43
<i>Some Implications Looking Forward</i> .....	44
<i>Annex: Growth Accounts</i> .....	46
<b>3. Improving the Climate for Investment and Business in South Asia.....</b>	<b>47</b>
<i>Introduction</i> .....	47
<i>Disaggregating Investment Climate Measures</i> .....	48
Subjective Rankings .....	48
<i>Doing Business</i> Examines Regulatory Hurdles Facing Entrepreneurs .....	49
Using Investment Climate Surveys to Identify Key Challenges for Improving the Investment Climate in South Asia .....	50
<i>Linking Investment Climate Measures to Firm Performance</i> .....	56
Investment Climate and Productivity .....	58
Investment Climate and Exporting .....	59
<i>Conclusions</i> .....	60
<b>4. Property Rights Institutions, Contracting Institutions, and Growth in South Asia: Macro and Micro Evidence .....</b>	<b>61</b>
<i>Introduction</i> .....	61
<i>Cross-Country Evidence on Institutions and Growth</i> .....	64
Measuring Property Rights Institutions and Contracting Institutions .....	66
Deep Historical Determinants of Institutional Quality .....	66
Do Institutions Matter for Development: Identifying Causation .....	69
<i>Firm-Level Evidence on Institutions and Growth</i> .....	71
Do the Micro and Macro Data Agree .....	71

Do Property Rights Institutions and Contracting Institutions Matter for Firms.....	75
How Do Firms Cope With Weak Contracting Institutions .....	78
Conclusions .....	80
Annex 1. First-Stage Regressions for Property Rights and Contracting Institutions, Small Sample .....	81
Annex 2. Instrumental Variables Regressions of ln (GDP Per Capita) on Property Rights and Contracting Institutions, Small Sample .....	82
Annex 3. Variable Definitions and Country Coverage for the WBES and PICS Datasets .....	83
<b>5. Improving Technology, Skills, and Innovation in South Asia .....</b>	<b>85</b>
Introduction .....	85
The New Competitive Context .....	86
South Asian Countries in the Context of the Knowledge Economy .....	88
World Bank Knowledge Assessment Methodology .....	88
Relative Position of South Asian Countries.....	89
Global Trends in Education and the Situation of South Asian Countries.....	91
Global Trends in Education and Training.....	91
Education and Skills in South Asian Countries .....	93
Global Trends in Innovation and Situation of South Asian Countries .....	95
Global Innovation Trends.....	95
Innovation in South Asian Countries.....	98
Overall Assessment.....	99
Key Actions.....	100
Improving the Economic Incentive and Institutional Regime .....	100
Strengthening Education and Skills .....	100
Tapping into Global Knowledge.....	101
Creating Knowledge .....	102
Disseminating Existing Knowledge, Especially to the Very Large Traditional Sectors in Each Country .....	103
Networking and Collaboration Among South Asian Countries .....	104
<b>6. Power Sector Reform, Private Investment, And Regional Cooperation.....</b>	<b>107</b>
Introduction.....	107
The Problem.....	110
Reforms.....	113
Obstacles to Private Investment .....	114
Alternative Sources and Uses of Investment Finance.....	119
The Role of Energy Trade.....	120
The Case for a South Asia Energy Charter .....	121
Conclusions .....	123
Annex: Data and Analysis of Energy Supply and Demand.....	124
The Relationship between Electricity Consumption and GDP .....	124
<b>7. Trading Choices of South Asia .....</b>	<b>129</b>
Introduction.....	129

<i>Triumph of Trade Liberalization</i> .....	130
<i>Preferential Trading in South Asia: A Brief Historical Background</i> .....	132
<i>SAFTA: A Critical Examination</i> .....	133
<i>Sri Lanka-India FTA: Sectoral Exceptions and Rules of Origin</i> .....	138
<i>The Way Forward: An Asian Bloc via India-China FTA</i> .....	139
<i>Concluding Remarks</i> .....	141
<b>8. The Role of Trade Facilitation in Export Growth and Inter-regional Trade</b> .....	<b>143</b>
<i>Introduction</i> .....	143
<i>Characteristics of Trade in South Asia</i> .....	144
<i>Logistics and Competitive Advantage</i> .....	147
<i>Corridors</i> .....	150
<i>Road Transport</i> .....	155
<i>Rail Services</i> .....	156
<i>Shipping</i> .....	158
<i>Gateways</i> .....	159
Land Borders.....	161
Ports.....	161
<i>Regulatory Impediments</i> .....	164
Duties and Other Taxes on Imports.....	164
<i>Regional Trade and Transit Agreements</i> .....	167
<i>Supply Chain Management</i> .....	170
<i>Conclusions and Recommendations</i> .....	172
<b>9. Cutting Trade Costs and Improved Business Facilitation In South Asia: Estimating The Benefits Of Reform</b> .....	<b>179</b>
<i>Introduction</i> .....	180
<i>Trade Facilitation</i> .....	183
<i>Measuring the Impact of Trade Facilitation</i> .....	184
<i>Summary Overview of Conditions in South Asia</i> .....	186
<i>Port Infrastructure and Efficiency</i> .....	188
<i>Land Transportation</i> .....	189
Border Crossings and Customs.....	190
Standards and Technical Regulations.....	192
Information Technology and Services Sector Infrastructure.....	193
<i>Estimating the Gains From Capacity Building in South Asia</i> .....	195
<i>Expanding Intra-regional Trade</i> .....	197
Global Trade and the South Asia Region.....	199
<i>Conclusions</i> .....	200
<i>Annex</i> .....	202
<b>References</b> .....	<b>203</b>

## TABLES

Table 1.1: South Asia: Selected Indicators.....	5
Table 1.2: Sources of Growth, South Asia, 1960–2003 .....	6
Table 1.3: Infrastructure Stocks in South Asia, East Asia, and China, 2003.....	20
Table 1.4: South Asia is a Recent Global Integrator: Exports and Imports of Goods and Services as Proportion of the GDP.....	24
Table 1.5: Long – Term Potential for Energy Trade in South Asia.....	29
Table 2.1: South Asia: Selected Indicators.....	34
Table 2.2: Components of Gross National Income per Capita .....	36
Table 2.3: Sources of Growth, South Asia, 1960–2003 .....	40
Table 2.4: Sources of Growth by Region .....	41
Table 2.5: Average Years of Schooling (Population Aged 15+).....	43
Table 3.1: Governance Indicators .....	49
Table 3.2: New Data Sources from the World Bank Allow for Comparisons Across Countries .....	49
Table 3.3: A Better Investment Climate is Associated With Higher Productivity .....	58
Table 3.4: A Better Investment Climate is Associated With Higher Wages and Investment Rates .....	59
Table 3.5: Investment Climate Conditions Affect the Probability a Firm Will Export.....	60
Table 4.1: First-Stage Regressions for Property Rights and Contracting Institutions .....	67
Table 4.2: Instrumental Variables Regressions of ln (GDP Per Capita) .....	70
Table 4.3: Regressions of Micro Measures from WBES on Macro Measures: Contracting Institutions .....	73
Table 4.4: Regressions of Micro Measures From WBES on Macro Measures: Property Rights Institutions .....	73
Table 4.5: Regressions of Micro Measures From PICS on Macro Measures: Contracting Institutions .....	74
Table 4.6: Regressions of Micro Measures From PICS on Macro Measures: Property Rights Institutions.....	75
Table 4.7: Firm Performance, Contracting, and Property Rights .....	77
Table 4.8: Getting Around Weak Contracting Institutions: Regressions Using PICS Data .....	78
Table 4.9: Institutional Dependence, Contracting and Property Rights Institutions Across Industries: Regressions Using PICS Dataset.....	79
Table 4.10: Institutional Dependence and Ways to Get Around Weak contracting Institutions Across Industries: Regressions Using PICS Data .....	79
Table 5.1: Population, GDP, and Exports 2003 .....	85
Table 5.2: Growth of GDP .....	85
Table 5.3: Percentage Share in World Totals.....	86
Table 5.4: Various Indicators of Trade Structure .....	86
Table 5.5: Knowledge Economy Indicator and Components: Changes 1995 to Most Recent .....	91
Table 5.6: Various Proxy Indicators of Traditional Sector.....	99
Table 5.7: Knowledge Failures in the Use of Knowledge and Corrective Actions .....	104
Table 6.1: Rates of Growth of Energy Intensity 1986–88 to 1996–98 (percent per annum).....	108
Table 7.1: Annual Growth Rates of GDP.....	130
Table 7.2: Exports and Imports of Goods and Services as Proportion of the GDP .....	131
Table 7.3: Direction of Exports by Major Destinations (Percent).....	135
Table 7.4: Direction of Imports by Major Origins (Percent).....	135
Table 7.5: Population, GDP, and Trade in SAARC-5 (2001) .....	136
Table 7.6: Informal Trade Between India and its SAARC Partners.....	137
Table 8.1: Percentage of Export Goods Trade According to Commodity Groups Based on Value (2-Digit HS Code).....	145
Table 8.2: Major Non Bulk Export .....	145
Table 8.3: Export Trade by Volume, in Percent (2003).....	147
Table 8.4: Relationship of Logistics and Products for the Apparel Industry.....	150
Table 8.5: Principle Corridors .....	152
Table 8.6: General Performance for Main Corridors .....	152
Table 8.7: Extent of Divestiture Transport Services .....	154
Table 8.8: Estimated Truck Operating Costs .....	155
Table 8.9: Railroad Performance (FY03).....	156

Table 8.10: Container Statistics 1990–2004.....	158
Table 8.11: Transshipment Share for Indian Container Traffic FY04 .....	159
Table 8.12: Typical Shipping Times .....	159
Table 8.13: Tariffs to Europe US\$/TEU, 2005 .....	159
Table 8.14: Major Gateways .....	160
Table 8.15: Regulatory Functions .....	160
Table 8.16: Performance Statistics for Petrapole/Benapole (Hours).....	161
Table 8.17: Drafts in Regional Ports.....	162
Table 8.18: Standard Tariff Bands .....	165
Table 8.19: Additional Taxes at Border .....	165
Table 8.20: Customs Reforms .....	166
Table 8.21: Documents Required for Clearance of Goods Related to the Garment Trade.....	166
Table 8.22: Pakistan Supporting Documents .....	167
Table 8.23: Trade and Transit Agreements .....	168
Table 8.24: Signatories to U.N. Conventions Related to Transit Cargo.....	169
Table 8.25: Priority Initiatives for Improving Regional Logistics .....	175
Table 8.26: Specific Benefits and Risks Associated with the Initiatives.....	175
Table 9.1: Trade Gains (US\$ Million) From Capacity Building by Each of South Asian Countries and Entire South Asia Region in Trade Facilitation .....	198
Table 9.2: Trade Gains (US\$ Million) From Unilateral and Collective Capacity Buildings between South Asia and the Rest of the World .....	199

## FIGURES

Figure 1.1: South Asia is the Least Integrated Region in the World.....	2
Figure 1.2: Share of South Asian Firms Reporting the Issues as a “Major” or “Severe” Constraint on the Operation of Their Business.....	8
Figure 1.3: Cost of Doing Business is High in South Asia .....	9
Figure 1.4: Rule of Law and Per Capita Incomes.....	10
Figure 1.5: Contracting and Property Rights Institutions Across Cities: Bangladesh, India, Pakistan, and Sri Lanka.....	12
Figure 1.6: Overall Knowledge Economy Index for South Asia: 1995 Versus the Most Recent.....	14
Figure 1.7: Comparison of KEI Component Parts for World Regions with South Asian Countries (Most Recent in Top Line, Compared to 1995 Bottom Line for Each Group) .....	15
Figure 1.8: South Asia on Education.....	16
Figure 1.9: South Asia on Innovation .....	17
Figure 1.10: Electricity Losses in South Asia and China .....	21
Figure 1.11: South Asia Has Done Well in Service Exports.....	23
Figure 1.12: Remittances Inflow and Skill Composition of Labor Migration.....	24
Figure 1.13: South Asia Has Reduced Import Tariffs:.....	25
Figure 1.14: Cost of Trading Across Borders for South Asia: An International Comparison.....	26
Figure 1.15: Cost of Trading Across Borders for South Asian Countries .....	26
Figure 1.16: Who Gains From SAFTA? .....	28
Figure 1.17: South Asia is Weak on Trade Facilitation.....	30
Figure 2.1: Output Per Worker And Its Components South Asia, 1960-2003 .....	38
Figure 2.2: Comparison of Investment Share and Change in the Capital Stock, 1980-2003 (all countries except IND, LKA, PAK, BGD through 2000) .....	42
Figure 2.3: Average Schooling in 107 countries .....	43
Figure 3.1: Share of Firms Reporting the Issues as a “Major” or “Severe” Constraint on the Operation of Their Business.....	51
Figure 3.2: Average Time to Clear Customs .....	52
Figure 3.3: Extent of Variation to Clear Customs .....	53
Figure 3.4: Evidence from India That Poor Transportation Raises Inventory Costs.....	53

Figure 3.5: Share of Firms Exporting: Response to a One Standard Deviation Improvement in Transportation, Access to Electricity, and Finance .....	54
Figure 3.6: Highest Firing Costs .....	54
Figure 3.7: Time to Enforce a Contract.....	55
Figure 3.8: A Weak Investment Climate Disproportionately Hurts Small Firm .....	56
Figure 4.1: Rule of Law and Per Capita Incomes.....	65
Figure 4.2: Property Rights and Contracting Institutions in South Asia .....	68
Figure 4.3: Contracting and Property Rights Institutions Across Countries: Macro Versus WBES Measures .....	72
Figure 4.4: Contracting and Property Rights Institutions Across Countries: Macro Versus PICS Measures .....	72
Figure 4.5: Contracting and Property Rights Institutions Across Cities: .....	76
Figure 5.1: Overall KEI 1995 Versus Most Recent.....	89
Figure 5.2: Comparison of KEI Component Parts for World Regions With South Asian Countries (Most Recent in Top Line, Compared to 1995 Bottom Line for Each Group) .....	90
Figure 5.3: Education Scorecards for South Asian Countries .....	94
Figure 5.4: Innovation Scorecards for South Asian Countries .....	96
Figure 6.1: Comparisons of Electricity Intensity of Southeast Asia, the United States, China, and the European Union-15 .....	108
Figure 6.2: Electricity Consumption in South Asia Compared to Predicted per US\$ Thousand PPP.....	109
Figure 6.3: Electricity Losses in South Asia and China .....	110
Figure 6.4: Load Shedding in Maharashtra .....	111
Figure 7.1: Measuring GDP at Preliberalization Domestic Prices Understates Growth .....	132
Figure 7.2: South Asia's Intraregional Trade as a Share of Total Trade, 1948-99 .....	134
Figure 8.1: Export Share FY 2005 .....	144
Figure 8.2: India Export Trade by Value 2003.....	146
Figure 8.3: Sri Lanka Export Trade by Value 2004 .....	146
Figure 8.4: Maldives Export Trade by Value 2003 .....	146
Figure 8.5: Interregional Trade as a Percentage of Total Trade by Value.....	147
Figure 8.6: Exports of Fabric and Garments, 2003 .....	148
Figure 8.7: Map of Major Corridors.....	151
Figure 8.8: Relationship of Transport Time and Cost.....	153
Figure 8.9: Nhava Sheva Container Traffic .....	162
Figure 8.10: Traffic in Karachi and Qasim .....	162
Figure 8.11: Chittagong Container Traffic.....	163
Figure 8.12: Growth in Colombo Container Traffic.....	163
Figure 8.13: Clearance Times for All Imports .....	167
Figure 8.14: Countries Adopting the TIR Convention .....	170
Figure 8.15: Shrimp Export Supply Chain.....	171
Figure 8.16: Timeline for Garment Productions .....	172
Figure 9.1: Exports from Developing Countries, 1980-2002 .....	181
Figure 9.2: Intraregional Trade as a Share in Region's Total Trade .....	181
Figure 9.3: Actual to Predicted Ratios for Intraregional and Interregional Trade.....	182
Figure 9.4: Port Efficiency Indicators (Maritime and Air).....	188
Figure 9.5: Average Days Required for Customs Clearance by Sea .....	191
Figure 9.6: Technical Regulations and Standards: Percent of Firms Ranking Regulations Important to Export Expansion .....	193
Figure 9.7: Internet Hosts per 10,000 Inhabitants in 2003 .....	194
Figure 9.8: Internet Users per 10,000 Inhabitants in 2003 .....	194
Figure 9.9: Trade Facilitation Indicators .....	196
Figure 9.10: Trade Gains (Percentage) From Collective Capacity.....	198
Figure 9.11: Trade Gains to South Asia (Percent) From Its Own (Unilateral) Capacity Building and Capacity Building by the Rest of the World .....	200

## PREFACE

South Asia has experienced remarkable growth rate since the 1980s. This growth was triggered by reforms aimed at increasing global integration, improving macroeconomic management, and unleashing the private sector as the engine of growth. High growth rate, in turn, has created the interest and allowed political space for greater regional integration. This raises two issues: Is South Asia's high growth sustainable? Is regional integration desirable?

This report looks at several aspects of South Asia's growth and how regional integration can contribute to growth. The two themes are not tightly linked in a causality sense. Rather, the themes emerged as an outcome of a knowledge partnership between the World Bank and the South Asian Association for Regional Cooperation (SAARC) Chamber of Commerce and Industry (SCCI), which is the apex business organization of SAARC. The SCCI is composed of the national chambers of commerce and industry in Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. This partnership resulted in the first SAARC Business Conclave, held in November 2005 in New Delhi. The conference was organized by SCCI and was implemented by the Federation of Indian Chambers of Commerce and Industry and brought together the private sector, academics, civil society, and policy makers from the South Asian countries to discuss growth and regional integration. Several authors were invited to prepare background papers for this conference on issues of growth and regional integration. The report is essentially a compilation of these background papers.

Past growth was helped by the implementation of first-generation policy reforms aimed at global integration, macroeconomic stabilization, and reducing the scope of the state while strengthening the role of the private sector. These reforms have made South Asia more competitive, stable, and adaptable. South Asia now faces increasing challenges from second-generation reforms. These include the high cost of doing business, weak institutions, weak knowledge economy, and poor infrastructure. Increasing investment rates will require reducing costs of doing business, improving institutions, and addressing the infrastructure constraint. South Asia also needs to expand its knowledge economy to raise the productivity of investment. These second-generation policy reforms have started; continued strong implementation will support the sustainability of growth.

Is regional integration desirable? From the very narrow perspective of trade flows, the economic characteristics of the South Asia region, such as the small regional market relative to the world both in terms of gross domestic product and trade flows and the high level of protection, would suggest that focusing on regional integration alone will not generate the beneficial productivity and growth effects of integration. Instead, further multilateral trade liberalization is the way to go.

Nevertheless, regional integration is desirable from other perspectives. Regional cooperation can be an effective tool in addressing energy shortage, ensuring that no region/country is left behind, land-locked regions/countries have full access to markets, and peace and stability are promoted. There is a need for greater people-to-people contact through improved connectivity, phasing out of visa restrictions, and liberalizing the restrictions on the trade of services (for example, tourism, education, and health) where the risk of trade diversion is low. These initiatives would help increase investment and growth by reducing the infrastructure constraint and by lowering transaction costs. Better regional cooperation and integration can also increase welfare by improving the regional political environment, thereby reducing conflicts and associated social and economic costs.

## **REPORT TEAM AND ACKNOWLEDGEMENTS**

This report was prepared by a team consisting of Sadiq Ahmed, Susan Collins, Carl J. Dahlman, Ana Margarida Fernandes, Ejaz Ghani, Mary C. Hallward-Driemeier, Aart C. Kraay, David Newberry, Tsunehiro Otsuki, Arvind Panagariya, John S. Wilson, and John H. Arnold.

We would like to acknowledge the contribution of the conference participants and thank several colleagues for their comments/suggestions, including M. K. Saharia, W. Ahmed, R. Kohli, A. Sarkar, G. Ghosh, A. McKechnie, S. Devarajan, H.Kharas, A. Winters, F. Sobhan, A. R. Kemal, C. Harris, S. A. Mahmood, R. Agarwala, N. Kumar, T. Baysan, A. Subramanian, and A. Mattoo. Finally, we would like to thank B. Kalimili for research support, and to R. Soni, J. Teodosio, A. Reyes and M. Schwartz for providing very competent team support.

# 1. SOUTH ASIA'S GROWTH AND REGIONAL INTEGRATION: AN OVERVIEW

## INTRODUCTION

1.1 South Asia has experienced unprecedented growth, averaging close to 6 percent per annum since the 1990s. This growth is impressive because many developing countries grew more slowly during this period. As India accounts for more than three quarters of the region's gross domestic product (GDP), its growth has had a decisive impact on the overall regional growth. India grew at 3.2 percent during 1965–81, accelerated to 5.1 percent during 1981–7, and then to 6 percent during 1987–2004. While India has led the way, the other South Asian countries including Bangladesh and Pakistan have also shown remarkable improvements in economic growth (Ahmed 2006). It is this steady rise in growth that has attracted the world's attention to the South Asia region.

1.2 Growth in South Asia was triggered by first-generation policy reforms, including greater global integration, macroeconomic stabilization, and economic deregulation (Ahmed 2006). Trade restrictions including import tariffs were reduced. The scope of the state was reduced through economic deregulation to enhance the role of the private sector as the engine of growth. These reforms made the South Asian countries more stable, competitive, and adaptable. It helped to overcome three key constraints to growth (Spence 2005):

- Exports to the rest of the world relaxed the constraint from capacity to consume domestically.
- Inflow of remittances relaxed the constraint from capacity to save domestically.
- In-bound technology and knowledge transfers through increased trade moved the production possibility frontier outward rapidly.

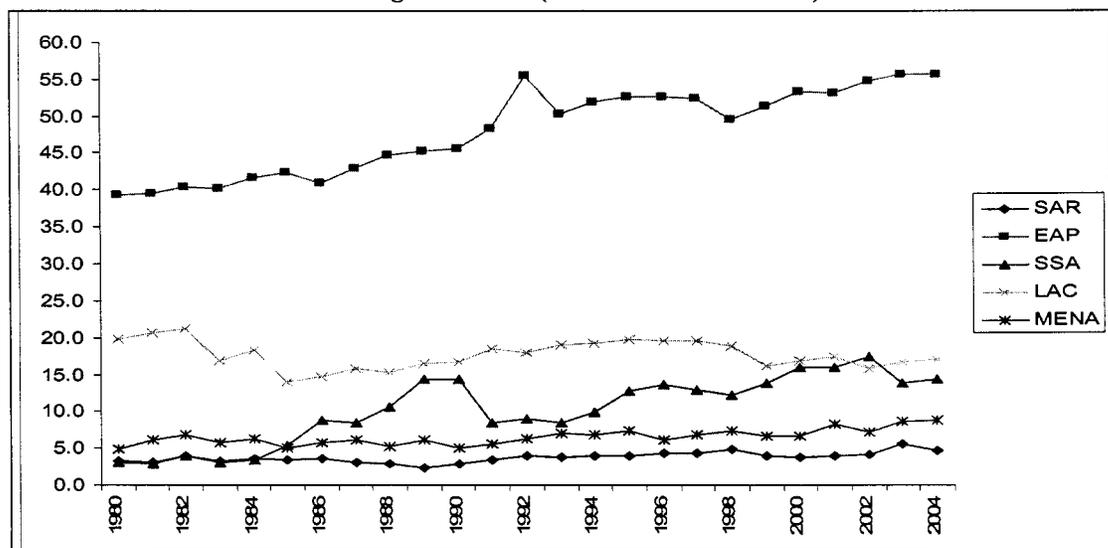
1.3 While South Asia made significant progress in integrating with the global economy, integration within the region remained limited. South Asian countries have maintained a higher level of protection within the region than with the rest of the world. Restrictive policies within the region have neutralized the beneficial effects of common cultural affinity, common geography,<sup>1</sup> and the “gravitational” pull of proximity on movement of goods and people within the region.

1.4 South Asia is the least integrated region in the world, where integration is measured by intraregional trade in goods, capital, and ideas. Intraregional trade as a share of total trade is the lowest for South Asia. There is little cross-border investment within South Asia. The flow of ideas, crudely measured by the cross-border movement of people, or the number of telephone calls, or the purchase of technology and royalty payments, are all low for South Asia. In South Asia, only 7 percent of international telephone calls are regional, compared to 71 percent for East Asia. Poor connectivity, cross-border conflicts, and concerns about security, have all contributed to South Asia being the least integrated region in the world (Figure 1.1)

---

<sup>1</sup> India has a common (land) border with most South Asian countries in the region.

**Figure 1.1: South Asia is the Least Integrated Region in the World  
Intra-regional Trade (Percent of World Trade)**



Sources: U.N. COMTRADE, SITC 1 classification and GDP from *World Development Indicators*. SAR - South Asia Region, EAP - East Asia & Pacific, SSA - Sub-Saharan Africa, LAC - Latin American & Caribbean, MENA - Middle East & North Africa.

1.5 The rapid growth that South Asia has experienced, however, has generated interest in, and political support for, increased regional integration. On January 6, 2004, the South Asian countries signed a South Asia Free Trade Agreement (SAFTA). The prospect that rapid growth will facilitate regional integration raises two fundamental questions. Is rapid growth sustainable in South Asia? If so, what role can regional integration play?

1.6 Is growth sustainable? South Asia has made significant progress in implementing the first-generation policy reforms. Increasingly, South Asia faces the challenge of second-generation policy reforms, which have become the key downside risks to growth. These include:

- High cost of doing business
- Weak institutions
- Weak knowledge economy
- Weak infrastructure

1.7 Despite past progress, the cost of doing business in South Asia remains high. Corruption and energy supply have been identified as the two biggest problems faced by the firms in South Asia. The problem of infrastructure deficit was ignored in the past because of political reasons (opposition to increasing costs when services were almost once free) and economic reasons (many consumers doubt that increasing charges will improve services, given decades of corrupt public administration). The competitiveness of South Asia is held back by inadequate education and skills. Although South Asia, and in particular India, has made a name for itself in high-skill services and high skill manufacturing (Kochar et. al 2005) South Asia lags on most indicators of knowledge economy (for example, gross enrollment rates for secondary education was 49 percent for South Asia compared to 69 percent for East Asia in 2004).

1.8 The policy makers in South Asia have begun to address the second-generation policy reforms (Ahmed 2006). They have deepened attention to microeconomic policies aimed at

reducing the cost of doing business and improving competitiveness. There is increased attention to improving institutions and governance by expanding market-based allocation of resources, improving transparency through better disclosure and market discipline, reforming regulation to minimize corruption and opportunities for rent seeking, and seeking opportunities to introducing better checks and balances to improve governance. Policy reforms are being implemented to encourage private and public partnerships in the provision of infrastructure services. These reforms have, however, started recently and they need to be deepened and sustained. Political opposition is a challenge that needs to be met with determination, especially in regards to establishing proper institutional arrangements required for sustaining these second generation reforms. With the full implementation of the second-generation policy reforms, South Asia should be able to sustain high growth rates in the future.

1.9 Is regional integration desirable? Regional integration creates both challenges and opportunities. The challenge is to minimize the possible harmful effects of regional integration. The economic characteristics of the South Asia region, such as the small regional market relative to the world both in terms of GDP and trade flows, and the high level of external protection, would suggest that focusing on regional integration alone may not generate the beneficial productivity and growth effects in South Asia. South Asia is a relative new comer to global integration. Despite liberalization, it lags other regions (for example, East Asia) on openness. When external protection is high, trade diversion is likely to dominate trade creation, and so the risks that regional integration will become a drag on growth in South Asia is high. There are three reasons why South Asia will need to further lower external trade barriers: to generate classical gains from trade, to lessen the chances that trade diversion will occur, and to reduce income transfers between member countries resulting from regional integration and the tensions that can arise from such transfers (Hoekman and Schiff 2002). History shows that a successful regional integration is often preceded by global integration.

1.10 But regional integration also provides opportunities to make progress in areas that otherwise would not take place in the absence of regional cooperation. Some of these opportunities include addressing the problems of energy shortage, relaxing the mobility constraints for lagging and land-locked regions, overcoming high transaction cost due to poor trade facilitation across regions, and reaping the positive benefits emerging from reputation effects/political risk premium/peace dividend through regional cooperation. The gains from these opportunities can contribute to higher sustained growth. Importantly, better economic cooperation can lead to better political relations thereby reducing conflicts and associated social and economic costs.

1.11 Regional cooperation can play an important role in addressing the problem of energy needs in the region. Energy endowments differ among the South Asian countries, but energy trade in the region is low. Only India, Bhutan, and Nepal currently trade electricity. Bangladesh is endowed with natural gas reserves, but gas trade is constrained by the region's inadequate infrastructure and political misconceptions. Pakistan and Afghanistan can play an important role as transit states for the rest of South Asia, as they provide the best route for access to Central Asia's energy.

1.12 Regional cooperation, along with national initiatives, could play a useful role in ensuring that no region/country in South Asia is left behind. Rising inequality across regions and within countries is becoming a concern to the policy makers as rising inequality is a threat to the region's growth and stability. Several lagging regions in South Asia are border economies. They suffer from the disabilities typically associated with land-locked countries or geographical isolation. Examples include northeast India, northwest Pakistan, northern Bangladesh, and parts

of Nepal and Afghanistan. Typically, these sub-regions have poor connectivity with the markets within the country and with the neighboring countries. Regional cooperation on transport and trade facilitation can transform these land-locked regions into land-linked regions. There are other areas where the region can benefit through cooperation. These include tourism, education, health, and professional services, where the risk of trade diversion is low.

1.13 In conclusion, provided external protection is further reduced globally, regional integration could play a beneficial role in allowing the South Asian countries to gain from geographical proximity, improved transport and trade facilitation, improved management of cross-border resources (for example, energy and water), and reduced conflict and friction.

1.14 Against the backdrop of the above, this book looks at several aspects of South Asia's growth and how regional integration can contribute to growth. The two themes are not tightly linked in a causality sense. Rather, the themes emerged as an outcome of a knowledge partnership between the South Asia Chamber of Commerce; national chambers of commerce in Bhutan, Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka; and the World Bank. This partnership resulted in the first South Asian Association for Regional Cooperation (SAARC) Business Conclave that was held in November 2005 in New Delhi. This conference was organized by the Federation of Indian Chamber of Commerce and Industry and SAARC Chamber of Commerce and brought together the private sector, academics, civil society, and policy makers from all South Asian countries to discuss growth and regional integration. Several authors were invited to prepare background papers for this conference on issues of growth and regional integration. The book is essentially an edited compilation of these back ground papers.

1.15 This book has three parts:

- Part 1, Growth and Regional Integration, comprises this overview.
- Part 2, Is Growth Sustainable, includes papers on growth accounting by Susan Collins, investment climate by Mary Hallward-Driemeier, institutions by Ana Margarida Fernandes and Aart Kraay, knowledge economy by Carl J. Dahlman, and energy infrastructure by David Newbery,.
- Part 3, Is Regional Integration Desirable, includes papers on trading choices by Arvind Panagariya, trade facilitation and exports by John Arnold, and trade facilitation and regional integration by John S. Wilson and Tsunehiro Ostuki.

1.16 This overview chapter summarizes some of the key issues on growth and integration drawing on the analysis of the papers in this volume. While there is a broad consensus on the key challenges that South Asia faces to sustain growth, there are differences in views on the role that regional integration should play in South Asia. The differences in views nevertheless enrich the evolving thinking on the subject as well as the political dynamics by bringing different perspectives from researchers, private sector, policy makers, and the civil society on the desirability of regional integration in South Asia.

## **IS GROWTH SUSTAINABLE**

1.17 What are the sources of growth in South Asia? What will it take for South Asia to increase growth rates from 6 to 10 percent per annum? What role will business climate, institutions, knowledge economy, and infrastructure play in sustaining growth?

## Sources of Growth

1.18 South Asian economies have achieved impressive rates of economic growth since the 1980s. Chapter 2, on economic growth in South Asia by Susan Collins, explains that output for India, Pakistan, Bangladesh, and Sri Lanka has grown more rapidly since 1980 than for any other region except East Asia. Table 1.1 shows the key features of South Asia's growth. During the period 1980–2000, India and Bangladesh increased their GDP growth rates relative to the rates they had sustained in the two decades prior to 1980. Sri Lanka maintained a steady pace throughout from the decade of the 1960s. Pakistan maintained rapid growth until the 1980s but growth faltered in the 1990s. South Asia, as a region, has increased the growth rate by nearly 2 percentage points since the 1980s. Growth rates of these magnitudes are impressive achievements that have helped South Asia to reduce poverty rates and raise living standards.

**Table 1.1: South Asia: Selected Indicators**

	GNI Per Capita	Population	Annual Rates of Change		Investment
	(PPP) <sup>a</sup>	(Millions) <sup>a</sup>	GDP	Labor Force	Share percent
<b>India</b>					
1965-80			3.2	2.2	17.5
1980-04	US\$3,116	1,080	5.8	1.8	22.6
<b>Bangladesh</b>					
1973-80			3.7	2.1	10.1
1980-04	US\$1,969	139	4.3	2.3	19.0
<b>Pakistan</b>					
1965-80			5.8	2.7	16.6
1980-04	US\$2,174	152	5.2	2.9	18.4
<b>Sri Lanka</b>					
1965-80			4.7	2.2	19.0
1980-04	US\$4,208	19	4.6	1.5	25.1
<b>South Asia</b>					
1965-80			3.6		16.6
1980-04	US\$2,854	1,447	5.5	1.9	21.9
<b>East Asia Pacific</b>					
1965-80			6.7		26.4
1980-04	US\$5,332	1870	8.0	2.0	33.5

Source: World Bank, 2006.

a. These data are for 2004.

Note: PPP, purchasing power parity, GNI, gross national income.

1.19 Table 1.2 reports the growth decomposition for the South Asian countries. At 3.3 percent per annum since 1980, growth in output per worker in South Asia has been well above the world average, rivaling East Asia's experience (3.9 percent). Total factor productivity (TFP)—a measure of efficiency with which resources are used—surged for South Asia in the 1980s, after two decades of little growth. TFP contributed twice as much to growth in South Asia as in East Asia, while increases in capital per worker contributed just half as much. However, increases in education contributed far less to growth in South Asia compared to East Asia. Increases in education among the South Asian economies have not been impressive; that is, average years of schooling remains quite low in South Asia.

Table 1.2: Sources of Growth, South Asia, 1960–2003

Region/period	Output	Labor force	Output per worker	Contribution of		
				Physical Capital	Education	Factor productivity
<b>India</b>						
1960–70	4.06	1.94	2.08	1.05	0.30	0.72
1970–80	3.00	2.26	0.72	0.63	0.36	-0.27
1980–90	5.79	1.87	3.85	1.02	0.33	2.46
1990–2003	5.59	2.11	3.41	1.33	0.47	1.57
1960–2003	4.67	2.05	2.57	1.03	0.37	1.15
<b>Bangladesh</b>						
1970–80	1.53	2.46	-0.91	-0.23	0.30	-0.97
1980–90	4.75	2.55	2.15	0.47	0.18	1.49
1990–2003	4.84	2.17	2.62	1.10	0.34	1.16
1960–2003	3.84	2.25	1.55	0.64	0.24	0.66
<b>Pakistan</b>						
1960–70	7.22	2.44	4.67	3.75	0.35	0.54
1970–80	4.68	3.04	1.59	0.68	0.23	0.68
1980–90	6.28	2.63	3.55	0.98	0.92	1.61
1990–2003	3.82	2.71	1.08	0.46	0.04	0.57
1960–2003	5.37	2.71	2.60	1.39	0.36	0.83
<b>Sri Lanka</b>						
1960–70	4.57	2.36	2.16	0.02	0.33	1.80
1970–80	4.40	2.10	2.25	1.51	0.39	0.33
1980–90	4.19	2.04	2.11	2.04	0.22	-0.15
1990–2003	4.64	2.05	2.53	1.10	0.34	1.08
1960–2003	4.46	2.13	2.28	1.16	0.32	0.78
<b>South Asia</b>						
1960–80	3.8	—	1.5	1.0	0.3	0.3
1980–2003	5.5	—	3.3	1.1	0.4	1.8
1960–2003	4.7	—	2.5	1.0	0.4	1.1
<b>East Asia less China</b>						
1960–80	7.0	—	4.0	2.2	0.5	1.2
1980–2000	6.4	—	3.9	2.4	0.5	0.9
1960–2000	6.7	—	3.9	2.3	0.5	1.0

Source: Susan Collins (see chapter 2).

1.20 Where will South Asia need to focus to sustain growth in the future? The sources of growth analysis in Table 1.2 show that both capital accumulation and productivity growth played important roles. Investment rates grew substantially from a low average rate of about 12 percent per year in the 1970s to 23 percent in the decade of 2000s (Ahmed 2006). Similarly the contribution of TFP growth increased significantly in the post 1980 period relative to the 1960–80 period. As explained in detail in Ahmed (2006), these developments resulted from the markedly improved overall policy environment in South Asia. Since both capital accumulation and productivity matter, a prudent policy is to foster both. For the future, much of the potential productivity gains for South Asia will come from the reallocation of labor from agriculture, where productivity is relatively low, to the rest of the economy (manufacturing and services), where it is considerably higher. However, for South Asia to successfully shift underemployed workers out of agriculture into higher productivity activities in the manufacturing and services

sectors, it will need to make investments to increase both physical and human capital stocks. Without the appropriate physical infrastructure, and human skills, the structural transformation of South Asia will be hampered.

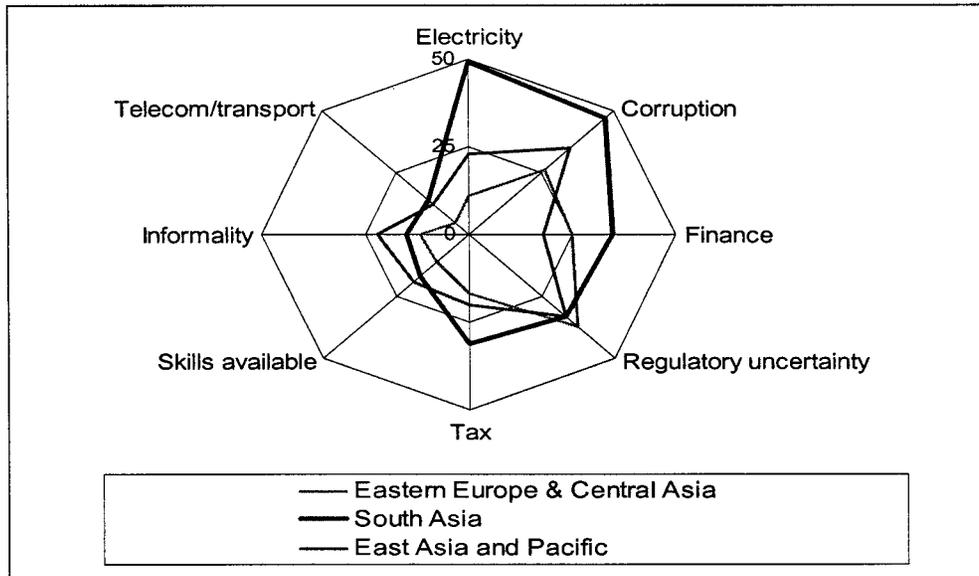
1.21 What will it take for South Asia to boost its growth rate from 6 to 10 percent? In addition to improving productivity, investment rates will need to rise substantially. Output growth rates of about 6 percent per annum in South Asia are consistent with maintaining investment rates of 23–24 percent of GDP, the average in recent years. However, increasing the region's growth rate to 10 percent will require increasing the investment rate to more than 35 percent. As explained below, the infrastructure gap in South Asia is large, and meeting this gap will require substantial additional investment. Higher investment could be achieved by reducing fiscal deficits, by lowering the cost of doing business, and by improving institutions. Increased physical capital stock will need to be accompanied by human capital stock. The average year of schooling for South Asia is low at 5 years compared to nearly 15 years for Korea. Increasing human capital stock will require increased emphasis on the knowledge economy.

### **Cost of Doing Business**

1.22 Increasing investment rates will require improving the investment climate and reducing the cost of doing business. How does South Asia compare with other regions on the cost of doing business and investment climate? Chapter 3, on investment climate by Mary Hallward-Driemeier, uses cross-country data on the cost of doing business and firm level surveys that were carried out in Bangladesh, India, Pakistan, and Sri Lanka to assess the investment climate. Firm level surveys on the investment climate draw data directly from firms and cover both objective and subjective indicators. They cover eight indicators that influence investment decisions, from policy uncertainty and corruption to reliability of electricity and labor regulations.

1.23 Figure 1.2 shows a comparison of the investment climate in South Asia with East Asia and Central Europe. Access to infrastructure has been cited as the number one problem faced by the firms in South Asia. The key concern for most firms is the access to reliable electricity. Corruption figures as the second biggest problem facing the firms in South Asia. When officials have discretion in how particular regulations will be implemented; there is an opportunity for unofficial payments to determine the outcomes. The costs of these bribes and the uncertainty of the standards that will be imposed can reduce the incentive to invest or to expand. Across South Asia the size of bribes was reported to be between 2.2 and 2.5 percent of firm sales (See Figure 1.2).

**Figure 1.2: Share of South Asian Firms Reporting the Issues as a “Major” or “Severe” Constraint on the Operation of Their Business**



Source: Investment Climate Surveys. (See Chapter 3)

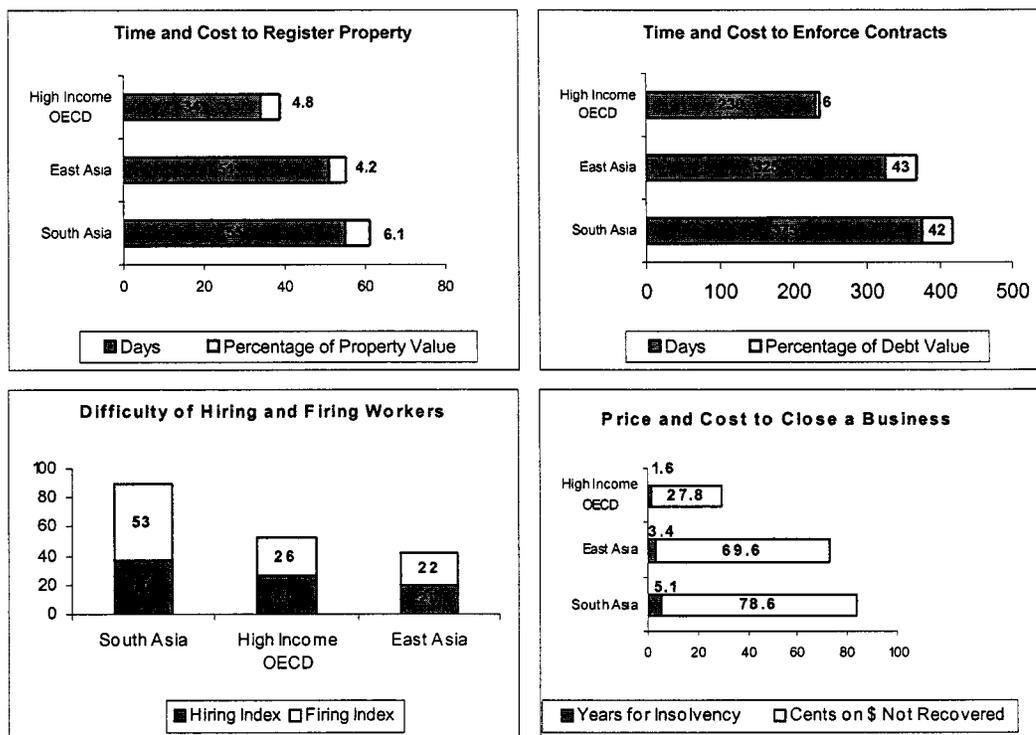
1.24 Figure 1.3 compares the cost of doing business in South Asia with East Asia and Organisation for Economic Co-operation and Development (OECD) countries. Despite substantial deregulation, regulatory burden, particularly tax, customs, and labor regulation, remain high in South Asia. Access to finance has improved but credit information and secured lending systems lag other regions. Time to enforce a contract, or register a property, is high in South Asia relative to East Asia. Policies combined with institutions influence the investment climate and cost of doing business.

### Institutions

1.25 It is increasingly recognized that weak institutions are a drag on growth and development (World Bank 2001). The cost of poor institution and governance is largely borne by the poor (World Bank 2006a). In the literature, five types of institutions have been identified as important for growth and development (Rodrick 2002; Knack 2006):

- Market-creating institutions (property rights, rule of law)
- Market regulating institutions (financial services, telecom, transport)
- Market stabilizing institutions (central bank, budget rules)
- Social insurance or market-substituting institutions (provision of education, health)
- Institutions for conflict management or market legitimizing institutions (democracy, equity, justice)

**Figure 1.3: Cost of Doing Business is High in South Asia**

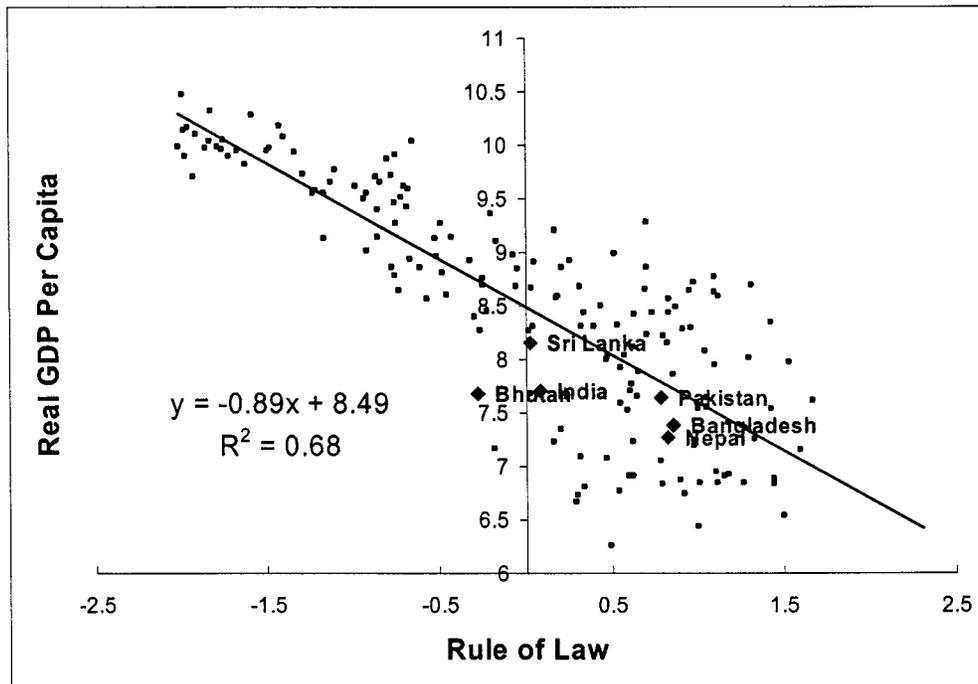


Source: World Bank (2005).

1.26 What is the relationship between institutions and growth? How should institutions be measured? Can institutions be unbundled to identify those that are more critical for growth? How does South Asia compare on institutions with other parts of the world? Chapter 4, on growth and institutions in South Asia by Ana Margarida Fernandes and Aart Kraay, is an attempt to investigate the links between institutions and growth in the context of South Asia. It is worth emphasizing that institutions are difficult to measure, and the link between institutions and growth is complex. Although cross-country data are available to assess how South Asia is doing relative to other regions, time series data are not available to judge whether institutions in South Asia have improved or deteriorated over time.

1.27 Several researches have produced evidence to suggest that there is a strong positive correlation between measures of institutional quality and log-levels of per capita income. Figure 1.4 shows one such typical relationship. On the horizontal axis is a widely used measure of rule of law produced by Kaufmann, Kraay, and Mastruzzi (2005) who combine information from a large number of cross-country sources measuring perceptions of governance and construct composite indicators summarizing these perceptions. The rule of law measure in particular captures the perceptions of individuals, firms, commercial risk rating agencies, nongovernmental organizations, think tanks, and multilateral development banks on issues relating to the protection of property. For example, it captures perceptions of the likelihood that property will be expropriated by the state, the likelihood that contracts will be enforced, the likelihood that property is secure from crime, and so on.

Figure 1.4: Rule of Law and Per Capita Incomes



Note: Real GDP per capita refers to 1996 and rule of law to 2004. Higher values of the rule of law measure correspond to worse outcomes. (See Chapter 4).

1.28 Figure 1.4 shows a strong negative correlation between this broad measure of institutional quality and levels of development: Countries with worse institutional quality are on average poorer than countries with good institutional quality. A further striking feature is the relative position of countries in the South Asia region. All countries in the South Asia region fall below the regression line. Bangladesh, Pakistan, and Nepal have fairly poor scores on this measure, which place them in the bottom quartile of all countries, while India, Sri Lanka, and Bhutan fare much better, around the median of all countries worldwide.

1.29 However, interpreting the relationship between growth and rule of law is not easy. The evidence provided by the above research has been controversial. In particular, the research has not been able to reconcile the very low rating on the rule of law for South Asia with the regions sustained rapid growth, among the highest in the world. In general, the low rating on governance as a whole for South Asia emerging from the Kaufmann, Kraay, and Maturazzi research in the face of the region's rapid sustained growth has generated considerable debate. The debate centers on two issues: First, are we measuring the right things when ranking governance performance? And second, is there necessarily a causal relationship between institutions and growth and which way does this causality run?

1.30 The measurement issue has led to research seeking to unbundled governance and institutions. Acemoglu and Johnson (2005) unbundled institutions into two distinct dimensions, and identified them as important determinants of growth. The first of these, which they refer to as "property rights institutions," capture the extent to which private property is secure from predation by the state (for example, through outright expropriation or, less dramatically, from corrupt officials demanding bribes in exchange for favors to the firm or individual). The second, which they refer to as "contracting institutions," captures how the effectiveness of institutions that are used to mediate disputes between private parties, such as the courts and the judicial system.

1.31 Using the above framework, Fernandez and Kraay measure the property rights and contracting institutions for the South Asian countries using macro and micro data. They measure property rights institutions using the Kaufmann, Kraay, and Mastruzzi (2005) measure of corruption. While perceptions of corruption are clearly not institutions themselves, the prevalence of corruption is considered a good proxy for the absence of well-functioning institutions that prevent the arbitrary or abusive exercise of authority. They measure contracting institutions using an estimate of the length of time required to resolve a dispute over an unpaid commercial debt, constructing by using the World Bank's annual Doing Business report.

1.32 They find great diversity on institutional performance within South Asia. Bangladesh, Sri Lanka, and Pakistan have better contracting institutions compared to India, but India has better property rights institutions. They find that property right institutions are more critical, relative to contracting institutions, to growth in South Asia.

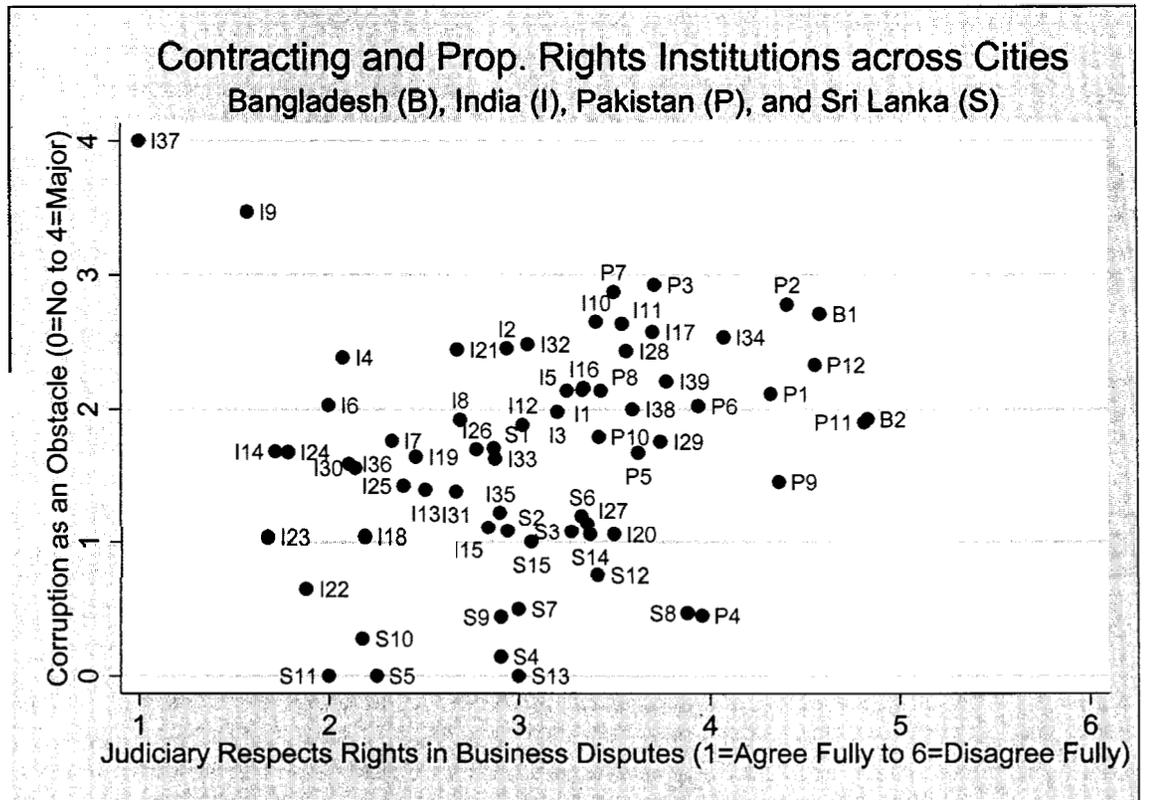
1.33 The poor performance of countries such as Bangladesh on corruption based on the views of firms in these countries suggests that this is an area where reforms, although difficult, are likely to have substantial impact. The evidence for India points to deficiencies in contracting institutions, which can be interpreted more broadly as failures in the overall regulatory environment. While cross-country evidence suggests that institutional weaknesses in this dimension have smaller development impacts than do property rights institutions, this does not mean that there are no returns to improvements in this area. In fact, firm-level evidence suggests that firms need to develop alternative strategies to circumvent weak contracting institutions, and it is likely that these alternative strategies are inefficient compared with the benchmark of good contracting institutions.

1.34 Do institutions vary within countries? Fernandez and Kraay investigate this using firm level data. Figure 1.5 shows on the horizontal axis the judiciary aspect of rights in business disputes as the proxy for contracting institutions, and it shows on the vertical axis the importance of corruption as an obstacle to business. As indicated by the labels, the data points in the figure represent each of the cities in Bangladesh, India, Pakistan, and Sri Lanka. Each data point corresponds to an average at the city level of the firm-level measures of contracting and property rights institutions.

1.35 The striking feature of Figure 1.5 is that there is tremendous variability of institutional quality within countries. For India, variability in institutional quality within the country exceeds variability across countries. India has some of the best and worst performers on institutional performance in South Asia. The city of Kanpur in the state of Uttar Pradesh (a lagging region) in

1.36 India has the worst performance on property rights in the region, while Calicut (in Kerala) and Gurgaon (in Haryana), both leading states, do well on institutional performance. The measure on institutional quality is worse according to the firm-level measures than according to the cross-country measures (Figure 1.5).

Figure 1.5: Contracting and Property Rights Institutions Across Cities: Bangladesh, India, Pakistan, and Sri Lanka



B1	Dhaka	I16	Surat	I33	Hosur	P11	Quetta
B2	Chittagong	I17	Vadodara	I34	Madurai	P12	Peshawar
I1	Ahmedabad	I18	Gurgaon	I35	Ghaziabad	S1	Colombo
I2	Bangalore	I19	Faridabad	I36	Noida	S2	Gampana
I3	Calcutta	I20	Panipat	I37	Lakimpur	S3	Kalutara
I4	Chandigarh	I21	Dharwad	I38	Howrah	S4	Kandy
I5	Chennai	I22	Calicut	I39	Mangalore	S5	Matale
I6	Cochin	I23	Palakkad	P1	Karachi	S6	Nuwara Eliya
I7	Delhi	I24	Bhopal	P2	Lahore	S7	Galle
I8	Hyderabad	I25	Gwalior	P3	Sheikhupura	S8	Matara
I9	Kanpur	I26	Indore	P4	Sialkot	S9	Kurunegala
I10	Mumbai	I27	Nagpur	P5	Faisalabad	S10	Puttalam
I11	Pune	I28	Nashik	P6	Gujranwala	S11	Anuradhapura
I12	Mysore	I29	Thane	P7	Wazirabad	S12	Badulla
I13	Vijayawada	I30	Jalandhar	P8	Islamabad/Rawalpindi	S13	Monaragala
I14	Lucknow	I31	Ludhiana	P9	Sukkur	S14	Ratnapura
I15	Guntur	I32	Coimbatore	P10	Hyderabad	S15	Kegalle

Note: City averages of the variables judiciary respects rights in business disputes and corruption as an obstacle to business from the PICS data are shown.

1.37 However, there remains the major question of how South Asia sustained high growth rates despite weak institutions. A large part of the answer is that South Asia has performed very well in implementing major policy reforms that are good for growth (Ahmed 2006). So, making a sharp distinction between good policies and good institutions is not very helpful because policies and institutions are interrelated through a time dimension. Many good policies can be implemented immediately while institutions are built over time. Sustained good policies help build institutions. Indeed, it can be argued that not all institutions are weak in South Asia (Subramanian 2006). Many of them have improved over time with the implementation of the first-generation policy reforms. First, aspects of market creating institutions improved starting in the 1980s, as the policy makers substituted planned allocation with market-based allocation of resources. Global integration also helped to strengthen market creating institutions. Second, market stabilizing institutions improved as the policy makers strengthened economic management. The good aspects of the market stabilizing institutions have resulted in South Asia averaging one of the lowest inflation rates in the world. Output variability in South Asia over the period 1960–2000 has also been low compared to other regions. Third, institutions on conflict management have helped to avoid extreme outcomes in South Asia, such as famines (Sen 1981), or the disintegration of states (for example, Soviet Russia, Yugoslavia, and Sudan). Some researchers have credited South Asia with achieving large growth responses with small policy changes. It is the underlying institutions that helped magnify the effect of policy changes on growth. Governance institutions have improved as a result of the increased role of the civil society, access to information, and education.

1.38 In conclusion, the first-generation policy reforms aimed at maintaining a stable macroeconomy, strengthening the role of the private sector, reducing the *scope* of the state, and global integration have contributed to growth. However, while the role of state has been curtailed, the *effectiveness* of the state has not improved. Cost of doing business and corruption are still high in South Asia. The delivery of basic services has not improved as much as needed in South Asia (as an example of the Indian case, see World Bank 2006b). Inequality is on the rise. The second-generation policy reforms will need to focus on improving the effectiveness of the state.

## **Knowledge**

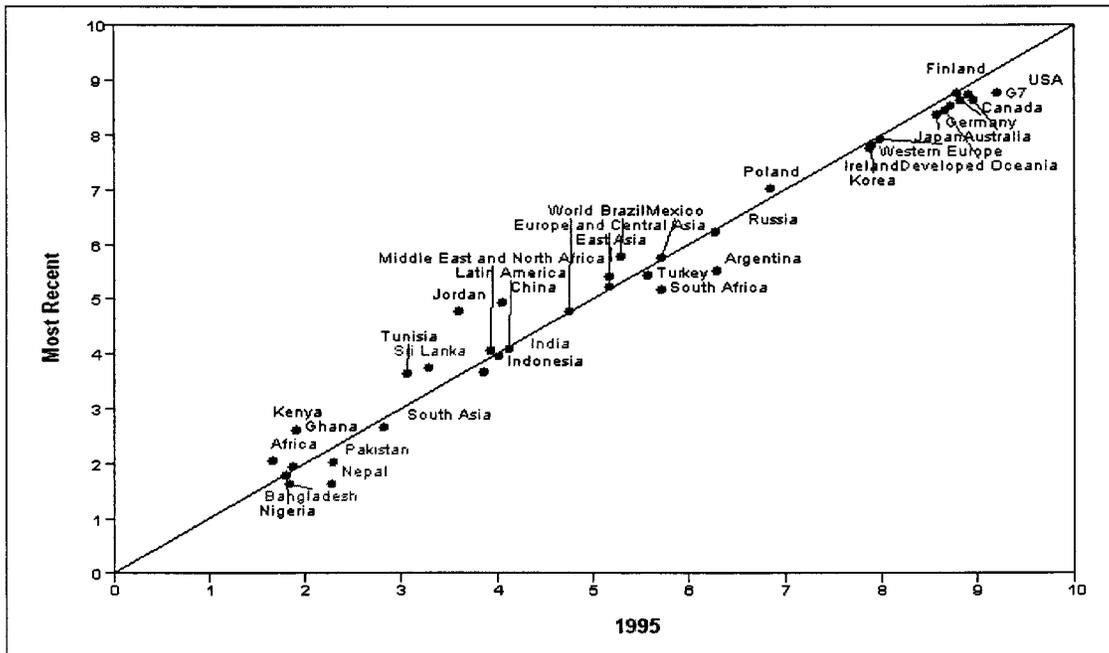
1.39 The generation and application of new technology, knowledge, or ideas is widely acknowledged to be a crucial driver of growth and competitiveness (Romer 1993). Given the rapid rate of development and dissemination of new knowledge globally, low capital and labor costs can no longer be viewed as the only drivers of competitiveness and growth. Although they continue to be important, new drivers of competitiveness have emerged, including the ability to rapidly redeploy resources in order to capture new opportunities; ensure the quality, skills, and flexibility of labor force (and management); keep up with rapidly changing technological and organizational advances; move to higher value parts of value chain (research/design and marketing, branding, and managing of customer information); make effective use of information technologies to reduce transactions costs; and improve capacity to respond quickly to changing opportunities and threats.

1.40 Chapter 5, on technology, skills, and innovation by Carl J. Dahlman, compares South Asia with the rest of the world on different indicators of knowledge economy. The key indicators of knowledge economy include:

- Education
- Innovation
- Information infrastructure
- Institutional regime governing knowledge

1.41 South Asia does poorly compared to other developing regions, except Africa, on knowledge economy (Figure 1.6.) Within South Asia, India does the best, although it does not show improvement over time. Its higher knowledge economy index is largely due to its high index on innovation, given the large absolute size of scientists and engineers in R&D as well as the absolute volume of scientific and technical publications.<sup>2</sup>

Figure 1.6: Overall Knowledge Economy Index for South Asia: 1995 Versus the Most Recent



Source: [www.worldbank.org/kam](http://www.worldbank.org/kam). (See Chapter 5).

Note: The horizontal axis represents the relative position of the country or region in 1995. The vertical axis represents the position in the most recent year (generally 2000–3). The graph is split by a 45 degree line. The most advanced countries are on the northeastern section of the diagonal. But the position relevant to the diagonal is also critical. Those countries or regions that are plotted below the line indicate a regression in their performance between the two time periods. Countries or regions that are marked above the line signify improvement between the two time periods, while those countries that are plotted on the line indicate stagnation. The KAM methodology allows the user to check performance in the aggregate KEI or knowledge index, as well as the individual pillars that define them: economic incentive regime, education, and information communications technologies, and the innovation index. This figure has been computed using the un-weighted variables for the innovation index.

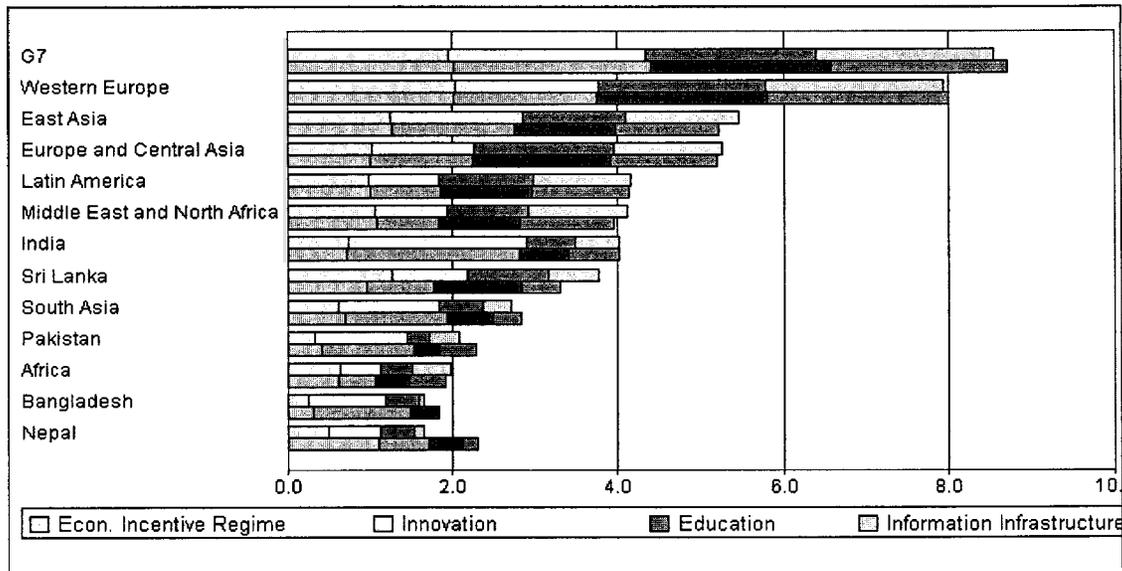
1.42 Sri Lanka is the second highest among the South Asian countries, and it shows some improvement over the period. The biggest improvement is in the economic incentive and institutional regime, where it gets the highest ranking among the South Asian group. It made significant improvements in the information and communication technology (ICT) index where it moves from second to first. While it makes a small improvement in the innovation index, it

<sup>2</sup> All the indicators in the methodology were scaled by population. However, because knowledge is not consumed in its use, for the innovation variables the indicator was also computed based on absolute values, which is how it is reported here. In the full KAM database it is possible to use the innovation variables normalized by population.

actually loses ground in the education variable even though it still remains the highest in education among the group.

1.43 Pakistan, Bangladesh, and Nepal all lose ground in the aggregate knowledge economy index (KEI). Most notable is the sharp fall in the economic incentive regime in Nepal which considerably pulls down its overall average. Nepal also loses in the ICT indicator. Pakistan also loses in the economic incentive, and in the ICT indicator as well as in the education indicator, and ends up with the lowest score among the group in the later. Bangladesh slips most in the innovation index and also slips in the economic incentive regime, but makes some gains in the ICT and a smaller gain in the education index (Figure 1.7).

**Figure 1.7: Comparison of KEI Component Parts for World Regions with South Asian Countries (Most Recent in Top Line, Compared to 1995 Bottom Line for Each Group)**



Source: [www.worldbank.org/kam](http://www.worldbank.org/kam).

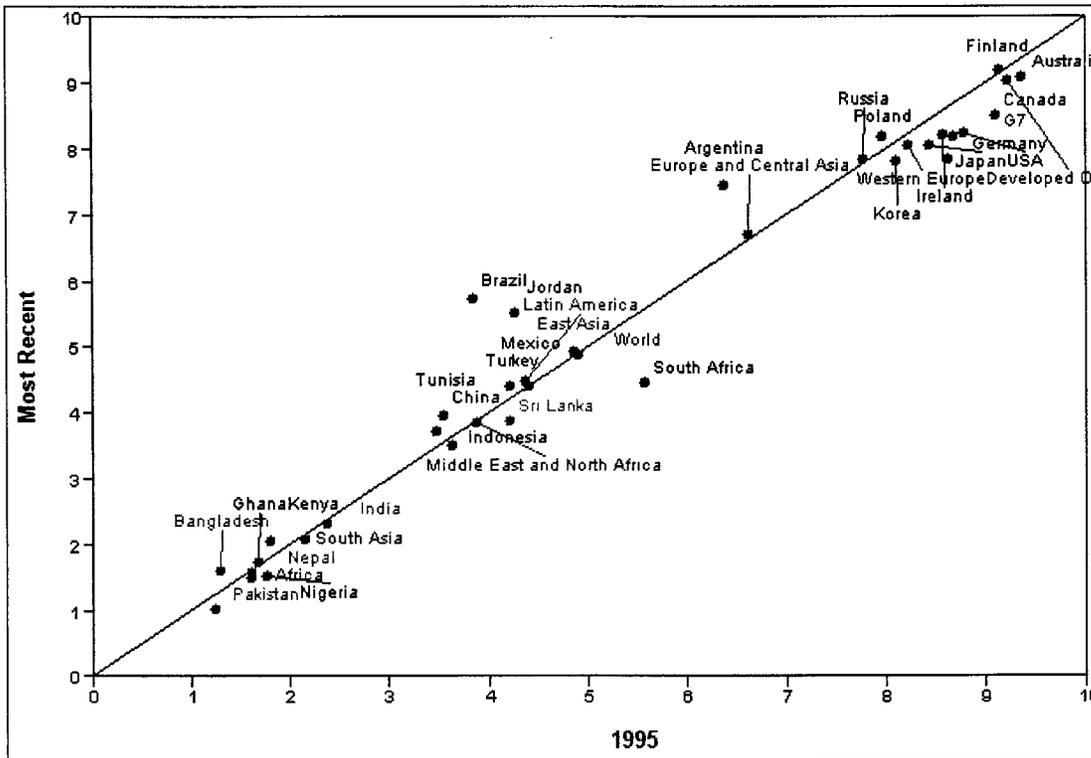
Note: The top bar represents the most recent aggregate KEI score for a selected region or country, split into the four KE pillars. Each color band represents the relative weight of a particular pillar to the overall country's or region's knowledge readiness, measured by the KEI. The first line for each country is its position in the most recent year for which data are available (generally 2002–3). The second line is for 1995. This figure has been computed using the un-weighted variables for the innovation index.

1.44 Education is becoming more important because of the increase in speed of the creation and dissemination of new knowledge. Education is the fundamental enabler of the knowledge economy and a key to long-term competitiveness and growth. What is critical is no longer just basic or even secondary education, but higher education and the constant upgrading of skills. This is a challenge for all countries of the world but especially for South Asia.

1.45 The development of a knowledge economy demands a flexible education system. It begins with basic education that provides the foundation for learning; continues with secondary and tertiary education that develops core, including technical skills; and encourages creative and critical thinking that is key to problem solving and innovation, extending into a system of lifelong learning. Such a system is one that encompasses learning from early childhood to retirement and includes formal training (schools, training institutions, and universities) and non-formal learning (on-the-job training, and skills learned from family members or people in the community). The basic elements of such a system are comprehensiveness, new basic skills (acting autonomously,

using tools interactively, and functioning in socially heterogeneous groups), multiple pathways, and multiple providers (Figure 1.8).

**Figure 1.8: South Asia on Education**



1.46 South Asian countries are in a relatively weak position in terms of education and skills. As a group they have high illiteracy rates, low enrollment ratios at the secondary and tertiary levels, very low average educational attainment among the adult population, extremely low percentage of professional and technical workers among the labor force, low quality of math and science education, little staff training even among firms in the modern sector, and a serious problem of emigration of the highly skilled workers.

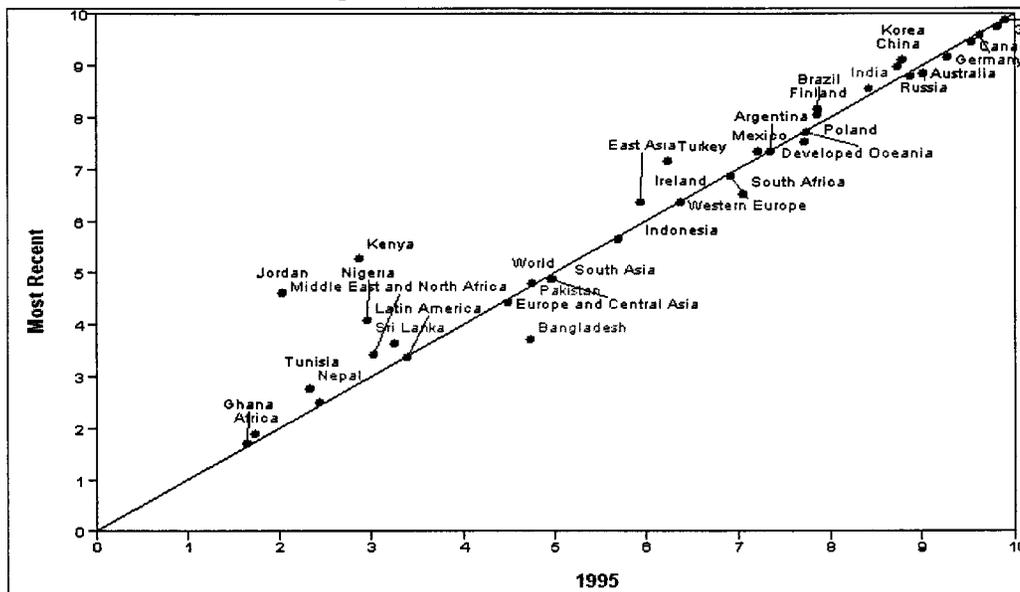
1.47 There is considerable variation with the South Asia region. Nepal and Bangladesh are much weaker on all the variables. Pakistan ranks somewhat better. Sri Lanka and India score much higher. Sri Lanka has the highest literacy, enrollment rates, and average educational attainment.

1.48 However, India is ranked higher in terms of the quality of science and math education, extent of staff training, and availability of management education. India has the world-renowned Indian Institutes of Technology and Indian Institutes of Management, which produce world-class graduates. These institutes, along with many other lesser known regional colleges, have given India a critical mass of highly skilled people. These high quality English-speaking human resources are a large part of the reason why India has been able to develop the information technology export services that have moved up from simpler back office functions and call centers to software design and innovation services. Many of the highly skilled Indians have immigrated to the United States and Europe in search of higher paying jobs. However, some of this brain drain has been turned into a brain gain as they have started to outsource highly skilled services from India.

1.49 This strong high-skilled ICT service sector has not developed in the other South Asian countries because of their smaller scale and less prevalence of English in their education systems. However, this is a very small sector in India relative to its total population, and the average levels of educational attainment in India are very low. Therefore, improving education and skills is a challenge for all the South Asian countries including India.

1.50 Innovation is another important element of competitiveness and growth as there is greater mobility of factors, products, services, and knowledge. The innovation system plays an important role in acquiring, creating, adapting, and disseminating knowledge, which is crucial for success in the knowledge economy. It consists of the network of institutions, rules, and procedures that affect how the country acquires, creates, disseminates, and uses knowledge. Innovation in a developing country does not just concern domestic development of knowledge on the global frontier. It also concerns the application and use of existing knowledge to the local context. For the countries of South Asia, which are still far behind the global frontier in many sectors, tapping into and making effective use of existing global knowledge will likely have a greater economic impact than directing most of its resources to develop frontier knowledge, no matter how prestigious the latter may be (Figure 1.9)

Figure 1.9: South Asia on Innovation



1.51 As a region, the South Asian countries do better on the innovation pillar than on any of the others, and that is largely because of the capabilities of the large countries, India in particular, but also Pakistan and to a lesser extent Bangladesh. The main strength comes from the large absolute number of scientists and engineers in R&D as well as the number of scientific and technical journal articles. Bangladesh also has strength in the high science and engineering enrollment ratios in higher education, although this advantage is diluted by the very low tertiary enrollment rates.

1.52 Another area of relative strength is a strong state of cluster development, although this is mostly concentrated in India (where it includes not just IT services but pharmaceuticals, textiles, and metal engineering industries), Pakistan (medical instruments, sporting goods, textiles, and garments), and Sri Lanka (textiles and garments).

1.53 The overall formal R&D effort of the South Asian countries is very small. R&D expenditures as a share of GDP average 0.48 percent, with a high of only 0.78 percent in India. In general, the vast majority of the research done in the South Asian economies is done in public R&D labs. An area where India shows some strength though is in patenting. India has a large public research network and recently there have been some reforms that are strengthening the incentive regime to produce more commercially relevant output.

1.54 The private sector, with the exception of some of the larger Indian groups, does very little research. In addition, the relatively little research done by the public sector is not commercially relevant, and there are poor mechanisms to get it out to the productive sectors. It is also generally quite burdensome to start up new businesses particularly technology-based business that face the additional challenge of raising funds for risky new technology projects. The overall business environment is somewhat more supportive in Sri Lanka.

1.55 Another area of weakness of the innovation system in South Asian countries is the poor links between university and company researchers. This is a little stronger in India than in the other countries, but is still quite weak by the standards of developed countries.

1.56 However, not all innovations are done through formal research. In all countries there are informal innovation efforts. In India some of this effort is being collected through an organization called the Honey Bee network, which has documented more than 12,000 small indigenous innovations, mostly in the agricultural sector. Furthermore, the government is beginning to pay attention to supporting and scaling up this indigenous effort.

1.57 All five countries with a partial exception of Sri Lanka, however, do not draw very much on global knowledge. This is revealed by the very low share of foreign direct investment to GDP, which is just a fraction of 1 percent for all countries except Sri Lanka (where it is 1.4 percent), and by very low formal purchase of foreign technology as shown by very low royalty or licensing fee payments (US\$0.33 per person in India where it is the highest followed by US\$0.12 in Pakistan, and virtually nil in the others). This contrasts with the situation of East Asian countries where the average share of gross direct foreign investment as a share of GDP is 8.26 percent and the average royalty and licensing fees per population are US\$30.82. In addition, with the exception of Sri Lanka, the share of manufactured trade (imports and exports as proxy for access to embodied knowledge and pressures to keep up with global technology) in GDP is less than 25 percent (and in India it is only 13 percent) compared to an average of 99 percent for East Asian countries.

1.58 In conclusion, the South Asian countries are significantly behind the global frontier in education and innovation and ICT. There is considerable diversity among the five South Asian countries. India is clearly ahead in its skills, technology, and innovation capability because of its much larger size and the critical mass in the absolute number of highly skilled population, number of researchers in R&D, resources allocated to R&D, and the vast network of public research laboratories, universities, and large private companies that are already undertaking research. Nepal is at the other extreme because of its very small population, much lower per capita income, and much less developed technology infrastructure.

1.59 There are many generic actions that are similar across the South Asian countries, and all the countries share the need to find more effective ways to extend education and technology to the large part of their population that is outside the modern economy. Sharing the experiences that each country has in dealing with the issues identified would be very beneficial to others. In addition, countries that are less advanced in a particular area could learn from those that have

more experience of successful programs in that area. There is also scope for collaboration across countries in tackling similar issues and even in doing joint research on common problems. An excellent example of such knowledge sharing across a region as well as a formal framework for joint research is given by the European Community's program in education and in research. Besides regional collaboration, the key policy actions needed to strengthen knowledge economy and competitiveness include improving the economic incentive and institutional regime, strengthening education and skills, tapping global knowledge, and networking and collaboration.

## **Infrastructure**

1.60 Modern infrastructure, particularly electricity, telecoms, and roads, is critical to economic development. As noted earlier, a part of the reason for high cost of doing business in South Asia is the inadequacy of infrastructure. Electricity provides light, the ability to use modern equipment, computers, and access to ICT. Telecoms facilitate information exchange and access to the rest of the world, while transport infrastructure is critical for trade and by lowering transport costs extends the market and increases competition. Studies of the productivity of infrastructure suggest that infrastructure has strong complementarities with other human and physical capital. If there is a surplus of infrastructure, more investment adds little to total output, but if there is a deficit, then shortages constrain total output, magnifying the impact, so that the return to reducing that deficit can be very high indeed. In chapter 6, David Newberry deals with South Asia's challenges in the provision of one major infrastructure service, electricity.

1.61 Firm level surveys of investment climate, as mentioned earlier, have identified infrastructure, particularly power, as a major constraint to growth in South Asia. The concern on lack of electricity is striking in South Asia compared to other regions in Asia. In India, for instance, investment climate surveys have found that, on average, manufacturers face almost 17 significant power outages per month versus 1 in Malaysia and less than 5 in China. In Pakistan, the typical business estimates that it loses 5.6 percent in annual sales revenue owing to power outages against a reported loss of 2 percent by its Chinese counterparts. In Bangladesh, the most frequent common complaint is the constraint imposed by the poor electricity system.

1.62 Cross-country data reinforce the findings of the firm level surveys. Despite some recent improvements, infrastructure coverage and quality in the region do not compare well with the rest of the world. South Asia ranks the last among all world regions in terms of road density, rail lines, and mobile tele-density per capita. It is slightly ahead of the Sub-Saharan Africa region in terms of mainlines coverage, electricity, improved water sources, and sanitation. South Asia is the only region in the world that has no city that can provide 24/7 piped water. Poor transport and communications still hinder the integration of many rural areas into the wider economy. For example, in Pakistan urban tele-density is 28 per 1,000 households versus 0.9 for rural areas. Rural access to all-season roads is as low as 39 percent in Bangladesh and 30 percent in Nepal.

1.63 When compared to its neighbor East Asia and the Pacific (EAP) and one of its main economic competitors China, South Asia region and India have significantly stayed behind in terms of infrastructure expansion and improvement. The gap in infrastructure coverage between South Asia and East Asia has enlarged more dramatically in the past decade. While in 1980 India was characterized by higher levels of infrastructure coverage (that is, electricity, paved roads, and mainlines), during the 1990s China poured substantial investments in infrastructure and overtook India and South Asia infrastructure coverage by 2002. Were the region to try to reach China's present level of infrastructure stocks per capita by 2015, it would have to invest more than 12 percent of GDP each year for the next 10 years (Table 1.3).

**Table 1.3: Infrastructure Stocks in South Asia, East Asia, and China, 2003**

Sector	India	China	South Asia	EAP (2000) <sup>a</sup>	Latin America and the Caribbean
Electricity generation capacity (million kilowatts)	126.3	356.1	151.9	66.5	
Paved roads (km per 1,000 km <sup>2</sup> )	267.2	171.6	227.5		
Rail routes (km per 1,000 km <sup>2</sup> )	19.2	6.3	14.6		
Mainlines (lines per 1,000 hab)	46.3	209.0	38.9 (35)	49 (76 in 2003)	192
Mobile (lines per 1,000 hab)	24.7	215.0	22.6 (37)	48 (96 in 2003)	249
Access to improved water (percent of population) <sup>b</sup>	88 (86)	77	86 (72)	75	90
Access to improved sanitation (percent of population) <sup>b</sup>	34 (30)	44	39 (48)	60	77

Sources: EAP Infrastructure Flagship, *World Development Indicators*, and SASEI databases.

a. Infrastructure stocks for EAP countries do not include stocks of China.

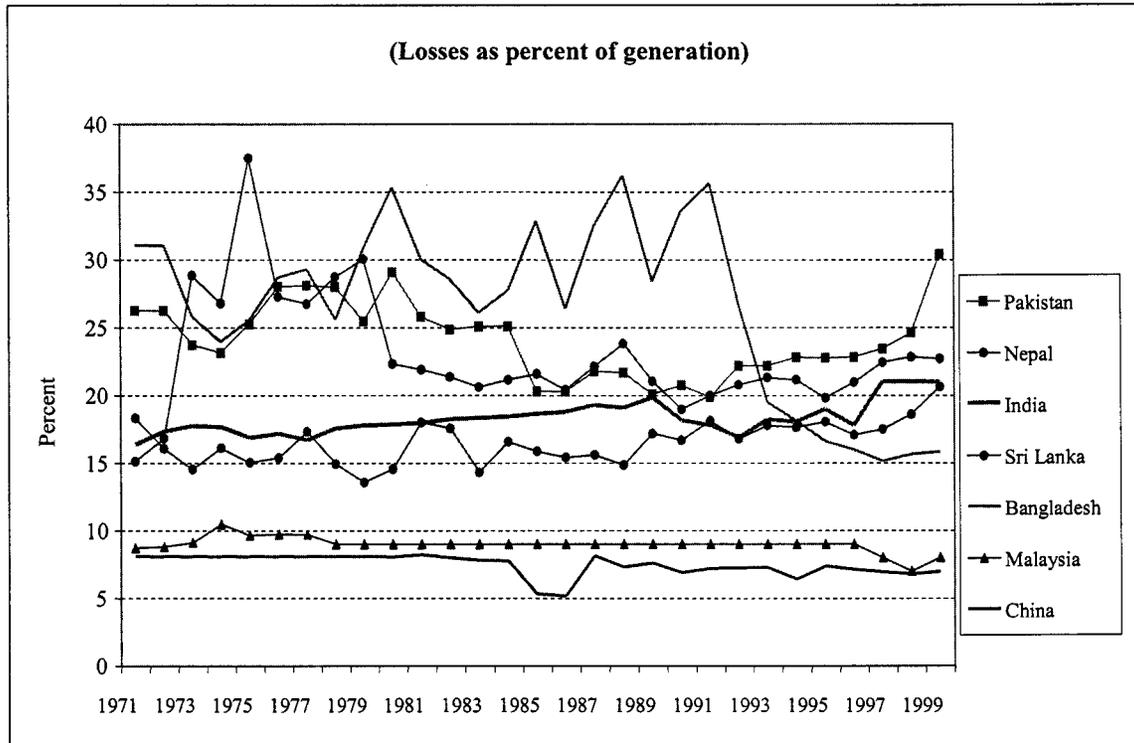
b. Water and sanitation figures correspond to 2002.

1.64 The challenges involved in addressing the infrastructure deficit, and in particular the shortcomings in policies and service delivery that has led to this infrastructure deficit, is enormous. The politicization of tariff setting for services has led to prices well below costs, and those services are not well targeted to the poor.

1.65 Regarding electricity supply, Newberry notes that while not all South Asia countries suffer from the same problems, as a generalization the region has inherited the legacy of state-owned vertically integrated electricity supply industries, often with the characteristic politicization of tariff setting that leads to excessively cheap electricity to domestic consumers, high levels of non-technical losses (that is, theft or failure to collect bills), high levels of debt or arrears, high levels of manning, and poor commercial performance (as measured by the ability of revenues to cover costs). As a result, it is difficult for the sector to finance its investment needs on commercial terms. The shortage of revenue leads to poor maintenance with frequent equipment failures (for example, as measured by transformer failures and low generation availability), resulting in power shortages and load shedding. Figure 1.10 gives time series of losses, although for India these are considerably below those reported by various states.

1.66 Prompted by the apparent success of reforms in Latin America, many South Asian countries in the region have considered or embarked upon reform programs to allow private investment in the sector. The main obstacle to private investment is the fear that once the investment is sunk, it will not be allowed to earn a remunerative return. The electricity sector is particularly problematic as private investors supply an essential service directly to a large fraction of the voting population in competition with underpriced supply from the state-owned sector. As prices will have to rise to ensure that the investments are remunerative, the price rise will be associated with the reforms that brought in private investors, and will be doubly resisted on that account. Many of the current beneficiaries of opaque accounting, cross-subsidies, patronage in the appointment of regulators and senior management, and so on will have an interest in preserving the status quo, including the low prices that deter efficient commercial competition.

Figure 1.10: Electricity Losses in South Asia and China



Source: World Bank 2002. (See Chapter 6).

1.67 There remain reasons for being optimistic. Governments are increasingly confronting the challenges of poor sector performance. In the power sector, South Asia provides examples of innovative approaches to expanding rural access and to improving performance, including cooperative rural schemes in Bangladesh, and a thriving private sector playing an extensive role in small scale renewable-based power in Sri Lanka.

1.68 Perhaps the main leadership role that governments in the region could contribute would be to agree and enforce a regional energy charter to underwrite increased energy trade. Such steps have been effective in integrating the transition countries of Central Europe into the European Union, and stimulating foreign direct investment (FDI) into the power sector, and might have similarly stimulative effects in South Asia, quite apart from creating profitable trade opportunities and increasing regional security of supply and greater resilience against external oil shocks. Opening access to industrial customers would help assure the financial viability of investments in cross-border infrastructure.

1.69 In conclusion, South Asia can sustain high growth provided it can aggressively manage the downside risks arising from a poor investment climate, weak institutions, weak knowledge economy, and a poor infrastructure. At the same time, it needs to complete the any remaining agenda on global integration and macroeconomic stabilization.

1.70 We now turn to the second issue, which deals with the role of regional integration in supporting high growth in South Asia.

## **IS REGIONAL INTEGRATION DESIRABLE?**

1.71 Regional integration can promote growth through several channels: agglomeration benefits, increased investments as a result of enlarged markets and economies of scale, flow of information and technology and knowledge spillovers, increased foreign direct investments, and deeper integration through regulatory cooperation and harmonization. These benefits of regional integration typically materialize when external protection is low or when integration is between north-south rather than south-south (Hoekman and Schiff 2002). When external protection is high, trade diversion dominates trade creation. Countries are more likely to benefit from north-south integration because endowment differences are larger between north-south, and this will encourage countries to exploit their comparative advantages better. Knowledge and technology spillovers are also likely to be higher between north-south. Since institutions that protect property rights and promote competition are likely to be superior in industrialized countries, north-south integration is likely to generate more benefits from deep integration.

1.72 But regional integration can also provide opportunities that are unlikely to be addressed between north-south, and where a case can be made for a regional approach (for example, energy trade, transport and trade facilitation, and reduced conflict and friction).

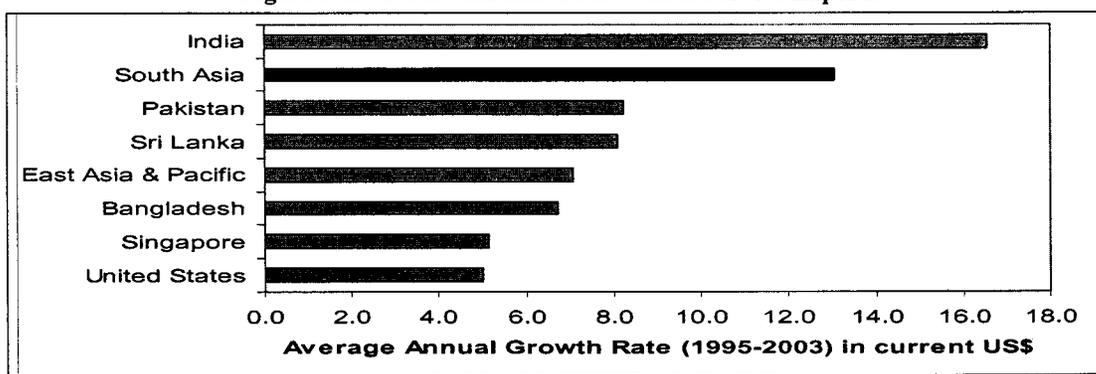
1.73 This section examines whether regional integration is desirable for South Asia. Is there evidence on agglomeration benefits arising from integration in South Asia? Is trade preference in South Asia likely to lead to trade diversion rather than trade creation? What role can regional cooperation play in addressing energy shortage in South Asia? Can integration play a role in ensuring that lagging regions and land-locked countries have full access to markets?

### **Agglomeration Benefits**

1.74 There is not much evidence on agglomeration benefits from regional integration in South Asia, at least not in the manufacturing sector, although a potential role for it in the services sector can not be ruled out. Unlike East Asia and the European Community, South Asia has not benefited from the neighborhood effects of regional integration. The benefits of integration are clearly evident in the manufacturing sector in East Asia, where production networks have been formed within the region to take advantage of economies of scale, specialization, and agglomeration. The literature on new trade theory, new growth theory, and new economic geography all highlight the role that integration can play in enhancing productivity and growth by taking advantage of economies of scale and specialization, which, in turn, could give rise to agglomeration at the regional level (Feenstra 1999; Bhagwati and Dehejia 1994; Krugman 1996).

1.75 Unlike East Asia, South Asia appears to have done well in the services sector, benefiting from outsourcing and specialization. South Asia is the fastest growing region in the export of services. Exports of services from South Asia grew at 14 percent per annum over the period 1995–2003 compared to less than 8 percent for East Asia (Figure 1.11). It is not only India that did well, but Pakistan and Sri Lanka, too, which have grown faster than East Asia in service exports. Bangladesh services exports have also grown fairly rapidly, averaging about the rate in East Asian economies. India and Bangladesh have performed well in the exports of computer and information communications and other commercial services, while Pakistan has done well in the export of transport services and Sri Lanka in travel services.

Figure 1.11: South Asia Has Done Well in Service Exports



1.76 There are two different channels through which services can be exported. It can be outsourced to another country or labor can migrate to produce the services in that country. We do not have data on labor migration by sectors, but we have data on the skill composition of labor migration and remittances inflow. Remittances inflow and the skill composition of labor migration are other crude indicators on South Asia's performance on exports.

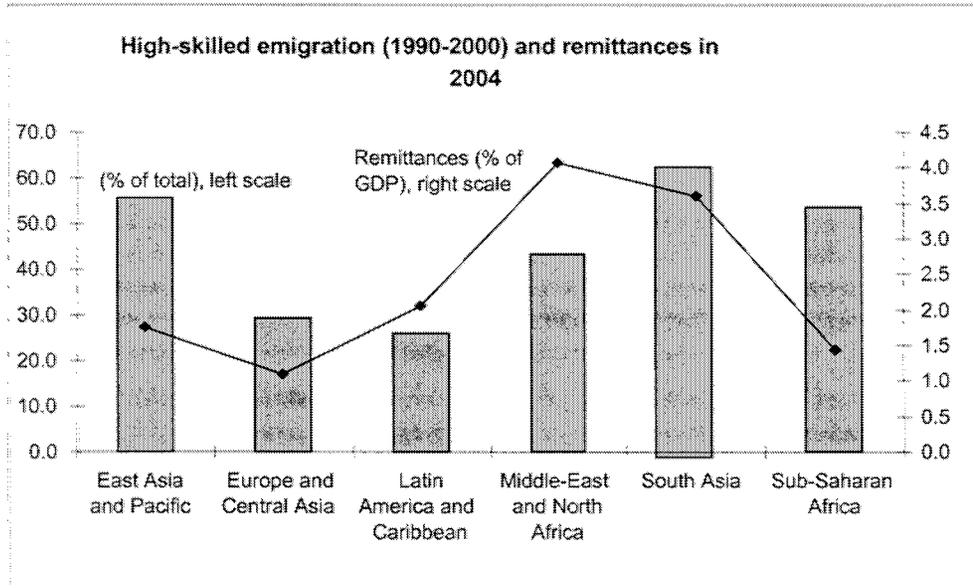
1.77 First, as a region, South Asia has the largest ratio of remittances to GDP. This ratio significantly exceeds FDI inflows. Inflow of remittances into South Asia has in many respects performed the same functions for South Asia as FDI inflows have done for East Asia. It is an important source of capital and ideas for the region.

1.78 Second, global demand for South Asian *skills* is high, as reflected by the skill composition of labor migration to OECD countries. Nearly 64 percent of the labor force that migrates out of South Asia to OECD belongs to the high skill category. This ratio is significantly higher for South Asia compared to other regions. The proportion of workers that migrate out of South Asia to OECD countries with low skills is small compared to the medium and high skill categories.

1.79 Why did East Asia benefit from outsourcing in the manufacturing sector while South Asia seems to be doing the same in the services sector? This question cannot be fully addressed here. In part, the growth of the manufacturing sector in South Asia was constrained by poor physical infrastructure. But infrastructure was not a binding constraint for the services sector. English language and IT skills strengthened the competitiveness of South Asia in the services sector. The services sector in South Asia has also benefited from a relatively liberal regulatory regime, which attracted FDI and the flow of ideas and technology from abroad (Figure 1.12).

1.80 However, service exports from South Asia are largely global and not regional. Like the manufacturing sector, services sector also benefit from economies of scale and specialization. But transportation costs for the services sector are significantly low compared to the transportation costs in the export of manufactured goods. Internet and modern telecommunication have resulted in the transportation cost of exporting IT services to the United States, for example, being no more expensive than transporting it to Sri Lanka. Nevertheless, there is a potential for South Asian countries to gain from liberalizing regional trade in education, health, and tourism at the regional level.

Figure 1.12: Remittances Inflow and Skill Composition of Labor Migration



Sources: *Global Economic Prospects 2006*; World Bank 2006d; and Docquier and Marfouk 2004.

## Trade

1.81 The acceleration in growth in South Asia took place in an environment of declining trade barriers. Table 1.4 presents data on exports and imports of goods and services as proportions of GDP. Export and import ratios rose in the South Asian countries between 1990 and 2004, except the imports/GDP ratio in Pakistan. In India, exports/GDP ratio rose from 7.1 to 19 percent and Imports/GDP ratio from 8.6 to 22.5 percent. Likewise, in Bangladesh, exports rose from 6.1 percent of the GDP in 1990 to 15.5 percent in 2004 while imports rose from 13.7 to 20.8 percent over the same period.

Table 1.4: South Asia is a Recent Global Integrator: Exports and Imports of Goods and Services as Proportion of the GDP

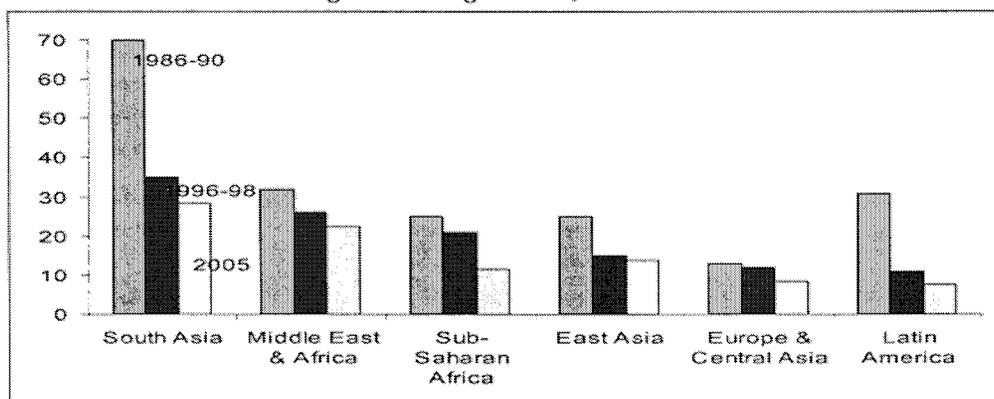
Country	Exports/GDP		Imports/GDP	
	1990	2004	1990	2004
Bangladesh	6.1	15.5	13.5	20.8
India	7.1	19.1	8.6	22.5
Pakistan	15.5	16.0	23.4	14.9
Sri Lanka	29.2	36.4	38.0	45.5
China	19.2	34.0	15.7	31.4
World	19.0	23.9	19.3	23.9

Source: World Bank 2005a.

1.82 The collapse of the Soviet Union and the success of China under outward-oriented policies convinced the policy makers in the region that rapid growth could not be achieved without wholesale opening of the trade regimes. Unilateral trade liberalization policies, which had begun to be introduced in the second half of the 1980s, were introduced on a more systematic basis in the 1990s. These changes contributed to a more rapid expansion of South Asia's trade with the outside world. But South Asia is still relatively protected. South Asia's export to GDP and import to GDP ratios are lower than the world average.

1.83 Import tariffs, though lower now, still remain high relative to other regions. Tariffs in South Asia for example in the mid-1980s were nearly 70 percent on an un-weighted average basis (Figure 1.13). Tariffs have come down in South Asia, from 70 to about 35 percent in the 1996–8 period and to 28 percent in 2005. But the rest of the world has liberalized even faster.

**Figure 1.13: South Asia Has Reduced Import Tariffs:  
Un-Weighted Average Tariffs, 1986–2005**

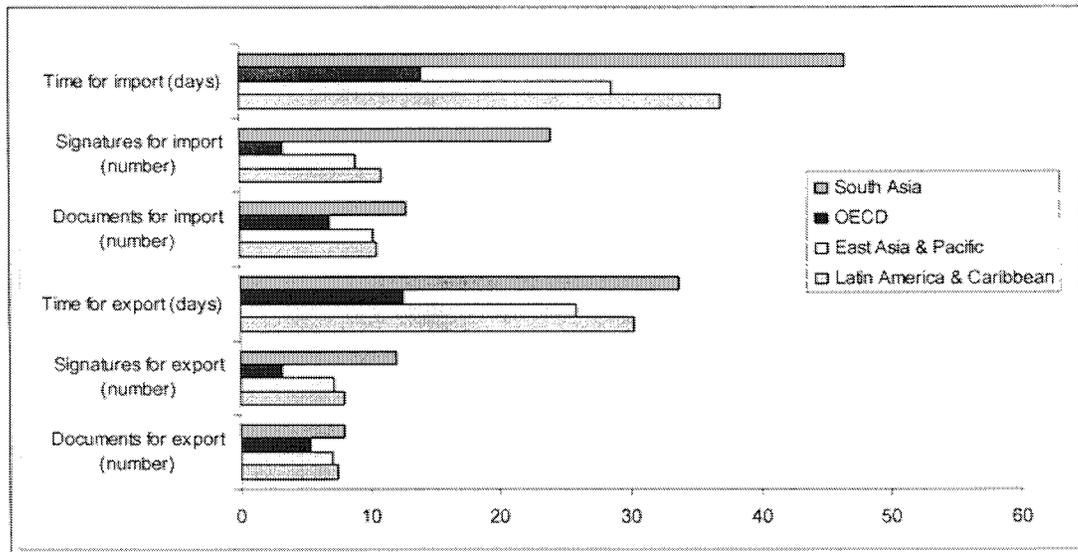


Source: World Bank, World Trade Organization, International Monetary Fund.

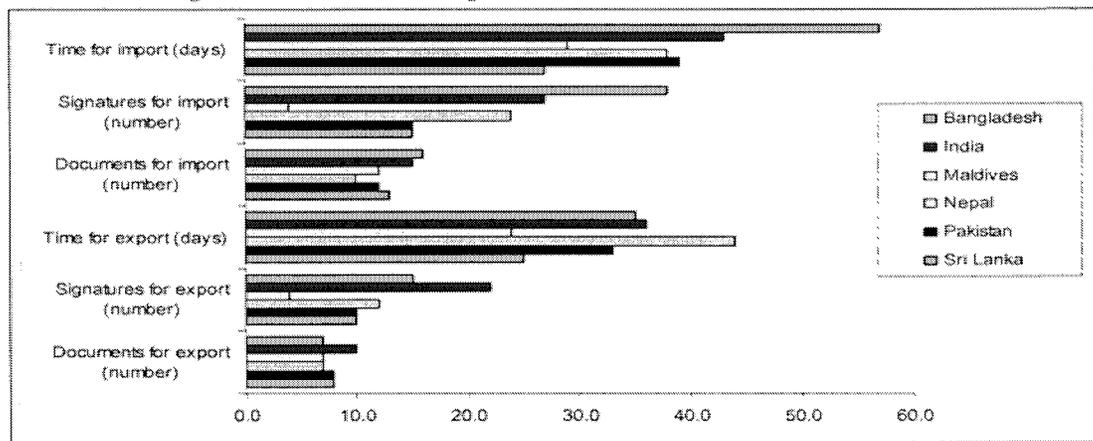
1.84 Although South Asia has significantly reduced import tariffs, the cost of trading across borders is one of the highest in the world for South Asia (Figures 1.14 and 1.15). Cost of trading across borders is the transaction costs involved in meeting the procedural requirements for exporting and importing; that is, the number of documents needed to export or import, number of signatures needed to export or import, and the number of days it takes to export or import. Often, costs of trading across borders can exceed other costs of doing business such as cost of getting credit, enforcing contracts, hiring and firing workers, or protecting investors. It takes on average more than 33 days to export from South Asia compared to 12 days from OECD countries and more than 46 days to import into South Asia compared to 14 days for OECD.<sup>3</sup>

<sup>3</sup> Most of the improvements have focused on seaports and airports (which facilitate global trade) rather than land borders (which facilitate intraregional trade). Currently, land border crossings suffer from lack of harmonization of border procedures and lack of transparency, although there are ongoing efforts to reform customs, standardize cargo documents, and introduce risk management techniques and greater use of EDI to expedite cargo flows. The requirement for back-to-back transfer of goods substantially increases the time and cost for intraregional trade. It is important to introduce modern procedures at these land borders and to coordinate activities of the agencies on both sides of the border so as to minimize the transactions involved in crossing the border. An important reform would be to allow the movement of goods in transit under customs seal either to a point of clearance behind the border or through the country to a third country destination. Other regions have taken active measures to reduce cost of trading across borders through regional cooperation. In Europe, once on land, the cargo moves effortlessly across borders. Too many checks and procedures breed corruption, and encourage traders to avoid them altogether, by smuggling across borders, which is significant within South Asia.

**Figure 1.14: Cost of Trading Across Borders for South Asia: An International Comparison**



**Figure 1.15: Cost of Trading Across Borders for South Asian Countries**



1.85 Efforts to promote better regional integration and cooperation in South Asia have suffered from regional political conflicts, primarily between India and Pakistan. However, the prospects are improving albeit slowly. The umbrella regional cooperation entity South Asia Agreement on Regional Cooperation (SAARC) provides the overall regional forum for political level dialogue. Several agreements have been reached with varying degrees of implementation and mixed outcomes. One such agreement concerns the promotion of free trade through the South Asia Free Trade Agreement (SAFTA).

1.86 Will South Asia gain from SAFTA? SAFTA can potentially help reduce conflicts, and promote better political ties among neighbors, especially India and Pakistan, just like the European Economic Community, which joined France and Germany into a tight economic union. SAFTA can also help to switch trade from informal to formal channels (for example, the bulk of India-Pakistan trade is routed through Dubai, which is costly). SAFTA can become a forum for addressing the concerns of the land-locked lagging regions. However, in Chapter 7, Arvind Panagariya cautions against expending too much political capital in pushing SAFTA. He argues

for South Asian countries to push multilateral trade liberalization instead of focusing on regional trade agreements (Baysan, Panagariya, and Pitigala 2006; Newfarmer and Pierola 2006)

1.87 Panagariya notes that SAFTA faces many challenges. First, a critical factor in determining whether SAFTA would raise or lower the real incomes of the South Asian countries depends on whether it will be predominantly *trade creating* or *trade diverting*. Thus, for example, when Bangladesh allows Indian cement to be imported duty free and this leads the more efficient Indian cement industry to out-compete the less efficient Bangladesh cement industry, there is trade creation: Increased imports into Bangladesh represent a shift from high-cost Bangladeshi producers to low-cost Indian producers. On the other hand, if duty-free access to Indian computers into Bangladesh allows the less efficient Indian computer manufacturers to displace more efficient Korean suppliers who remain subject to the duty, there is trade diversion: Increased imports from India in this case represent a switch from low-cost outside sources to the high-cost within-union sources of supply. Some characteristics of the South Asia region (for example, small regional market relative to the world both in terms of GDP and trade flows, high level of protection among SAARC countries) increase the probability that SAFTA is likely to be largely trade diverting.

1.88 The second challenge is the *political economy* of the selection of excluded sectors and rules of origin. When countries are allowed to choose sectors that can be excluded from tariff preference of free trade, domestic lobbies make sure that the sectors in which they may not withstand competition from the union partner are the ones that get excluded. On the other hand, lobbies go along with free trade in the sectors in which they are competitive and the preference will threaten the imports from outside countries. In the same vein, lobbies tend to go for tight rules of origin or outright quantitative restrictions in precisely those sectors in which they fear the competition from the partner most. On the other hand, when the threat is mainly to the imports from outside countries, they are willing to accept greater liberalization. The rules of origin can also be subject to abuse by the bureaucrat administering them. In cases where imports from the partner may be threatening an inefficient domestic competitor, bureaucratic discretion may be employed to block entry of the imports.

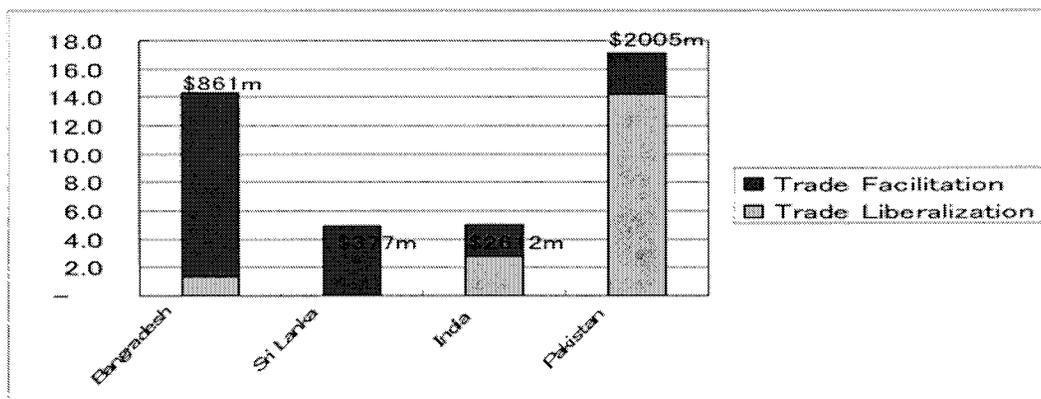
1.89 The reservations to the SAFTA based on sectoral exceptions and rules of origin were applied extensively under the Sri Lanka-India Free Trade Agreement. For example, the top 20 exports of Sri Lanka (to the world and not just India) at the 6-digit HS level accounted for 46 percent of Sri Lanka's total exports in 1999. India subjects 15 out of these 20 products to either a tariff rate quota (meaning the tariff preference applies only up to a pre-specified quantity of imports) or negative-list exception. Thus, the exclusionary policies applied with potency to products in which Sri Lanka showed the greatest comparative advantage. The rules of origin and rules of destination requirements further restrict exports. For example, apparel exports from Sri Lanka are not only subject to the tariff rate quota of 8 million pieces but at least 6 million of these pieces should be manufactured from fabrics of Indian origin exported to Sri Lanka from India. Likewise, exports of tea from Sri Lanka at the preferential tariff are not to exceed 12.5 million kilograms within a calendar year. Both products are also subject to a uniquely South Asian restriction called the rule of destination: The preference applies only if the products enter through specific Indian ports.

1.90 The third challenge is that SAFTA overlooks the role of the services sector. The welfare effects of trade preferences for services are likely to be more positive compared to trade preference for goods, as preferential liberalization in services leads to trade creation with little or no trade diversion. Loss of tariff revenue from services is less of an issue and it allows countries to take advantage of increasing returns to scale. Regulatory cooperation, of particular importance

in services, may be more practical at a regional level rather than global level, as there is less of a free rider problem at the regional level. But purely on efficiency grounds, most-favored nation liberalization is to be preferred, as it offers access to most competitive service providers and avoids complexity of negotiations, and other gains from trade (more intense competition, knowledge spillovers) are likely to be bigger if liberalization is nondiscriminatory. Nevertheless, certain forms of regulatory cooperation (air service agreements, recognition of educational qualifications, and mutual recognition of standards) are more feasible and desirable within a smaller group of countries. If regional agreements create large markets and do not impose stringent ownership related rules of origin, they may assist in attracting FDI when economies of scale matter.

1.91 Who will gain from SAFTA? Smaller countries have more to gain as they will have access to the large and rapidly growing markets in India. The results of a gravity model, used to estimate the current level of trade, and potential or predicted trade from improving trade facilitation and trade liberalization, are reported in Figure 1.16. Pakistan and Bangladesh have a lot to gain from trade liberalization within the region, especially when these gains are measured as a proportion of their total trade. India also gains in absolute terms but it is small relative to its total trade. Bangladesh and Sri Lanka have the most to gain from improved trade facilitation, as measured by bringing the ports, customs, and other regulations in South Asia to the same level as in East Asia.

Figure 1.16: Who Gains From SAFTA?



Note: Actual trade, value of trade recorded in the U.N. COMTRADE data; predicted trade, value of trade predicted by a gravity model.

### Lowering the Infrastructure Constraint through Regional Cooperation

1.92 Regional cooperation will play a crucial role in meeting the infrastructure needs of the region. Trade and cooperation in energy and water (see Table 1.5) will help the SAARC countries address some of the common problems they have in infrastructure. Particularly in energy, increased trade within SAARC and between SAARC and other regions can help meet the region's growing energy demands. Energy security is a major concern for the SAARC region, given its net energy imports position and fast growing demand coming from the growing economies and the need to expand access. Persistent and recurring electricity and gas shortages in the region highlight this concern.

**Table 1.5: Long – Term Potential for Energy Trade in South Asia**

Countries/Regions	Afghanistan	Pakistan	India	Bangladesh	Sri Lanka	Nepal	Bhutan	Iran, Turkmenistan, Uzbekistan, and Tajikistan
Afghanistan								
Pakistan	High (including transit trading)							
India	High (via third country)	High						
Bangladesh	Low	Low	High					
Sri Lanka	Low	Low	Medium	Low				
Nepal	Low	Low	High	Low	Low			
Bhutan	Low	Low	High	Low	Low	Medium		
Iran, Turkmenistan, Uzbekistan, and Tajikistan	High	High (direct from Iran and via third country)	High (via third country)	Low	Low	Low	Low	High

1.93 The national energy systems—gas and electricity networks—in the SAARC countries are largely isolated from each other. There are no gas pipelines crossing the national borders, whether within SAARC or between SAARC and its neighbors. Electricity interconnections exist but are limited to India-Bhutan, India-Nepal, and Pakistan-Iran interconnections. South Asia lags most other regions in terms of trade in electricity and gas. Western and central Europe have seen a big increase in energy trade in recent years, particularly with the introduction of competition in domestic markets. Both in North and South America there is substantial amounts of energy trade. This is also growing in Africa with the development of regional power pools, as well as in East Asia through the Greater Mekong. Trade should be seen not just within the countries of South Asia but also between SAARC and other regions.

1.94 There are complementarities in the seasonal and daily demand patterns, in the supply system characteristics, and in resource endowments. The complementarities in the resource endowments in the region include hydropower in Bhutan and Nepal and the northern regions of India and Pakistan (including in Kashmir), gas resources in Bangladesh, and coal in India. Extending this to the neighboring areas adds hydropower of Central Asia and natural gas to Iran, Qatar, Turkmenistan, and Myanmar.

1.95 The economic potential of increased regional energy trade is well recognized and shared in the region. Indirect benefits include a larger market that is more attractive to local and global investors and businesses, faster economic development, and reinforcement to conflict resolution and confidence building measures at the political level. SAARC has initiated activities to increase energy cooperation. There are discussions on gas imports from Iran and Myanmar and electricity imports from Central Asia and Iran. Cross-border investments in energy infrastructure are also being pursued in Bhutan, Bangladesh, and Afghanistan.

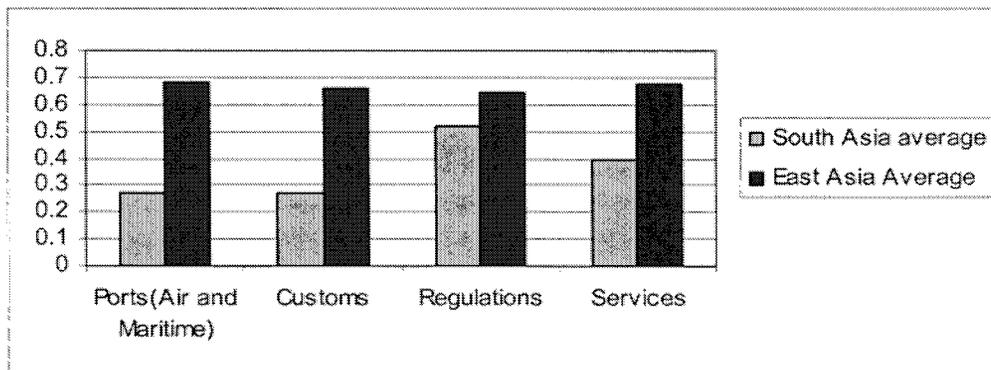
1.96 There are, however, at present significant barriers to increasing regional energy trade. Many of the barriers are political. With stronger political support, other barriers could be

addressed more aggressively than the case has been. Given the positive impact of increased regional cooperation on the political process, this could result in an accelerating virtuous cycle, leading to a greater political stability and increased regional cooperation.

1.97 To benefit from regional energy trade, the SAARC countries will have to accelerate reform of their national energy sectors. Improving the commercial performance of utilities through better regulation and corporate governance, cost-reflective pricing of energy, nondistorting subsidy policies, and nondiscriminatory access to transmission grids and to end-consumers will be important.

1.98 Better transport infrastructure is needed throughout the region, both within countries and between countries. However, streamlined procedures, reduced restrictions, as well as improved regional trade facilitation could possibly play an even greater role in generating substantially more trade (Figure 1.17). Chapter 8 by John Arnold and chapter 9 by John S. Wilson and Tsunehiro Ostuki look at the role of trade facilitation in promoting export growth and inter-regional trade. Some of the impediments to trade at present reflect policies that increase border crossing times and enforce transshipment. The high transaction cost is a result of restrictive regulatory barriers (for example, complex customs and transit procedures, lack of standardization, security checks) which are often characterized by uncertain delays, corruption, and smuggling. Crossings between India and Bangladesh are so heavily congested that queues often exceed 1,000 trucks on the Indian side with the result that crossing time can take 99 hours instead of 21 hours without delay. Trade can be more than doubled if appropriate regional agreements on roads, rail, air, and shipping are put in place enabling seamless movement.

**Figure 1.17: South Asia is Weak on Trade Facilitation**



Source: WMO database.

Note: A higher score implies better performance. Data on regulatory environment and service-sector infrastructure are not available for Pakistan. Ports, the quality of infrastructure of maritime and air ports; customs, administrative efficiency and transparency of customs; regulations, domestic regulatory environment; services, domestic service infrastructure

1.99 Fluid transit arrangements have been developed in other regions that provide benefits for all parties, but South Asia seems stuck with borders that rupture transport systems. Of course, substantial increases in transit trade might require major investments in infrastructure. We should not lose sight of the opportunity for developing infrastructure to meet increasing interregional trade and potential traffic, for example, trade between India and China, transiting through India via Nepal, or Central Asian using gateways developed through Afghanistan and the Pakistani ports. Of course, there is considerable scope for increasing the role of Bangladesh and the port of Chittagong in serving the transport needs of northeast India.

1.100 Better trade facilitation would reduce substantially the transactions costs of intraregional trade. But streamlining transport and trade systems is also needed to facilitate interregional trade. As formal tariff barriers fall, transport-related costs are becoming one of the prime factors determining competitiveness. Many of South Asia's competitors have already dramatically reduced customs and port clearance times, South Asia risks being left behind. Privately managed port terminals, with international levels of productivity, are increasingly the norm, though Bangladesh remains an exception. But such terminals have to be complemented by full customs computerization, port community IT systems, reliance on self declaration and risk management systems, and streamlining of other non-customs trade-related procedures if South Asia is to make the transition from third world to first class external transport systems.

1.101 Finally, one other area not covered in this volume where regional cooperation will have large payoff concerns cross-border management of water resources. Watershed management and storage in Nepal would generate hydro and irrigation benefits in Nepal and flood control benefits in Bihar. Water storage in northeast India could provide hydropower and flood control in India and flood control and dry season water augmentation in Bangladesh. Similarly, there are significant cross-border water management issues between Afghanistan and Pakistan. High priorities include agreements between India and Bangladesh and between Afghanistan and Pakistan on regional water issues.

## CONCLUSION

1.102 South Asia has experienced remarkable growth rate since the 1980s. This growth was triggered by reforms aimed at increasing global integration, improving macroeconomic management, and unleashing the private sector as the engine of growth. High growth rate, in turn, has created the interest in, and political space for, greater regional integration. This raises two issues of importance to the region: Is high growth sustainable? Is regional integration desirable?

1.103 Past growth was helped by the implementation of first generation policy reforms aimed at global integration, macroeconomic stabilization, and reducing the scope of the state while strengthening the role of the private sector. These reforms have made South Asia more competitive, stable, and adaptable.

1.104 South Asia now faces increasing challenges from second-generation reforms. These include the high cost of doing business, weak institutions, weak knowledge economy, and poor infrastructure. Reforms in these areas are inter-related and hold prospects for large payoffs. Increasing investment rates will require reducing costs of doing business, improving institutions, and addressing the infrastructure constraint. South Asia also needs to expand its knowledge economy. Increases in both physical and human capital investments are needed to bring about the structural transformation of the economy, shifting unemployed and low-skill workers from agriculture and informal services (low productivity) to other sectors such as manufacturing and formal services (high productivity) which require high skills and better infrastructure. South Asia has begun to address the second-generation policy reforms and continued implementation will ensure sustainability of growth.

1.105 Is regional integration desirable? From the very narrow perspective of trade flows, the economic characteristics of the South Asia region, such as the small regional market relative to the world both in terms of GDP and trade flows, and the high level of protection, would suggest that focusing on regional integration alone will not generate the beneficial productivity and growth effects of integration. South Asia is a relative newcomer to global integration. Despite recent liberalization, it lags other regions such as East Asia in terms of openness. When external

protection is high, *trade diversion* is likely to dominate *trade creation*, and so the risks that regional integration will be a drag on growth in South Asia is high. History shows that a successful regional integration is often preceded by global integration.

1.106 Nevertheless, regional integration is desirable from other perspectives. Regional cooperation can be an effective tool in addressing energy shortage, ensuring that no region/country is left behind, land-locked regions/countries have full access to markets, and peace and stability are promoted. Above all, there is a need for greater people-to-people contact through improved connectivity, phasing out of visa restrictions, and liberalizing the restrictions on the trade of services (for example, tourism, education, and health) where the risk of trade diversion is low. These initiatives would help increase investment and growth by reducing the infrastructure constraint and by lowering transaction costs. Better regional cooperation and integration can also increase welfare by improving the regional political environment, thereby reducing conflicts and associated social and economic costs.

## 2. ECONOMIC GROWTH IN SOUTH ASIA: A GROWTH ACCOUNTING PERSPECTIVE<sup>4</sup>

### INTRODUCTION

2.1 South Asian economies have achieved impressive rates of economic growth since the 1980s. Output for India, Pakistan, Bangladesh, and Sri Lanka (SA4) has grown more rapidly since 1980 than for any other region except East Asia. However, unlike East Asia, these countries have not been characterized by particularly high rates of investment. Indeed, as a share of output, investment has averaged just one-half to two-thirds of the levels typical in East Asia during its sustained periods of high growth. This fact—which some see as a puzzle—could be taken to imply that capital accumulation has been a relatively unimportant factor in the region's growth experience. If capital accumulation mattered little in the past, perhaps it need not be a central focus for South Asia to sustain, and increase, its rates of growth in the future.

2.2 The main objective here is to take issue with that perspective.<sup>5</sup> It is argued instead that capital accumulation is indeed important for growth and that this is evident in South Asia's experience. Furthermore, countries in South Asia will need to increase their rates of investment so as to accumulate (both physical and human) capital more rapidly if they are to achieve the desired rise in growth rates going forward. It is also important to emphasize that capital accumulation is certainly not all that matters. Strong, sustained growth also requires countries to increase the efficiency with which they use domestic factors to produce goods and services, which economists label total factor productivity (TFP). The two should *both* be seen as central to the growth process, and indeed many policies undertaken to foster one will also tend to promote the other.

2.3 Thus, the perspective that capital accumulation matters goes hand-in-hand with the extensive and convincing new findings linking positive growth experience with strong domestic institutions (such as those protecting property rights). Growth accounting provides a useful framework for exploring the roles of capital accumulation and TFP and is the basis for the empirical analysis presented. The approach, including its strengths and limitations, is discussed further below. Some of the implications will be discussed from work to date from ongoing research on economic growth in South Asia and elsewhere.

### GROWTH IN SOUTH ASIA: AN OVERVIEW

2.4 Table 2.1 highlights some key features of South Asia's growth. As shown, during the period 1980–2000, two of the economies (India and Bangladesh) increased their gross domestic product (GDP) growth rates by roughly 2 percentage points per annum relative to the rates they had sustained in the two decades prior to 1980. Sri Lanka's growth increased only marginally, but from the initially strong rate of 4.5 percent per year. While average output growth declined after 1980 in Pakistan, it remained about 5 percent per year. Growth rates of these magnitudes are impressive achievements that have helped these countries to reduce poverty rates and raise living standards. Indeed, South Asia grew more rapidly than any other region except East Asia.

---

<sup>4</sup> This chapter was prepared by Susan M. Collins, Professor of Economics, Georgetown University and a Senior Fellow in Economic Studies, the Brookings Institution, USA. Key arguments are drawn from work that the author has done with Barry Bosworth. The author would also like to thank Gabriel Chodorow-Reich for expert research assistance. The views in this paper are solely the authors and do not necessarily reflect those of the World Bank or its Executive Directors.

<sup>5</sup> See Bosworth and Collins (2003).

**Table 2.1: South Asia: Selected Indicators**

	GNI/capita (PPP) <sup>a</sup>	Population (millions) <sup>a</sup>	Annual rates of change		Investment share (percent)
			GDP	Labor force	
<b>India</b>					
1960–80			3.5	2.1	21.9
1980– 2003	\$2,880	1,064	5.7	2.0	21.3
<b>Bangladesh</b>					
1960–80			2.4	2.2	22.7
1980– 2003	\$1,870	138	4.4	2.3	18.2
<b>Pakistan</b>					
1960–80			5.9	2.7	22.1
1980– 2003	\$2,040	148	4.9	2.7	19.5
<b>Sri Lanka</b>					
1960–80			4.5	2.2	23.2
1980– 2003	\$3,740	19	4.4	2.0	22.6

Source: World Bank 2005.

Note: PPP, purchasing power parity.

a. These data are for 2003.

2.5 However, as also shown in Table 2.1, these growth achievements do not seem closely related to what has happened to underlying inputs. In particular, investment as a share of GDP did not rise after 1980 in the countries where growth surged. Instead, it declined slightly in India and more sharply in Bangladesh. Moreover, in none of the four countries has investment rates approached the 30–40 percent range typical for East Asian economies during their rapid growth periods. The table also shows that, while the labor force continued to grow rapidly in all four countries, this growth did not accelerate in either India or Bangladesh.

2.6 Thus, the Figures in Table 2.1 raise questions related to South Asia's growth experience. In particular, should they be taken to imply that capital accumulation played little role in explaining strong growth in the region? And what are the implications for the importance of investment, if South Asia is to sustain, and hopefully increase, its output growth over the next decade? While the investment rate relates to the role of physical capital, it is also of interest to explore the role of increases in human capital, which is done briefly below.

### **Output Growth versus Living Standards**

2.7 Most of this examines the growth in South Asia's GDP. The growth accounting methodology focuses attention on the proximate role of underlying factor inputs: physical capital, labor augmented for changes in labor quality using educational attainments, and the residual role of increases in the efficiency with which those factors are used. Thus, much of the analysis emphasizes growth in GDP scaled by labor inputs (GDP/LF), an indicator of productivity.

2.8 However, it is important to keep in mind that a primary objective is to raise living standards for residents in each of these countries. GDP does not measure how much of the income earned from production actually goes to locals. Given the wide disparities in age

distribution and labor force participation across countries, labor force is not an accurate indicator of population. Gross national income per resident (GNI/capita) is a much better indicator of living standards than GDP/LF.

2.9 There is a close linkage between the two indicators. As shown in equation (2.1) below, each country's per capita income can be decomposed into productivity, the portion of domestic income that accrues to residents and the labor force as a share of the total population. Data permitting, this last term can be further decomposed into a demographic effect—the population share of labor force age—and the labor force participation rate (LFPR). The split between labor force participation and a demographic effect is not presented because the results for some countries are quite sensitive to the selected start and end dates, raising questions about data reliability. However, the demographic effect does appear to have been positive in all four countries as dependency rates have declined.<sup>6</sup>

$$\left(\frac{GDP}{LF}\right) \times \left(\frac{GNI}{GDP}\right) \times \left(\frac{LF}{Pop}\right) = \frac{GNI}{Pop} \quad (2.1)$$

where

$\frac{GDP}{LF}$  = production per member of the labor force

$\frac{GNI}{GDP}$  = the proportion of income from production that accrues to residents

$\frac{LF}{Pop}$  = the proportion of the population that is economically active

$\frac{GNI}{Pop}$  = national income per capita

2.10 Table 2.2 reports this decomposition for each country. In addition to measures for 1980 and 2003, it shows the percentage change over the period. The top panel shows that for India, productivity and living standards both more than doubled, increasing by roughly the same percentage. Nearly all income accrued to residents in 2003, as in 1980. Similarly, there was little change in the labor force as a share of the total population. In contrast, living standards have grown more slowly than productivity in Pakistan, reflecting a shift from net inflow to a net outflow of factor payments.<sup>7</sup> However, in Bangladesh and Sri Lanka, growth in per capita incomes have significantly exceeded growth in productivity. For Bangladesh and especially Sri Lanka, this reflects a rise in the share of the population that is economically active. Bangladesh has also experienced a net inflow of factor payments.

2.11 Table 2.2 also highlights that a relatively small share of the people in these four South Asian countries are economically active. As discussed further below, this is attributable in part to the relatively low labor force participation for women in India, Sri Lanka, and especially Pakistan.

<sup>6</sup> With employment data, productivity can be measured as GDP per employed worker, and the last term can be split between the demographic effect, the LFPR, and the employment rate.

<sup>7</sup> However, net factor payment to Pakistan have been quite variable, in part due to remittances, and do not exhibit a clear trend.

**Table 2.2: Components of Gross National Income per Capita**

	<b>GDP/labor force participant (2000 international US\$)</b>	<b>GNI/GDP</b>	<b>Labor force/population</b>	<b>GNI/capita (2000 international US\$)</b>
<b>India</b>				
1980	2,705	1.00	0.44	1,185
2003	6,144	0.99	0.44	2,721
<i>Percent change</i>	<i>127.2</i>	<i>-0.7</i>	<i>2.0</i>	<i>129.5</i>
<b>Pakistan</b>				
1980	2,916	1.08	0.37	1,148
2003	5,277	0.97	0.38	1,927
<i>Percent change</i>	<i>81.0</i>	<i>-9.9</i>	<i>2.3</i>	<i>67.8</i>
<b>Bangladesh</b>				
1980	2,257	0.97	0.49	1,074
2003	3,259	1.06	0.51	1,767
<i>Percent change</i>	<i>44.4</i>	<i>8.5</i>	<i>5.2</i>	<i>64.5</i>
<b>Sri Lanka</b>				
1980	4,550	0.99	0.38	1,704
2003	7,791	0.99	0.46	3,533
<i>Percent change</i>	<i>71.2</i>	<i>-0.4</i>	<i>21.0</i>	<i>107.4</i>
<b>South Korea</b>				
1980	11,180	0.98	0.41	4,482
2003	32,594	1.00	0.52	17,004
<i>Percent change</i>	<i>191.5</i>	<i>1.9</i>	<i>27.8</i>	<i>279.4</i>
<b>Thailand</b>				
1980	4,705	0.99	0.53	2,463
2003	12,041	0.98	0.60	7,038
<i>Percent change</i>	<i>155.9</i>	<i>-1.1</i>	<i>12.7</i>	<i>185.7</i>

*Source: World Development Indicators and author's calculations.*

2.12 Increases in the percentages of labor force-aged women who become economically active, combined with continued declines in dependency rates, are important channels for raising the growth of income per capita above the growth rate of productivity.

## **GROWTH ACCOUNTS**

2.13 Growth accounting provides a means for decomposing increases in output per worker into the contributions from accumulation of physical and human capital (per worker) and a residual measure of the change in total factor productivity.<sup>8</sup> In recent work with Barry Bosworth, we have constructed growth accounts for 84 industrial and developing economies over the period 1960–2003. This sample of countries, which encompasses 95 percent of world GDP and 85 percent of world population, gives a useful means for comparing growth experiences across countries, regions and other time periods. Methodology and data sources are explained in the annex.

<sup>8</sup> As discussed above, “worker” refers to a member of the labor force except for the industrial countries.

2.14 Growth accounting is a useful framework for organizing data. It is simple and internally consistent, and has been used in a wide variety of contexts. For example, growth accounts (often based on industry-level decompositions) are central to the ongoing debate over recent productivity growth in the United States and Europe, and the role of computers and other information technology goods. Given their extensive usage within industrial countries, it is somewhat surprising that some in the development literature view them with skepticism. Bosworth and Collins (2003) argue that this partially reflects issues of measurement and interpretation, and that when appropriately implemented and interpreted, they provide extremely informative benchmarks for studying growth experiences.

2.15 It is also important to keep in mind their limitations. These are noted briefly here and discussed further in Bosworth and Collins (2003). First, growth accounting shows only the *proximate sources of growth* and is not intended to determine the *underlying causes* of growth. Consider a country with rapid increases in both accumulation of capital per worker and factor productivity. The decomposition provides no information about whether the productivity growth caused the capital accumulation (for example, by increasing the expected returns to investment) or whether the capital accumulation made additional innovations possible, or some combination.

2.16 Second, growth accounts measure TFP as a residual. In addition to changes in economic efficiency, this residual will reflect a range of other determinants of growth, not accounted for by the measured increases in factor inputs. Changes in TFP should *not* be taken as a proxy for technological innovation.<sup>9</sup>

2.17 Third, some express concern that the decomposition is sensitive to measurement of inputs and outputs, and to the underlying assumptions about the production process. Thus, we pay considerable attention to measurement issues in constructing the dataset.

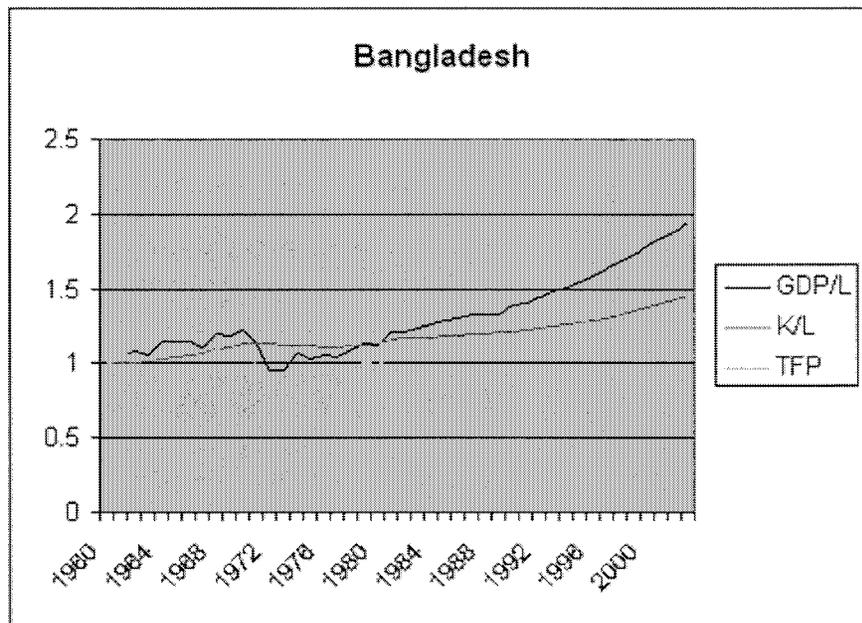
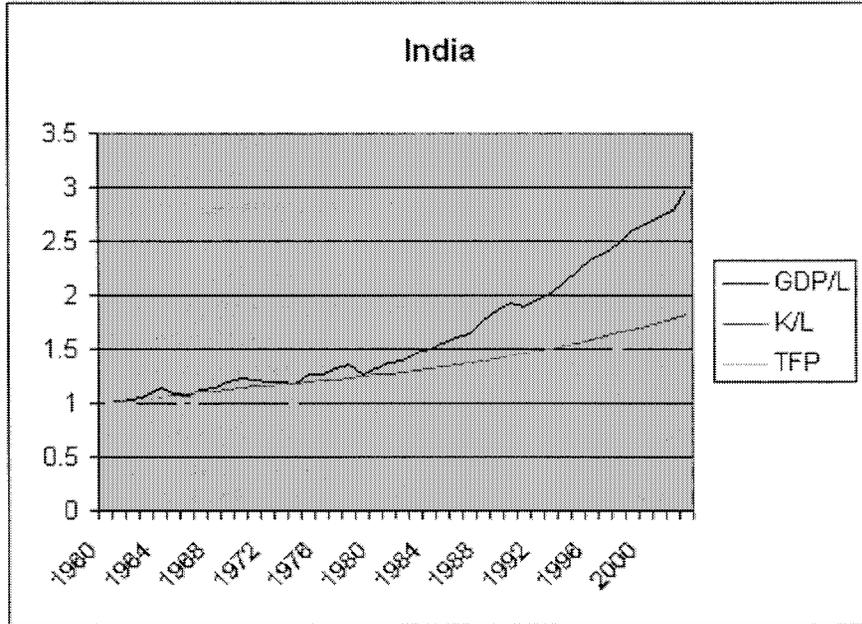
2.18 Fourth, growth accounts are an appropriate tool for examining growth experiences over longer run periods of a decade or more. The supply side approach is not designed to capture cyclical relationships between variables or effects of short-term shocks such as droughts. By construction, cyclical movements in output simply will be reflected in the residual measure of TFP.

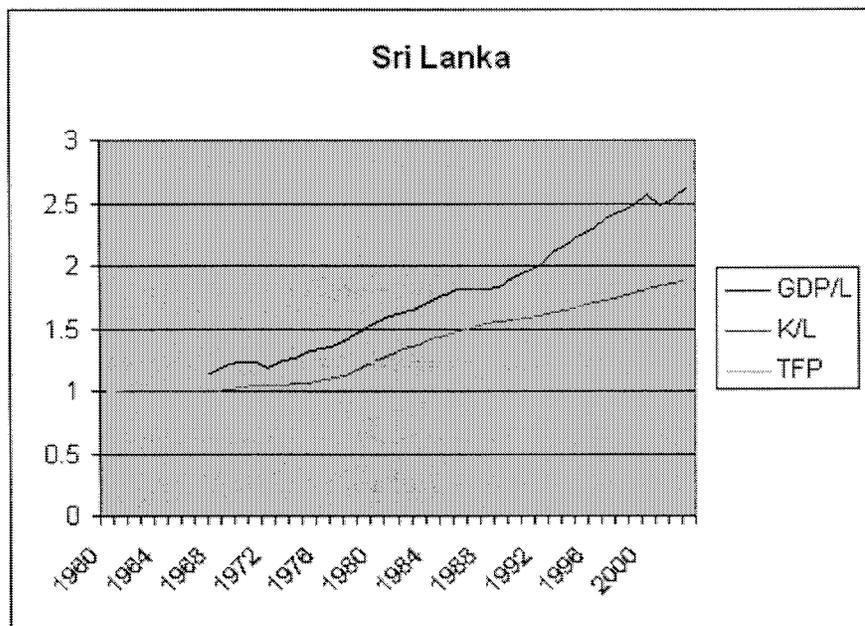
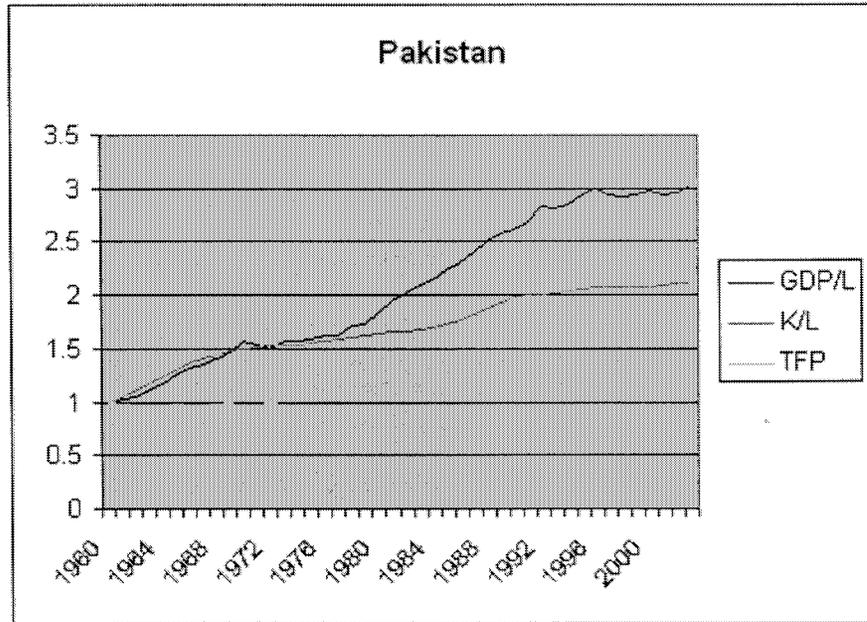
2.19 Table 2.3 reports the resulting growth decompositions for each of the SA4 by decade and for the entire period. Figure 2.1 provides graphical representations of the decomposition, with the contributions from physical and human capital combined for ease of presentation. Regional averages are shown in Table 2.4 for comparison purposes. China is reported separately from the rest of East Asia owing to concerns about data reliability. (See Heston, 2001.) The discussion below refers to these tables and figures in highlighting the main findings.

---

<sup>9</sup> See Hulten (2001) for a detailed discussion of growth accounting and the TFP residual.

Figure 2.1: Output Per Worker And Its Components South Asia, 1960-2003





2.20 Consider first the regional comparisons. At 3.3 percent per annum since 1980, growth in output per worker in South Asia has clearly been well above the world average, rivaling East Asia's experience (3.9 percent). Furthermore, since 1980 increases in TFP contributed fully twice as much to growth in SA4 as in East Asia, while increases in capital per worker contributed just half as much. At the same time, the overall contribution to growth from capital deepening in SA4 was not low by world standards, but exceeded that for all other regions except East Asia.

Table 2.3: Sources of Growth, South Asia, 1960–2003

Region/period	Output	Output per worker	Contribution of		
			Physical capital	Education	Factor productivity
<b>India</b>					
1960–70	3.74	1.81	1.34	0.17	0.74
1970–80	3.08	0.70	0.73	0.33	-0.21
1980–90	5.50	3.48	1.06	0.36	2.05
1990–2003	5.82	3.99	1.48	0.46	1.95
1960–2003	4.62	2.59	1.17	0.34	1.19
<b>Bangladesh</b>					
1960–70	3.99	2.09	0.10	0.13	1.85
1970–80	0.81	-1.61	-0.73	0.30	-1.18
1980–90	3.72	1.07	0.84	0.18	0.05
1990–2003	4.84	2.67	1.61	0.34	0.70
1960–2003	3.43	1.15	0.53	0.24	0.37
<b>Pakistan</b>					
1960–70	7.22	4.67	3.75	0.35	0.54
1970–80	4.68	1.59	0.68	0.23	0.68
1980–90	6.28	3.55	0.98	0.92	1.61
1990–2003	3.82	1.08	0.46	-0.08	0.69
1960–2003	5.37	2.60	1.39	0.33	0.87
<b>Sri Lanka</b>					
1960–70	4.57	2.16	0.08	0.33	1.73
1970–80	4.40	2.25	1.55	0.39	0.29
1980–90	4.19	2.11	2.05	0.22	-0.16
1990–2003	4.64	2.53	1.10	0.34	1.07
1960–2003	4.46	2.28	1.19	0.32	0.75

Source: Authors' calculations as explained in text.

2.21 It is also interesting to note that strong growth associated with rapid increases in TFP was a standard pattern observed during the 1960s (not shown separately). During this decade, efficiency increases were associated with roughly 60 percent of the rise in output per worker among industrial economies, still recovering from the World War II, as well as in Latin America and the Middle East.

2.22 However, a more careful look at the results to distinguish across countries and decades suggests a much more nuanced view of the contribution of TFP to growth in South Asia (Table 2.3). First, the regional average (GDP weighted) is of course dominated by India's experience. Only two of the other three (Bangladesh and Pakistan) exhibited strong TFP growth since 1980, and both well below that for India.

**Table 2.4: Sources of Growth by Region**

Region/period	Output	Output per worker	Contribution of		
			Physical capital	Education	Factor productivity
<b>South Asia (4)</b>					
1960–80	3.61	1.41	0.85	0.32	0.24
1980–2003	5.52	3.35	1.17	-0.36	1.76
1960–2003	4.63	2.44	1.02	0.35	1.05
<b>World (84)</b>					
1960–80	4.48	2.77	1.19	0.39	1.17
1980–2003	3.25	1.82	0.85	0.29	0.68
1960–2003	3.82	2.26	1.00	0.33	0.91
<b>Industrial countries (22)</b>					
1960–80	4.25	2.95	1.19	0.42	1.32
1980–2003	2.59	1.62	0.75	0.22	0.63
1960–2003	3.36	2.23	0.95	0.31	0.95
<b>China (1)</b>					
1960–80	4.04	1.83	0.80	0.38	0.64
1980–2003	9.48	7.77	2.78	0.35	4.49
1960–2003	6.91	4.97	1.86	0.36	2.68
<b>East Asia less China (7)</b>					
1960–80	7.02	3.98	2.23	0.53	1.18
1980–2003	6.08	3.67	2.22	0.53	0.88
1960–2003	6.52	3.81	2.23	0.53	1.02
<b>Latin America (23)</b>					
1960–80	5.74	2.75	1.04	0.32	1.37
1980–2003	1.96	-0.58	0.10	0.41	-1.08
1960–2003	3.70	0.95	0.54	0.36	0.05
<b>Africa (19)</b>					
1960–80	4.40	1.94	1.01	0.12	0.80
1980–2003	2.16	-0.55	-0.08	0.41	-0.88
1960–2003	3.20	0.60	0.43	0.28	-0.11
<b>Middle East (9)</b>					
1960–80	5.43	3.20	1.81	0.38	0.99
1980–2003	3.81	0.82	0.35	0.52	-0.05
1960–2003	4.56	1.92	1.02	0.45	0.43

*Source:* Authors' calculations as explained in text.

2.23 Second, in all three of these economies, TFP surged during the 1980s after two decades of little growth. For India and Bangladesh, this surge partially reflected a recovery from the poor performance during the 1970s. Especially for India and Pakistan, TFP growth then slowed substantially during 1990–2003.

2.24 Third, the most recent period is certainly not one in which physical capital accumulation was relatively unimportant for growth. For Bangladesh, Pakistan, and Sri Lanka, its contribution accounts for 43 percent of total growth in output per worker, a share identical to the overall global average. For India this share is lower, but not substantially, at 39 percent.

## Investment Rates Versus Capital Accumulation

2.25 The growth accounting methodology highlights the fact that the change in a country's capital stock is the appropriate way to measure the contribution of capital accumulation to growth—not the country's investment rate. This is particularly relevant here, because the average ratios of investment to GDP understate capital's contribution for all of the SA4.

The change in the capital stock is given by

$$\Delta K = I - dK \quad (2.2)$$

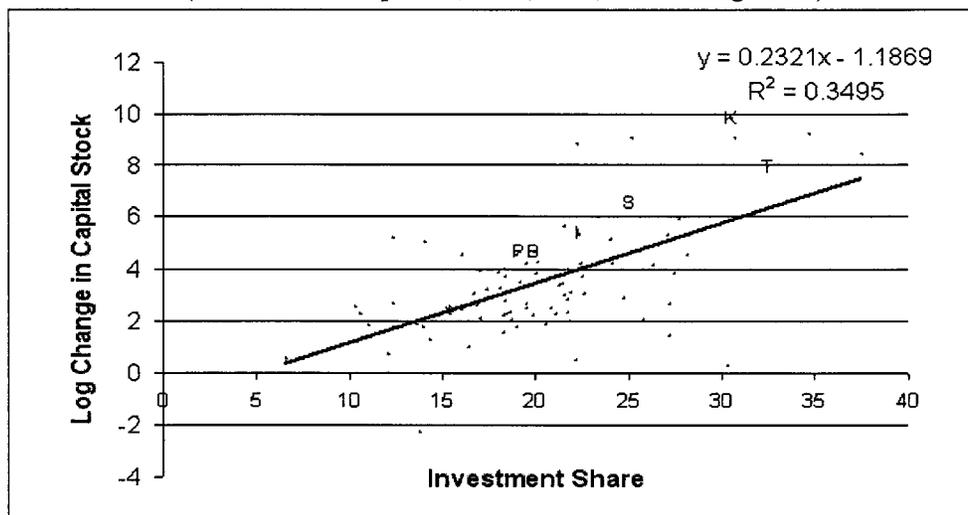
where  $d$  represents depreciation. Dividing through by  $K$  and assuming a steady-state constant value ( $\gamma$ ) for the inverse of the capital-output ratio allows the rate of change of the capital stock ( $k$ ) to be measured by the investment rate ( $i = I/Y$ ):

$$k = i\gamma - d \quad (2.3)$$

However, if the capital output ratio is not constant,  $I$  can be a very poor proxy for  $k$ . The assumption of a constant capital output ratio and steady-state seems particularly unreasonable for developing countries struggling to catch up. Indeed capital-output ratios not only differ across countries, but also evolve over time for many of the developing countries in our sample.<sup>10</sup>

2.26 In fact, the correlation between the two measures is surprisingly low, as illustrated in Figure 2.2. Each point represents the average investment rate and the average change in physical capital stock for one of the countries in the sample. The SA4 (as well as Korea and Thailand) are each denoted with the first letter of their country name. Countries that devote modest shares of their output to investment can exhibit relatively large increases in their capital stocks if their output is growing rapidly. In contrast, countries with very slow output growth will tend to have small changes in their capital stocks despite high investment shares.

**Figure 2.2: Comparison of Investment Share and Change in the Capital Stock, 1980-2003**  
(all countries except IND, LKA, PAK, BGD through 2000)



<sup>10</sup> Note that with investment equal to 20 percent of GDP and a 5 percent depreciation rate, the growth in the capital stock would equal 5 percent with a capital-output ratio equal to 2, but just 2 percent with a capital-output ratio just under 3.

## Educational Attainment: A Labor Quality Index

2.27 The growth accounts also highlight increases in labor quality, which we measure using average years of schooling and an assumed rate of return to each additional year of schooling.<sup>11</sup> Overall, for our sample, increases in education contribute 0.3 percentage points per annum to growth. During much of its rapid growth period, East Asia stands out for very rapid rise in years of schooling, contributing roughly 0.6 percent to annual growth, or twice the global average.

2.28 Increases in education among the South Asian economies have not been as impressive (Figure 2.3) and the average level of schooling remains quite low (Table 2.5). Data constructed by Robert Barro and Jong-Wha Lee for 2000 show that the percentages of the population over age 15 who had completed at least the first level of schooling (six years) were just 17 percent in Bangladesh, 28 percent in India and Pakistan,<sup>12</sup> and 52 percent in Sri Lanka. However, in India the population share with post-secondary school education has risen relatively rapidly. Our growth accounts show the contribution from increased schooling ranging from under 0.3 to just over 0.4 percent.

Figure 2.3: Average Schooling in 107 countries

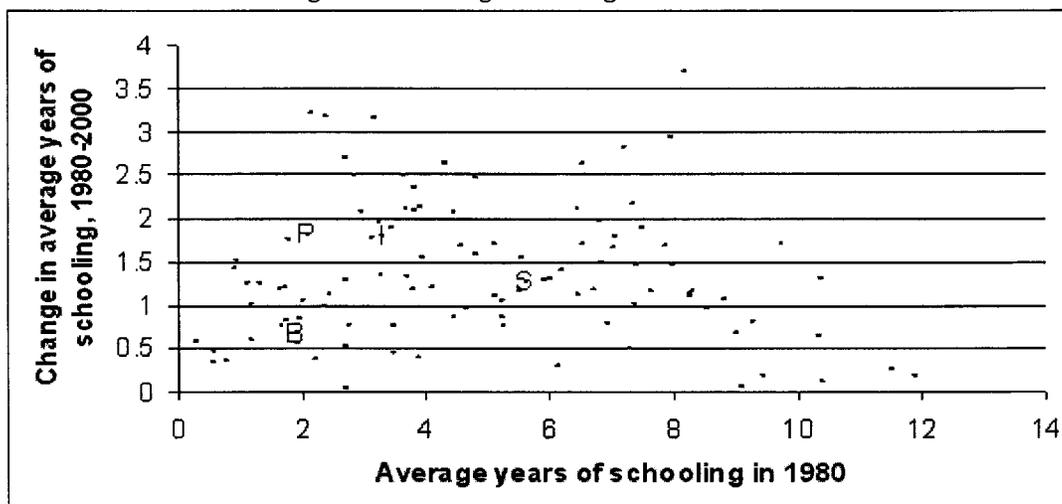


Table 2.5: Average Years of Schooling (Population Aged 15+)

	Average years of school		
	1960	1980	2000
India	1.7	3.3	5.1
Bangladesh	0.6	1.9	2.6
Pakistan	0.7	2.1	3.9
Sri Lanka	3.9	5.6	6.9

Source: Provided by Jong Wha Lee (Barro and Lee 2000 dataset).

<sup>11</sup> Our work to date assumes a constant rate of return to each additional year of schooling. The results reported here use 7 percent, which is in the lower range of estimates from microeconomic studies. We have also considered higher rates of return, and explored approaches to controlling for the quality as well as number of years, of schooling. However, some estimates suggest that the returns to education may not be constant and it would be useful to explore this further.

<sup>12</sup> The educational data reported for Pakistan appears particularly noisy and may be unreliable.

## **SOME IMPLICATIONS LOOKING FORWARD**

2.29 In sum, growth accounts show that both capital accumulation and increased efficiency of factor usage have been important for South Asia's growth. Modest investment rates to the contrary, capital accumulation has not played an unusually small role. At the same time, there is considerable room for increasing investments in both physical and human capital. This final section provides a much more speculative discussion, looking to the future. What are the prospects for achieving double digit growth, and what would it require?

2.30 Could South Asia achieve this goal through concentrating on approaches intended to accelerate TFP growth? There are at least two reasons one might reach this conclusion. First, it has become popular in the literature on economic growth to emphasize the role of TFP. Thus, researchers now frequently model capital accumulation as endogenous, such that increases in TFP automatically induce the investment required to maintain the capital-output ratio. (See Easterly and Levine, 2001, and Klenow and Rodriguez-Clare, 1997) However, there is little evidence for this in our data. Capital accumulation and TFP growth exhibit surprisingly little correlation, consistent with the view that investment decisions are influenced by a great many factors (such as availability of finance and tax consideration) in addition to changes in TFP. It is also worth noting in this context that initial conditions and available policy indicators explain investment and capital accumulation at least as well as they explain changes in TFP (for example, see Bosworth and Collins 2003.) There are no magic policy bullets for generating TFP growth. Since both capital and TFP matter, a prudent policy stance should seek to foster both.

2.31 Second, India has achieved strong TFP growth with modest investment. Over this period, it has also achieved very impressive growth in its information technology (IT) sector, which the Ministry of Finance forecasts will account for fully 25 percent of value added by 2020, up from roughly 7 percent today. However, in a recent paper, Srinivasan (2006) identifies a variety of potential constraints to the sectors' growth. The domestic ones include shortages of appropriately skilled labor, poor infrastructure, and difficult labor and bankruptcy laws. External ones include concerns about increased protectionism if U.S. fears about offshoring intensify.

2.32 Perhaps more importantly, one can agree that there are strong prospects for continued growth of India's IT sector without concluding that IT is a likely engine of more rapid growth that could be sustained with modest investment. As discussed above, our data show somewhat more impressive Indian TFP during the 1980s than in the past decade. Furthermore, the IT sector is concentrated in a few urban areas. As in the other South Asian economies, a substantial share of India's labor force is relatively low skilled, living in rural areas, and involved with agricultural activities. Though difficult to estimate, underemployment is extremely high. Substantial increases in living standards will necessitate reallocating much of this labor to activities in the industrial or service sector, where their productivity will be significantly higher. And for them to be productive in these activities will require investments in their human capital, as well as increases in infrastructure and other types of physical capital.

2.33 However, one should not be surprised if this reallocation generates relatively little TFP increase in the sectors to which these workers move. For example, there is considerable scope for expanding production of manufactured goods, using technology that is standard in the global marketplace. Assuming the required capital is purchased at world prices, and the goods are sold in world markets, this is unlikely to generate increases in TFP in the manufacturing sector. However, to the extent that labor pulled out of agriculture was at least partially redundant, one would expect to observe measured productivity in agriculture increase. Much of the aggregate

productivity gains would be associated with the reallocation of labor from agriculture where productivity is relatively low, to the rest of the economy, where it is considerably higher.

2.34 To study the implications of this reallocation for aggregate growth requires consistent data series so as to disaggregate the growth accounts by sector. We hope to extend our growth accounts to the broad categories of agriculture, industry, and services for at least some of the South Asian countries. However, this type of analysis has been done recently for Thailand, and the results for the period 1977–96, during which agriculture’s share of employment fell from roughly 65 to 45 percent, are quite interesting. In particular Bosworth (2005) finds that fully two-thirds of the rise in Thailand’s TFP during this period can be attributed to reallocation of labor (1.1 percentage points out of a total TFP contribution to growth of 1.6 percent per annum).

2.35 Finally, it is interesting to construct some benchmark scenarios that project the implications for required investment of achieving alternative rates of growth over the coming decade. While based on relatively simple assumptions, and focusing on the results for India, the results are provocative. We begin by assuming that India maintains balanced growth, with investment sufficient for capital to grow at the rate of output. Sustainable output growth would be given by the growth of the labor force (adjusted for labor quality), and the rate of TFP increase, scaled by labor’s share of income. Consider growth in the number of workers ranging from 2 to 2.8 percent per year. (ADB [2005] projects India’s labor force will grow at 1.8 percent through 2015. These figures are augmented to reflect prospects for increased labor force participation of women, and reduced underemployment.) Next suppose the feasible range for India to increase average years of schooling is from one to one and a half years over the next decade. (Note that the changes in Figure 2.3 reflect a twenty year period.) The implied increases in labor quality would add an additional 0.7–1.2 percent per year to effective labor force growth. Suppose that India can achieve TFP growth of at least 1.5 percent per year, but perhaps as much as 3 percent per year. Finally, assume labor share equal to 65 percent, as for the growth accounts. The result is GDP growth ranging from 4.9 to 8.7 percent per annum. Using the capital output ratio for India from our data, and assuming a 5 percent rate of capital depreciation, the required investment ranges from 22 to 30 percent of GDP. And with the other variables all at the top of their ranges, India could achieve output growth of 10 percent per annum with an investment share of 38 percent of GDP.

2.36 These scenarios suggest that output growth rates of about 5 percent per annum in South Asia are quite consistent with maintaining investment rates of 22 percent of GDP, the average since 1980. However, these scenarios support the view that sustained increases in the region’s growth will require significant increases in the investment rate, as well as efforts to increase labor force participation and increase worker skills through schooling.

## ANNEX: GROWTH ACCOUNTS

2.37 Earlier, growth accounting is used to examine South Asia's growth experience over the period 1960–2003. As discussed in Bosworth and Collins (2003), we have used this methodology to construct consistent accounts for an additional 80 countries during 1960–2000.<sup>13</sup> Readers are referred to Bosworth and Collins (2003) for additional details about the data and methodology and for further discussion of its strengths and shortcomings.

2.38 A country's output in any given year depends on its factor inputs—labor and (human and physical) capital—as well as on the efficiency with which factors are used in production. Thus, the key pieces to the procedure are a growth accounting equation for constructing the decomposition, parameter assumptions, and data on output and factor inputs.

2.39 Define  $Y$  as GDP,  $K$  as the physical capital stock, and  $A$  as the level of technology.  $L$  is labor inputs (measured as “bodies of economically active persons”) which we assume is “augmented” by  $H$ , an index of the average “level of labor quality,” which we measure by average years of schooling. We also assume that a country's output can be expressed as a function of these inputs, using the specific functional form shown in (A.1).<sup>14</sup>

$$Y = A K^\alpha (HL)^{(1-\alpha)} \quad (\text{A.1})$$

2.40 We report our results in a form that decomposes growth in output per worker into the contributions from the growth of physical capita per worker, the growth of education per worker, and the growth in total factor productivity, as shown below. (Lower case letters denote a variable's average annual growth rate.)

$$y/l = \alpha(k/l) + (1 - \alpha) h + a \quad (\text{A.2})$$

2.41 Given an estimate for  $\alpha$  and measures of  $Y$ ,  $L$ ,  $K$ , and  $H$ , it is straightforward to solve for  $A$  (or  $a$ ) and construct the decomposition. As for our 84-country study, this decomposition assumes a capital share:  $\alpha = 0.35$ . An analysis that used the actual income shares in each period would allow for the consideration of a much wider range of underlying production functions. However, few countries are able to allocate the incomes of the self-employed between capital and labor.<sup>15</sup>

2.42 As noted above,  $Y$  is real GDP.  $L$  is employment for industrial countries and labor force for all nonindustrial countries. The capital stock measure is constructed from investment data using the perpetual inventory method, with a depreciation rate of 0.05. Finally, to construct  $H$ , we assume that human capital is directly related to average years of schooling ( $S$ ), and that there is a 7 percent return to each additional year of schooling:

$$H = (1.07)^S \quad (\text{A.3})$$

2.43 Information about data sources for the 1960–2000 sample is provided in Bosworth and Collins (2003). Data from *World Development Indicators* (2005) were used to update GDP,  $L$ , and  $K$  to 2003 for India, Bangladesh, Pakistan, and Sri Lanka. Average years of schooling was interpolated to 2003 for these countries, based on trends during 1990–2000.

---

<sup>13</sup> Country coverage was determined by data availability. The main exclusions are the transition economies and countries with population less than one million.

<sup>14</sup> Equation (A.1) assumes constant returns to scale.

<sup>15</sup> See Bosworth and Collins (2003) for further discussion and references in the cross-country context.

### 3. IMPROVING THE CLIMATE FOR INVESTMENT AND BUSINESS IN SOUTH ASIA<sup>16</sup>

#### INTRODUCTION

3.1 Increasing growth is a central goal of policy makers interested in improving the opportunities and living standards of their constituents. The sustained high growth rates of China continue to grab headlines. Recent growth in the South Asia region has also been impressive, although less consistent across the region. To understand why growth is higher in some locations than others and to highlight ways to foster higher growth, we need to understand the investment climate faced by entrepreneurs. The institutional, policy, and regulatory environment affects the ease of doing business and the scope of opportunities facing entrepreneurs.

3.2 Here we will focus on the microeconomic underpinnings of growth in the South Asia region. Decisions to invest, to hire new workers, or to expand production are made by firms every day. These decisions are then aggregated across the whole economy to give the country performance measures. Understanding the factors influencing these decisions from the firms' perspective can give insights into the aggregated dynamics and performance in the aggregate measures of growth and productivity.

3.3 Growth can be achieved by increasing inputs, the amount of machinery, or human capital. It can also be achieved by improving productivity or producing more with the same inputs. Most see the challenge as how to increase productivity. There are two components: The first is related to technology. The second is the environment, which enables entrepreneurs to work more efficiently, such as fewer difficulties accessing raw materials, fewer distractions dealing with bureaucratic harassment and demands for bribes, or less exposure to theft.

3.4 Total factor productivity (TFP) captures these last two sources. Much of the focus has traditionally been on the first source, on differences in technology. More recently, attention has shifted to differences in the broader institutional, social infrastructure, or investment climate setting.<sup>17</sup> The World Bank's *World Development Report (2005)* focused on the latest evidence this perspective brings to growth and poverty reduction (see World Bank 2004). We will compare countries across South Asia and with China on key dimensions of the investment climate: access to infrastructure and financial services, the security of property rights, the burden of regulatory requirements, and the quality of governance, providing evidence on how they can improve productivity and the prospects of doing business in South Asia.

3.5 In this view, the investment climate can be understood as a crucial link between the efforts of sowing and reaping. If the local government is highly bureaucratic and corrupt, if government's own provision or regulation of infrastructure and financial services is inefficient so that firms cannot get reliable services, then returns on potential investments will be low and uncertain, and there would not be much accumulation and growth in these environments. On the other hand, in developing locations that create a good governance and business environment, returns and accumulation should be high. Thus, the expected rate of return on a project is determined not only by the degree of efficiency on the factory floor but also by the broader

---

<sup>16</sup> This Chapter was prepared by Mary C. Hallward-Driemeier, Senior Economist, World Bank. The views in this paper are solely the author's and do not necessarily reflect those of the World Bank or its Executive Directors.

<sup>17</sup> See Acemoglu and Johnson (2005), Hall and Jones (1999), Parente and Prescott (2000), and Klenow and Rodriguez-Clare (1997).

environment, including the ability to appropriate the returns. In fact, the costs associated with a poor investment climate can more than offset technical efficiency gains.

## **DISAGGREGATING INVESTMENT CLIMATE MEASURES**

3.6 New measures are available to benchmark the quality of a location's investment climate. Polls of expert opinions including the Global Competitiveness Report, Transparency International, and International Country Risk Guide have provided subjective measures for more than a decade. Two recent initiatives provide more objective measures. The World Bank annual *Doing Business* report provides time and cost measures associated with fully complying with a set of regulations according to statutory requirements. The World Bank Investment Climate Surveys also provide time and cost measurements based on the actual experience of a wide range of firms. The topics covered include key regulatory areas, access to finance and infrastructure services, as well as firm performance measures.

3.7 Using these measures of the investment climate in South Asia identifies areas where entrepreneurs could benefit from reforms. Providing comparisons across countries allow policy makers to benchmark conditions in their countries. This can highlight areas for reform, providing demonstration effects of what can be achieved.

### **Subjective Rankings**

3.8 The Global Competitiveness Index publishes a Business Competitiveness Index (see World Economic Forum 2004). In 2004, 4 countries from South Asia were included in its list of 101 countries. India ranked thirty-seventh, Sri Lanka fifty-seventh, Pakistan seventy-fifth, and Bangladesh ninety-first according to the perceptions of expert respondents. The report then details specific areas of relative strengths and weaknesses for each country. India's strong performance is due to the strength of its pool of scientists and engineers, quality of management schools, and the availability of locally based competitors. The factors identified as "most problematic" for doing business in the region were strikingly similar across the countries. Corruption, inefficient bureaucracy, inadequate infrastructure, and policy instability are the top concerns in Bangladesh, Sri Lanka, Pakistan, and India. Restrictive labor regulations joins the list in India.

3.9 Looking at measures of institutional quality and governance the ranking shifts somewhat. Table 3.1 gives indicators based on the compilation of all the major indices published from a variety of sources, normalized around an average of 0 and a standard deviation of 1. On these indicators Sri Lanka performs relatively better, except for the measure of political stability. Bhutan and the Maldives have reasonably favorable results, although they are based on a smaller number of underlying ratings. Still, the concern regarding corruption in much of the region does come through, as does the dampening effect of political instability.

3.10 These subjective measures do provide a picture of the relative strengths and weaknesses of different countries. But the subjective nature of the rankings makes it difficult to make comparisons or to measure improvements over time. The World Bank has launched two extensive new efforts to fill the gap and to provide more objective measures of key dimensions of climate for investing and doing business (see Table 3.2).

**Table 3.1: Governance Indicators**

	<b>Corruption</b>	<b>Government efficiency</b>	<b>Political stability</b>	<b>Regulatory quality</b>	<b>Rule of law</b>
Bangladesh	-1.09	-0.72	-1.24	-1.15	-0.86
Bhutan	0.69	-0.14	0.84		0.27
India	-0.31	-0.04	-0.81	-0.59	-0.09
Maldives	0.12	0.47	0.82		-0.57
Nepal	-0.61	-0.9	-1.74	-0.6	-0.82
Pakistan	-0.87	-0.57	-1.59	-1.03	-0.78
Sri Lanka	-0.16	-0.27	-1.06	0.21	-0.03

Source: Kaufmann, Kraay, and Mastruzzi, 2005.

Note: Scores are centered on 0 with a standard deviation of 1.

**Table 3.2: New Data Sources from the World Bank Allow for Comparisons Across Countries**

	<b>Investment Climate Surveys</b>	<b>Doing Business</b>
Country coverage	Launched in 2001; the report draws on more than 50,000 firms in 70 countries. Each year an additional 15–20 surveys are fielded. Second round surveys are now underway, including in India, Pakistan, and China.	Launched in 2003; 145 countries are now covered each year.
Investment climate dimensions covered	The standard questionnaire of 82 questions covers regulations, governance, access to finance, and infrastructure services. It also collects data on firm productivity, investment, and employment decisions.	Ten areas of regulation: business registration, property registration, insolvency, contract enforcement, hiring and firing workers, accessing credit, customs, licenses, investor protection, and tax payments.
Types of variables	Covers both objective and perception data. The objective data include the time to complete processes or receive services and the monetary costs of various disruptions and regulations. In addition, respondents give perceptions of potential constraints and assessments of risks and competition.	Objective measures of the number of procedures, the time to complete them, and the fees and costs associated with full compliance.
Whose perspective	Surveys cover a diverse range of sizes and activities, with random samples of several hundred firms. Data are gathered through face-to-face interviews conducted with senior managers and accountants.	Use a single, defined, hypothetical firm and transaction. Judgments based on assessment of up to five local experts (lawyers, accountants).
Differences within a country	Samples cover multiple locations within each country.	A single indicator is given for the largest city in the country. For some large countries, including India and Pakistan, additional cities are available. <sup>18</sup>
Basis of assessment	Indicators are based on the experience reported by firms, providing ranges of how policies are implemented in practice.	Indicators measure formal regulatory requirements.

Source: Adapted from World Bank 2004.

### **Doing Business Examines Regulatory Hurdles Facing Entrepreneurs**

3.11 *Doing Business* provides detailed information on the procedures, their time, and costs of complying with a set of regulations from opening a business, accessing credit, hiring and firing workers, and closing a business (World Bank 2005b). Requirements for specific, tightly defined transactions can then be compared across countries and over time. The 10 regulatory areas are reported separately, with an aggregate index also reported.

<sup>18</sup> See World Bank (2005a).

3.12 Taking a simple average of all the *Doing Business* indicators, India ranks in the bottom 25 percent of the 155 countries, Sri Lanka at the midpoint, and Bangladesh, Nepal, and Pakistan in the second quintile. On the other hand, China is in the third quintile, while Malaysia and Thailand are in the top 15 percent of countries according to these measures. The differences with the Global Competitiveness Report is in part because these rankings only include the regulatory environment in 10 specific areas, and does not address other issues such as infrastructure services, availability of skilled labor, or corruption. Certainly the regulatory environment is an extremely important component, but the rankings would likely shift if other dimensions were included.

3.13 This simple ranking also masks a number of features. First, looking across the 10 regulatory areas, the same country can do extremely well on some dimensions and rather poorly on others. It is not the case that the efficient registration of property or businesses implies that contracts can be enforced easily or that investors will necessarily be protected. Thus, the Maldives ranks the best on the ease of paying taxes, but is 134 out of 155 on the ease of getting credit. Bhutan is 42 on the ease of registering property but 143 on the ease of closing a business.

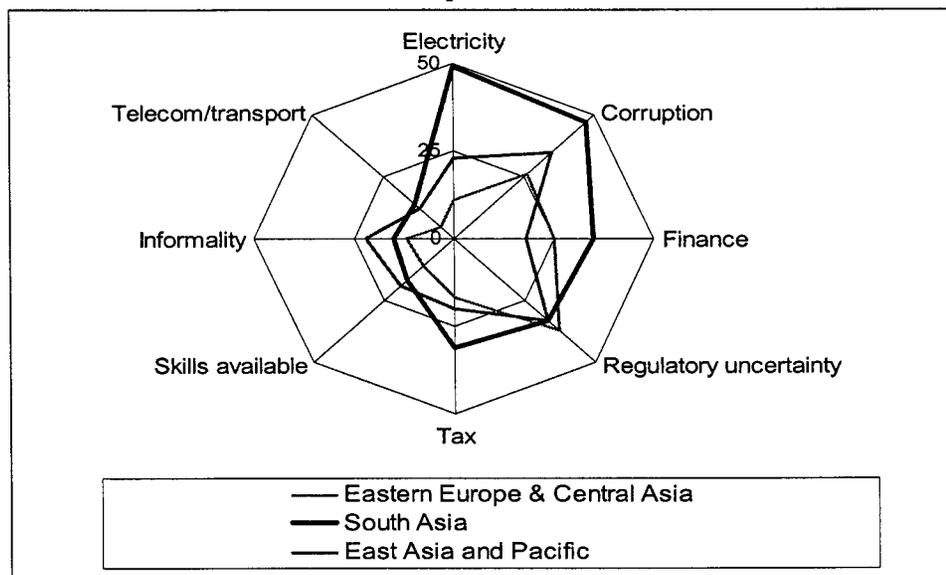
3.14 Second, there is considerable variation within the region as to where countries' relative strengths are. Thus, while the region as a whole generally makes it easy to register property, Bangladesh stands out with some particularly onerous requirements, being 151 compared to India's being 29.

3.15 Third, *Doing Business*' comparisons are based on the formal requirements and may or may not be a good proxy for how the laws and regulations are actually applied in practice. In fact, where there are gaps between the investment climate survey results and the *Doing Business* indicators point to areas where reforms would be desirable and are often associated with opening up opportunities for bribes.

### **Using Investment Climate Surveys to Identify Key Challenges for Improving the Investment Climate in South Asia**

3.16 Results from the Investment Climate Surveys are consistent with the themes highlighted in the perception data of international experts as reflected by the Global Competitiveness Index. The investment climate surveys are based on large, random samples of firms in specific sectors in four South Asian countries: Bangladesh, India, Pakistan, and Sri Lanka. For additional comparison, results are also compared to those of China. All the surveys used a common instrument and sample design. Key manufacturing sectors were included in each country based on their contribution to output and exports, including garments, textiles, leather products, food products, electronic and electrical equipment, metal products, and chemicals. Within each country, major industrial centers were included. The sample sizes are 1,001 in Bangladesh; 1,900 in India; 879 in Pakistan; 452 in Sri Lanka; and 1,500 in China. These firms report the significant constraints are a unreliable access to electricity, corruption, a lack of government efficiency, and burdensome labor regulations (see Figure 3.1).

**Figure 3.1: Share of Firms Reporting the Issues as a “Major” or “Severe” Constraint on the Operation of Their Business**



Source: Investment Climate Surveys.

3.17 *Access to Reliable Electricity.* Access to a reliable source of electricity topped the list of concerns for the region as a whole. The level of the constraint is particularly striking compared to other regions in Asia. Firms in Bangladesh report that power interruptions are virtually a daily occurrence. Compared to all other regions, firms in South Asia were likely to lose a higher share of their output due to power losses. In Bangladesh the losses amount to 3.3 percent of sales, which in turn is much better than either Pakistan (5.4 percent) or India (5.5 percent) but significantly higher than in China (2.2 percent of sales). For all of these measures there is also much variation within countries. In India, for example, Bangalore is similar to China at 2 percent of sales lost, while Calcutta is very poor for a large city (6 percent of sales). This is due not only to time lost during an outage, but also the production spoiled owing to the interruption in the process and the time needed to reset machinery.

3.18 Given the losses stemming from power failures, many firms respond by running their own generator. While it is not uncommon for large firms in any location to have their own power generators, for small and medium enterprises (SMEs) the cost of maintaining a power generator is quite high and burdensome. Thus, another gauge of the reliability of the power supply is the proportion of firms that have their own generators. The patterns are similar; the share of firms with their own generator is only 17 percent in the China sample but half of the SMEs sampled in Sri Lanka and Bangladesh do and 60 percent in India and Nepal.

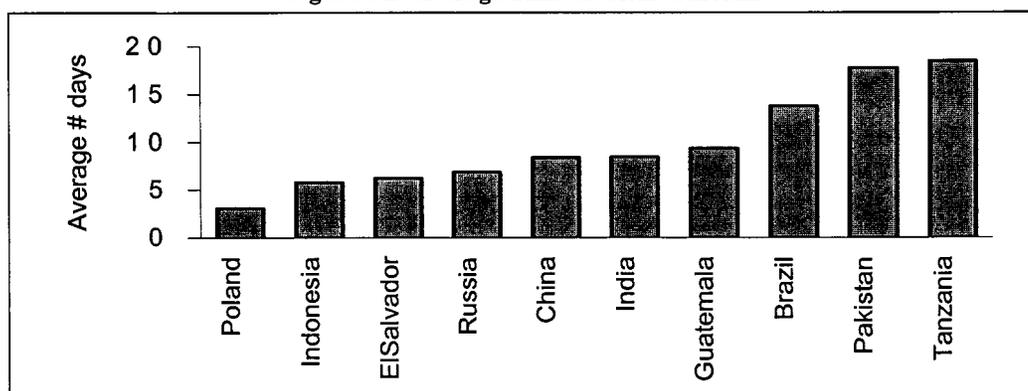
3.19 *Government regulations.* The issue of corruption was the second greatest source of concern reported in the South Asia region as a whole. This correlates significantly with concerns that the interpretation of regulations can be unpredictable. When officials have discretion in how particular regulations will be implemented, there is an opening for unofficial payments to determine the outcomes. The costs of these bribes and the uncertainty of the standards that will be imposed can reduce the incentive to invest or to expand. The magnitude of the issue is seen in the share of firms reporting to make such payments and the delays faced in the provision of public services.

3.20 The survey includes a number of questions that get at the efficiency of the government in providing services that are essential for firms. It includes a general measure of the quality of government efficiency as experienced by firms. The share of firms that consider the provision of government services to be inefficient varies from less than 30 percent in China to 60 percent in Pakistan, Sri Lanka, and Nepal. The time management has to spend with officials can be more than 10 percent in India and Pakistan, while closer to 4 percent in Sri Lanka. Requests for additional payments to “get things done” are reported as extremely common. Across the countries the size of bribes was between 2.2 and 2.5 percent of sales. The efficiency of providing services is also illustrated by the time it takes to get hooked up to utilities. For a new phone line, firms have to wait on average 35 days in India and 130 days in Bangladesh.

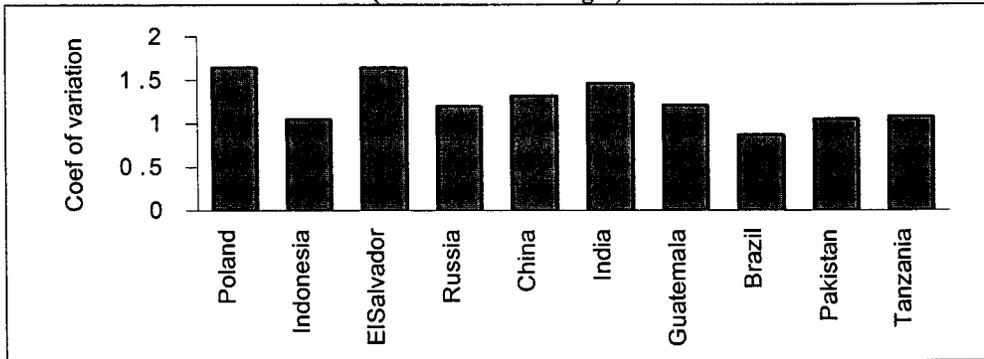
3.21 Particular attention is paid to two areas of regulation given their importance to growth and the prospect of increased regional integration. They are customs administration and labor regulations.

3.22 *Customs administration.* Customs administration is of particular interest in assessing the constraints to better regional integration. The data show there is variation in the time it takes to get goods through customs. This is both at the level of securing the necessary paper work as well as the actual inspection process. The *Doing Business* database reports on the official time to obtain the paperwork to clear goods, with the Investment Climate Surveys reporting on the actual time it takes to clear customs once goods have left the production facility. This variation not only introduces greater uncertainty in the delivery process, but it can mean the difference between fulfilling an export order or not. With buyers facing many potential suppliers, reliable delivery schedules can be key. Figure 3.2 shows the average time to clear customs, with India reporting just over nine days, while firms in Pakistan can face double that. However, Figure 3.3 shows the extent of variation around these averages.

Figure 3.2: Average Time to Clear Customs



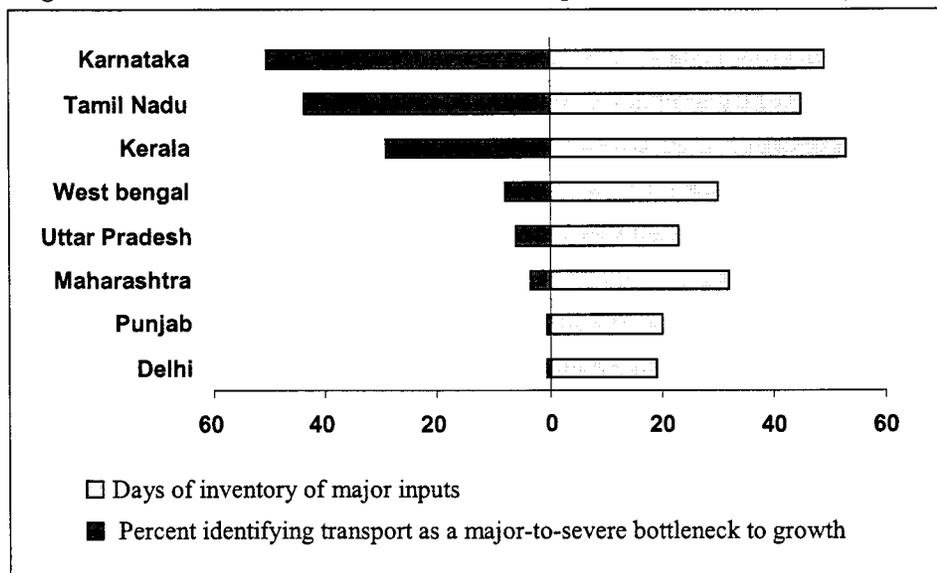
**Figure 3.3: Extent of Variation to Clear Customs  
(Around the Averages)**



3.23 A related issue is the cost of transportation. This is both across borders and within a country. Firms report significant delays in transportation owing to poor infrastructure conditions as well as the need to pass often repeated inspections. Costs are even higher taking into account the potential of theft and breakage that occurs during the transportation of goods to market.

3.24 The impact of such customs and transportation delays can be seen in different dimensions. One impact is that firms respond by increasing their holdings of inventories (see Figure 3.4). Such increased holdings are needed to ensure against supplier delays and can tie up significant working capital that might have been directed to more efficient purposes.

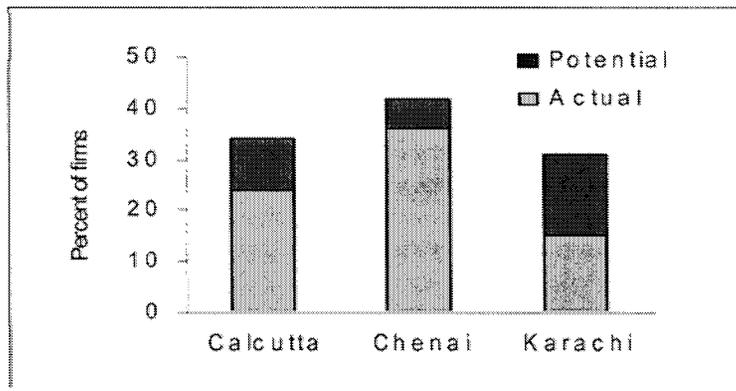
**Figure 3.4: Evidence from India That Poor Transportation Raises Inventory Costs**



Source: 2002 Investment Climate Survey in India.

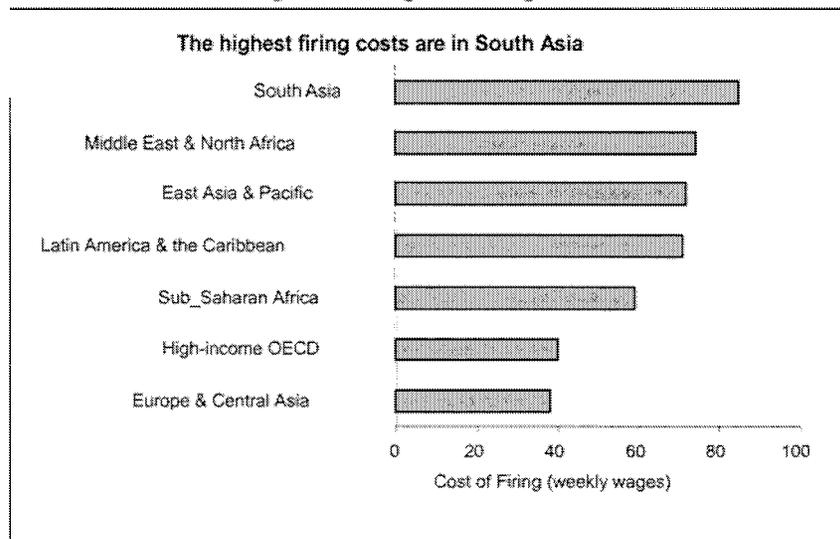
3.25 Another impact can be seen on the ability of firms to export. Here the experience with customs administration is linked with access to infrastructure, finance, and public utilities. Figure 3.5 illustrates the results if the access to these services were improved by one standard deviation and what the implication would be on the probability that a firm would be an exporter. The share could rise by over 10 percent in Chennai and double in Karachi (see the next section for more detailed results).

**Figure 3.5: Share of Firms Exporting: Response to a One Standard Deviation Improvement in Transportation, Access to Electricity, and Finance**



3.26 *Labor regulations.* According to the formal labor standards from *Doing Business* indicators, South Asia has some of the most stringent requirements. While intended to protect workers, the consequence can be that firms are reluctant to hire in the first place or seek to keep workers off the books. The Investment Climate Surveys show that over a third of firms in India and Sri Lanka report that the stringency of the regulatory requirements keep them from employing their desired level of employment. (See Figure 3.6.)

**Figure 3.6: Highest Firing Costs**

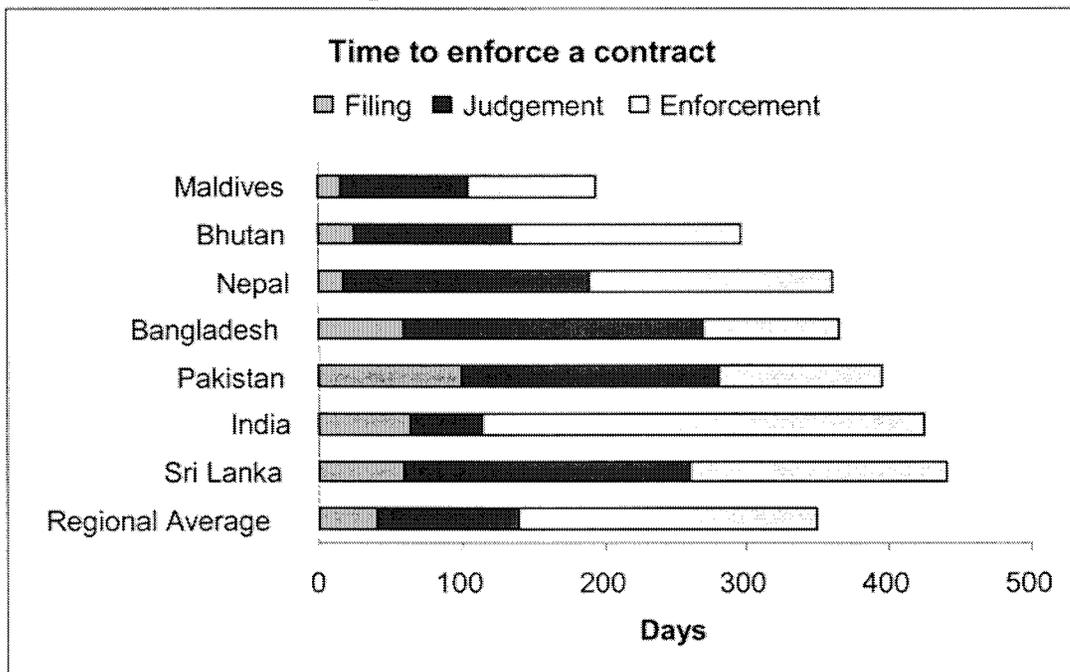


Source: World Bank 2005a.

3.27 *Property rights.* The ability of firms to appropriate the returns to their investments and activities can be divided into two broad types of property rights (Acemoglu and Johnson 2005). The role of government expropriating resources through bribes and raising risks owing to the unpredictability of how regulations will be implemented have been discussed above. The other dimension is the quality of institutions for dealing with disputes and enforcing contracts between private parties. The *Doing Business* indicators provide measures of the cost and time to enforce a contract (see Figure 3.7). These lengthy times can help explain why the firms surveyed rarely turn to the court system in the region. Fewer than 5 percent of firms with a dispute reported taking the dispute to the courts. The strength of the legal framework thus has a significant impact

on the access firms can get on credit. This is not just from formal financial institutions. Firms that report little confidence that their property rights will be upheld are significantly less likely to sell their goods on credit.

Figure 3.7: Time to Enforce a Contract

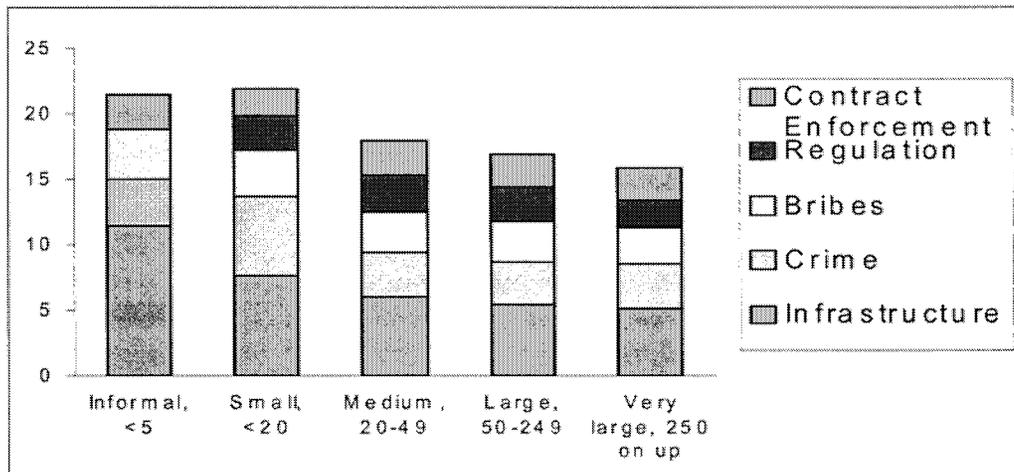


Source: Doing Business database.

3.28 *Access to Finance and Financial Services.* In all of these countries the government has a dominant role in the financial sector. Access to finance repeatedly comes up as a concern for entrepreneurs. Without access to external finance, entrepreneurs can be severely constrained in their ability to take advantages of opportunities and to make investments. The rate of formal bank loans is fairly limited. Even whether firms have access to an overdraft facility that would provide more limited credit on a more flexible basis varies considerably. It is on this dimension that South Asia is considerably stronger than China. The share of firms with an overdraft facility ranges from a low of 18 percent in China to 23 percent in Pakistan to nearly 60 percent in India, Bangladesh, and Sri Lanka. Another measure of the efficiency of the banking sector is the average clearance times for checks. This ranges from 2 days in Pakistan to 3 days in Bangladesh, 4 days in China, and 11 days in India.

3.29 *Distributional Impact of a Weak Investment Climate.* There is also an important distributional dimension to the quality of a location's investment climate. For many dimensions, smaller firms are the ones hit hardest by a lack of access to infrastructure and financial services. Fixed costs associated with regulations are also relatively more burdensome for small firms. There is also some evidence that smaller firms can face more harassment from officials and while micro firms may be under the radar screen, those that are somewhat larger can be candidates for bribes as they are often not fully compliant with all regulations. The following chart quantifies five dimensions, converting the monetary costs to a share of a firm's sales. The costs can be striking – over 20 percent of output. And the burden is indeed highest for small firms. (See Figure 3.8.)

**Figure 3.8: A Weak Investment Climate Disproportionately Hurts Small Firm**



### LINKING INVESTMENT CLIMATE MEASURES TO FIRM PERFORMANCE

3.30 The discussion so far has primarily been using the data to benchmark different locations. This is useful for bringing attention to particular issues and showing what is possible to achieve in neighboring countries or by those at a similar level of economic development. But benchmarking is not the whole story. What policy makers really want to know is if the constraints are really binding and what the order of magnitude of expected benefits would be if the constraint were relaxed. This section tests more rigorously if there are systematic differences in firm performance of firms across locations that can be explained by difference in investment climate indicators.

3.31 The focus here is whether better investment climate conditions are associated with higher productivity, higher investment rates, and whether gains are shared with workers in the form of higher wages.<sup>19</sup> If the investment climate in a location is weak, then for the plants that exist in these locations TFP would be expected to be lower. Bureaucratic harassment, power outages, and limited access to government services result in less value added being produced from the same capital and labor in different locations. The potential for higher rates of return would lead to higher rates of accumulation and to higher growth in areas with better investment climates. Assuming that factor rewards are equal to, or are monotonically increasing with, marginal factor productivity, this would mean that locations whose investment climates are better will have greater factor prices.

3.32 In estimating TFP, firms in the garment sector were selected. It is a sector covered in each of these countries and is the best example of a relatively homogeneous industry so that one can assume the production technology involved is broadly similar. A Cobb-Douglas production function is used with the assumption that factor shares are the same across all firms and locations. Testing this assumption by allowing for country interaction terms does not reject the hypothesis of a single production function being legitimate. TFP is then calculated as the residuals after controlling for labor and capital. The robustness of the results were checked using measures to

<sup>19</sup> For a more rigorous discussion, please see Dollar, Hallward-Driemeier, and Mengistae (2005).

control for human capital and the potential endogeneity of input selections.<sup>20</sup> TFP calculated from the data is then related to differences in the investment climate across the firm locations.

3.33 In controlling for investment climate conditions a number of the variables were discussed in the preceding section. Production losses from power outages captures concerns about the access to electricity. Access to an overdraft facility is the measure of access to finance. A number of proxies of government efficiency are used. The days to get goods through customs and the time to get a telephone connection are reported here. The share of firms reporting bribes, an index of overall government efficiency, and the confidence in the courts are also used with similar findings.

3.34 There are a number of potential concerns that need to be addressed in this analysis. One is that the firm's own investment climate indicators could be endogenous to their performance. This is most likely the case for subjective opinions. However, it is not necessarily clear which way the bias would go. Firms that are performing poorly may be more likely to complain and blame external factors in the investment climate for their lack of success or successful firms may be more constrained by a weak investment climate in expanding their business. A significant benefit of using objective data avoids issues of how much a given entrepreneur is prone to complain. However, even objective measures can still be endogenous. For example, a firm's performance could affect the probability that it faces more harassment (and demands for bribes) by officials; that is, growing or successful firms may be targets as they are more likely to attract attention and because they are more likely to have the resources to make additional payments. To deal with this potential endogeneity, investment climate indicators are averaged for a particular sector in each city. The interpretation is then not the specific investment climate conditions of a firm but of the broader location in which it is operating.

3.35 Another potential source of endogeneity regards the location choice of firms; that is, that more productive firms chose to locate in the better environments. This can be controlled for by restricting the analysis to exclude firms that are mobile (that is, excluding multinationals and larger domestic firms). Migration within these countries is remarkably low, and other surveys confirm that the location choice of domestic firms is overwhelmingly determined by where the founder was born or brought up. So we define the latter group as the subsample of domestically owned small firms employing no more than 150 workers.<sup>21</sup>

3.36 There could also be a competing hypothesis to explain differences in performance across locations. The literature on economic geography points to the importance of the size of the local market. To explore this, the regressions include the population of the local city, the distance to the nearest port, and the distance to the nearest major overseas market. The investment climate results are indeed robust to their inclusion. This holds out the potential for sound investment climate policies to be able to offset certain disadvantages of geography.

3.37 Finally, the results are robust to including country dummies, so that identification comes only from the variation across locations within a country. Even where policies may be set nationally, they are often implemented locally. The results confirm that local governance matters.

---

<sup>20</sup> The technique outlined by Levinsohn and Petrin (2000) was used. Results are available upon request.

<sup>21</sup> We repeated the analysis using a cutoff of 100 workers and even 50 workers and the results were robust to these cutoffs, too.

## Investment Climate and Productivity

3.38 Table 3.3 shows the results of regressing firm productivity on the objective investment climate indicators. The indicators are averaged at the city level to control for endogeneity, and errors are clustered to correct for potential correlation within cities. The signs of the coefficients are all as expected. Increasing the time it takes through customs, the longer it takes to receive a telephone connection, and the greater the losses from electricity are all associated with lower productivity. Greater access to finance, on the other hand, is positively correlated with productivity. The coefficients are significant. Adding in controls for the geographic characteristics (the size of the local market and distance to other major markets) do not remove the significance of the investment climate indicators. The results are robust even after adding country dummies so all the variation is coming from differences within a given country.

**Table 3.3: A Better Investment Climate is Associated With Higher Productivity**

	TFP	TFP	TFP
Days through customs	-0.221	-0.295	-0.399
	(4.82)*	(2.63)***	(2.85)***
Losses from power outages	-0.083	-0.466	-0.539
	(1.56)	(3.73)***	(3.86)***
Access to finance	0.029	0.100	0.149
	(0.61)	(1.68)*	(1.80)*
Days for new telephone connection	-0.078	-0.128	-0.140
	(2.81)***	(2.90)***	(2.52)**
Population		0.066	0.098
		(2.08)**	(2.22)**
Distance to major market		-0.176	-0.367
		(0.50)	(0.74)
Distance to port		0.010	0.013
		(1.25)	(1.04)
Country dummies	No	Yes	Yes
Sector dummies	Yes	Yes	Yes
Constant	0.102	2.055	3.496
	(0.63)	(0.74)	(0.91)
Number of observations	1134	1134	657

Note: Variables are in logarithms. Absolute value of *t* statistics in parentheses.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

3.39 The third column looks only at the subsample of small domestic firms to assuage concerns that the results are driven by large, mobile firms choosing to locate in better investment climates. If better performing firms have a tendency to locate in more hospitable investment climates, the effect of deficiencies in investment climate that estimated for this group of firms should be smaller than the estimates for the full sample. On the other hand, if inherently more productive firms tolerate more deficiency in investment climate, estimates of the effect of investment climate on performance would be larger for this group than the estimate for the full sample. That the coefficients are marginally larger is consistent with the latter view; that is, more mobile firms are better equipped to deal with or have private means of circumventing weak investment climate conditions.

3.40 The results are also economically significant. If investment climate conditions were to improve by one standard deviation, productivity could go up by 2 percentage points. If the conditions in India were the same as those enjoyed by their Chinese competitors, productivity could be one percentage point higher, much of the gap because of the differences in access to reliable electricity.

3.41 Table 3.4 extends the approach to look at the impact of investment climate variables on wages and on investment rates. The results in the first column show that firms in good investment climate locations pay higher wages. This is true even controlling for a number of additional firm characteristics that can be associated with higher wages, such as the average schooling and age (experience) of the employee and whether the firm is a multinational. This is still true including country dummies. However, including the economic geography variables in the second column does soften the results somewhat. The economic impact is also significant. A one standard deviation in the investment climate variables is associated with wages that are 25 percent higher. If Pakistan and Bangladesh were to raise their investment climate variables to the level of China, wages could be 23 and 31 percent higher.

**Table 3.4: A Better Investment Climate is Associated With Higher Wages and Investment Rates**

	Wage	Wage	Wage	Rate of investment	Rate of investment
Days through customs	-0.192 (1.97)*	-0.125 (1.59)	-0.092 (1.00)	-0.168 (2.30)**	-0.067 (1.47)
Losses from power outages	-0.280 (2.89)***	-0.036 (1.63)	-0.190 (2.53)**	-0.059 (1.03)	-0.150 (2.97)***
Days for new telephone connection	-0.160 (2.72)***	0.130 (1.39)	-0.153 (3.82)***	-0.119 (3.76)***	-0.007 (0.19)
Access to finance	0.106 (2.00)*	0.207 (4.60)***	0.095 (1.64)	0.206 (3.91)***	0.153 (3.71)***
Population		0.039 (1.06)			0.050 (1.87)*
Distance to major market		-0.249 (0.75)			0.194 (1.51)
Distance to port		-0.007 (1.18)			0.002 (0.57)
Age of firm	-0.052 (1.23)	-0.042 (1.01)	-0.029 (0.68)	-0.045 (1.56)	-0.019 (0.74)
Initial size of workforce	0.002 (0.06)	-0.020 (0.86)	-0.003 (0.12)		
Average education of workforce			0.002 (1.60)		
Average age of workforce			0.021 (1.15)		
Foreign direct investment			0.121 (1.97)*		
Initial capital stock				-0.098 (4.28)***	-0.102 (4.81)***
Country dummies	No	Yes	Yes	No	Yes
Sector dummies	Yes	Yes	Yes	Yes	Yes
Constant	8.208 (15.35)***	8.766 (3.01)***	7.235 (16.92)***	2.211 (5.92)***	-0.405 (0.35)
Obs	4818	4818	3822	4710	4710
R squared	0.07	0.10	0.04	0.08	0.15

Note: Variables are in logarithms. Robust *t* statistics in parentheses.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

3.42 The results are also robust looking at the impact on the rate of investment by firms. The impact of a one standard deviation improvement in the average investment climate conditions could raise investment by a third.

### Investment Climate and Exporting

3.43 Table 3.5 looks at the effect the investment climate conditions have on the probability that a firm will export at least some of its output. These have implications for the types of constraints needed to be addressed to further the regional integration in South Asia. The geographic controls are included, as are country dummies. The results are very robust. Additional robustness checks are reported using alternative measures of the efficiency of

government services. Concerns that better firms are more likely to both export and select to locate in better investment climate cities, the fifth column reports the results for the subsample of small domestically owned firms that are not likely to be mobile. Again, the results are robust. Improvements in the investment climate of one standard deviation are associated with raising the probability that a firm exports by 30 percent.

**Table 3.5: Investment Climate Conditions Affect the Probability a Firm Will Export**

Days through customs	-0.06 (1.62)	-0.05 (1.24)	-0.08 (1.80)*	-0.09 (2.00)**	-0.07 (1.72)*
Losses from power outages	-0.141 (3.02)***	-0.114 (2.82)***	-0.194 (3.97)***	-0.184 (3.83)***	-0.151 (3.85)***
Access to finance	0.060 (2.18)**	0.066 (2.10)**	0.079 (2.77)***	0.044 (1.47)	0.048 (1.72)*
Government ineffectiveness index	-0.134 (1.59)				
Share paying bribes		-0.056 (1.71)*			
Unreliable courts			-0.223 (1.71)*	-0.209 (1.62)	-0.176 (1.55)
Distance to major overseas market	0.151 (1.87)*	0.190 (2.65)***	0.203 (2.34)**	0.136 (1.83)	0.045 (0.60)
Distance to port	-0.010 (1.58)	-0.008 (1.33)	-0.007 (1.03)	-0.006 (0.97)	-0.002 (0.35)
Local population	0.009 (0.53)	0.021 (1.41)	0.015 (0.94)	0.008 (0.54)	0.003 (0.20)
Workers				0.079 (9.56)***	
Country dummies	Yes	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes	Yes
Observations	4386	4461	5370	5288	3953
$X^2$	186	292	269	465	118
Prob > $X^2$	0.0	0.0	0.0	0.0	0.0
Pseudo $R^2$	0.13	0.17	0.18	0.24	.12

Note: Dependent variable from probit regression is the export status of the firm. Country and sector dummies are included. Errors are clustered by cities. Robust z statistics are reported. \* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

## CONCLUSIONS

3.44 A range of indicators were provided that measure the investment climate in South Asia, allowing for comparisons of countries in the region with each other and with China. Access to electricity, access to finance, and efficient government regulation in areas such as customs administration, corruption, and property rights are raised as priority areas by entrepreneurs themselves.

3.45 Linking these indicators to firm performance shows that plants that exist in better investment climate locations are more productive, producing more value with a given level of capital and labor. The benefits are enjoyed as higher profits, but are also shared with workers, with firms in better investment climate locations paying higher wages. These superior returns also serve to encourage greater capital accumulation. Given the large differences in investment climate that we find in our surveys, it is not surprising that growth rates vary so much across these locations

## 4. PROPERTY RIGHTS INSTITUTIONS, CONTRACTING INSTITUTIONS, AND GROWTH IN SOUTH ASIA: MACRO AND MICRO EVIDENCE<sup>22</sup>

### INTRODUCTION

4.1 There is by now widespread consensus among academics and development practitioners that institutions are important for economic development. Here we will examine how countries in the South Asia region fare in terms of their institutional quality and the consequent development impact. A first glance at the data suggests a number of puzzles that make the performance of South Asian countries of considerable interest. Bangladesh, and to a lesser extent India, rank poorly in most cross-country rankings of corruption and regulation, yet have grown quite quickly in recent years. Both countries, and Sri Lanka as well, have had sharp growth accelerations around 1980 without obvious changes in various measures of governance or institutional quality.<sup>23</sup> Turning to the long-run relationship between institutions and levels of per capita income, it is striking that all countries in the region fall below the simple regression line of per capita incomes on measures of institutional quality. In other words, despite recent rapid growth, these countries have not yet reached the per capita incomes typical of countries with similar levels of institutional quality.

4.2 A naive interpretation of these facts might suggest that institutional performance has not been important for economic performance for countries in the region. In this paper we dig deeper into both cross-country and within-country firm-level evidence in order to come up with a more nuanced view. We begin by following Acemoglu and Johnson (2005) in distinguishing between "property rights institutions," which measure the extent to which private property is secure from predation by the state, and "contracting institutions," which measure how well institutions such as the courts allow private parties to contract with each other. The former may be thought of as institutions that mediate the vertical relationship between individuals or firms and the state, while the latter mediate the horizontal relationship between firms and individuals.

4.3 While conceptually this distinction is a useful one, coming up with empirical proxies is difficult. In this paper we measure the (absence of) good property rights institutions using the Kaufmann, Kraay, and Mastruzzi (2005) measure of corruption. While perceptions of corruption are clearly not institutions themselves, we argue that the prevalence of corruption is a good proxy for the absence of well-functioning institutions that limit the arbitrary exercise of state power. In particular, since corruption is defined as the use of public office for private gain, the taking of bribes by public officials can be thought of as the expropriation of private property by the state.<sup>24</sup>

4.4 We measure contracting institutions using an estimate of the length of time required to resolve a dispute over an unpaid commercial debt, constructed by the World Bank's annual *Doing Business* report. This measure is the same as the one used by Acemoglu and Johnson

---

<sup>22</sup> This Chapter was prepared by Ana Margarida Fernandes, Economist, and Aart C. Kraay, Lead Economist, the Development Economic Research Group Unit, World Bank. The views in this paper are solely the authors and do not necessarily reflect those of the World Bank or its Executive Directors.

<sup>23</sup> Consistent with common usage we will use the terms "governance" and "institutional quality" interchangeably throughout the paper. Below we spell out in more detail precisely which dimensions of governance or institutional quality are of interest for this paper.

<sup>24</sup> We prefer this measure to the one used by Acemoglu and Johnson (2005). They use a measure of "expropriation risk" produced by ICRG, a political risk consultancy. ICRG produced this index between the mid-1980s and mid-1990s, but since has discontinued it. We prefer our corruption measure because it covers more countries, is more timely, and is based on a large number of individual measures of corruption and hence is likely to be more informative than any individual source. The ICRG measure is however highly correlated with our corruption measure.

(2005). It measures the number of legal procedures, and the estimated number of days to complete them, for a plaintiff who successfully collects on an unpaid debt. This measure emphasizes statutory or de jure procedures that must be followed, and does not attempt to measure the de facto procedures that are actually followed. These may differ significantly from the de jure ones, particularly in countries where courts are corrupt.<sup>25</sup> Clearly, there other possibilities for empirical proxies for property rights institutions and contracting institutions. For example, measures of expropriation risk provide direct evidence on perceptions of the risk of overt predation by the state. Similarly, excessively burdensome regulation makes contracting between private parties more cumbersome (for example, strict labor market regulations impede efficient contracting between firms and workers).

4.5 We next ask how countries in South Asia fare on these two key dimensions of institutional quality. In order to do so it is useful to have some kind of benchmark for institutional performance.

4.6 We obtain benchmarks from the growing literature on the deep historical determinants of institutional quality. In the case of property rights institutions, Acemoglu, Johnson, and Robinson (2001) have argued that the strength of modern institutions can be traced back to the interaction between countries' geographical features and their colonial experience. In particular they argue that in countries where the disease environment was inimical to European settlement in the eighteenth and nineteenth centuries, colonial powers were more likely to set up "extractive" states whose main purpose was to exploit local resources. In contrast, in more hospitable climates colonial powers were more likely to set up the institutions of limited government that served the interests of European settlers who established themselves in the colonies. The very different experiences of British colonial power in the Gold Coast in West Africa versus in Canada or New Zealand provide examples of these two extremes. They show that these early differences in institutions cast long shadows that are still seen in cross-country differences in modern institutions.

4.7 We use their measure of settler mortality in the eighteenth and nineteenth centuries to measure this deep determinant of property rights institutions. Turning to contracting institutions, Djankov et al. (2003) have shown that countries that inherited common-law legal traditions tend to have more effective courts, in the sense of simpler and faster procedures and fairer outcomes. We use a dummy variable indicating British legal origins to capture this deep historical determinant of contracting institutions.

4.8 After controlling for the deep historical determinants of these two types of institutions, we are better able to assess how well or how poorly countries in the South Asia region fare on these distinct dimensions of institutional quality. For example, we find that while India has fairly average performance on contracting institutions when looking at all countries, it stands out as being one of the poorest performers among countries with British legal origins, a deep determinant of this type of institutions. By contrast, it fares reasonably well on measures of property rights institutions. The reverse is true for Bangladesh, which stands out for having quite poor property rights institutions but reasonable contracting institutions.

4.9 We next document the Acemoglu and Johnson (2005) core finding that of the two types of institutions, property rights institutions matter much more for development than do contracting

---

<sup>25</sup> The possibility of corruption in the courts raises an interesting question: Does this signal the failure of property rights institutions or contracting institutions? The answer is surely a bit of both. On the one hand, bribes paid by private parties to judges who are public officials represent state expropriation as discussed. At the same time corruption likely makes the conflict resolution services provided by courts less efficient.

institutions. The rationale that they offer for this finding is that private parties can respond to weak formal contracting institutions by developing alternative informal institutions. In contrast, private parties have little recourse to alternatives when they face a predatory state. For this reason contracting institutions appear to matter less for long-run growth than secure property rights institutions.

4.10 We also ask where countries in the region fall in the causal relationship running from these two types of institutions to economic performance. While, as noted, all countries in the region seem to fall below the simple regression line, once we control for the direction of causation a rather different situation emerges. We find that India and Bangladesh again stand out in this estimate of the causal impact of institutions on development. India stands out for having a large negative residual, suggesting that even India's good performance on property rights institutions has not yet had the development impact that cross-country analysis would suggest. By contrast, Bangladesh stands out in just the opposite direction, with a predicted level of per capita income based on its institutional quality that is much lower than its actual income levels. One interpretation of this finding is that India has a great deal of scope for future growth given its relatively good institutional performance, while Bangladesh's current relatively high income levels (given its weak institutional quality) are more likely to be unsustainable.

4.11 We next turn to large cross-country firm-level datasets from two main sources, the World Business Environment Survey (WBES) and the World Bank Investment Climate Surveys (PICS) to dig deeper into the relationship between different types of institutions and economic performance at the firm level. We first identify specific questions from these two firm-level datasets that can be used to measure these distinct types of institutions. Firms' perceptions about the quality of the courts capture contracting institutions and their views on corruption capture property rights institutions. We then show that there is a broad correspondence between the firm-level data on institutional quality and the cross-country data described above. Countries with poor contracting and property rights institutions according to the cross-country measures also have poor functioning of the judiciary and corruption as a major obstacle to business according to the WBES and PICS firm-level measures. Interestingly, we generally find that for South Asian countries institutional quality is worse according to the firm-level measures than according to the cross-country measures.

4.12 We then use the firm-level data for India, Pakistan, Bangladesh, and Sri Lanka to investigate the consequences of successes and failures in the provision of these two types of institutions. We find that there is a great deal of dispersion in the two types of institutions across firms and across cities within countries. Interestingly, perceptions of the two types of institutional quality are not very highly correlated: Cities where firms find corruption to be a problem are not necessarily cities where firms find poorly functioning courts to be a problem, and vice versa.

4.13 This dispersion in the two types of institutional outcomes is useful because it provides us with an opportunity to examine the consequences of successes and failures in both dimensions. We find that for firms in Bangladesh, India, Pakistan, and Sri Lanka, property rights institutions have a more detrimental effect on performance—measured by sales per worker—than contracting institutions. A possible interpretation for this finding is that firms can find ways to contract around poorly performing contracting institutions while that is not possible for weak property rights institutions. Our evidence supports this interpretation: In cities and industries with weaker institutional quality, firms resort more frequently to informal channels—for example, belonging to a business association and using it to resolve business disputes—to get around those. We also show that in industries that rely more heavily on contracting institutions, firm-level concerns

about institutional quality are higher, but at the same time firms get around the weaknesses in contracting institutions by using informal channels more frequently.

4.14 Overall, our evidence suggests that governance or institutional quality does matter for economic development, around the world and for countries in the South Asia region. The poor performance of countries such as Bangladesh and Pakistan on corruption—based not just on outside assessments but particularly so based on the views of firms in these countries—suggests that this is an area where reforms, although difficult, are likely to have substantial impact. Our evidence for India points to deficiencies in contracting institutions, which we primarily measure as weaknesses in the ability of courts to settle business disputes, but which can be interpreted more broadly as failures in the overall regulatory environment. While cross-country evidence suggests that institutional weaknesses in this dimension have smaller development impacts than do property rights institutions, this does not mean that there are no returns to improvements in this area. In fact, our firm-level evidence suggests that firms need to develop alternative strategies to circumvent weak contracting institutions, and while we do not provide direct evidence, it is very plausible that these alternative strategies are inefficient compared with the benchmark of good contracting institutions.

### **CROSS-COUNTRY EVIDENCE ON INSTITUTIONS AND GROWTH**

4.15 As noted, there is a growing consensus among academics and policy makers that good institutional performance is of fundamental importance for economic development. This consensus goes back at least to the seminal work of Douglass North. In their classic study of the economic effects of the Glorious Revolution in seventeenth century England, North and Weingast (1989) document how the emergence of a limited monarchy subject to checks and balances by Parliament made the commitments of the state more credible. In particular the Glorious Revolution was followed by a flourishing of public debt markets as private parties came to trust the state's promises to service public debt, which in turn catalyzed the development of private financial markets in England. Taking a similar historical perspective, DeLong and Shleifer (1993) empirically documented that cities governed by absolute rulers subject to no checks on their authority grew more slowly than those with more limited government during the 800 years before the industrial revolution.

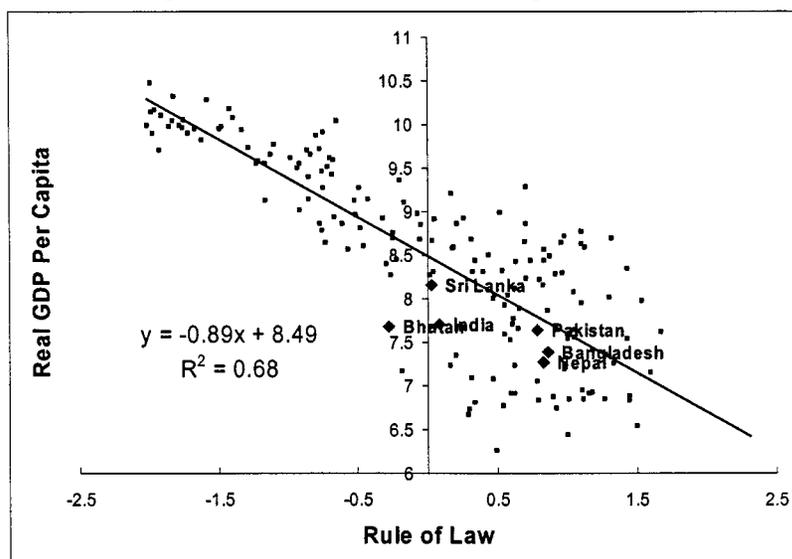
4.16 A large body of cross-country empirical work has identified the importance of institutional quality for either growth or income levels. Mauro (1995) and Knack and Keefer (1995) documented the relationship between corruption and economic growth, while Hall and Jones (1999), Rodrik, Subramanian, and Trebbi (2004), Rigobon and Rodrik (2004), and Alcalá and Ciccone (2004) have shown that institutions exert an important causal effect on per capita incomes across countries.

4.17 A growing body of research also has looked for more disaggregated evidence on the importance of institutions. For example, Banerjee and Iyer (2005) show that Indian districts in which property rights were historically given to landlords had lower levels of investment and productivity than districts where property rights were assigned cultivators, arguing that this reflects the greater security of tenure in nonlandlord districts.

4.18 The starting point for many discussions of the role of institutional quality, or good governance, in development is the strong positive correlation observed between measures of institutional quality and log-levels of per capita income. Figure 4.1 shows one such typical relationship. On the horizontal axis we have a widely used measure of rule of law produced by Kaufmann, Kraay, and Mastruzzi (2005). These authors combine information from a large

number of cross-country sources measuring perceptions of governance and construct composite indicators summarizing these perceptions. The rule of law measure in particular captures the perceptions of individuals, firms, commercial risk rating agencies, nongovernmental organizations, think tanks, and multilateral development banks on issues relating to the protection of property. For example, it captures perceptions of the likelihood that property will be expropriated by the state, the likelihood that contracts will be enforced, the likelihood that property is secure from crime, and so on. Throughout the paper, we will orient our data such that higher values for measures of institutional quality mean worse outcomes.

**Figure 4.1: Rule of Law and Per Capita Incomes**



4.19 The striking feature of such a graph, and many others like it, is that there is a very strong negative correlation between this broad measure of institutional quality and levels of development: Countries with worse institutional quality are on average poorer than countries with good institutional quality. A further striking feature of particular interest for this paper is the relative position of countries in the South Asia region. All six countries in the region for which we have data fall below the regression line, as shown in the Figure.<sup>26</sup> Bangladesh, Pakistan, and Nepal have similar fairly poor scores on this measure, which place them in the bottom quartile of all countries worldwide, while India, Sri Lanka, and Bhutan fare much better, around the median of all countries worldwide.

4.20 Interpreting these striking regularities is more difficult. Consider, for example, the position of the six countries in the region relative to the regression line. Should we interpret this graph horizontally and conclude that these countries have much better institutional quality than one might expect given their relatively low income levels (that is, emphasize the fact that the countries fall to the left of the regression line)? Or should we interpret the graph vertically and observe that these countries have substantially lower income levels than we would expect given their governance performance (that is, emphasize the fact that the countries fall below the regression line)? Clearly sorting this out requires an understanding of the causal relationship between institutions and per capita incomes, not merely the correlation shown in Figure 4.1. The second problem of interpretation has to do with the measure of institutional quality itself. What

<sup>26</sup> We use the World Bank's regional grouping of countries. The South Asia region also includes Afghanistan and the Maldives, for which we do not have data in Figure 4.1.

exactly does a measure such as rule of law mean? Do countries that fare poorly on this measure have a high risk of expropriation by the state? Or do they fare poorly because crime is an issue, or because private contract enforcement is weak? And do all of these distinct ingredients of rule of law matter equally for development outcomes?

4.21 In this paper we use a framework developed by Acemoglu and Johnson (AJ) (2005) to make progress on these fundamental questions of interpretation in the context of countries in the South Asia region. AJ suggest that it is important to unbundle measures of rule of law into two distinct dimensions. The first of these, which they refer to as "property rights institutions," capture the extent to which private property is secure from predation by the state (for example, through outright expropriation) or, less dramatically, from corrupt officials demanding bribes in exchange for favors to the firm or individual. The second, which they refer to as "contracting institutions," captures how the effectiveness of institutions that are used to mediate disputes between private parties, such as the courts and the judicial system. From the definition of rule of law given above, it is clear that this aggregate measure combines—and conflates—these distinct conceptions of institutional quality.

### **Measuring Property Rights Institutions and Contracting Institutions**

4.22 The first step is to find empirical proxies for these two distinct types of institutions. In our main results, we use a measure of corruption also produced by Kaufmann, Kraay, and Mastruzzi (2005) to measure property rights institutions. As noted in the introduction, we reason that corruption reflects the illicit capture of private property by corrupt public officials, and as such constitutes expropriation. We orient this variable such that higher values correspond to greater corruption. We also follow AJ in using a novel measure of the functioning of the courts to capture contracting institutions. We, and they, use a variable that measures the number of days, and the number of formal procedures, that are required to resolve a hypothetical business dispute between two private parties over an unpaid debt. This measure was originally constructed by Djankov et al. (2003) and is updated and maintained in the *Doing Business* reports.

4.23 Higher values, both in terms of the length of time, and the number of procedures, required to settle a business dispute correspond to worse institutional outcomes. In the annexes we also report results obtained using two measures of institutional quality preferred by AJ, but which are available only for a smaller sample of countries. These are a measure of perceptions of the likelihood of expropriation, reported by Political Risk Services, a commercial risk rating agency, and "executive constraints" reported in the Polity IV database, which measures the extent to which the power of the executive is limited by other branches of government. The rationale for the latter is that expropriation is less likely in countries where executive power is limited.

### **Deep Historical Determinants of Institutional Quality**

4.24 The second key step in interpreting this evidence is to find deep historical determinants of these two types of institutional quality that can be used to statistically identify the effects of institutions on development. The basic problem is straightforward. The simple correlation between institutions and per capita incomes in Figure 4.1 does not tell us anything about causation. It could be that better institutional quality causes higher incomes, or it could also be that richer countries can afford better institutions. Sorting out the direction of causality is typically done using instrumental variables. These are variables that can explain cross-country differences in institutional quality but have relatively little direct effect on per capita incomes today. By exploiting only the cross-country variation in institutional quality that is driven by

these deep historical determinants it is possible to statistically identify the causal effects of institutions on long-run economic performance.

4.25 In a highly influential paper, Acemoglu, Johnson, and Robinson (2001) propose using mortality rates of European settlers around the world in the eighteenth and nineteenth centuries as an instrument for property rights institutions. As discussed in the introduction, the argument is that in countries where settler mortality was low, it was in the interests of the colonial powers to create institutions that protected property rights, at least those of the occupying settlers, and these institutions persisted to the present. In contrast, in countries where settler mortality was high, colonial powers were interested only in extracting wealth and had no interest in developing any kind of formal institutions. We follow this approach here, using an expanded dataset on settler mortality.<sup>27</sup> We also follow AJ in using data on the legal traditions of countries as an instrument for contracting institutions. Here the insight is that countries with British legal origins tend to have much more streamlined procedures for dispute resolution, as opposed to the highly formalized and codified procedures in countries particularly with French legal origins. This effect is reflected in the complexity of current dispute resolution mechanisms.

**Table 4.1: First-Stage Regressions for Property Rights and Contracting Institutions**

	Rule of law	Corruption	Number procedures	ln (number of days)
British legal origins	-0.268 (0.173)	-0.268 (0.177)	-9.886 (3.436)***	-0.321 (0.143)**
ln (settler mortality)	0.336 (0.078)***	0.327 (0.078)***	1.154 (1.158)	0.084 (0.054)
India	0.057 (0.173)	0.384 (0.188)**	13.604 (2.465)***	0.433 (0.110)***
Bangladesh	0.696 (0.160)***	1.029 (0.171)***	2.161 (2.649)	0.248 (0.107)**
Sri Lanka	-0.125 (0.161)	0.111 (0.172)	-9.813 (2.636)***	0.437 (0.107)***
Pakistan	0.846 (0.184)***	1.029 (0.202)***	19.920 (2.376)***	0.383 (0.115)***
Constant	-1.006 (0.391)**	-1.073 (0.400)***	31.800 (5.810)***	5.614 (0.293)***
Observations	82	82	82	82
R squared	0.34	0.32	0.22	0.14

Note: Robust standard errors in parentheses. All measures of institutions are oriented so that higher values correspond to worse institutions.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

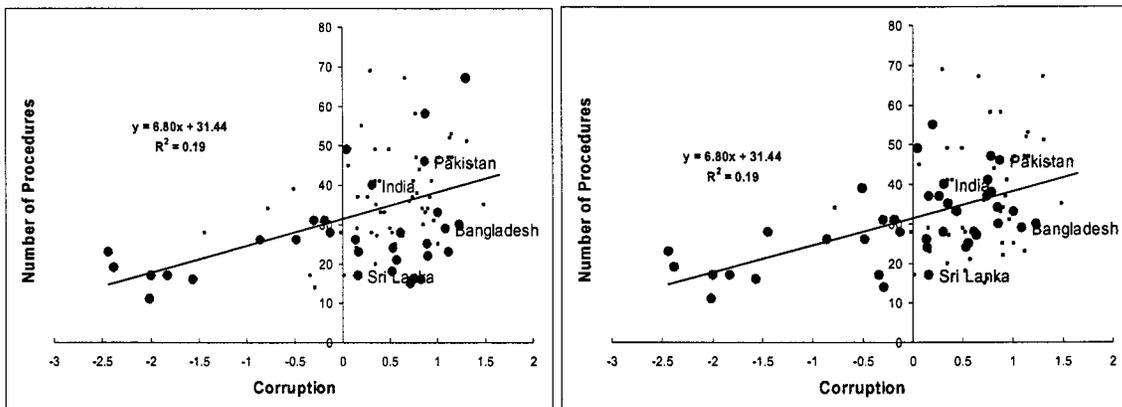
4.26 In Table 4.1 we summarize the relationship between these deep determinants of institutional quality and institutional outcomes. We regress our four measures of institutions (rule of law, corruption, number of procedures, and the logarithm of the number of days) on the two instrumental variables (a dummy variable identifying countries with British legal origins and settler mortality). We also include dummy variables for the four major countries in the South Asia region: Bangladesh, India, Pakistan, and Sri Lanka. These dummy variables capture the extent to which these countries differ significantly from the average relationship estimated using a large cross-country sample of 82 countries. The main regressions of interest are in the second

<sup>27</sup> This is based on ongoing work by Kaufmann, Kraay, and Mastruzzi, who use Acemoglu, Johnson, and Robinson (2001) estimates of settler mortality but extend them to geographically proximate countries with similar climates that were not included in the original Acemoglu, Johnson, and Robinson (2001) analysis owing to the limited country coverage of their preferred measure of institutional quality.

and third columns. For corruption, we find that settler mortality enters very significantly and positively; that is, countries with higher settler mortality 200 years ago have worse corruption today, which we interpret as worse property rights institutions. We also find that British legal origin is very significantly associated with the complexity of dispute resolution procedures, as measured by number of procedures or number of days. Countries with British legal origins have substantially lower values for these two measures, indicating that they tend to have better contracting institutions.<sup>28</sup> These findings mirror those of AJ in the substantially smaller sample of 51 countries that they study.

4.27 Of particular interest for this paper is how countries in South Asia fare in these relationships. All four countries have British legal origins, and so in assessing the quality of their contracting institutions we should focus on how they fare relative to other countries with British legal origins. The dummy variables for India and Pakistan are positive and highly significant, which tells us that these countries have substantially worse contracting institutions than other countries with British legal origins. For number of procedures, for example, the estimated coefficients imply that in India and in Pakistan it takes 13.6 and 19.2 days longer (respectively) to resolve a business dispute than it does in a typical British legal origin country. This is summarized graphically in Figure 4.2. In both panels of this graph we plot corruption on the horizontal axis and number of procedures on the vertical. In the top panel, the green dots identify countries with British legal origins. Although both India and Pakistan are around the middle of the pack for all countries taken together on contracting institutions as measured by number of days, they are in the worst five performers among the group of countries with British legal origins. In short, India and Pakistan both perform quite poorly on this measure of institutional quality. In contrast, the dummy variable for Sri Lanka enters negatively, and in the graph it is clear that Sri Lanka ranks among the best of all countries in terms of speedy dispute resolution.

Figure 4.2: Property Rights and Contracting Institutions in South Asia



Note: All variables refer to 2004. Corruption is oriented so that higher values correspond to worse outcomes. In the left panel the large green dots identify countries with British legal origins. In the right panel the large green dots identify countries with lower-than-average settler mortality.

4.28 Turning to property rights institutions, we see that the dummy variables for Pakistan and Bangladesh in particular are very large, positive, and significant. The interpretation of this is that these two countries have particularly poor performance on the corruption variable, even after taking into account the deep historical determinants of this type of institution. This is also

<sup>28</sup> As a narrow, but important, technical point, note that settler mortality is a good predictor of property rights institutions but not of contracting institutions, while the opposite is true of British legal origins. This is crucial for the instrumental variables strategy to work. Intuitively, both instruments predicted both types of institutions, and then they would not be helpful for isolating the separate causal effects of the two types of institutions.

visually striking from the right panel of Figure 4.2. In this panel, the green dots correspond to countries with low settler mortality. These are countries where we should expect that their historical situation was favorable to developing strong property rights institutions. However, Pakistan and Bangladesh stand out as being among the worst performers of all countries in this group, suggesting fundamental problems with corruption.

4.29 In summary so far, the cross-country data suggest that Pakistan stands out for its poor performance in both types of institutions. Bangladesh stands out for having poor performance on property rights institutions, but reasonable performance on contracting institutions, while the converse is true for India. Finally, Sri Lanka has very good contracting institutions but only average property rights institutions. We note also that we find broadly similar results when we look at other measures of property rights institutions in a smaller sample of countries, as reported in Annex 1.

### **Do Institutions Matter for Development: Identifying Causation**

4.30 The next step is to assess how these differences in institutional quality have translated into economic development, as summarized by real GDP per capita. We report the results of the instrumental variables estimates of the causal impacts of these two types of institutions on real per capita GDP in Table 4.2. Consistent with the findings of AJ, we find a clear pattern that property rights institutions, as proxied by corruption, have a very large and significant causal impact on development, while contracting institutions, as proxied by either number of procedures or number of days, matter much less. The magnitude of the effect of institutions on development is very large. For example, a one-standard-deviation improvement in corruption, corresponding roughly to the difference between Sri Lanka and Pakistan or Bangladesh, would result in incomes that are higher by a factor of 6 in the long run. The result that property rights institutions matter much more than contracting institutions is quite intuitive. As AJ argue, a key feature of contracting institutions such as the courts is that firms and individuals have a variety of opportunities for circumventing them if the services they provide are weak. For example, firms might rely on business associations or informal networks to enforce contracts if the courts are ineffective or slow. In contrast, it is much more difficult for firms to contract around a predatory state when property rights institutions are weak.

4.31 It is again of particular interest to see how the four South Asian countries differ from this average relationship. Consider for example the regression which uses the number of days to proxy for contracting institutions. Here we see a very striking pattern in the dummy variables for the four countries. Bangladesh and Pakistan stand out for having very significant positive residuals, while India stands out with a modestly significant negative residual. The interpretation of this pattern is that Bangladesh and Pakistan have per capita incomes that are substantially higher than expected given their institutional quality in these key dimensions. The point estimates suggest that Bangladesh and Pakistan have per capita incomes that are between two and three times higher than their very weak institutional performance would suggest based on average cross-country relationships. In contrast, India's per capita income is only about half of what is expected given its per capita income. Finally, Sri Lanka falls more or less on the average cross-country relationship, with a dummy variable that is not significantly different from zero.

**Table 4.2: Instrumental Variables Regressions of ln (GDP Per Capita) on Property Rights and Contracting Institutions**

Corruption	-1.843 (0.419)***	-2.231 (0.632)***
Number of procedures	0.070 (0.038)*	
ln (number of days)		2.467 (1.500)
India	-0.661 (0.269)**	-0.633 (0.354)*
Bangladesh	1.185 (0.494)**	1.121 (0.420)***
Sri Lanka	1.068 (0.607)*	-0.651 (0.490)
Pakistan	-0.137 (0.341)	0.704 (0.219)***
Constant	6.114 (1.200)***	-5.939 (8.572)
Observations	82	82

*Note:* Robust standard errors in parentheses. Corruption is oriented so that higher values correspond to worse outcomes.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

4.32 In annex 2 we show how these results differ in a smaller sample of countries that is closer to that studied by AJ, in which we can use their preferred measures of institutional quality. The finding that India has relatively low incomes given its institutional quality comes through very consistently and significantly in this sample as well while Bangladesh stands out for its higher-than-expected income levels, although not consistently so. The evidence for Sri Lanka and Pakistan is somewhat more mixed.

4.33 How do we interpret these findings? By far the clearest findings we have are that India is much poorer than expected based on the cross-country relationship between institutions and economic performance while Bangladesh, and to a lesser extent Pakistan, is far richer than expected. A somewhat naive interpretation of this evidence focusing on these countries alone might be that institutional quality simply does not matter for these countries. After all, our evidence suggests that Bangladesh and Pakistan have managed to attain quite high per capita incomes despite poor institutional quality while India has lagged despite its relatively good performance on the property rights institutions that matter most for growth.

4.34 We think, however, that this interpretation is too narrow, because it ignores the quite strong cross-country evidence that property rights institutions do matter on average for economic performance. A more nuanced view might be that institutions do in fact matter for growth, but in the case of India they have not yet delivered their full development impact. The good news in this interpretation is that India has considerable room to grow based on its reasonably good property rights institutions. The flip side of this is a rather more gloomy view for Bangladesh and Pakistan, where it could be argued that their past income gains, whatever their source, are fragile because they are not supported by commensurately strong property rights institutions.

4.35 Based on our reading of the evidence on institutions and growth, we prefer the latter interpretation. However, we recognize that cross-country analysis based on these rather crude proxies for property rights institutions and contracting institutions can only bring us so far in understanding what the causes and consequences of institutional weaknesses are. They also provide relatively little guidance for policy advice.

4.36 In the rest of this paper we therefore turn to more detailed firm-level data from a large number of countries, and from major South Asian countries in particular, to probe further the links between different types of institutions and economic performance at the firm level. In particular we ask whether firms' perceptions of institutional quality mirror those in the cross-country macro data that we have used so far. We also examine the evidence on how these types of institutions matter for firm performance, and show how firms make use of alternative, and possibly inefficient, strategies for getting around failures of contracting institutions.

#### **FIRM-LEVEL EVIDENCE ON INSTITUTIONS AND GROWTH**

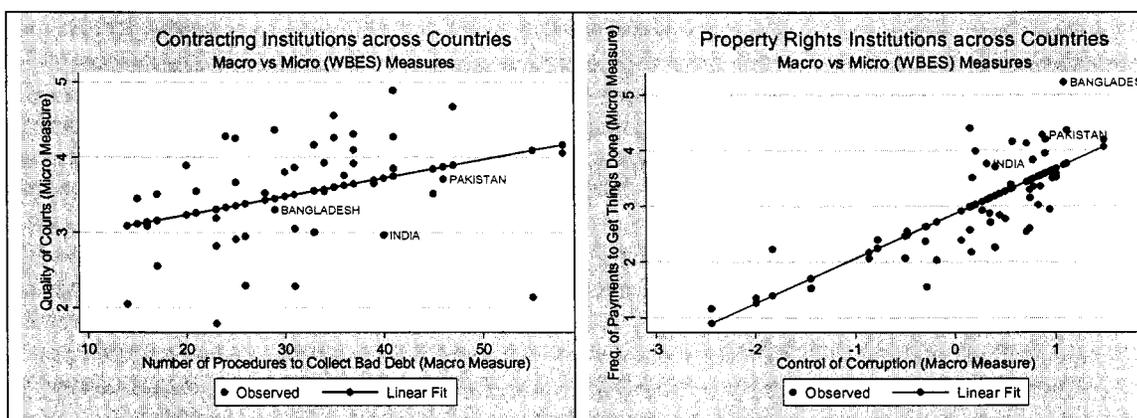
4.37 In this section we dig deeper into the links between institutions and firm performance, using firm-level data. Throughout this section we will refer to this as "micro data," as opposed to the "macro cross-country data" of the previous section. We draw on two large cross-country datasets of firms, WBES and PICS, to analyze at the micro level the relationship between different types of institutions and firm performance, and we also study the use of informal channels by firms to get around weak contracting institutions. In both firm-level datasets, we identify specific questions that proxy for contracting institutions and property rights institutions. In broad terms, we use firms' perceptions about the quality of the courts and the judiciary system to capture contracting institutions and firms' views on corruption to capture property rights institutions. Detailed definitions and country coverage of the measures used are provided in Annex 3.

#### **Do the Micro and Macro Data Agree**

4.38 We first conduct a validation exercise where we relate the micro data and the macro data on institutional quality. For this purpose, we average the firm-level data in each country to obtain micro-founded macro measures of institutional quality that we relate to the macro measures of institutional quality employed in the first part of the paper: rule of law and control of corruption indicators, number of days, and number of procedures to solve a payment dispute.

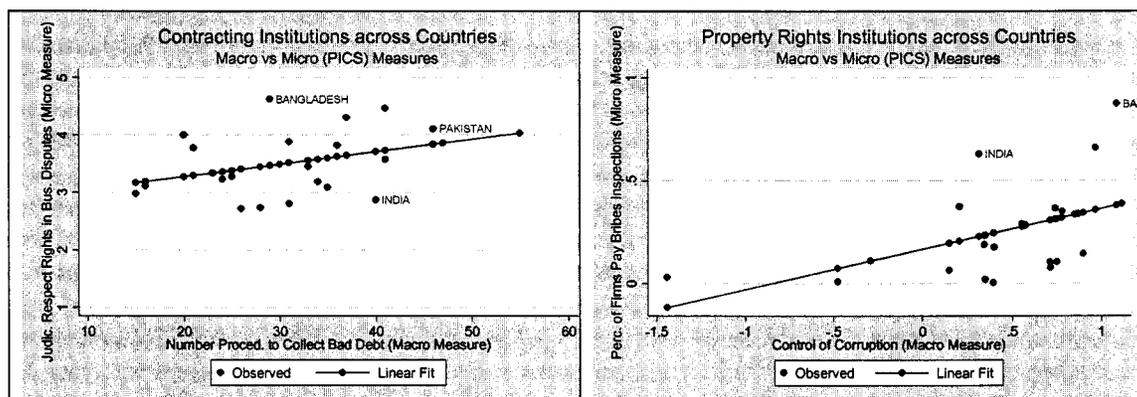
4.39 The micro and the macro data on institutional quality are generally consistent with one another, as can be seen in Figure 4.3 for the WBES measures and Figure 4.4 for the PICS measures. In the left panel of both Figures, we show the measures of contracting institutions: on the horizontal axis the macro measure (the number of procedures) and on the vertical axis the micro measure (quality of courts in Figure 4.3 for WBES or judiciary respect of rights in business disputes in Figure 4.4 for PICS). In the right panel of both Figures, we show the measures of property rights institutions: on the horizontal axis the macro measure (the control of corruption indicator and on the vertical axis the micro measure (frequency of payments to get things done in Figure 4.3 for WBES or percentage of firms that pay bribes during government inspections in Figure 4.4 for PICS). For all measures, higher values indicate poorer quality of the corresponding type of institution. The South Asian countries are highlighted in both Figures. The regression lines suggest a positive cross-country relationship between the micro and macro measures of institutional quality, whether it is contracting institutions or property rights institutions.

**Figure 4.3: Contracting and Property Rights Institutions Across Countries:  
Macro Versus WBES Measures**



Note: Higher values of the quality of courts and of the control of corruption measures correspond to worse outcomes.

**Figure 4.4: Contracting and Property Rights Institutions Across Countries:  
Macro Versus PICS Measures**



Note: Higher values of the judiciary respect rights in business disputes and of the control of corruption measures correspond to worse outcomes.

4.40 We summarize the consistency between the macro and micro data more systematically in Tables 4.3 and 4.4 for the WBES measures and in Tables 4.5 and 4.6 for the PICs measures. In these tables we report the results of regressing each of the micro measures of property rights institutions and contracting institutions on their corresponding macro proxies, treating each country as an observation. We also include dummy variables for the South Asian countries included in each sample, so that we can see the extent to which these countries do or do not deviate from the average cross-country relationship between the micro and the macro measures.

4.41 The results in Tables 4.3 and 4.5 indicate that, on average, countries with poor contracting institutions according to the number of procedures also have poor contracting institutions according to the micro measures on the quality of courts and on the functioning of the judiciary in business disputes. Similar findings are obtained when the macro proxy for contracting institutions is the number of days. Tables 4.4 and 4.6 suggest that countries with weak property rights institutions measured by the control of corruption indicator have weak property rights

institutions proxied at the micro level by the importance of corruption as an obstacle to business and the percentage of firms paying bribes to government officials during inspections.<sup>29</sup>

**Table 4.3: Regressions of Micro Measures from WBES on Macro Measures: Contracting Institutions**

Dependent Variable is:	Quality of Courts	Functioning of Judiciary with respect to Business Disputes	Quality of Courts	Functioning of Judiciary with respect to Business Disputes
Number of Procedures	0.027** (0.015)	0.020* (0.015)		
Number of Days (log)			0.669*** (0.118)	0.667*** (0.142)
Bangladesh	-0.173 (0.107)	-0.053 (0.116)	-0.257*** (0.098)	-0.129 (0.099)
India	-0.806 (0.198)	-0.623*** (0.193)	-0.699*** (0.101)	-0.578*** (0.099)
Pakistan	-0.222 (0.276)	-0.436 (0.268)	0.094 (0.099)	-0.221** (0.098)
Observations	46	45	46	45
R-squared	0.15	0.08	0.34	0.33

*Note:* Robust standard errors in parentheses. The regressions include a constant. The dependent variable is the average of the firm-level responses on quality of courts or on functioning of judiciary with respect to business disputes in each country.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

**Table 4.4: Regressions of Micro Measures From WBES on Macro Measures: Property Rights Institutions**

Dependent Variable is:	Corruption as an Obstacle to Business	Frequency of Additional Payments to Get Things Done	Corruption as an Obstacle to Business	Frequency of Additional Payments to Get Things Done
Rule of Law	0.569*** (0.058)	0.755*** (0.080)		
Control of Corruption			0.557*** (0.047)	0.748*** (0.077)
Bangladesh	0.473*** (0.069)	1.840*** (0.107)	0.297*** (0.073)	1.599*** (0.116)
India	0.208*** (0.058)	0.961*** (0.093)	0.023 (0.057)	0.716*** (0.091)
Pakistan	0.304*** (0.067)	0.947*** (0.105)	0.207*** (0.067)	0.813*** (0.107)
Observations	45	46	45	46
R-squared	0.66	0.62	0.68	0.65

*Note:* Robust standard errors in parentheses. The regressions include a constant. The dependent variable is the average of the firm-level responses on Corruption as an Obstacle to Business or on Frequency of Additional Payments to Get Things Done in each country.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

<sup>29</sup> The exercises shown in these tables differ from those in AJ that also make use of WBES data. AJ regress the proxies for contracting and property rights institutions in WBES at the firm-level (instead of taking country averages as we do here) on macro measures (executive constraints shown in annex 1) and the deep determinants discussed in the second section.

4.42 The less significant results obtained using the PICS measures in Tables 4.5 and 4.6 though still positive are likely due to the smaller number of countries included in the corresponding regressions relative to the WBES sample. Annex 3 shows that while the WBES dataset covers a large number of developing and middle-income countries plus some developed countries (United States, United Kingdom, and Canada), the PICS dataset covers a smaller number of developing and middle-income countries only.

4.43 The average relationship between macro and micro measures of institutional quality estimated using the cross-sections of countries in the WBES or the PICS datasets indicate that macro and micro measures are consistent with one another. We now focus on the dummies for the major countries in South Asia region, shown in Tables 4.3–4.6. These dummies show the extent to which the relationship between macro and micro measures of institutional quality differs from the average relationship. The regressions based on the WBES dataset (Tables 4.3 and 4.4) suggest that Bangladesh and India have a better ranking in terms of their contracting institutions' quality according to the firm-level perceptions than they do according to the macro measures. However, WBES firm-level perceptions in Bangladesh, India, and Pakistan reveal significantly worse quality of property rights institutions than is suggested by the macro measures.

4.44 The regressions based on the PICS dataset (Tables 4.5 and 4.6) suggest that Bangladesh has clearly worse institutional quality—both contracting and property rights—according to the firm-level perceptions than according to the macro measures. Given that the overall fit of the regressions based on the PICS dataset is weaker owing to the aforementioned smaller sample size, it is not surprising that the dummies for Bangladesh are less significant in those regressions. We find these results for Bangladesh to be of particular interest, given that aggregate cross-country measures of corruption based on perceptions data are often viewed with considerable skepticism, particularly in countries that fare poorly on these indicators. Our results here suggest that not only do the cross-country aggregate indicators agree quite well on average with the view of firms within countries, but moreover firms in Bangladesh seem to view corruption to be even more of a problem than do the outside "expert" assessments that feature prominently in the macro data on corruption.

**Table 4.5: Regressions of Micro Measures From PICS on Macro Measures:  
Contracting Institutions**

Dependent Variable is:	Functioning of Judiciary with Respect to Business Disputes	Functioning of Judiciary with Respect to Business Disputes
Number of Procedures	0.026 (0.016)	
Number of Days (log)		0.343 (0.291)
Bangladesh	1.192*** (0.134)	1.192*** (0.138)
India	-0.853*** (0.230)	-0.618*** (0.132)
Pakistan	0.23 (0.311)	0.647*** (0.133)
Observations	20	20
R-squared	0.42	0.39

*Note:* Robust standard errors in parentheses. The regressions include a constant. The dependent variable is the average of the firm-level responses on functioning of judiciary with respect to business disputes in each country.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

**Table 4.6: Regressions of Micro Measures From PICS on Macro Measures: Property Rights Institutions**

Dependent Variable is:	Corruption as an Obstacle to Business	Percentage of Firms Asked to Pay Bribes in Gov. Inspections	Corruption as an Obstacle to Business	Percentage of Firms Asked to Pay Bribes in Gov. Inspections
Rule of Law	0.335 (0.351)	0.136* (0.071)		
Control of Corruption			0.208 (0.311)	0.139** (0.065)
Bangladesh	0.29 (0.181)	0.622*** (0.063)	0.294 (0.219)	0.584*** (0.075)
India	-0.067 (0.203)	0.483*** (0.037)	-0.16 (0.154)	0.448*** (0.039)
Pakistan	-0.292* (0.166)		-0.267 (0.172)	
Observations	22	19	22	19
R-squared	0.14	0.62	0.08	0.64

*Note:* Robust standard errors in parentheses. The regressions include a constant. The dependent variable is the average of the firm-level responses on corruption as an obstacle to business or on whether firms are asked to pay bribes during government inspections in each country.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

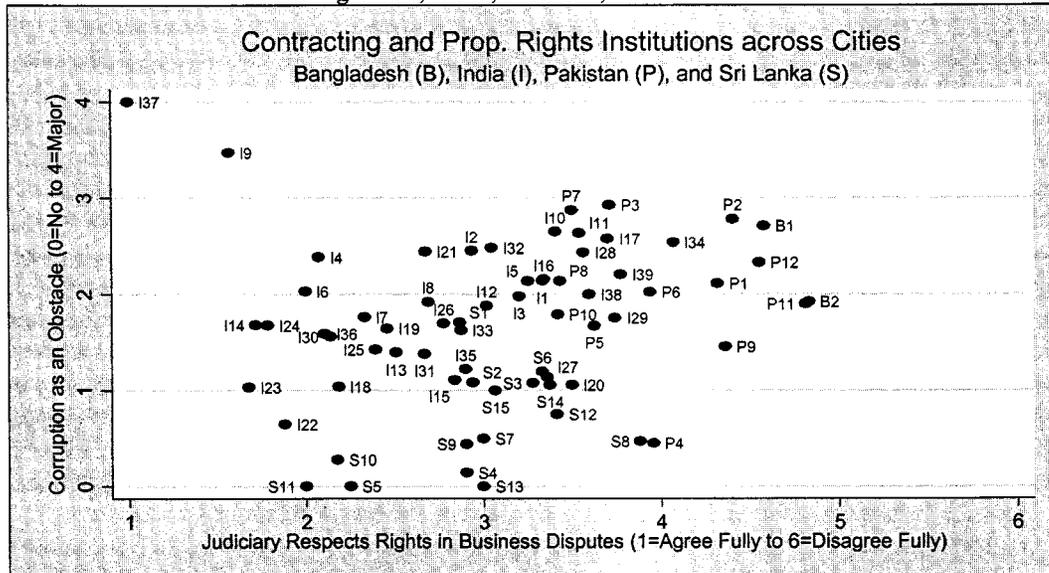
## Do Property Rights Institutions and Contracting Institutions Matter for Firms

4.45 We next turn to the question of whether the cross-country evidence on the importance of these two types of institutions holds up at the firm level. There is a great deal of variability in contracting and property rights institutions across firms, and across cities within countries, as can be seen in Figure 4.5, which reports our two preferred measures of institutions from the PICS dataset. On the horizontal axis, we show the judiciary respect of rights in business disputes as the proxy for contracting institutions, and on the vertical axis we show the importance of corruption as an obstacle to business. As indicated by the labels, the data points in the Figure represent each of the cities in Bangladesh, India, Pakistan, and Sri Lanka where the PICS was conducted. Each data point corresponds to an average at the city level of the firm-level measures of contracting and property rights institutions.

4.46 Interestingly, this Figure also shows that the perceptions about the two types of institutional quality are not very highly correlated: The cities where firms find corruption to be a major problem are not necessarily cities where firms find a poorly functioning judiciary system to be a major problem, and vice versa. The variability in the two types of institutional outcomes is useful because it provides an opportunity to examine the consequences of successes and failures in both contracting and property rights institutions for firms in South Asia.

4.47 We are interested in relating firm performance to the measures of institutional quality using the PICS dataset. Conceptually, contracting and property rights institutions should be exogenous to a given firm. However, our analysis is based on firm-level perceptions of institutional quality, and thus there is a potential endogeneity problem in relating firm-level performance to those perceptions. On the one hand, firms with better performance may be more aware of the difficulties that weak institutions cause and therefore may complain more about those. On the other hand, firms with better performance may be able to undertake actions to avoid dealing with the weak institutions. This endogeneity would lead to biased estimates of the relationship between institutional quality and firm performance.

**Figure 4.5: Contracting and Property Rights Institutions Across Cities: Bangladesh, India, Pakistan, and Sri Lanka**



B1	Dhaka	I16	Surat	I33	Hosur	P11	Quetta
B2	Chittagong	I17	Vadodara	I34	Madurai	P12	Peshawar
I1	Ahmedabad	I18	Gurgaon	I35	Ghaziabad	S1	Colombo
I2	Bangalore	I19	Faridabad	I36	Noida	S2	Gampaha
I3	Calcutta	I20	Panipat	I37	Shahjahanpur-Lakimpur	S3	Kalutara
I4	Chandigarh	I21	Dharwad	I38	Howrah	S4	Kandy
I5	Chennai	I22	Calicut	I39	Mangalore	S5	Matale
I6	Cochin	I23	Palakkad	P1	Karachi	S6	Nuwara Eliya
I7	Delhi	I24	Bhopal	P2	Lahore	S7	Galle
I8	Hyderabad	I25	Gwalior	P3	Sheikhupura	S8	Matara
I9	Kanpur	I26	Indore	P4	Sialkot	S9	Kurunegala
I10	Mumbai	I27	Nagpur	P5	Faisalabad	S10	Puttalam
I11	Pune	I28	Nashik	P6	Gujranwala	S11	Anuradhapura
I12	Mysore	I29	Thane	P7	Wazirabad	S12	Badulla
I13	Vijayawada	I30	Jalandhar	P8	Islamabad/Rawalpindi	S13	Monaragala
I14	Lucknow	I31	Ludhiana	P9	Sukkur	S14	Ratnapura
I15	Guntur	I32	Coimbatore	P10	Hyderabad	S15	Kegalle

*Note:* City averages of the variables judiciary respects rights in business disputes and corruption as an obstacle to business from the PICS data are shown.

4.48 To circumvent this problem, we consider the measures of institutional quality averaged at the city-industry level. There are several reasons why institutional quality will vary at the city or industry level, although institutional quality has an important national dimension. For example, in large countries such as India or Pakistan, the decentralization of economic policy making likely leads to important differences in the enforcement of contracting institutions and even property rights institutions across states and cities depending on the political power and the quality and the degree of corruption of local government officials. The significant variability in institutional quality across cities (seen in Figure 4.5), which is even higher for city-industry cells, allows us to identify the effects of institutions on firm performance.

4.49 To assess how institutional weaknesses affect firms in Bangladesh, India, Pakistan, and Sri Lanka, we regress firm-level sales per worker (in logs) on city-industry average institutional quality. Sales per worker is a measure of labor productivity, and varies substantially across

industries within each country owing to differences in capital intensity and in production processes. Our regressions therefore include industry-fixed effects to control for such industry differences. We include in our regressions only those firms that have been in operation for more than 15 years. The purpose of this choice is to make our measure of sales per worker close to a long-run measure of firm growth, in a similar vein to what is done in the second section, where a country's real GDP per capita is used as a proxy for that country's long-run growth.<sup>30</sup>

4.50 Our main finding in Table 4.7 is that for firms in Bangladesh, India, Pakistan, and Sri Lanka, property rights institutions have a more detrimental effect on performance than contracting institutions. Since we use institutional measures as averages at the city-industry level, we are relatively confident in interpreting the regression coefficients as a causal effect of institutions on firm performance.<sup>31</sup>

4.51 The coefficients in the third column of Table 4.7 indicate that firms in a city-industry cell with worse property rights institutions by 1 standard deviation (that is, a city-industry cell where corruption is more important as an obstacle to business) would have on average 6.6 percent lower sales per worker than firms in a city-industry cell with (sample) average property rights institutions.<sup>32</sup> We note however, that weak contracting institutions also have a negative effect on firm performance, albeit six times smaller than that of property rights institutions.

**Table 4.7: Firm Performance, Contracting, and Property Rights Institutions: Regressions Using PICS Dataset**

Dependent Variable is:	Sales per Worker	Sales per Worker	Sales per Worker
	(1)	(2)	(3)
Functioning of Judiciary with Respect to Bus. Disputes	-0.012 (0.063)		-0.002 (0.063)
Corruption as an Obstacle to Business		-0.066 (0.062)	-0.066 (0.062)
Country Dummies	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes
Observations	1820	1820	1820
R-squared	0.91	0.91	0.91

*Note:* Robust standard errors in parentheses. The regressions include a constant. The dependent variable is the logarithm of sales per worker with sales converted to US\$. The variables functioning of judiciary with respect to business disputes and corruption as an obstacle to business are normalized to have a mean of 0 and variance of 1. The independent variables are averages of these normalized variables for city-industry cells. The regressions include only firms that are older than 15 years of age. Outliers in the sales per worker distribution for each industry and country (top and bottom 2 percent) are eliminated from the regressions.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

4.52 While this firm-level evidence of a link between performance and institutional quality is less clear cut than the earlier cross-country evidence, that likely reflects a variety of weaknesses in the firm-level data. In particular, the important variability of institutional quality across cities and industries may still be lower than the variability of institutional quality across countries used in the second section to identify the impact of institutions on cross-country incomes.

<sup>30</sup> In the cross-country data, the argument is that per capita income levels across countries were not very different in the distant past, and so cross-country differences in levels of per capita income reflect differences in countries' very long-run growth performance.

<sup>31</sup> We note, though, that we would need to use instrumental variables for the city-industry institutional quality measures to be fully confident on the causal interpretation of the regression coefficients. Unfortunately, those instrumental variables are not available.

<sup>32</sup> The measures of contracting and property rights institutions included in the regressions are normalized to have a mean of 0 and a standard deviation of 1.

## How Do Firms Cope With Weak Contracting Institutions

4.53 The firm-level data allow us to investigate in more detail one hypothesis that emerges from the cross-country evidence: The reason why poor contracting institutions do not have a strong impact on growth is that firms can find ways to contract around poorly performing institutions in this dimension while that is not possible in the case of weak property rights institutions that allow governments to prey on the private sector. We investigate the extent to which firms are able to use informal channels in Bangladesh, India, Pakistan, and Sri Lanka to get around weak contracting institutions. The informal channels considered are: belonging to a business association, using the business association to resolve business disputes with customers or suppliers, using informal sources of finance for working capital and for investment needs, and solving overdue payments problems by alternative mechanisms instead of courts.

4.54 Table 4.8 provides strong evidence that in cities and industries where the quality of contracting institutions is weaker, firms resort to different informal ways to get around those. For example, firms operating in city-industry cells with worse contracting institutions by 1 standard deviation (that is, where the functioning of the judiciary in business disputes is worse) are 14.6 percent more likely to belong to a business association than firms in a city-industry cell with (sample) average contracting institutions.<sup>33</sup> Also, in cities and industries where the weak quality of the judicial system makes it difficult to enforce debt contracts, firms resort to the use of informal credit channels.

**Table 4.8: Getting Around Weak Contracting Institutions: Regressions Using PICS Data**

Dependent Variable is:	Membership in Business Association	Importance of Dispute Resolution by Business Association	Percentage of Working Capital Financed by Informal Sources	Percentage of Investment Financed by Informal Sources	Percentage of Overdue Payments Not Resolved by Courts
	(1)	(2)	(3)	(4)	(5)
Functioning of Judiciary with Respect to Business Disputes	0.146** (0.071)	0.273*** (0.074)	0.011** (0.005)	0.018* (0.010)	0.133 (0.111)
Country Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Observations	4038	2052	1908	1164	328
R-squared		0.21	0.02	0.04	0.11

*Note:* Robust standard errors in parentheses. The regressions include a constant. The variable functioning of judiciary with respect to business disputes is normalized to have a mean of 0 and variance of 1. The independent variable is the average of these normalized variables for city-industry cells. The first column shows the marginal effects from a probit regression.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

4.55 Finally, we use the PICS dataset to examine whether firm-level concerns about weak institutional quality are stronger in industries that are more institutionally dependent. We follow Levchenko (2004) ranking of industries according to their institutional dependence as measured by industry-level Gini coefficient of intermediate input use and number of supplying industries. An industry is more institutionally dependent if its contracting intensity is high; that is, if producers that industry need to enter into complex production relationships with many different suppliers. Industries with more concentrated intermediate input use are less institutionally dependent than industries whose intermediate inputs used originate in many different industries. Industries where producers enter in interactions with a large number of suppliers have a high

<sup>33</sup> The measures of contracting institutions included in the regressions are normalized to have a mean of 0 and a standard deviation of 1.

contract intensity and thus are more dependent on good contracting institutions. Applying the ranking to the industries covered in the PICS dataset, it indicates that auto parts, transport equipment, and metals and machinery industries are more institutionally dependent than leather and food industries.

4.56 Table 4.9 shows that indeed firm-level concerns about the quality of contracting institutions are higher in industries that are more institutionally dependent. In contrast, we find contracting institutions use more frequently informal channels to get around institutional weaknesses, as shown in Table 4.10. For example, firms in auto parts, transport equipment, and metals and machinery find it more important to use their business association to solve payment disputes with customers and suppliers than firms in industries such as leather and food.

**Table 4.9: Institutional Dependence, Contracting and Property Rights Institutions Across Industries: Regressions Using PICS Dataset**

Dependent Variable is:	Functioning of Judiciary with Respect to Bus. Disputes	Functioning of Judiciary with Respect to Bus. Disputes	Corruption as an Obstacle to Business	Corruption as an Obstacle to Business
	(1)	(2)	(3)	(4)
Inst. Depend. Ranking - N. Interactions	0.069* (0.041)		0.003 (0.005)	
Inst. Depend. Ranking - Gini Coefficient		0.076* (0.041)		0.004 (0.005)
Country Dummies	Yes	Yes	Yes	Yes
Observations	25	25	25	25
R-squared	0.89	0.89	0.66	0.66

*Note:* Robust standard errors in parentheses. The regressions include a constant. The dependent variables functioning of judiciary with respect to business disputes or corruption as an obstacle to business are normalized to have a mean of 0 and variance of 1. Higher values of the independent variables *N. Interactions* or *Gini coefficient* correspond to a higher institutional dependence of the industry.

significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

**Table 4.10: Institutional Dependence and Ways to Get Around Weak contracting Institutions Across Industries: Regressions Using PICS Data**

Dependent Variable is:	Membership in Business Association	Importance of Dispute Resolution by Business Association	Perc. of Overdue Payments Not Resolved by Courts	Membership in Business Association	Importance of Dispute Resolution by Business Association	Perc. of Overdue Payments Not Resolved by Courts
	(1)	(2)	(3)	(4)	(5)	(6)
Inst. Depend. Ranking - N. Interactions	0.029 (0.033)	0.006 (0.046)	-0.002 (0.004)			
Inst. Depend. Ranking - Gini Coefficient				0.011 (0.035)	-0.047 (0.048)	-0.004 (0.004)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25	25	11	25	25	11
R-squared	0.46	0.87	0.02	0.43	0.88	0.07

*Note:* Robust standard errors in parentheses. The regressions include a constant. Higher values of the independent variables *N. Interactions* or *Gini coefficient* correspond to a higher institutional dependence of the industry.

significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

## CONCLUSIONS

4.57 We have examined the evidence on institutions and growth in South Asian countries at the macro and micro levels, distinguishing between two key dimensions of institutional performance: property rights institutions and contracting institutions.

4.58 First, we document how countries in the South Asia region fare along these two types of institutional quality, using cross-country macro data and controlling for deep historical determinants of these two types of institutions. We find that while India has poor performance on contracting institutions, it fares reasonably well on measures of property rights institutions. The reverse is true for Bangladesh, which stands out for having quite poor property rights institutions but reasonable contracting institutions.

4.59 Second, we show that property rights institutions matter much more for economic growth across countries than contracting institutions. Relative to this strong cross-country empirical regularity, India stands out for having a large negative residual, suggesting that even India's good performance on property rights institutions has not yet had the development impact that cross-country analysis would suggest. In contrast, Bangladesh stands out in just the opposite direction, with a predicted income level based on its institutional quality that is much lower than its actual income level. A possible interpretation of these findings is that India has a great deal of scope for future growth given its good institutional performance, while Bangladesh's current relatively high income levels (given its weak institutional quality) are more likely to be unsustainable.

4.60 Third, using micro data, we confirm the importance of property rights institutions for firm performance in Bangladesh, India, Pakistan, and Sri Lanka. Finally, we show how firms in the South Asian countries are able to circumvent failures in formal contracting institutions by resorting frequently to informal channels such as belonging to a business association.

**ANNEX 1. FIRST-STAGE REGRESSIONS FOR PROPERTY RIGHTS AND CONTRACTING INSTITUTIONS,  
SMALL SAMPLE**

	Rule of law	Control of corruption	Executive constraints	Expropriation risk	Number of procedures	ln (number of days)
British legal origins	-0.394	-0.418	0.417	-0.675	-10.014	-0.385
	(0.210)*	(0.227)*	(0.590)	(0.363)*	(4.567)**	(0.200)*
ln (settler mortality)	0.472	0.489	1.244	0.742	1.251	0.153
	(0.099)***	(0.099)***	(0.148)***	(0.119)***	(1.381)	(0.079)*
India	0.404	0.785	-2.121	-0.705	14.507	0.586
	(0.203)*	(0.235)***	(0.479)***	(0.330)**	(3.637)***	(0.178)***
Bangladesh	0.991	1.368	2.401	2.110	3.026	0.375
	(0.192)***	(0.219)***	(0.483)***	(0.322)***	(3.792)	(0.167)**
Sri Lanka	0.173	0.454	-0.571	1.236	-8.946	0.566
	(0.193)	(0.220)**	(0.483)	(0.322)***	(3.781)**	(0.167)***
Pakistan	1.231	1.474	-1.781	1.716	20.849	0.555
	(0.215)***	(0.248)***	(0.479)***	(0.340)***	(3.571)***	(0.188)***
Constant	-1.757	-1.951	-10.130	-9.783	30.646	5.257
	(0.479)***	(0.488)***	(0.848)***	(0.587)***	(7.038)***	(0.430)***
Observations	57	57	57	57	57	57
R squared	0.51	0.52	0.49	0.49	0.22	0.18

*Note:* Robust standard errors in parentheses.  
\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

**ANNEX 2. INSTRUMENTAL VARIABLES REGRESSIONS OF LN (GDP PER CAPITA) ON PROPERTY RIGHTS AND CONTRACTING INSTITUTIONS, SMALL SAMPLE**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of law	1.740 (0.402)***				2.459 (0.924)**			
Control corruption		1.686 (0.371)** *				2.403 (0.991)**		
Expropriation risk			1.120 (0.293)***				1.638 (0.932)*	
Executive constraints				0.568 (0.086)** *				0.550 (0.121)** *
Number procedures	0.083 (0.052)	0.085 (0.054)	0.090 (0.057)	-0.009 (0.031)				
Number days					2.902 (2.096)	2.993 (2.357)	3.254 (3.222)	-0.213 (0.703)
India	-1.428 (1.442)***	-0.833 (0.329)**	-3.020 (0.845)***	-1.997 (0.409)** *	-1.631 (0.804)**	-0.790 (0.532)	-3.985 (2.364)*	-1.965 (0.481)** *
Bangladesh	0.485 (0.471)	1.061 (0.596)*	1.102 (0.679)	0.402 (0.299)	0.360 (0.313)	1.177 (0.670)*	1.247 (1.072)	0.414 (0.266)
Sri Lanka	0.796 (0.774)	1.276 (0.923)	1.941 (1.093)*	-0.654 (0.521)	-1.467 (0.927)	-0.853 (0.749)	-0.066 (0.566)	-0.444 (0.280)
Pakistan	-0.796 (0.520)	-0.490 (0.487)	-1.159 (0.623)*	-2.026 (0.556)** *	0.214 (0.213)	0.682 (0.330)**	-0.195 (0.360)	-2.062 (0.440)** *
Constant	5.905 (1.639)***	5.618 (1.788)** *	-2.202 (3.729)	6.038 (1.238)** *	-8.063 (11.853)	-8.907 (13.490)	-21.614 (24.570)	7.058 (4.532)
Observations	57	57	57	57	57	57	57	57

Note: Robust standard errors in parentheses.

\* significant at 10 percent; \*\* significant at 5 percent; \*\*\* significant at 1 percent.

**ANNEX 3. VARIABLE DEFINITIONS AND COUNTRY COVERAGE FOR THE WBES AND PICS DATASETS**

<b>Variable</b>	<b>Description</b>	<b>Country coverage</b>
Quality of courts (WBES)	An assessment of the quality of courts based on the rating of “the overall quality and efficiency of services delivered by the judiciary and courts.” Answers ranged from 1 = very good to 6 = very bad	Bangladesh, India, Pakistan, and others <sup>a</sup>
Functioning of judiciary with respect to business disputes (WBES)	An assessment of the functioning of the judiciary with respect to business disputes based on the question, “In resolving business disputes do you believe your country’s court system is (a) fair/impartial, (b) honest/uncorrupt, (c) quick, (d) affordable, (e) consistent, (f) decisions enforced?” Answers ranged from 1 = always to 6 = never. We use the average of the firms’ answers to the six items	Bangladesh, India, Pakistan, and others
Corruption as an obstacle to business (WBES)	An assessment of corruption based on “how problematic is” corruption “for the operation and growth” of the firm. Answers ranged from 1 = no obstacle to 4 = major obstacle	Bangladesh, India, Pakistan, and others
Frequency of additional payments to get things done (WBES)	The frequency of bribes based on the rating of the statement, “It is common for firms in my line of business to have to pay some irregular additional payments to get things done.” Answers ranged from 1 = always to 5 = seldom	Bangladesh, India, Pakistan, and others
Functioning of judiciary with respect to business disputes (PICS)	An assessment of the functioning of the judiciary with respect to business disputes based on the rating of the statement, “I am confident that the judicial system will enforce my contractual and property rights in business disputes.” Answers ranged from 1 = fully disagree to 6 = fully agree	Bangladesh, India, Pakistan, and Sri Lanka
Corruption as an obstacle to business (PICS)	An assessment of corruption based on “how problematic is” corruption “for the operation and growth” of the firm. Answers ranged from 0 = no obstacle to 4 = major obstacle	Bangladesh, India, Pakistan, and Sri Lanka
Percentage of firms asked to pay bribes in government inspections (PICS)	The percentage of firms that were asked to pay bribes during inspections by government officials from several agencies	Bangladesh, India, Pakistan, and Sri Lanka
Membership in business association		Bangladesh, India, Pakistan, and Sri Lanka
Importance of dispute resolution by business association	An assessment of the value of the services provided by the business association regarding the resolution of disputes with officials, workers or other firms. Answers ranged from 0 = no value to 4 = critical value to the firm	Bangladesh, India, Pakistan, and Sri Lanka
Percentage of working capital financed by informal sources	Informal sources of finance are listed as, for example, moneylender	Bangladesh, Pakistan, and Sri Lanka
Percentage of investment financed by informal sources	Informal sources of finance are listed as, for example, moneylender	Bangladesh, Pakistan, and Sri Lanka
Percentage of overdue payments not resolved by courts	Percentage of firm disputes about overdue payments in the last two years that were not resolved by court action	Bangladesh and Sri Lanka

a. Others include Argentina, Bolivia, Botswana, Brazil, Cambodia, Cameroon, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Ghana, Guatemala, Haiti, Honduras, Indonesia, Ivory Coast, Kenya, Madagascar, Malawi, Malaysia, Mexico, Namibia, Nicaragua, Nigeria, Panama, Peru, Philippines, Senegal, Singapore, South Africa, Tanzania, Tunisia, Uganda, United States, Uruguay, Venezuela, Zambia, and Zimbabwe.



## 5. IMPROVING TECHNOLOGY, SKILLS, AND INNOVATION IN SOUTH ASIA<sup>34</sup>

### INTRODUCTION

5.1 Since the 1980s the South Asian countries<sup>35</sup> have been growing faster than the rest of the world. However, the international environment is becoming more competitive and demanding. In addition, higher education and innovation are becoming more critical for countries to be able to benefit from the increasingly globalized international environment. Therefore, South Asian countries have to improve their skills and innovation capabilities. Here we will assess the position of South Asian countries and propose some of the key actions that they need to take to strengthen their technology and innovation capabilities to improve their economic performance and welfare.

5.2 This paper covers the five largest South Asian countries. They range from Sri Lanka and Nepal, which have around 20 million inhabitants each, to India, the second most populous country in the world with slightly more than 1 billion people. In terms of gross domestic product (GDP) per capita, four are in the World Bank's low income category (per capita income less than US\$765 in 2003) with Nepal at the very low income level, to Sri-Lanka, which just makes it into the lower middle income category (US\$766–3,035) (Table 5.1).

**Table 5.1: Population, GDP, and Exports 2003**

	Population (millions)	GDP (US\$ billion)	GDP/capita	Merchandise exports (US\$ millions)
<b>Bangladesh</b>	138	55	400	6942
<b>India</b>	1064	571	540	55982
<b>Nepal</b>	25	6	240	662
<b>Pakistan</b>	148	78	520	11930
<b>Sri Lanka</b>	19	18	930	5125
<b>World</b>	6273	34577	5510	7578698

Source: World Bank 2005.

5.3 Each of the five has had rates of growth above the world average for the period 1980–1990 and 1990–2003, with Pakistan having the highest rate of growth in the decade of the 1990s and India the highest in the 1990–2003 period (Table 5.2). In fact in the last years India has achieved a spectacular rate of growth of 8 percent.

**Table 5.2: Growth of GDP**

	1980–90	1990–2003
<b>Bangladesh</b>	3.7	4.9
<b>India</b>	5.7	5.9
<b>Nepal</b>	4.6	4.6
<b>Pakistan</b>	6.3	3.6
<b>Sri Lanka</b>	4.0	4.7
<b>World</b>	3.3	2.8

Source: World Bank 2005.

<sup>34</sup> This Chapter was prepared by Carl J. Dahlman, Professor of International Relations and Information Technology, Edmund A. Walsh School of Foreign Services, Georgetown University, USA. The views in this paper are solely the author's and do not necessarily reflect those of the World Bank or its Executive Directors.

<sup>35</sup> We examine the situation of five of the South Asian countries: Bangladesh, India, Nepal, Pakistan, and Sri Lanka. Unfortunately, it was not possible to include Bhutan or the Maldives because of data limitations.

5.4 To put them in the global context it is instructive to compare their shares in the global population with those in global GDP and trade. Because they are low income countries, their share in global GDP is much lower than that in global population. At the higher end, Sri Lanka's share in global GDP is 17 percent of its share in population, while that of Nepal is just 5 percent. With respect to exports, Sri Lanka's share of global exports actually exceeds its share of global GDP by 40 percent, indicating it is an export-driven economy. The shares of the four other countries range from just 44 percent (India, the least export oriented) to 70 percent (Pakistan). While the share of exports in global exports between 1990 and 2003 increased by 80 percent for Bangladesh and 40 percent for Sri Lanka and 45 percent for India, Pakistan and Nepal just maintained their relative shares (Table 5.3).

**Table 5.3: Percentage Share in World Totals**

	Population 2003	GDP 2003	Merchandise exports 2003	Merchandise exports 1990
<b>Bangladesh</b>	02.20	00.16	00.09	00.05
<b>India</b>	16.96	01.65	00.74	00.51
<b>Nepal</b>	00.40	00.02	00.01	00.01
<b>Pakistan</b>	02.36	00.23	00.16	00.16
<b>Sri Lanka</b>	00.30	00.05	00.07	00.05

Source: Computed from World Bank 2005.

5.5 In terms of the share of exports of goods and services in GDP, only Sri Lanka, with 36 percent, is above the world average of 24 percent (Table 5.4). India is particularly low at just 14 percent, in fact one of the lowest in the world in spite of its considerable service exports particularly in the information technology services for which it is so well known worldwide. With respect to merchandise exports, the majority in all countries are manufactured products. With the exception of India and Sri Lanka, the share of manufacture in merchandise exports exceeds the world average. However, only a very small percentage of them are high technology products.

**Table 5.4: Various Indicators of Trade Structure**

	Export goods and services/GDP	Percent manufactured exports			Percent hi-tech in manufactured exports
		1990	2003	1990	2003
<b>Bangladesh</b>	6	14	77	89	0
<b>India</b>	7	14	71	77	5
<b>Nepal</b>	11	17	83	Na	Na
<b>Pakistan</b>	16	20	79	85	1
<b>Sri Lanka</b>	29	36	54	74	1
<b>World average</b>	19	24	72	77	18

Source: World Bank 2005.

## THE NEW COMPETITIVE CONTEXT

5.6 The world is in what could be called a knowledge revolution. There has been a speed up in the production and dissemination of knowledge based, in part, on advances in information processing and communications technologies, as well more general advances in the science base and in ability to codify knowledge.

5.7 The rapid reduction of transportation and communications costs made possible by technological progress in all means of transportation and information technologies (IT), combined with liberalization of trade in goods and services, are leading to a rapid increase in the volume of

goods and services that are traded. Between 1990 and 2003, the share of imports and exports in GDP increased from 38 to 48 percent of global GDP. In addition, 27 percent of global value added is being produced by multinational corporations (MNCs), meaning that nearly one-third of world GDP is produced by corporations spanning multiple markets and national jurisdictions.<sup>36</sup> This is actually an underestimate of the degree to which global production is interlinked because it does not include all the indirect effects through the integration of supply and distribution chains.

5.8 MNCs are also the key agent in the creation of knowledge since the R&D done by multinationals accounts for the large majority of R&D done by the private sector, and private R&D has become larger than public R&D as a result of the decrease in global defense budgets that occurred after the end of the cold war.

5.9 Combined with the trend toward liberalization of product, service, and financial markets, greater globalization means increasing global competition. Capital markets move capital to where they expect the highest risk adjusted returns, while MNCs redirect their resources in line with the global dynamics of markets, driven by size and growth potential, and the creation of endowments, among which knowledge stands out. Thus, countries like China and India have become magnets in the creation of major new platforms in the exports of production and services.

5.10 The nature of competitiveness is also changing. Traditionally it was based on lower capital or labor costs, or of other local inputs, including infrastructure services, while also depending on the economic and business environment. Although these fundamentals continue to play a key role, given the very rapid rate of development and dissemination of new knowledge globally and the pressure to restructure, there are important new elements, including the ability to:

- Rapidly redeploy resources in order to capture new opportunities
- Ensure the quality, skills, and flexibility of labor force (and management)
- Keep up with rapidly changing technological and organizational advances
- Move to higher value parts of value chain (research/design and marketing, branding, and managing of customer information)
- Make effective use of IT to reduce transactions costs and improve capacity to respond quickly to changing opportunities and threats

5.11 As a result there is increased attention across countries on improving their overall business environment and the flexibility and speed of their economies to respond to rapidly changing circumstances, improving education and skills systems, and improving their innovation systems and their information infrastructure. With the exception of India, the South Asian countries are not so well placed to take advantage of these changes in the competitive environment because they lack the critical mass of high skilled human resources and technological capability necessary to do so.

---

<sup>36</sup> Based on calculations from UNCTAD (various years).

## **SOUTH ASIAN COUNTRIES IN THE CONTEXT OF THE KNOWLEDGE ECONOMY**

### **World Bank Knowledge Assessment Methodology**

5.12 The World Bank Institute has developed a useful benchmarking tool that helps to rank countries in terms of their readiness to use knowledge for their development.<sup>37</sup> The methodology consists of examining a country's global rank ordering in four pillars. The four pillars are:

- An economic and institutional regime that provides incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship; this is critical because it affects not only the incentive to improve performance, but also the ease with which better knowledge can be put into practice
- An educated and skilled population that can create, share, and use knowledge well; this is critical because, as argued above, this is the key enabler to make effective use of knowledge as well as to produce it
- A dynamic information infrastructure that can facilitate the effective communication, dissemination, and processing of information; this has become critical for access to knowledge and to reduce transactions costs
- An efficient innovation system of firms, research centers, universities, consultants, and other organizations that can tap into the growing stock of global knowledge, assimilate, and adapt it to local needs, and create new technology

5.13 The rationale for including the economic incentive and institutional regime as one of the pillars of the knowledge economy is that it sets the broader framework for the more structural pillars. In addition, an economy needs to have the flexibility to adjust to the rapidly changing opportunities created by the rapid development and dissemination of new knowledge. An effective economic and institutional regime that permits such rapid adjustment is critically important.

5.14 Knowledge Assessment Methodology (KAM) consists of a set of 80 structural and qualitative variables that serve as proxies for the four pillars (roughly 20 per pillar) that are critical to the development of a knowledge economy. The comparison is undertaken for a group of 128 countries that includes most of the developed Organisation for Economic Co-operation and Development (OECD) economies and more than 90 developing countries. A reduced index of the KAM called the knowledge economy index (KEI) based on three indicative variables in each of the four pillars has been developed to give a quick summary index of a country's overall position.<sup>38</sup>

---

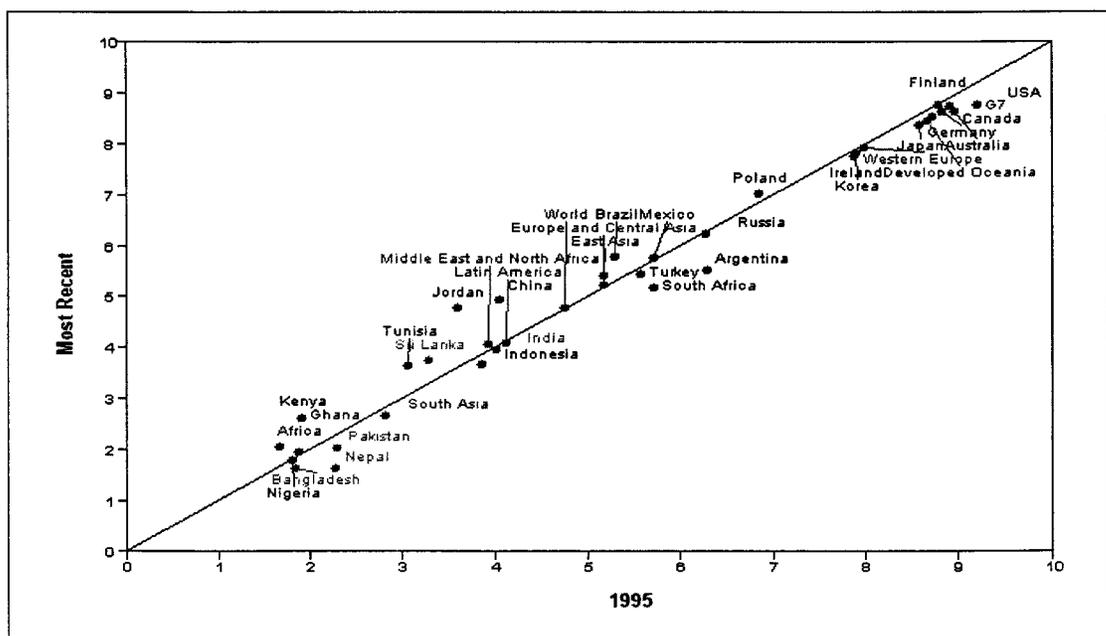
<sup>37</sup> See [www.worldbank.org/kam](http://www.worldbank.org/kam). Knowledge Assessment Methodology is designed to help countries understand their strengths and weaknesses in making the transition to the knowledge economy. It provides a preliminary knowledge economy assessment of a country, which can form the basis for more detailed sector-specific work.

<sup>38</sup> The actual indicators used for each of the pillar are as follows. Economic and institutional regime: tariff and nontariff barriers, regulatory quality, and rule of law. Education and human resources: adult literacy rate (percent age 15 and above), secondary enrollment, and tertiary enrollment. Innovation system: researchers in R&D, patent applications granted by the U.S. Patent and Trademark Office, and scientific and technical journal articles (all weighted per million people). Information infrastructure: telephones per 1,000 persons, computers per 1,000 persons, and Internet users per 10,000 persons.

## Relative Position of South Asian Countries

5.15 Figure 5.1 presents the KEI for the six developing regions, the Group of Seven and Western Europe, as well as some key developing countries and the five South Asian countries for which we have data. Several interesting aspects stand out. First, as a whole the developed countries (with the notable exception of Finland) have lost some of their relative ranking as some middle income countries have made faster relative progress. Second, some developing countries such as Brazil, China and Jordan have made significant relative improvements. Other middle income countries such as Argentina and South Africa have lost ground<sup>39</sup>

Figure 5.1: Overall KEI 1995 Versus Most Recent



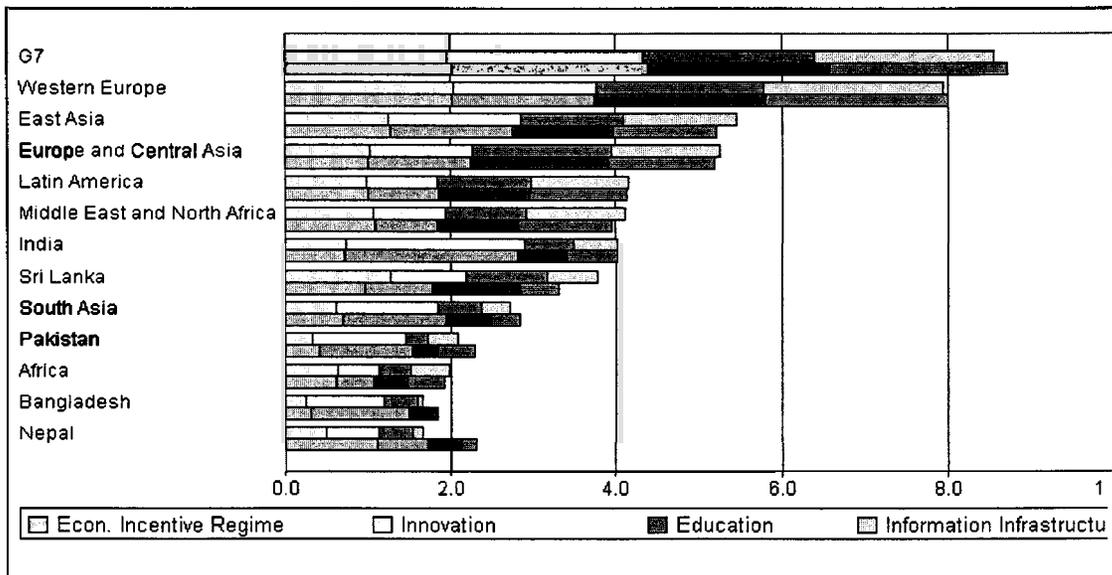
Source: [www.worldbank.org/kam](http://www.worldbank.org/kam).

Note: The horizontal axis represents the relative position of the country or region in 1995. The vertical axis represents the position in the most recent year (generally 2000–3). The graph is split by a 45 degree line. The most advanced countries are on the northeastern section of the diagonal. But the position relevant to the diagonal is also critical. Those countries or regions that are plotted below the line indicate a regression in their performance between the two time periods. Countries or regions that are marked above the line signify improvement between the two time periods, while those countries that are plotted on the line indicate stagnation. The KAM methodology allows the user to check performance in the aggregate KEI or knowledge index (KI), as well as the individual pillars that define them: economic incentive regime, education, and information communications technologies, and the innovation index. This figure has been computed using the unweighted variables for the innovation index

<sup>39</sup> Countries can lose ground in one of two ways. They may have an actual decline in an indicator or they may not improve an indicator as fast as other countries so they fall behind relative to the rest of the world. In South Africa, for example, both elements are at work. In secondary education, the actual enrollment rates declined. In the information communications technologies indicators, even though South Africa made significant improvements in the penetration ratios increasing some by a factor of six times, the rest of the world moved much faster so South Africa fell behind relative to the rest of the world. The KAM score cards also show that Africa as a whole is particularly weak in the innovation pillar variables

5.16 South Asia does worse than the other developing regions except Africa. Within South Asia, India does the best, although it does not show any improvement over time. Its higher knowledge economy index is largely due to its high index on innovation (see Figure 5.2 and Table 5.5, which give the breakdown in the composition of the indices and their change over time) given the large absolute size of scientists and engineers in R&D as well as the absolute volume of scientific and technical publications.<sup>40</sup>

**Figure 5.2: Comparison of KEI Component Parts for World Regions With South Asian Countries (Most Recent in Top Line, Compared to 1995 Bottom Line for Each Group)**



Source: [www.worldbank.org/kam](http://www.worldbank.org/kam).

Note: The top bar represents the most recent aggregate KEI score for a selected region or country, split into the four KE pillars. Each color band represents the relative weight of a particular pillar to the overall country's or region's knowledge readiness, measured by the KEI. The first line for each country is its position in the most recent year for which data are available (generally 2002–3). The second line is for 1995. This figure has been computed using the unweighted variables for the innovation index.

5.17 Sri Lanka is the second highest among the South Asian countries, and it shows some improvement over the period. The biggest improvement is in the economic incentive and institutional regime, where it gets the highest ranking among the South Asian group. It made significant improvements in the ICT index where it moves from second to first. While it makes a small improvement in the innovation index, it actually loses ground in the education variable even though it still remains the highest in education among the group.

5.18 Pakistan, Bangladesh, and Nepal all lose ground in the aggregate KEI. Most notable is the sharp fall in the economic incentive regime in Nepal which considerably pulls down its overall average. Nepal also loses in the information communications technologies (ICT) indicator. Pakistan also loses in the economic incentive, and in the ICT indicator as well as in the education indicator, and ends up with the lowest score among the group in the latter. Bangladesh slips most in the innovation index and also slips in the economic incentive regime, but makes some gains in the ICT and a smaller gain in the education index.

<sup>40</sup> All the indicators in the methodology were scaled by population. However, because knowledge is not consumed in its use, for the innovation variables the indicator was also computed based on absolute values, which is how it is reported here. In the full KAM database it is possible to use the innovation variables normalized by population.

**Table 5.5: Knowledge Economy Indicator and Components: Changes 1995 to Most Recent**

Country	Most recent					1995				
	KEI	Econ. Incentive Regime	Innovation	Education	Information Infrastructure	KEI 1995	Econ. Incentive Regime 1995	Innovation 1995	Education 1995	Inf. Infrastructure 1995
G7	8.55	7.85	9.49	8.21	8.64	8.71	8.05	9.54	8.68	8.57
Western Europe	7.94	8.15	6.89	8.09	8.62	7.98	8.02	6.92	8.22	8.74
East Asia	5.44	4.95	6.39	4.96	5.48	5.17	4.98	5.95	4.86	4.91
Europe and Central Asia	5.25	4.09	4.91	6.73	5.25	5.18	3.95	4.96	6.62	5.17
Latin America	4.13	3.87	3.40	4.50	4.73	4.12	3.99	3.39	4.38	4.73
Middle East and North Africa	4.09	4.23	3.47	3.88	4.81	3.94	4.29	3.03	3.89	4.53
India	3.97	2.91	8.59	2.33	2.06	4.02	2.85	8.42	2.38	2.42
Sri Lanka	3.76	5.08	3.67	3.90	2.39	3.29	3.79	3.26	4.22	1.87
South Asia	2.70	2.44	4.90	2.10	1.34	2.82	2.78	4.98	2.15	1.37
Pakistan	2.05	1.29	4.46	1.05	1.43	2.29	1.64	4.49	1.25	1.78
Africa	1.96	2.57	1.91	1.51	1.87	1.88	2.41	1.74	1.61	1.75
Bangladesh	1.66	0.97	3.73	1.62	0.30	1.84	1.24	4.74	1.30	0.08
Nepal	1.65	1.97	2.52	1.60	0.53	2.28	4.38	2.44	1.62	0.70

Source: www.worldbank.org/kam.

Note: These numbers are the normalized rankings. For the raw scores see the database.

5.19 See the annex for individual basic scorecards with changes between the two periods for each of the countries. The annex also includes more detail data on the economic incentive and institutional regime as well as the information and communications indicators because they are not the main focus of this paper.

## GLOBAL TRENDS IN EDUCATION AND THE SITUATION OF SOUTH ASIAN COUNTRIES

### Global Trends in Education and Training

5.20 Education is the fundamental enabler of the knowledge economy. Well-educated and skilled people are key to creating, sharing, disseminating, and using knowledge effectively. Critical is no longer just basic or even secondary education, but higher education and the constant upgrading of skills. This is a challenge for all countries. There is also increasing competition for people with high level skills, which makes their education and effective employment a central aspect of development strategy.

5.21 The development of a knowledge economy demands a flexible education system. It begins with basic education that provides the foundation for learning; continues with secondary and tertiary education that develops core, including technical, skills; and encourages creative and critical thinking that is key to problem solving and innovation, extending into a system of lifelong learning. Such a system is one that encompasses learning from early childhood to retirement and includes formal training (schools, training institutions, and universities) and nonformal learning (on-the-job training, and skills learned from family members or people in the community). The basic elements of such a system are comprehensiveness, new basic skills (acting autonomously, using tools interactively, and functioning in socially heterogeneous groups), multiple pathways, and multiple providers.

5.22 Thus, the knowledge revolution means that higher levels of education are needed to keep up with and make effective use of rapidly changing knowledge. It also means that high level scientific and technical manpower is needed to create new knowledge. But because the half life of knowledge is getting shorter and there are new skills to learn, it also means that there is a need for a system of continuous training in order to constantly upskill or re-skill people who have already passed through the formal educational system.

5.23 Countries are therefore paying more attention to education as part of their development and competitiveness strategy, putting great efforts into increasing the levels of educational attainment. Between 1990/1 and 2002/3, for instance, enrollment rates at the secondary level increased from 55 to 71 percent and from 16 to 26 percent at the tertiary level. For high income countries, in particular the increases, were from 94 to 107 percent and from 47 to 66 percent for the secondary and tertiary levels, respectively.<sup>41</sup> For Korea, an economy that has traditionally placed a very high value on education and is now well known as a knowledge economy, the increase in tertiary enrollment rates was from 39 to 85 percent, which put it second only to Finland (with 86 percent), the other well-known knowledge-based economy (World Bank 2005).

5.24 Related to the need to keep up with new skills and functions—in computer literacy, communication skills, and the ability to work in groups—is the need for constant up-skilling and re-skilling of persons who have already left the formal educational system. This is reflected in the very high percentage of adults who are taking additional courses at work, in specialized institutions, or even going back to tertiary institutions for formal education (in Finland, this is true for more than 50 percent of adults). This is also reflected in the number of students at universities who are older than the typical university age cohort of 18–24 years old. In the United States, more than 40 percent of undergraduates are over 25 years of age. In Australia, New Zealand, Denmark, Norway, and Sweden, more than 20 percent of first-time entering students were over the age of 27 in 2000.<sup>42</sup>

5.25 In addition there is a trend for an increasing number of private educational institutions all the way from nursery schools to the university level that have arisen to fill in the needs not adequately addressed by public education. Firms are undertaking increasing amounts of in-house training to give their workers the skills they need to compete. In addition, some of the larger firms are even setting up their own in-house universities to provide the most advanced specialized skills needed to be competitive. Firms are also more proactive in approaching universities and specialized training centers to get them to develop specific training programs to meet their needs

5.26 Equally noteworthy is the increasing use of information-based technologies, which has been gathering speed as the technology has improved and more experience acquired on its use. In the United States, 16 percent of tertiary-level students are taking at least one course online, and 40 percent of those are full time on line. E-learning is expanding very rapidly and much is being provided by nontraditional universities (new entrants, including publishers and mass media). E-education, by crossing boundaries, has also facilitated the internationalization of education. In 2005 there were 2.1 million students in tertiary education outside their home countries, which combined with a growing tendency for foreign universities to set up facilities abroad, is increasing competition in the education sector worldwide.

---

<sup>41</sup> In most countries, in spite of rapid expansion of higher education, the relative wage differences between college graduates and high school grades is not narrowing. This is surprising given the very large increase in supply. The explanation for this is that rapid technological change and higher education are complementary. Higher education is becoming increasingly important to take advantage of the rapid advances in knowledge.

<sup>42</sup> OECD (2005).

5.27 Finally, there is also increasing competition for high level human capital across countries because there is clear understanding that to be globally competitive and to be able to innovate, countries need high level human resources. It is telling, for example, that while there is no free trade in labor, the exception is for highly trained persons, where even the U.S. has had more liberal immigration policies and developed a program for the temporary immigration of specialized manpower in the ICT sector.

### **Education and Skills in South Asian Countries**

5.28 South Asian countries<sup>43</sup> are in a weak position in terms of education and skills. As a group they have high illiteracy rates, low enrollment ratios at the secondary and tertiary levels, very low average educational attainment among the adult population, extremely low percentage of professional and technical workers among the labor force, low quality of math and science education, little staff training even among firms in the modern sector, and a very serious problem of emigration of the highly skilled workers.

5.29 As can be seen from the spider charts (Figure 5.3 next page) for individual countries there is considerable variations among the five countries. Nepal and Bangladesh are much weaker on all the variables. Pakistan ranks somewhat better. Sri Lanka and India score much higher. Sri Lanka has the highest literacy, enrollment rates, and average educational attainment.

5.30 However, India is ranked higher in terms of the quality of science and math education, extent of staff training, and availability of management education. India has the world-renowned Indian Institutes of Technology and Indian Institutes of Management, which produce world-class graduates. These institutes, along with many other lesser known regional colleges, have given India a critical mass of highly skilled people. These high quality English-speaking human resources are a large part of the reason why India has been able to develop the information technology export services that have moved up from simpler back office functions and call centers to software design and innovation services. Many of the highly skilled Indians have immigrated to the United States and Europe in search of higher paying jobs. However, some of this brain drain has been turned into a brain gain as they have started to outsource highly skilled services from India.<sup>44</sup>

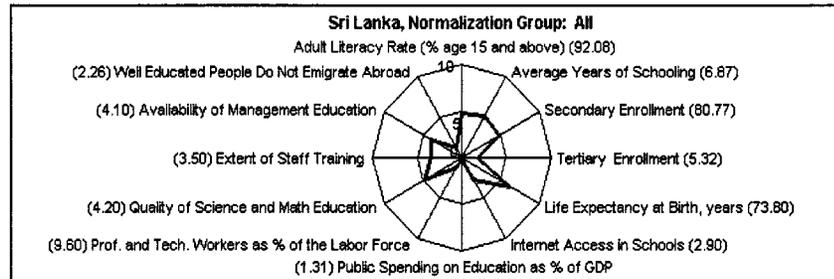
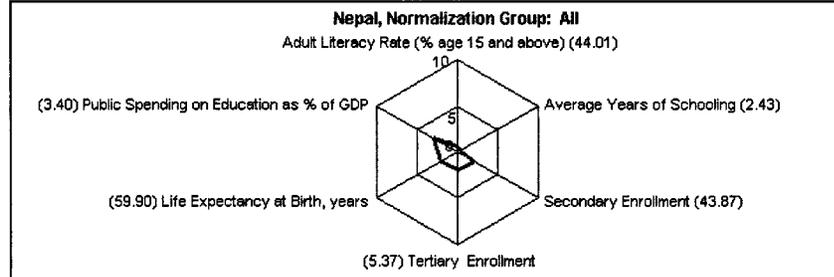
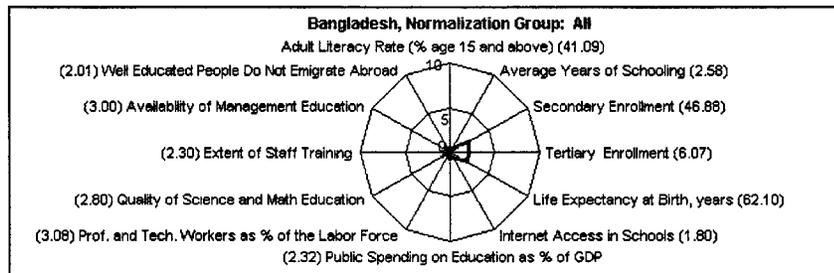
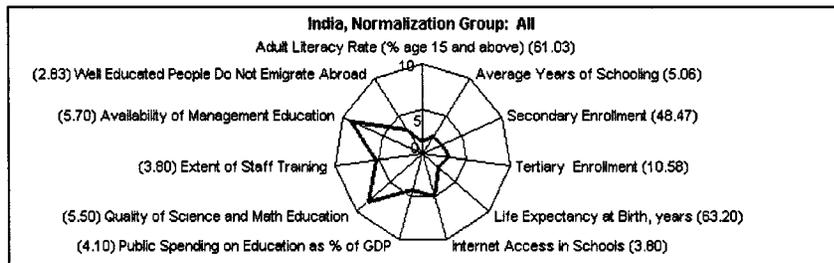
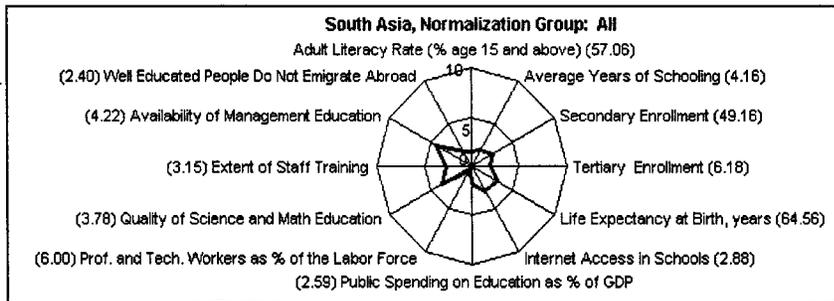
5.31 This strong high-skilled ICT service sector has not developed in the other South Asian countries because of their smaller scale and less prevalence of English in their education systems. However, this is a very small sector in India relative to its total population, and that the average levels of educational attainment in India are very low. Therefore, improving education and skills is challenge for all the South Asian countries.

---

<sup>43</sup>Figure 5.3 shows the position of the region or country relative to all the other countries in the world. Being on the outside perimeter indicates ranking among the top 10 percent of countries in the world and being at the center of the circle indicates ranking in the bottom 10 percent.

<sup>44</sup> For more on education and skills in India including the rise of the high technology service exports, see Dahlman and Utz (2005).

**Figure 5.3: Education Scorecards for South Asian Countries**



## GLOBAL TRENDS IN INNOVATION AND SITUATION OF SOUTH ASIAN COUNTRIES

### Global Innovation Trends

5.32 Innovation is becoming a critical element of competitiveness and growth as there is greater mobility of factors, products, services, and knowledge. A larger percentage of a country's economic growth can be attributed to more effective use of knowledge, even in developed countries. Countries behind the global frontier can dramatically increase their performance by improving their ability to innovate.

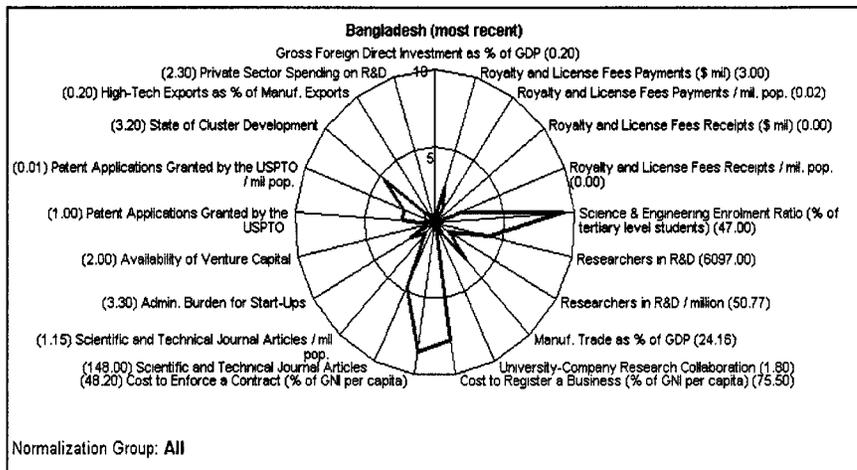
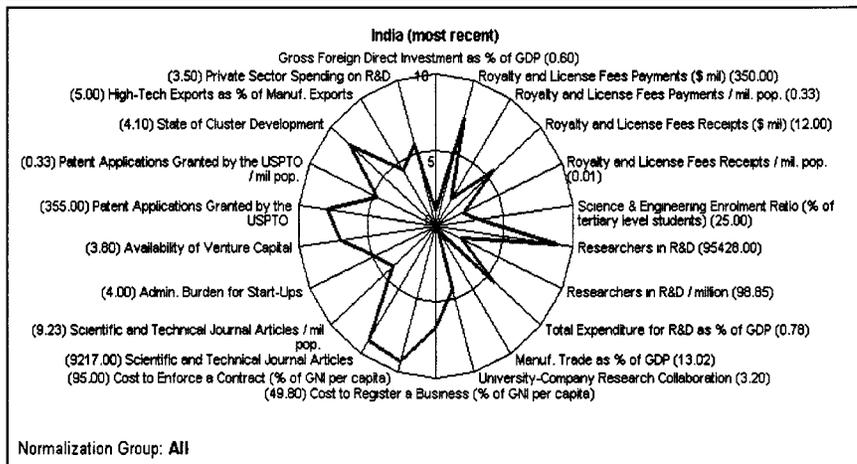
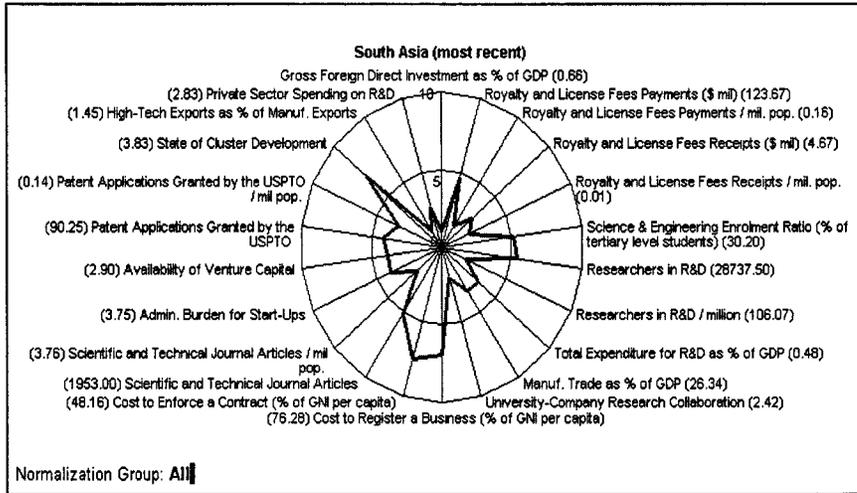
5.33 Expenditures on R&D globally have been increasing, particularly the share contributed by the productive sector. In OECD countries the share of R&D in GDP averages around 2.2 percent and 70–80 percent is undertaken by the private sector. In developing countries the share of R&D in GDP tends to average below 1 percent, and 70–90 percent tends to be undertaken by the public sector. The R&D effort undertaken by private firms is oriented toward commercially relevant applications, while the R&D effort undertaken by the government is usually more oriented toward basic knowledge and military research. As noted earlier, MNCs are the main producers of commercially oriented knowledge and they are also the main disseminators of such knowledge throughout the world. That is why it is important for developing countries to attract foreign investment that is relevant to their development strategies.

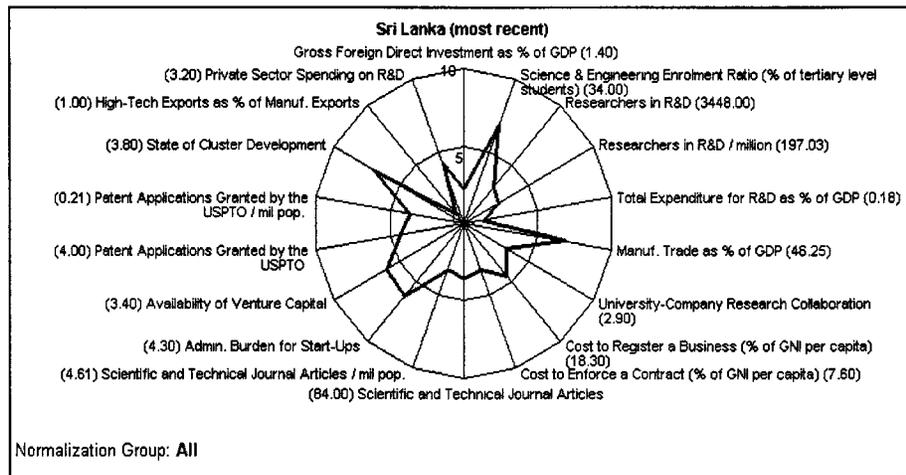
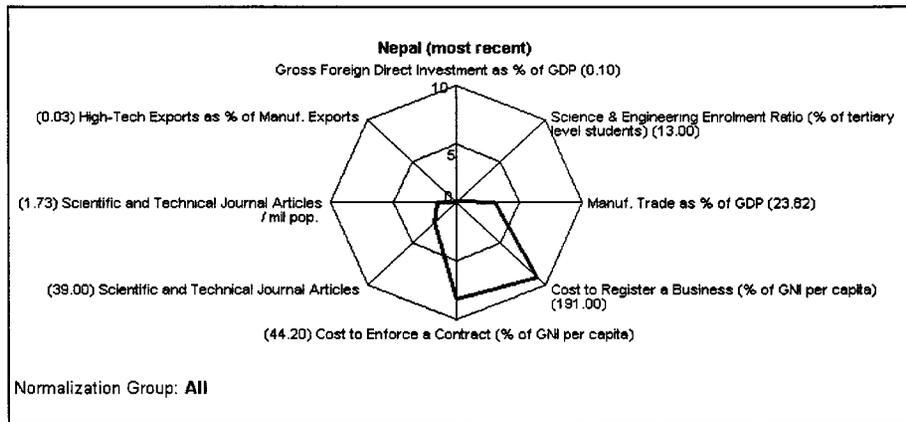
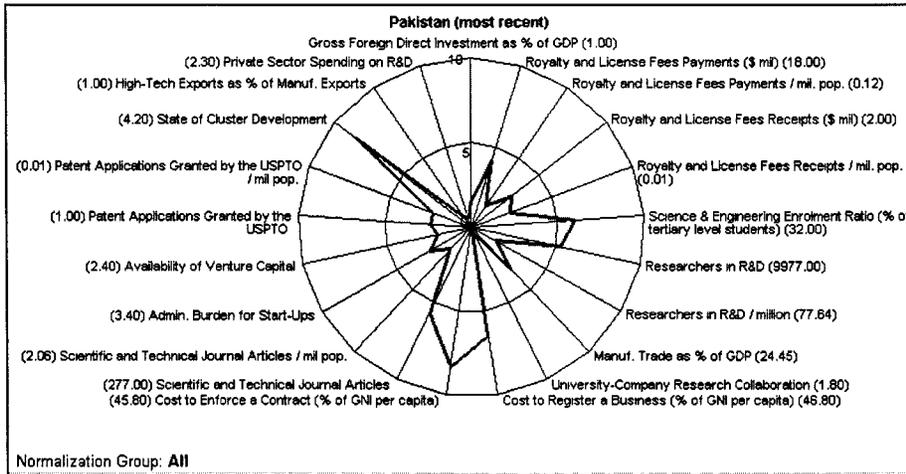
5.34 The innovation system plays an important role in acquiring, creating, adapting, and disseminating knowledge, which is crucial for success in the knowledge economy. It consists of the network of institutions, rules, and procedures that affect how the country acquires, creates, disseminates, and uses knowledge. Innovation in a developing country does not just concern domestic development of knowledge on the global frontier. It also concerns the application and use of existing knowledge to the local context. For the countries of South Asia, which are still far behind the global frontier in many sectors, tapping into and making effective use of existing global knowledge will have a greater economic impact than directing most of its resources to develop frontier knowledge, no matter how prestigious the latter may be.

5.35 The concept of innovation encompasses not only technological innovation, that is, diffusion of new products and services of a technological nature into the economy, but equally includes nontechnological forms of innovation, such as organizational innovations. The latter includes the introduction of new management or marketing techniques, adoption of new supply or logistic arrangements, and improved approaches to internal and external communications and positioning.

5.36 The concept of a national innovation system rests on the premise that understanding the linkages among the various actors involved in innovation are key to improving a country's technology performance. These actors include private enterprises, universities, research institutes, think tanks, and consulting firms. The innovative performance of a country depends to a large extent on how these actors relate to each other as elements of a broader system. Linkages can take the form of joint research, personnel exchanges, cross patenting, licensing of technology, purchase of equipment, and a variety of other channels.

**Figure 5.4: Innovation Scorecards for South Asian Countries**





## **Innovation in South Asian Countries<sup>45</sup>**

5.37 As a region the South Asian countries do better on the innovation pillar than on any of the others, and that is largely because of the capabilities of the large countries, India in particular, but also Pakistan and to a lesser extent Bangladesh. The main strength comes from the large absolute number of scientist and engineers in R&D as well as the number of scientific and technical journal articles. Bangladesh also has a strength in the very high science and engineering enrollment ratios in higher education, although that is diluted by the very low tertiary enrollment rates. See Figure 5.4.

5.38 Another area of relative strength is a strong state of cluster development, although this is mostly concentrated in India (where it includes not just IT services but pharmaceuticals, textiles, and metal engineering industries), Pakistan (medical instruments, sporting goods, textiles, and garments), and Sri Lanka (textiles and garments).

5.39 The overall formal R&D effort of the South Asian countries is very small. R&D expenditures as a share of GDP average 0.48 percent, with a high of only 0.78 percent in India. In general, the vast majority of the research done in the South Asian economies is done in public R&D labs. An area where India shows some strength though is in patenting. India has a large public research network and recently there have been some reforms which are strengthening the incentive regime to produce more commercially relevant output.

5.40 The private sector, with the exception of some of the larger Indian groups, does very little research. In addition, the relatively little research done by the public sector is not commercially relevant, and there are poor mechanisms to get it out to the productive sectors. It is also generally quite burdensome to start up new businesses, particularly technology-based business that also face the additional challenge of raising funds for risky new technology projects. The overall business environment is somewhat more supportive in Sri Lanka.

5.41 Another area of weakness of the innovation system in South Asian countries is the poor links between university and company researchers. This is a little stronger in India than in the other countries, but is still quite weak by the standards of developed countries.

5.42 However, it should be noted not all innovations are done through formal research. In all countries there are informal innovation efforts. In India some of this effort is being collected through an organization called the HoneyBee network, which has documented more than 12,000 small indigenous innovations, mostly in the agricultural sector. Furthermore, the government is beginning to pay attention to supporting and scaling up this indigenous effort.

5.43 All five countries with a partial exception of Sri Lanka, however, do not draw very much on global knowledge. This is revealed by the very low share of foreign direct investment to GDP, which is just a fraction of 1 percent for all countries except Sri Lanka (where it is 1.4 percent) and by very low formal purchase of foreign technology as shown by very low royalty or licensing fee payments (US\$0.33 per person in India where it is the highest followed by US\$0.12 in Pakistan, and virtually nil in the others). This contrasts with the situation of East Asian countries where the

---

<sup>45</sup> The innovation scorecards have a small glitch in that the variables on the cost of registering a contract and on the cost to register a business were inversely scaled. In their case, the higher the cost, the higher the ranking shown. To be consistent with the scaling of all the other variables, they should have been scaled inversely: the higher the cost, the lower the ranking. This inversion should be taken into account in interpreting the high rankings on the two variables in this section.

average share of gross direct foreign investment as a share of GDP is 8.26 percent, and the average royalty and licensing fees per population are US\$30.82.

5.44 In addition, again with the exception of Sri Lanka, the share of manufactured trade (imports and exports as proxy for access to embodied knowledge and pressures to keep up with global technology) in GDP is less than 25 percent (and in India it is only 13 percent) compared to an average of 99 percent for East Asian countries.

5.45 In short, although the South Asian countries do relatively better on the innovation pillar than on the other, they still have relatively small R&D effort relative to their needs. Also, the little that they do is not well integrated into the production system. In addition, as will be stressed below, they have a majority of the population in traditional subsistence sectors of the economy, and very little of this effort gets out to them except for some work on agricultural research and extension. Finally, these countries are not drawing very much or very effectively on the rapidly growing stock of global knowledge.

### OVERALL ASSESSMENT

5.46 The South Asian countries are significantly behind the global frontier in education and innovation and ICT. While their GDP growth has been higher than the world average, they also have high population growth rates. Competing on the international stage is becoming more demanding.

5.47 There is considerable diversity among the five South Asian countries analyzed in this paper. India is clearly ahead in its skills, technology, and innovation capability because of its much larger size and the critical mass in the absolute number of highly skilled population; number of researchers in R&D, resources allocated to R&D, and the vast network of public research laboratories, universities, and large private companies that are already undertaking research. Nepal is at the other extreme because of its very small population, much lower per capita income, and much less-developed technology infrastructure.

5.48 Keeping in mind these differences in scale and in the degree of development of their human and technological infrastructure, there are still some generic actions that all the countries can take. These will be treated under five headings, although the details under each will have to be adjusted to the specificities of each country. However, there is an overriding reality that cuts across all these recommendations that needs to be addressed. It is that in all South Asian countries the modern sector is just a small part of their economies. Two-thirds or more of their population are rural, and agriculture is still a large part of economic activity. The share of agriculture in GDP ranges from 19 percent in Sri Lanka to a high of 41 percent in Nepal, compared to the world average of just 4 percent. In addition, with the exception of Sri Lanka (where it is only 8 percent) the share of the population below US\$1 a day is in the double digits, ranging from 13 percent in Pakistan to 38 percent in Nepal. Furthermore, the South Asian countries have very high illiteracy rates ranging from 29 to 50 percent for men and from 51 to 74 percent for women. See Table 5.6.

**Table 5.6: Various Proxy Indicators of Traditional Sector**

	Rural	Agricultural	Below US\$1/day	Illiteracy, male/female
Bangladesh	73	22	36	50/69
India	72	22	35	32/55
Nepal	87	41	38	38/74
Pakistan	66	23	13	n.a.
Sri Lanka	76	19	8	29/51
World average	51	4	n.a.	20/27

5.49 This means that there needs to be a massive effort to increase the educational and technological level of the large population that is still not integrated into the modern sector. This population tends to be largely the rural population, although it also includes a large portion of the urban population eking out a marginal subsistence in urban slums in the informal urban sector. This will be a major focus of policy action and will be built into the recommendations for actions that follow. An additional recommendation will be the value of networking and cooperation among the South Asian countries.

## **KEY ACTIONS**

### **Improving the Economic Incentive and Institutional Regime**

5.50 Although Sri Lanka does better than the others, South Asian countries need to improve their economic and institutional regime. This includes increasing the depth and flexibility of capital and labor markets, strengthening social safety nets and competition policy, and improving governance and the rule of law, all of which are part of the basics of development. From the knowledge economy perspective, an additional area that needs to be improved is participation in international trade. Imports of capital goods, components, and products embody much knowledge. Exports also force companies to reduce costs and improve quality, which stimulates greater technological effort. With the exception of Sri Lanka, where the ratio of exports and import of goods to GDP is 57 percent, the share of trade in goods to GDP is below the weighted world average of 42 percent in 2003. The share in India is one of the lowest in the world at only 21 percent (World Bank 2005). India is missing out in the benefit of specialization and exchange and access to global knowledge. China, where the trade in goods is 60 percent of GDP, has benefited greatly from this greater global integration. Clearly there is room to lower tariff and nontariff barriers in the South Asian economies to create more competitive pressure to improve performance as well as to get greater access to embodied global knowledge.

### **Strengthening Education and Skills**

5.51 As noted earlier, education and skills are critical for countries to be able to make effective use of new knowledge, let alone to develop new knowledge. Here the challenges for South Asian countries are enormous. They have five challenges:

- Expand literacy. All five countries have female illiteracy rates over 50 percent and male illiteracy rates from 29 to 50 percent. Clearly they all have to undertake major literacy drives.
- Expand basic formal education to the large number of children not in school and who drop out. Primary enrollment rates are still less than 100 percent, and primary completion rates are even lower. The share of first grade students reaching the fifth grade is only 61 percent for males and 65 percent for females (World Bank 2005). At the same time they have to expand secondary education. Secondary enrollment rates average just 49 percent.
- Expand higher education where enrollment rates average just 6 percent compared to a world weighted average of 26 percent.
- Improve the quality of education at all levels. Most countries have outdated curriculums and do not teach the basic skills needed by students to continue to learn throughout their lives no matter at what level they leave formal education.
- Develop ways of effectively retraining adults who have left formal education, but need new skills demanded by rapidly changing technology.

5.52 Hard choices of priorities on budget allocations will be needed to be made as public sector budgets are clearly insufficient. Moreover, it is necessary to move on the various fronts as they are all critical and none can be completely unattended. Thus, ways have to be found to make more resources available for the challenge.

5.53 Three types of actions can be helpful. First, increase efficiency in the use of existing budgets. In all countries there are many inefficiencies and waste in educational expenditure. Better monitoring and incentive mechanism need to be put in place.

5.54 Second, make effective use of the private sector. This includes charging tuition for private education, particularly at the higher educational level. China, for example, has increased enrollments at the entering class at the tertiary level by 50 percent per year since 1997 and has been able to increase the enrollment rates from 6.5 percent in 1997 to 21 percent today. It did this in part by raising student tuitions to cover from 25 to 40 percent of public tertiary education costs. It also includes allowing entry of private providers of education, again especially at the higher education level since the government has the obligation to provide basic education as a public good. In China there are now more than 4 million students in nongovernment institutions.

5.55 Third, use the potential of new technologies to extend access and improve quality of education. In India, for example, Tata Consulting has developed a computer-based functional literacy program based on a multimedia program with animated characters and voiceover that allows students to acquire a 300–500–word vocabulary in their own language or dialect in 30–45 hours.<sup>46</sup> It is being piloted successfully in Andhra Pradesh and has the potential to help make a large proportion of India functionally literate in just a few years. There is also great potential to add new Internet- and satellite-based educational delivery mechanism to more traditional radio- or television-based distance education programs.<sup>47</sup>

### **Tapping into Global Knowledge**

5.56 All five countries could do better at tapping into global knowledge in addition to greater trade with the rest of the world. All could benefit by trying to attract more direct foreign investment. India in particular has great potential. Surveys of investors such as those done by A. T. Kearny find that executives rank India as a top potential destination.

5.57 However, little of this investment materializes for various reasons. One is that many sectors are still reserved for the state and other are only partially open. The second is the poor power and road infrastructure. The latter, in particular, inhibits investments that have to move goods in and out of the country. By contrast, investment in the services area that need only good Internet bandwidth such as back-office functions, call centers, engineering services, and software are not as inhibited because all they really need are good telecommunications and backup power. Liberalization of foreign investment restrictions and more proactive policies to attract foreign investment need to be put in place. Recall that the MNCs are the main producers and disseminators of applied knowledge.

---

<sup>46</sup> See Dahlman and Utz (2005).

<sup>47</sup> Cisco for example has developed a full day-by-day Internet-based curriculum to teach math in Arabic from kindergarden to twelfth grade that is being piloted in Jordan in 400 discovery schools through a joint program with the Ministry of Education. It has also developed online training programs for skills ranging from installing local area networks of its own systems to basic plumbing and electricity for workers in the United Kingdom.

5.58 South Asian countries also are not very active in purchasing foreign technology. Licensing payments per million population are extremely low, compared to East Asian countries (average of US\$0.16 in South Asia versus US\$30.82 average in East Asia). Overly restrictive technology transfer policies that inhibit purchase of foreign technology need to be relaxed.

5.59 Another means of tapping into foreign knowledge that needs to be strengthened is attracting back nationals who have gone abroad for studies and have acquired not only academic knowledge but practical experience from working in foreign countries. All the South Asian countries have a significant Diaspora that can be tapped. Economies such as Korea and Taiwan started doing this decades ago with great success. China has also launched major programs to attract its Diaspora by offering attractive incentives and special hi-tech parks dedicated exclusively for returning nationals. While India has begun to do some of this, it is still far behind China, and other countries in South Asia are even further behind.

5.60 Finally, much more can be done by South Asian countries to take advantage of the extensive amount of technical information and knowledge that can be tapped through technical publications and databases, especially now with the advent of the Internet. Some of the issues here are how to reap economies of scale in subscriptions to and dissemination of such information.

### **Creating Knowledge**

5.61 As noted, the five South Asian countries, with the partial exemption of India, are relatively weak in creating knowledge. Part of the reason for that is the still relatively weak pressure for improving performance for the economy as they generally are less open to international trade (although Sri Lanka is an exception here). It could be argued that they all need to increase expenditures on research and development. However, before pushing for an increase in public resources for R&D (as the bulk of spending is currently done by the government) it would be appropriate to improve the use of the resources that are currently being allocated. The productivity of the public resources allocated to R&D is very low. It is necessary to improve the efficiency in the allocation of public resources to R&D.

5.62 Some of the mechanisms that should be strengthened in the allocation of public funds for research are competitive bidding, peer review, and more monitoring and accountability in the use of the funds. In addition, it is necessary to improve the micro incentive regimes in the public R&D labs to that they use their resources more efficiently to focus on the needs of the respective economies.

5.63 It is also necessary to get the private sector to do more research of its own. Increasing competitive pressure in the economies should help. In addition, the government should stimulate more private research by strengthening various incentive mechanisms including matching R&D grants, tax subsidies for increases in R&D, and special programs to foster collaboration between public R&D labs, private firms, and universities (for example, by earmarking some of the matching grants for programs that actually involve such collaborations).

5.64 The latter should also include a review to remove disincentives for university researchers to do collaborative work with industry. Instead there should be strong incentives for public laboratory and university researchers to work with industry by allowing them to share in the benefits of the technologies developed through consultancy contracts and profit sharing in royalties. There should also be a special emphasis on publicly funded research to address the needs to the very large part of the population in all these countries that still live at close to the

subsistence level. These should include preventive health programs as well as programs to help them make more effective use of their limited resources, as well as how to extend to them the benefits of information technology by developing low-cost ICT solutions for them.

5.65 In all countries more can be done to set up special mechanisms and institutions to foster greater technology spin off from public research labs and universities. These mechanisms should include technology transfer offices in the public labs and universities, science-based industrial parks, and business incubator programs. These will make more sense in the larger economies such as India, Pakistan, and Bangladesh than in Nepal and Sri Lanka, although Sri Lanka is making efforts in this direction even in spite of its small size. In addition for the start up of new technology-based firms, it is necessary to help these firms to develop realistic business plans and provide them assistance in getting capital as it is very difficult for start ups with no assets to get loans from the banking sector.

5.66 It is also necessary to integrate these policies to allocate more resources to research and to strengthen the research infrastructure and collaboration among the main innovation agents with policies to develop the high level scientific, engineering, and technical persons who are to create new knowledge. This should also include strengthening business and entrepreneurship programs for scientists and engineers so that they are more attuned to identifying business opportunities.

5.67 The governments also have to strengthen programs to support grass root innovations and to support the scale up and broader dissemination of these innovations, as is being done by the Indian government.

### **Disseminating Existing Knowledge, Especially to the Very Large Traditional Sectors in Each Country**

5.68 This is perhaps the most important area given the very large percentage of the total population in these economies that has not yet benefited from the modern economy. In addition, this does not have the risk involved in the creation of new knowledge. It is the application and adaptation of already existing knowledge. In some cases there is the issue of purchasing existing proprietary knowledge. However, there is a tremendous amount of knowledge in the public domain that is not being used. This may be due to lack of information on its existence, lack of understanding of its relevance, lack of education or skills to make use of it, or lack of access to complementary inputs or supporting infrastructures and institutions to use it efficiently. A combination of these factors explains why it is not so easy for developing countries to catch up with developed countries, or for poor people to use knowledge that may be very relevant for them. The most relevant actions to address the lack of use of knowledge differ according to the nature of the problem (Table 5.7). They range from the more straightforward action of increasing access to information to the need to build up domestic institutions and domestic capabilities in terms of people's skills and ability to make effective use of knowledge.

**Table 5.7: Knowledge Failures in the Use of Knowledge and Corrective Actions**

Nature of the problem	Actions to solve the problem
Lack of information of existence of knowledge	<ul style="list-style-type: none"> <li>• Provide more technical information through print, radio, television, and Internet</li> </ul>
Lack of understanding of its relevance	<ul style="list-style-type: none"> <li>• Educate people on the value and relevance of different types of knowledge and how to look for an access to it</li> </ul>
Lack of education or skills to be able to use it	<ul style="list-style-type: none"> <li>• Beyond general education train people with the specific skills necessary to use the knowledge</li> </ul>
Lack of access to complementary inputs or supporting infrastructures and institutions to be able to use it	<ul style="list-style-type: none"> <li>• Provide easier access to finance</li> <li>• Provide extension services and other technical assistance to demonstrate the proper use of the new knowledge and to support its application; remove regulations that make it difficult to access the knowledge or to start up new business or activities with it</li> <li>• Provide a supportive environment in terms of good rule of law and contract and enforceability of contracts</li> </ul>

5.69 But while it is easy to say this needs to be done, it is quite difficult in practice. There are various mechanisms that need to be strengthened to disseminate knowledge. They include technical information services; extension services in agriculture, industry, and services; productivity organizations; and strengthening the metrology, standards, and quality control infrastructure. These should be given stronger priority than they are usually given by most governments that tend to focus too much on developing new knowledge rather than supporting the broader dissemination of knowledge to the large population in their economies who are still in the traditional sectors.

5.70 The kinds of knowledge that are needed for development are not just hard technical knowledge such as how to manufacture engines or produce steel or fertilizers or petrochemicals. Also important are organizational and managerial knowledge: how to set up transportation or distribution systems, and not just for goods but also for services. Some examples are how to set up effective tax collection and revenue administration systems for government or how to provide effective health and education services or business services.

## **NETWORKING AND COLLABORATION AMONG SOUTH ASIAN COUNTRIES**

5.71 A sixth action recommendation is to set up a system for networking and collaboration among the South Asian countries in the areas of education and training as well as in technology and innovation. As noted, in spite of their differences, there are many generic actions similar across the South Asian countries, and all the countries share the need to find more effective ways to extend education and technology to the large part of their population outside the modern economy. Sharing the experiences that each country has in dealing with the issues identified would be very beneficial to others.

5.72 In addition countries that are less advanced in a particular area could learn from those that have more experience of successful programs in that area. There is also scope for collaboration across countries in tackling similar issues, and even in doing joint research on common problems. An excellent example of such knowledge sharing across a region as well as a formal framework for joint research is given by the European Union's program in education and in research.

5.73 In 2000 the European Union set itself the ambitious target of becoming the most competitive and dynamic knowledge-based economy of the world by 2010. To achieve this the European Union developed numbers of program to transform education and training. These include sharing of experiences and working toward common goals and learning from what works best elsewhere. It also includes programs to encourage mobility of students teachers and researchers within the European Union and with outside countries, as well as programs for mutual recognitions of degrees.

5.74 The European Union has even more ambitious collaboration programs in the area of research. The Sixth Framework Program for research was launched in 2002 with a budget of €17.5 billion (about 5.5 percent of the total R&D effort), and was subsequently increased to €19.2 billion, to foster joint research across countries and between firms, universities, and enterprises and includes the creation of 25 technology platforms as well as an open method of coordination to contribute to policy learning and policy integration by encouraging and facilitating mutual exchange of knowledge and best practice.<sup>48</sup>

5.75 The European Union's programs are extremely ambitious and may be to more than what is feasible at the current time for South Asian countries, because South Asian countries do not yet have the formal integration of the European community. However, these programs do indicate the importance of cross-country collaboration and learning within a region, as well as the rationale for funding of research across national boundaries. Clearly it would make sense to start some of this cross-country sharing of experience and learning among the South Asian countries, and even consider some more formal exchange and joint-funding programs.

5.76 In conclusion, there is a great need to upgrade technology, skills, and innovation in South Asian economies to help improve their productivity and growth potential and to increase the welfare of their people. Fortunately, there is useful experience of the kinds of policies, mechanisms, and institutions that can be used to do this. The first thing that is needed is to raise awareness among policy makers, the business community, and the population at large of what can be done. The second step is to launch some concrete programs that begin to make a difference in order to demonstrate what can be done. The third is to publicize the scale up of the successful project.

---

<sup>48</sup> For more information see the European Union's Web site and look under the various education and research programs: [http://europa.eu/index\\_en.htm](http://europa.eu/index_en.htm).



## 6. POWER SECTOR REFORM, PRIVATE INVESTMENT, AND REGIONAL COOPERATION<sup>49</sup>

### INTRODUCTION

6.1 Modern infrastructure, particularly electricity, telecoms, and roads, is critical to economic development. Electricity provides light, the ability to use modern equipment and computers, and access to information and communication technology (ICT). Telecoms facilitate information exchange and access to the rest of the world, while transport infrastructure is critical for trade, and, by lowering transport costs, extends the market and increases competition. Studies of the productivity of infrastructure (Canning 1999; Canning and Bennathan 2000) suggest that infrastructure has strong complementarities with other human and physical capital. If there is a surplus of infrastructure, more investment adds little to total output, but if there is a deficit, then shortages constrain total output, magnifying the impact, so that the return to reducing that deficit can be very high indeed.

6.2 This can be seen most clearly for electricity. Once there is an adequate reserve margin of generation and adequate transmission and distribution to deliver the power to customers, more capacity has almost no extra value, and the efficient (and competitive) price of power falls to its short-run avoidable cost, essentially the cost of the fuel used in the least efficient plant dispatched. If there is a shortage, the value of lost load can be tens or even a 100 times as high. In Britain during the period 1990–2001, the wholesale market (the electricity pool) set a capacity payment based on the value of lost load, initially taken as £2,000/MWh (megawatts per hour) when the average wholesale price net of the capacity payment was less than £20/MWh.<sup>50</sup> The value of lost load reflects the considerable inconvenience of unexpected disconnection, while the value of unserved energy in a country familiar with power shortages may be lower, as users take precautions such as installing backup or stand-alone systems. Nevertheless, these are often many times as costly as reliable centrally generated power, showing the potentially high returns to investing to deliver that power, particularly to customers with a high willingness to pay (commercial and industrial customers in particular).

6.3 The demand for infrastructure, and particularly electricity, is growing rapidly in the region, and at low levels of income per head, can be expected to grow more rapidly than GDP as the economies modernize and shift resources from agriculture to industry. Figure 6.1 shows the electricity intensity of a selection of South Asian and other countries, measured by production of electricity per thousand US\$ gross domestic product (GDP) (at 1995 constant prices). Indian electricity production is rising considerably faster than GDP, as is that in Pakistan and even more so in Bangladesh (although the arithmetic scale may not show this clearly).

---

<sup>49</sup> This Chapter was prepared by David Newberry, Professor of Economics, Cambridge University, England. The views in this paper are solely the author's and do not necessarily reflect those of the World Bank or its Executive Directors.

<sup>50</sup> The price paid to generators was the sum of the system marginal price, the price of the most expensive bid accepted (if they were dispatched) and the capacity payment for plant declared available.

Figure 6.1: Comparisons of Electricity Intensity of Southeast Asia, the United States, China, and the European Union-15

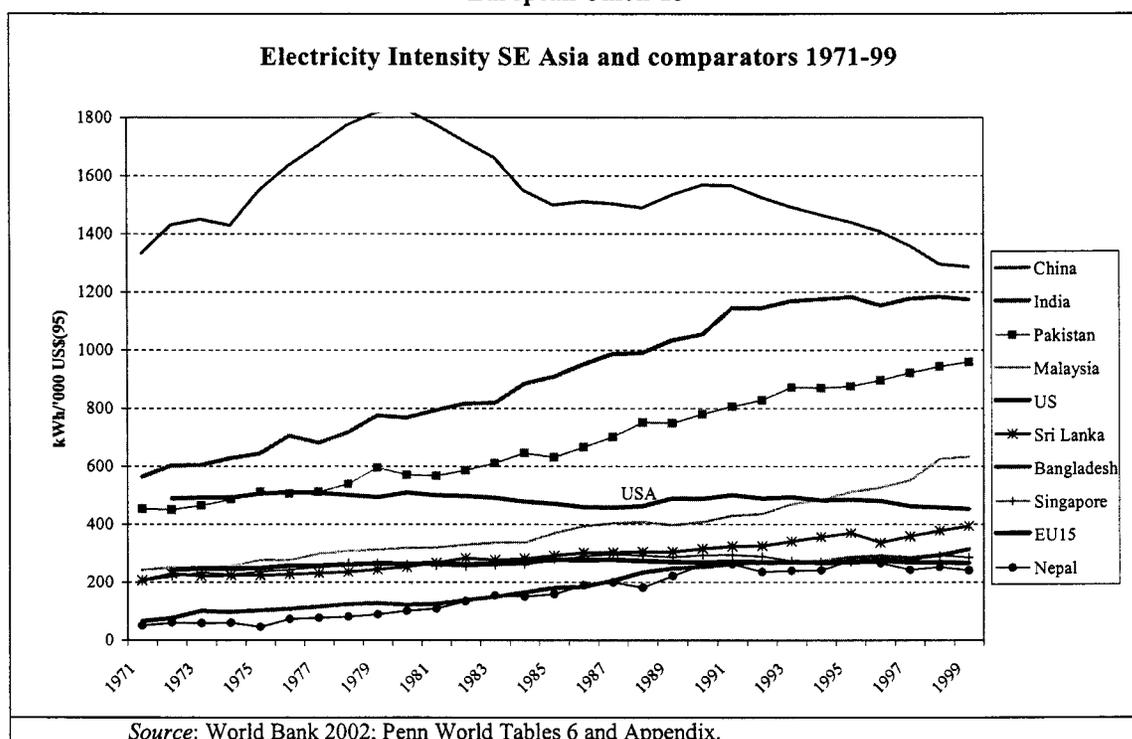


Table 6.1: Rates of Growth of Energy Intensity 1986-88 to 1996-98 (percent per annum)

Country	Electricity production	GDP US\$95	PPP US\$96	Electricity production/US \$(95)	Electricity consumption/\$PPP (96)
India	7.78	5.84	4.08	1.84	1.59
Pakistan	7.39	4.59	1.77	2.70	2.47
Bangladesh	7.90	4.44	2.70	3.34	5.48
Malaysia	12.38	8.57	5.64	3.53	4.46
Sri Lanka	6.53	4.75	3.42	1.68	1.35
Nepal	8.10	5.02	2.61	2.92	3.28
Singapore	8.34	8.81	6.71	-0.44	-0.44
China	8.52	9.67	5.91	-1.03	0.42
United States	3.07	2.91	1.86	0.16	-0.03
European Union-15	1.91	2.10		-0.19	

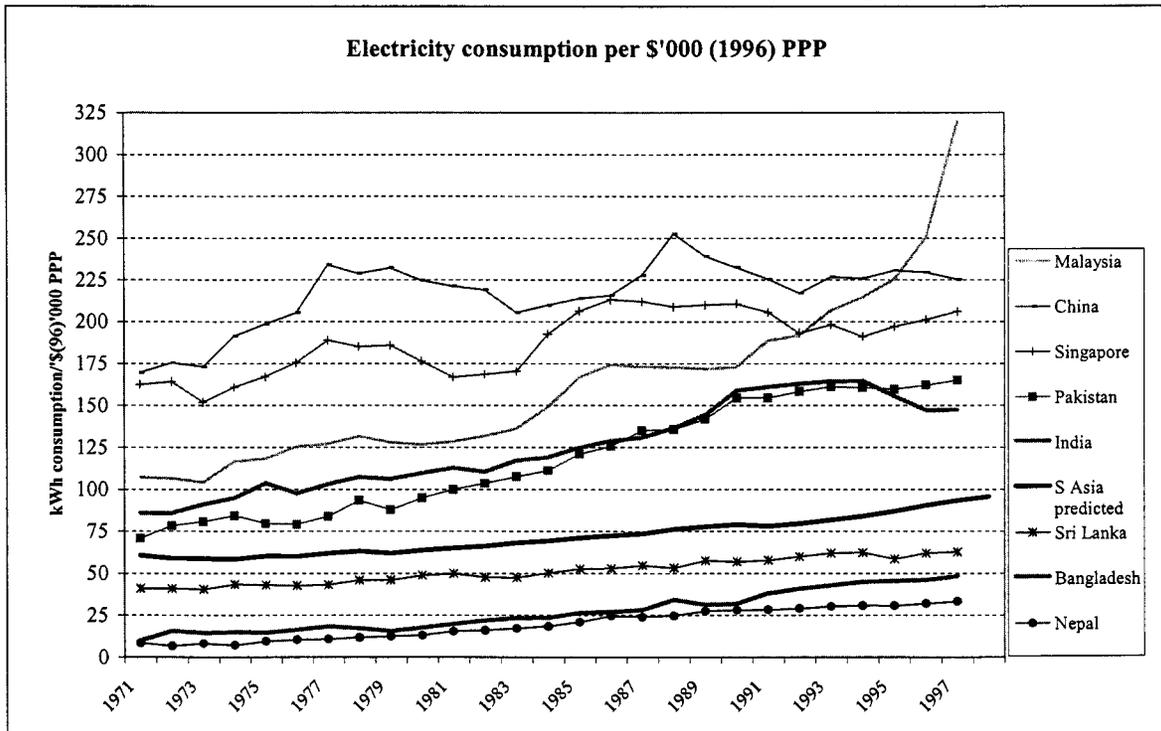
Source: World Bank 2002.

6.4 Table 6.1 gives the rate of growth of electricity production and of GDP (at constant US\$ and also constant purchasing power parity (PPP) dollars) and of electricity intensity (which is also the rate of growth of electricity production *less* the rate of growth of GDP).<sup>51</sup> India (and even more so China) looks surprisingly electricity intensive at market exchange rates (nearly three

<sup>51</sup> PPP is a measure of the real standard of living, taken from the Penn World Tables version 6. The relationship between the growth rates is not exact as the rates of growth are found by averaging the initial and terminal values over three years.

times as much as the United States and more than four times as much as the European Union-15). This continues to be true for India and Pakistan when GDP is measured at PPP. Figure 6.2 shows consumption (rather than production) per thousand \$PPP,<sup>52</sup> together with the predicted consumption for South Asian countries as a whole (excluding Bhutan) using the regression estimates presented in the annex. India and Pakistan track each other closely, and are considerably more electricity intensive than (more than three times as much as) the smaller countries, Sri Lanka, Bangladesh, and Nepal, and almost twice the predicted level.

**Figure 6.2: Electricity Consumption in South Asia Compared to Predicted per US\$ Thousand PPP**



Source: World Bank 2002; Penn World Tables 6 and Appendix.

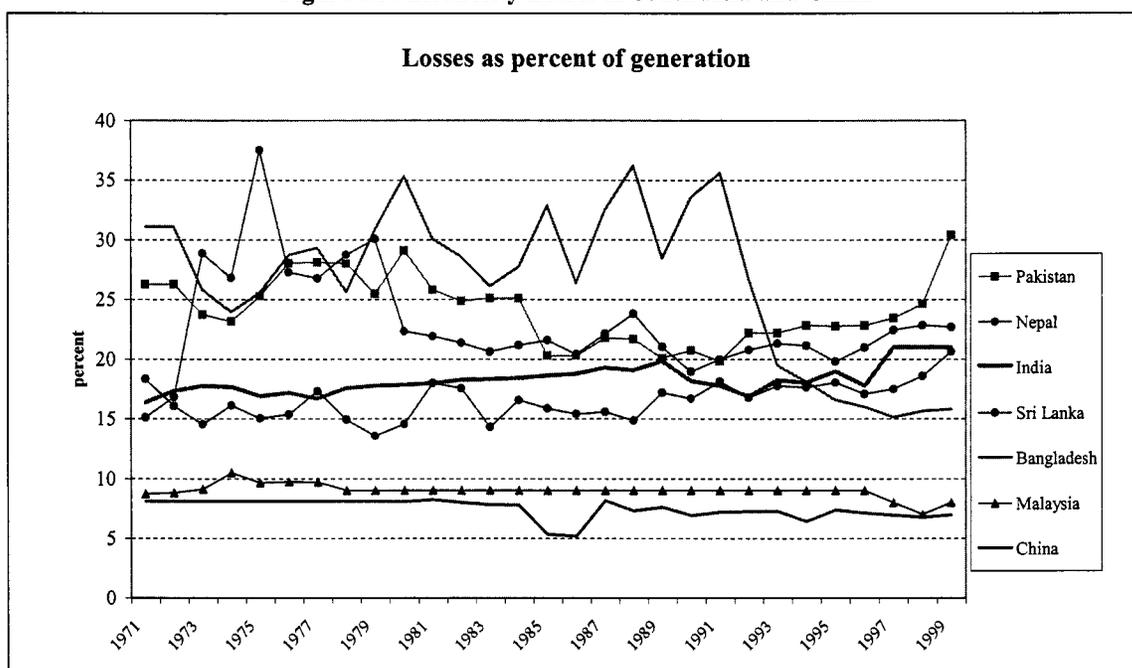
6.5 Thus, whether electricity intensity is compared at market exchange rates or at PPP rates, India and Pakistan appear more electric intensive than might be expected. One obvious explanation of this high intensity is that electricity is underpriced in many countries (both directly, and effectively through the failure to collect bills and prevent theft). Countries that have a lower than expected electric intensity usually also have a low penetration of electricity, particularly in rural areas. In that respect India appears to do quite well, given its per capita income.

<sup>52</sup> The difference between consumption and production is mainly losses, except for exporting countries like Bhutan (not shown) or India (which imports a very small share of consumption from Bhutan). PPP measures come from the Penn World tables and attempt to correct for different relative prices in poorer countries, primarily the lower prices of nontradables, as well as distortions that cause differences between domestic and world prices for tradables.

## THE PROBLEM

6.6 Not all South Asia countries suffer from the same problems, but as a generalization the region still has the legacy of state-owned vertically integrated electricity supply industries, often with the characteristic politicization of tariff setting that leads to excessively cheap electricity to domestic consumers, high levels of nontechnical losses (that is, theft or failure to collect bills), high levels of debt or arrears, high levels of manning, and poor commercial performance (as measured by the ability of revenues to cover costs). As a result, it is difficult for the sector to finance its investment needs on commercial terms. The shortage of revenue leads to poor maintenance with frequent equipment failures (for example, as measured by transformer failures and low generation availability), resulting in power shortages and load shedding. Figure 6.3 gives time series of losses as reported by the World Bank, although for India these are considerably below those reported by various states.

Figure 6.3: Electricity Losses in South Asia and China



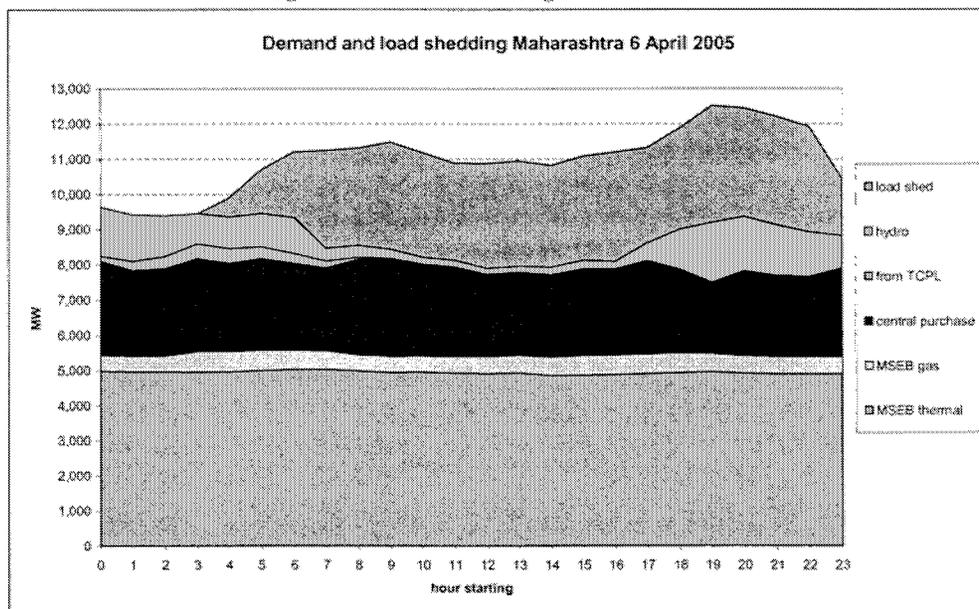
Source: World Bank 2002.

6.7 The India National Electricity Plan notes that “the country faced energy shortage of 7.1 percent and peaking shortage of 11.2 percent in 2003-04” (CEA 2004). ICRA (2004) gives statewide score card data for India for 2004 stating that “the power sector in the country is grossly over staffed leading to low productivity...” and “the proportion of billing on metered basis at less than 50 percent of energy input into the system” (ICRA 2004, p. 10). “Despite progress, the coverage of costs through revenues is still low for most states.” “... in the North East, the coverage ... is very low and typically less than 35 percent” (ICRA 2004, p. 11). Taking a sample of states, we find that for Delhi “the generation plants are aged and have a low PLF (48.5 percent) and low availability (62.2 percent). The commercial viability of DISCOMs is contingent upon improvements in the low level of metered billing ... reduction in the high levels of AT&C losses of 52.8 percent and improvement in distribution infrastructure. The power sector as a whole has

negative net worth ... with a low cost coverage ratio of 43 percent” (ICRA 2004, p. 15).<sup>53</sup> For Andhra Pradesh, initially one of the more progressive reformers, “the GoAP has deferred the time frame (of privatizing its distribution companies) indefinitely and currently has no time frame for the final privatization of these distribution entities” (ICRA 2004, p. 17). “The average adjusted book losses declined to Rs2526 crores in the years 2001–2 and 2002–3 from Rs3166 crores in 2000–1” (that is, from roughly US\$630 million down to US\$500 million). “The power utilities had realized average revenue per unit of Rs1.71” (3.6 UScents/kWh) “in 2002–3 against an average cost of supply of Rs2.17” (5.65 UScents/kWh) or a coverage of 78 percent.

6.8 For Maharashtra “MSEB [Maharashtra State Electricity Board] has been unable to meet the reform schedule laid down” (in the Memorandum of Understanding with the Ministry of Power). “(a) significant number of consumers (85 percent of agricultural consumers) continue to be unmetered. Further there has been no addition to the generation capacity either by MSEB or from the private sector in the last few years. This is a cause for concern in the face of mounting demand supply deficits in the state power sector” (ICRA 2004, p. 47). Evidence for daily load shedding can be downloaded from the dispatch center Web site (<http://www.sldcmsebindia.com>), and a randomly chosen weekday in April 2005 is shown in Figure 6.4.<sup>54</sup>

Figure 6.4: Load Shedding in Maharashtra



Source: <http://www.sldcmsebindia.com>.

6.9 Orissa is another disappointment, given that it was the first Indian state to start power sector reforms, with the passage of the Electricity Reforms Act in 1997 setting up the Regulatory Commission. “The state government has directed district administrators and police officials to support the distribution companies for curtailing frauds, theft, etc., but the actual implementation of the same had so far been quite lax. The government has not enacted the anti-theft legislation like most other majority states” (ICRA 2004, p. 90). “[P]rivate investors in distribution companies have faced steep distribution losses till OERC recognized them in 2002. OERC has

<sup>53</sup> PLF is plant load factor, AT&C is aggregate technical and commercial losses, GoAP is government of Andhra Pradesh

<sup>54</sup> There are curious features of this graph that raise questions: Specifically, why does hydro supply remain high in the early hours and then fall when load is shed.

been advocating the multi-year tariff policy as per GoO directions to embark upon long-term business plans by power utilities.” Lengthy legal litigation has delayed the introduction of SERC’s tariff orders, and generation availability is 10 percent below norms. “AT&C losses were quite high at 54 percent ...” and “... long-term viability of the power sector reforms heavily depends on the state government’s support and far reaching operational improvements in distribution segment” (ICRA 2004, p. 61).

6.10 The former Minister of Power, Yoginder Alagh, who introduced the Electricity Regulatory Bill to the Lok Sabha in 1997, noted that “by early 2001, SEBs [State Electricity Boards] as a whole faced an average 50 percent level of technical plus non-technical losses, and they collectively owe around [US]\$5 billion to the Government of India undertakings” (Ruet 2005a, p.13). The situation does not seem to have improved since then, with losses of the SEBs overall reported as Rs21,000 crores (about US\$4.2 billion) by the prime minister in May 2005. He expressed concern over continuing electricity shortages, and argued that the power sector needed urgent reforms, including unbundling.<sup>55</sup>

6.11 These problems are not peculiar to India, although their sheer scale there dwarfs those elsewhere. Thus, Bangladesh suffered energy shortages for much of the 1990s. In the fiscal year to June 1998, the Bangladesh Power Development Board, the main electricity producer, provided uninterrupted supply on only 49 days. Much of the time, 25 percent of peak power was unserved (World Bank, 1998). Unreliable power is estimated to have led to a loss of 10 percent of industrial output. As industry accounts for 15 percent of GDP, compared to electricity at only 1 percent, the social cost of electricity shortfalls are substantially larger than just the value of the unproduced power. Only 2,400 megawatts (MW) or 77 percent of nameplate capacity of 3,100 MW was available in 1998. The plant load factor was only 55 percent, despite excess demand. The poor availability and load factors result from poor maintenance and plant derating. This situation appears to have continued, with the Energy Information Agency (EIA) reporting in August 2005<sup>56</sup> that “The World Bank has estimated that Bangladesh loses around US\$1 billion per year in economic output due to power outages and unreliable energy supplies. [O]nly two-thirds of Bangladesh’s total electric generating capacity is considered to be ‘available.’ Problems in the Bangladeshi electric power sector include high system losses (up to 40 percent), delays in completion of new plants, low plant efficiencies, natural gas availability, erratic power supply, electricity theft, blackouts, shortages of funds for power plant maintenance, and unwillingness of customers to pay bills. Overall, the country’s generation plants have been chronically unable to meet system demand over the past decade.”

6.12 The same EIA source<sup>57</sup> notes that in Pakistan “Rotating blackouts (“load shedding”) are, however, still necessary in some areas. Losses are about 30 percent, due to poor quality infrastructure and a significant amount of power theft. Periodic droughts affect the availability of hydropower.” The World Bank notes that in the KESC “System losses have increased from 17 percent in 1985–6 to 40 percent in 2001–2. The experiments with public sector management through non-traditional methods including the induction of army personnel in uniform as top managers since 1999 have not shown any signs of significant improvement” (Alexander, Raza, and Wright 2003). The government of Pakistan still heavily subsidizes the power sector.<sup>58</sup> Losses

---

<sup>55</sup> The Hindu (2005).

<sup>56</sup> Available at <http://www.eia.doe.gov/emeu/cabs/bangla.html>.

<sup>57</sup> Available at <http://www.eia.doe.gov/emeu/cabs/pakistan.pdf>.

<sup>58</sup> The Water and Power Development Authority was reported in May 2005 as requesting Rs26 billion (nearly US\$500 million) for 2004–5 (<http://www.dawn.com/2005/05/04/top5.htm>), while in November 2004 the Daily Times reported that the federal government had decided to pay Rs15 billion (US\$250 million) “to subsidize electricity for domestic and

in KESC have fallen a small amount since then, as have total losses for the public utilities (down to 27.6 percent for the year up to June 30, 2003, according to the *Pakistan Energy Yearbook 2003*).

## REFORMS

6.13 The high rates of growth of electricity production shown in Table 6.1 (typically 7–8 percent per annum [p.a.]) and the high levels of unserved demand in some parts of the region (certainly in Bangladesh, India, and Pakistan) appear to require high rates of investment in generation if supply is not to become an increasing constraint on growth. State and central budgets are under stress, and the electricity companies are often effectively bankrupt, so the apparent solution has been to bring in private capital.

6.14 Under pressure from the International Financial Institutions (IFIs) and prompted by the apparent success of reforms in Latin America, many countries in the region have considered or embarked upon reform programs to allow private investment in the sector. The first step involves passing an electricity law to allow private investment, then establishing regulatory agencies to set tariffs, unbundling the natural monopoly transmission and distribution businesses, and in some cases privatizing distribution companies and some generation assets. The typical form of private participation has been by independent power producers (IPPs) signing long-term Power Purchase Agreements (PPAs) with the single buyer (normally the incumbent power company or SEB, but the standard model recommended is with a separate transmission company buying in a nondiscriminatory way from existing and new generation companies).

6.15 The results of these reforms have often been disappointing (Ranganathan 2003).<sup>59</sup> Elsewhere in Asia, currency crises undermined the ability of the single buyer to honor the PPAs, which were often largely denominated in foreign currency (Newbery 2002). More generally, the tariffs needed to finance foreign direct investment (given the perceived level of risk and the short tenor of most debt finance) has led to high initial charges for electricity purchased from these IPPs. The mismatch between the cost of these new PPAs, the average cost of existing generation (with tariffs based on written-down asset values and often underpriced fuel),<sup>60</sup> the lower average tariff of retail electricity, and the even lower average revenue per unit generated, placed the SEBs or their counterparts under increasing financial stress.

6.16 Ruet's (2005a, b) analysis of the problems of the SEBs is that they currently act as administrative bodies that are unresponsive to incentives, and for whom the concept of cost do not apply. Their concept of rationality involves following procedures (particularly based on paperwork) rather than taking cost-benefit-based decisions. The lack of proper management accounting, the absence of a proper internal allocation of discretionary power (to take sensible day-to-day operational decisions), and the pre-eminence of administrative rules, makes attempts to reform the structure of incentives and property rights (through privatization) ineffective without first changing the nature of the SEBs. Of course, there are major beneficiaries from this opacity of accounting that may account for the extreme resistance to meaningful reform. Reflecting on the reforms of the 1990s, Ruet (2005, p. 206) notes "the structural reforms as

---

agricultural consumers throughout Pakistan" as the distribution companies could not cover the cost of the subsidies and requested government support (Daily Times 2004).

<sup>59</sup> There is growing recognition that the early enthusiasm for privatization, particularly by the World Bank, was "oversimplified, oversold, and ultimately somewhat disappointing" (Kessides 2005), but see Kikeri and Nellis (2004) and Kessides (2004).

<sup>60</sup> In India, the required rate of return on assets was set at 3 percent in 1947, which even in real terms is well below a sensible economic rate.

envisaged by the Government of India and enforced by some States do not lead to any substantial change neither of the organization nor of the administrative nature of SEBs.”

6.17 The solution Ruet proposes is “enterprisation,” to be contrasted with corporatisation, which just changes the legal status of the SEBs, and which in any case would be a necessary first step toward the kind of restructuring envisaged by the reform program. The institutional changes required involve fundamental changes in management accounting, creating cash flow rights for the enterprise and allocating rights to and control over these cash flows to the relevant decentralized units, limiting the executive instructions from the state, while providing the information needed to expose corruption and clientalism.<sup>61</sup>

6.18 One central problem is that much electricity is not sold at remunerative prices, and a large fraction of customers are either not charged at all (agricultural consumers in some areas) or bills are not collected. The obvious solution is to install meters where these are lacking, to set remunerative tariffs by regulators charged to ensure that tariffs are cost-reflective and capable of financing both operations and investment of efficient companies, and then to privatize distribution companies to provide incentives to collect bills due. This strategy worked well in Chile (Galal et al. 1994), but appears not to have been successful in Orissa, where it was first tried. Apart from Ruet’s diagnosis of the need to create proper enterprises before privatization (as was done in Chile in a lengthy preparation to eventual privatization), there are several serious difficulties facing distribution companies in India. Dealing with the high levels of nontechnical losses requires installing (and reading) meters, ensuring that the meters are not tampered with, ensuring that those collecting the money are not corrupt, and protecting them when reading the meters and collecting bills, and, most important, having the legal authority and actual will to cut off those not paying.

6.19 One practical problem is forecasting a realistic set of targets over time at which the nonpayment rate will be reduced (too low and the distribution company will make a windfall gain, while too stringent may cause financial distress, and an inability to make investments to reduce losses) (Ranganathan 2005). This requires sophisticated multiyear regulation (probably with profit-sharing arrangements) insulated from political pressures that keep tariffs low and provide free electricity. Here the record is disappointing, with frequent political reversals of cost-justified tariff increases. Of course, when the whole industry is fraught with over-manning, poor maintenance, poor bill collection, and other obvious inefficiencies, it is easy for politicians to argue that removing such inefficiencies would deal with losses without tariff increases, and there is some force in these arguments, as discussed below.

## **OBSTACLES TO PRIVATE INVESTMENT**

6.20 The main obstacle to private investment is the fear that once the investment is sunk, it will not be allowed to earn a remunerative return. The electricity sector is particularly problematic as private investors supply an essential service directly to a large fraction of the voting population in competition with underpriced supply from the state-owned sector. As prices will have to rise to ensure that the investments are remunerative, the price rise will be associated with the reforms that brought in private investors, and will be doubly resisted on that account.

6.21 Many of the current beneficiaries of opaque accounting, cross-subsidies, patronage in the appointment of regulators and senior management, and so on will have an interest in preserving the status quo, including the low prices that deter efficient commercial competition. The fact that

---

<sup>61</sup> See also Irwin and Yamamoto (2004).

external bodies such as the World Bank are pressing for such reforms provides additional reasons for populist resistance, for the price rises that are needed to ensure investment adequacy yield current pain while the benefit of improved quality of service may be some way in the future, and beyond the politician's invariably short time horizon.

6.22 Private foreign investors are wary of investing in hydro capacity, which is both capital intensive, with long construction periods, and often subject to water management regimes that may conflict with power generation. Coal-fired power stations can be similarly problematic where they are dependent on domestic coal, as coal mining is often fraught in terms of labor relations.<sup>62</sup> Coal-fired stations using imported coal could be economically attractive but may be discouraged if there are inefficient domestic mines whose employees may object. The logical choice for IPPs is therefore gas-fired combined cycle plant using either indigenous piped gas (as in Bangladesh, Pakistan, or India), or where local gas is not available, liquefied natural gas (LNG) imports. India is increasingly turning to that source to supplement inadequate domestic gas. Petronet LNG has a 5 million tonne LNG terminal at Dahej that is being expanded to 12.5 million tonnes.<sup>63</sup> Petronet is also setting up a new 5 million tonne facility at Kochi, and is also taking over completion of the 5 million tonne terminal at Dabhol (as described below).

6.23 The Dabhol power plant in Maharashtra illustrates some of the problems facing private investors. In 1992 India opened up the electricity sector to foreign investment, and officials visited the United States to encourage investors, an invitation that Enron rapidly followed up with a proposal to build a large LNG terminal to supply a combined cycle gas turbine generating station of about 2,000 MW at Dabhol, on the coast some 180 kilometers south of Mumbai. Negotiations ensued with respect to the project contracts and led to the signing of a PPA in 1993.<sup>64</sup> The first phase of 740 MW was commissioned in 1997 before the LNG terminal was completed and ran on liquid fuel (initially distillate but then naphtha). The price charged by MSEB to consumers for power was less than it cost to generate power at the Dabhol plant, given the high cost of fuel and the capital costs associated with the project. As the amount of power purchased increased, the financial ability of MSEB to pay came under increasing stress, in large part because of the government of Maharashtra's failure to effect necessary (albeit politically unpopular) reforms in the power sector, such as charging market rates for the power produced. "Payment problems with the ... MSEB, however, prompted Enron-backed Dabhol Power Corporation (DPC) to serve notice of breach of contract on MSEB in May 2001. Construction on phase II was halted in June 2001."<sup>65</sup> The resulting acrimonious dispute lasted from 2001 until July 2005, when settlements were reached between MSEB and GE and Bechtel (the surviving equity holders after the bankruptcy of Enron) of various arbitration claims.

---

<sup>62</sup> That does not stop some apparently uneconomic coal-fired stations being built. In June 2005, a consortium of the China National Machinery Import and Export Corporation and the Xuzhou Coal Mining Group Company Ltd. signed a contract to run the management and production of the Barapukuria mine in Northwest Bangladesh. The only use for such coal would be for electricity generation in a country well endowed with cheap indigenous gas. See <http://www.eia.doe.gov/emeu/cabs/bangla.html>.

<sup>63</sup> Petronet is a joint venture between Oil and Natural Gas Corporation, the Indian Oil Corporation, the Gas Authority of India Ltd., the National Thermal Power Corporation, and Gaz de France.

<sup>64</sup> There is extensive material on Dabhol; <http://www.atimes.com/reports/CA13Ai01.html> and for more recent material and an archive <http://www.rediff.com/money/enron.htm>. The author should declare an interest as an expert witness acting for some of the investors in DPC, which was, however, settled before going to arbitration. The text is based solely on material publicly available from the web and whose accuracy is not guaranteed, and makes no use of any confidential material that may have been seen by the author.

<sup>65</sup> From <http://www.eia.doe.gov/emeu/cabs/india.html>.

6.24 The successor company Ratnagiri Gas and Power Pvt. Ltd. (RGPPL) with the National Thermal Power Corporation and the Gas Authority of India Ltd (GAIL) subsequently took over the almost completed 2,148 MW plant.<sup>66</sup> On September 22, 2005, the Bombay High Court issued an order on a consent term jointly filed by the DPC, RGPPL, and the IDBI Bank-led lenders.<sup>67</sup> Petronet LNG was then asked by the Ministry of Petroleum and Gas to complete the LNG terminal that will supply the power plant. Effectively, what was originally the largest IPP in India has now been taken back into public ownership after a lengthy and costly dispute during which the 2,000 MW that was potentially available to deal with shortages that were typically of the order of at least 2,000 MW (see Figure 6.4 above) were not available to MSEB and the state.<sup>68</sup>

6.25 Three problems compound the difficulties facing such plants in India. The first is that while GAIL sells its domestic gas at a price below import parity (that is, subsidizes it), imported liquid fuels such as naphtha and distillate are taxed. There are sound public finance principles arguing that inputs into production should not be taxed (except to correct externalities such as pollution or CO<sub>2</sub> emissions), and any taxes should fall on final consumers (Diamond and Mirrlees 1971; Newbery 2005).<sup>69</sup> As the public power is invariably subsidized to most final consumers, it is particularly perverse to tax fuel inputs into electricity.<sup>70</sup> Not surprisingly, RGPPL appealed to the Maharashtra government in October 2005 for a “waiver in sales tax and excise in a bid to maintain the per unit tariff of Dabhol phase-I (740 MW) at around Rs3.60 as against Rs2.50 by use of LNG.”<sup>71</sup>

6.26 The second is that LNG prices are both volatile and typically linked to oil prices, which have considerably increased in recent years, undermining the apparent attractiveness of gas-fired power stations. The third is that the energy cost of gas-fired generation can rise above that of indigenous fuels, encouraging dispatch centers to dispatch gas at lower load factors, further increasing the average cost of electricity, and straining the contractual relationship with the IPP when it is the average and not the marginal cost that is reported.<sup>72</sup>

6.27 Pakistan’s experience with IPPs also dates back to the mid-1990s, under encouragement from the World Bank’s Power Sector Development Project. The Bank’s project goals included restructuring and privatization, investment, and technical assistance to improve the operations and managerial efficiency of the power system (World Bank 1994). Before that date, there was little investor interest in Pakistan’s power sector after the government first allowed private investment in 1992, because of the high duties on imported equipment and the time taken to deal with the bureaucracy. In 1994 the Government published its *Policy Framework and Package of Incentives for Private Sector Power Generation Projects in Pakistan*. This provided an attractive formula for setting the PPA terms (according to the World Bank a bulk tariff of 6.5 UScents/kWh indexed to fuel prices, United States and Pakistani inflation, exchange rate fluctuations, operations and

---

<sup>66</sup> See <http://www.tribuneindia.com/2005/20050721/nation.htm#2>.

<sup>67</sup> See [http://www.financialexpress.com/fe\\_full\\_story.php?content\\_id=103402](http://www.financialexpress.com/fe_full_story.php?content_id=103402).

<sup>68</sup> See *The Times of India*, Oct. 10, 2005.

<sup>69</sup> The case for taxing distillate, given the prevailing emissions standards, while underpricing domestic coal is perverse on environmental grounds

<sup>70</sup> Oil taxation is justified on a variety of grounds, of which the most relevant here are to prevent substitution of legitimately taxed road fuels, and as part of an optimal import tariff to cover the costs of maintaining security of supply. Nevertheless, there should be less distorting ways of meeting these objectives for large power station fuel supplies.

<sup>71</sup> [http://www.financialexpress.com/fe\\_full\\_story.php?content\\_id=105176](http://www.financialexpress.com/fe_full_story.php?content_id=105176)

<sup>72</sup> The situation is further complicated by the terms under which the gas is purchased. LNG contracts are typically long-term take-or-pay contracts and the relevant opportunity cost may be near zero, arguing for base-load dispatch, while the apparent energy cost may suggest that it should run only at the peak. Such confusions undermine rational discussion between IPPs, regulatory agencies, politicians, and consumers who may appeal tariff decisions and may delay tariff adjustments and reduce investor confidence.

maintenance costs, and so on), tax holidays, and a standardized security package that included model agreements. These and other incentives resulted in considerable foreign interest, and led to the development of the Hub Power Company (Hubco). Hubco built a 1,300 MW oil-fired power station located on the Hub River estuary owned by a consortium of International Power (United Kingdom), Xenal (Saudi Arabia), and Mitsui Corporation. It is described by Water and Power Development Authority (WAPDA) as “the first and largest power station to be financed by the private sector in Southern Asia and one of the largest private power projects in the newly industrialized world.”<sup>73</sup>

6.28 The Hubco project, completed ahead of schedule and on budget (US\$1.6 billion) in 1997, was structured through four detailed agreements following the standardized model: the PPA, the Fuel Supply Agreement, the Implementation Agreement, and the Operations and Maintenance Agreement. These four key agreements formed the security package against which project funding was secured. In 1998 a tariff dispute caused the suspension of all dividend payments for a three-year period until it was resolved in December 2001. Shares in the company are locally traded, allowing the foreign investors to withdraw equity and invest in other power projects. Thus International Power had cut its holdings in Hubco from 26 percent to 16 percent by May 2004 but recently acquired 40 percent equity stake in the 586 MW Uch Power project, a 400 MW dual-fired project to supply the textile industry in Faisalabad.

6.29 Reforms of the state-owned companies continue, and WAPDA has recently been unbundled “in an attempt to create a more competitive, market-oriented environment.”<sup>74</sup> However, “Due to weak investor interest, KESC was not privatized as planned during 2002 and the process of unbundling WAPDA, although formally completed by December 2003, has not yet created the needed financial and managerial autonomy” (World Bank 2004). WAPDA continues to control all financial flows in the sector, including practically all decisions on allocation of funds, while nontechnical losses and subsidies remain. KESC was reported to be finally privatized by the *Daily Dawn* on February 22, 2005, although the deal fell through, and the cabinet then approved the sale of 73 percent to the second highest bidder, Hassan Associates.<sup>75</sup> The sale was finally signed on November 19, 2005.

6.30 Investors appear to have responded positively to the Private Power Investment Board’s announcement of three large power projects, “including a proposal from AES to develop a US\$1 billion coal project in Thar, and the announcement of increased investment to the tune of US\$1 billion from CDC Group’s Globeleq, which already owns 50 percent of the Lahore-based Orient Power.”<sup>76</sup> In addition, if the government finds enough uninterruptible gas, Hubco may be allowed to build two gas-fired power generation plants (of 300 and 600 MW) at Karachi. Whether these positive responses will translate into investments will in part depend on resolving the sector’s chronic financial problems.

6.31 Bangladesh has also been successful in attracting foreign private investment in electricity generation. According to EIA, “Given Bangladesh’s electricity supply shortage, in 1996 the government issued the Private Sector Power Generation Policy of Bangladesh and began to solicit proposals from international companies for IPPs. Among the first IPPs were a 360-MW gas-fired combined-cycle plant at Haripur, which began operation in October 2001, and a 450-MW gas-

---

<sup>73</sup> WAPDA was created in 1958 and is one of two vertically integrated state-owned electricity companies, the other being KESC, which serves only Karachi and surrounding areas. Together, WAPDA and KESC transmit and distribute all power in Pakistan, more than half to household consumers. See <http://www.hubpower.com/n/about.html>.

<sup>74</sup> New York Times (2005).

<sup>75</sup> Reported in *Khaleej Times*, Nov. 3, 2005.

<sup>76</sup> New York Times (2005).

fired combined-cycle plant at Meghnaghat, which began operation in November 2002. Both plants were sold to the British firm CDC Globeleq in December 2003. India's Bharat Heavy Electricals Ltd. completed a 124-MW gas-fired Baghabari generating unit in November 2001."<sup>77</sup>

6.32 It is worth asking why Bangladesh (and to some extent Pakistan) appear to have been more successful than India in continuing to attract foreign private investment. The case of Bangladesh is particularly interesting as it was, according to Transparency International, the most corrupt country in the world in 2005.<sup>78</sup> The most obvious reason is that indigenous gas is cheap, and Bangladesh was lucky in attracting AES to invest. AES is a company noted for its enthusiasm to build power stations in risky parts of the world supported by PPAs with very reasonable terms. The combination of cheap gas, moderately cheap capacity charges and excess demand for power made the project attractive both to the investor and also to the government. Unfortunately, AES's share price fell from a peak of \$70 in 2000 to less than \$2 in 2002, forcing asset sales, and making expensive foreign ventures both unattractive and infeasible. It is perhaps noteworthy that AES sold to CDC Globaleq,<sup>79</sup> which has a mission to help developing countries improve their power sectors, and may not be the best test of commercial willingness to invest in the depressed post-2000 power sector investor climate.

6.33 If Bangladesh has the advantage of cheap gas, then Pakistan, which appears to have some 33 years of reserves at current rates of consumption, also might expect to be attractive to gas-fired private generation investment, but reliable supplies of the required volumes appear to be problematic. It is hardly surprising that an oil-fired plant like Hubco (using expensive imported fuel) experienced difficulties over the tariff, although it is not clear to what extent the domestic cost of fuel oil is insulated from world oil price movements. Given that domestic consumers are still heavily subsidized, and nontechnical losses remain high (losses had only fallen from a high of 41 percent in 2002 to 38 percent in 2004, when KESC was to be privatized), one must be cautious in judging whether the apparent recent interest in private investment reflects confidence in the reform program or reassurance that the model agreements will adequately protect investors. The fact that the army was called in to manage KESC in 1999 may indicate that there is more evidence of political commitment to reform than in India, although as noted above their arrival in 1999 did not noticeably improve KESC's performance.<sup>80</sup>

6.34 To summarize, private investors need confidence that the necessary contractual underpinnings (PPA, fuel purchase agreements, sovereign guarantees, and so on) will be honored, that any legal disputes will be settled rapidly and fairly, with appeal to expeditious international arbitration, and that the underlying causes of disputes (inability of the counter party, either the single buyer, SEB, or the distribution companies to pay because of inadequate revenue) will be sustainably addressed. Opening access to the national transmission grid is one obvious step to reduce reliance upon populist-swayed state governments and bankrupt SEBs, providing there is enough transmission capacity and a sensible way of pricing access and use, and providing large customers can secure reliable power as a result (which may require direct connection to the grid rather than to the local distribution network). The Indian Electricity Act 2003 requires

---

<sup>77</sup> <http://www.eia.doe.gov/emeu/cabs/bangla.html>.

<sup>78</sup> India was ranked 88 out of 159 and Pakistan is ranked 144.

<sup>79</sup> The Commonwealth Development Corporation (CDC) was set up in 1948 as the U.K. government's instrument for investing in the private sector in developing economies. In 2002, CDC launched Globeleq, an operating power company solely focused on the emerging markets of Africa, the Americas, and Asia.

<sup>80</sup> "Improvement of the availability and quality of power supply in Karachi is a priority for the government of Pakistan. To facilitate this, management control of the company (KESC) was handed to the army in 1999. The army management has made progress in a number of areas, such as reductions in commercial losses, decreases in accounts receivable, and restructuring of the organisation aimed at increasing the quality of customer services and the profitability of the company." *The Dawn* (2005).

nondiscriminatory open access in transmission and the adoption of multiyear tariff principles, while the creation of the Power Trading Corporation in 1999 is gradually increasing power exchanges between state utilities and private generators, reaching 4.2 TWh in 2002–3 (Singh 2006). The five regional grids are interconnected with high voltage DC lines with a capacity of 5,000 MW (4 percent of installed generation capacity) and interregional transfer capacity is 9,450 MW carrying 12 TWh. POWERGRID has plans to increase this to 37,150 MW by 2012.<sup>81</sup> If these principles are effectively implemented, they will go some way to improving a commercial approach to the sector, although reforming the distribution companies remains critical.

6.35 If anything, private involvement is far more important in the distribution sector than in generation, for without commercial distribution charging cost-reflective tariffs, the counter parties to any power contracts will be financially weak and the PPAs will lack the credibility needed to attract private investment into generation. Reforming the distribution companies therefore has high priority. There is general agreement that sustained improvements will require privatization, although preparing the companies or boards for privatization requires considerable care, not least in ensuring adequate information (from metering, management budgetary systems, and so on) is available to regulators and investors before final privatization, to avoid costly mistakes and painful policy reversals (Ranganathan 2005; Ruet 2005a).

#### **ALTERNATIVE SOURCES AND USES OF INVESTMENT FINANCE**

6.36 Foreign private investment in power has a major advantage but one obvious disadvantage. The advantage is that it brings best practice in terms of contracting and efficiency (both in construction and operation) that puts pressure on the country's electricity supply industry to shape up, make necessary reforms, and establish sensible regulatory bodies and tariff-setting practice. The model agreements proposed by Pakistan,<sup>82</sup> and insurance against opportunistic tax and legal changes, may provide a good model, but will have to be supported by evidence of enforcement. There is ample evidence from elsewhere that private ownership delivers more efficient construction and operation than state ownership. The disadvantage is that the cost of finance is likely to be high, as sovereign and regulatory risk are perceived as high. If a larger fraction of the finance could come from low cost debt finance (supplied either by the government through its state banks or IFIs, with suitable exchange rate guarantees), then the overall cost of finance will fall (although the equity component is still likely to be costly, its share may be low enough to reduce the overall cost).

6.37 Some South Asian governments have now accumulated considerable foreign exchange reserves that allow both increased domestic lending and foreign exchange rate guarantees, although it still ought to be preferable to agree conditions under which IFI finance becomes available, as this is likely to give better signals to the private investment community. Clearly, the lending by India to Bhutan to finance dams (discussed below) suggests that public funds can be used effectively; and for high capital cost low running cost projects such as dams and transmission, cheap finance can be critical to economic success.

6.38 The central problem in making use of this cheaper finance is that unless the distribution companies are reformed to become commercial and regulated to set (and collect) cost-reflective tariffs the revenue flows even to service cheaper debt will be lacking. If capital (including the revalued modern equivalent asset value of existing plant) earns a sensible return (8–10 percent

---

<sup>81</sup> [http://www.cea.nic.in/power\\_systems/National\\_Electricity\\_Plan/index\\_National\\_Electricity\\_Plan.htm](http://www.cea.nic.in/power_systems/National_Electricity_Plan/index_National_Electricity_Plan.htm) published in July 2005.

<sup>82</sup> This requires PPAs that reward capacity availability and pass through energy costs at a specified energy efficiency to encourage efficiency operation, to give sensible average and marginal cost signals to the dispatch center.

real) then the electricity supply industry would become largely self-financing at current demand growth rates (from Table 6.1 of 7–10 percent). If power were sensibly priced, then excess demand might rapidly disappear, providing the time and resources to improve maintenance and availability, further reducing costly load shedding. The paradox is that without reforming distribution (which will eventually require privatization to sustain the reforms) private investment in generation may fail, and with effective reform in distribution and a more intelligent approach to losses, private finance in generation may not be necessary (although good practice management and operations still argue for private ownership or at least management).<sup>83</sup>

6.39 Ruet (2005b) has demonstrated most effectively that finance should not be a constraint by comparing the profitability of investing in new generation capacity (and the associated transmission) in India with alternatives. He estimates that eliminating nontechnical losses at 2002 tariff levels would give an internal rate of return (IRR) of 339 percent, compared with new generation yielding 8.6 percent, although increasing the plant load factor (PLF) from 67 to 70 percent would reduce the amount of new capacity required and would deliver an IRR on the total investment needed of 13.4 percent. Just investing in refurbishment and maintenance to raise the PLF alone yields 116 percent return, while investing in better transmission and distribution to reduce technical losses yields 27 percent return. The implication is that much can be done to bridge the supply-demand gap with less finance than just building more generation capacity. If existing resources can be reallocated to reduce various losses, then considerable extra cash flow would be generated to expand the system when needed, but this will require a radical change in management culture in the SEBs.

## THE ROLE OF ENERGY TRADE

6.40 The Agreement on the South Asian Free Trade Area was signed on January 6, 2004, to enter into force on January 1, 2006. However, progress seems somewhat troubled as Bangladesh on August 8, 2005, “once again outright rejected an Indian proposal for signing Free Trade Agreement (FTA) with her, urging the counterpart to sign the proposed South Asia Free Trade Agreement (SAFTA) for boosting the regional trade and commerce.”<sup>84</sup> Counterbalancing this, on August 15, 2005, the *Indian Express* announced plans for promoting trade between India and Pakistan via a free trade area in Kashmir. “In a radical proposal to end the current Indo-Pak conflict over water resources of J&K (Jammu and Kashmir), Burki is calling for joint development of the power potential of the Indus waters that run through the state. Instead of separately developing hydel power in their own parts of J&K and raising suspicions across the border, Burki proposes joint generation of hydel power for use in both parts of J&K and selling the surplus to northern Pakistan and India through a common electric grid. Such an approach, according to Burki, does not involve either a renegotiation of the Indus Waters Treaty or a reduction of water flows to either India or Pakistan. It needs a mutually satisfactory reinterpretation of the treaty and negotiating a subregional agreement on hydel power generation and distribution.”<sup>85</sup>

6.41 The potential for mutually advantageous energy trade in South Asia is considerable. India is short of indigenous gas and is actively importing expensive LNG. Bangladesh has substantial reserves estimated by the *Oil and Gas Journal* in 2005 at 10.6 trillion cubic feet (Tcf) and net proven reserves estimated by Petrobangla in 2004 at 15.3 Tcf, compared with a 2003 production (and consumption) of 420.2 billion cubic feet. At that rate based on Petrobangla’s estimate,

---

<sup>83</sup> The case for privatization has been recently summarized by Kikeri and Nellis (2004).

<sup>84</sup> <http://www.bilaterals.org/recherche.php3?recherche=SAFTA>.

<sup>85</sup> [http://www.bilaterals.org/article.php3?id\\_article=2487&var\\_recherche=SAFTA](http://www.bilaterals.org/article.php3?id_article=2487&var_recherche=SAFTA).

reserves would last 36 years, although if demand grows at a projected 6 percent p.a. the reserves would only last 19 years. In addition to proven reserves, the U.S. Geological Survey has estimated that Bangladesh contains 32.1 Tcf of additional “undiscovered reserves,” which would increase the ratio of reserves to use to over 100 years or nearly 50 years at a growth rate of 6 percent.<sup>86</sup> On the other hand, Bangladesh has been suffering from gas shortages, despite these abundant gas reserves. The immediate cause is a combination of underpricing, poor collection rates, and theft, which have created serious financial shortfalls, and hence an inability to finance the required maintenance and investment. The deeper cause is poor management and extensive political interference in tariff setting and reform efforts. The fundamental problem is one of pervasive corruption, in turn sustained by a lack of political accountability.

6.42 Bangladesh is short of foreign exchange and government revenue, both of which would be significantly enhanced by exporting gas to India, ideally by pipeline to the Delhi area where electricity demand is high (in comparison to the adequate supply of coal-fired generation near the India-Bangladesh border).<sup>87</sup> Finding an outlet for exported gas priced in foreign exchange would encourage more gas exploration and development. It is therefore particularly perverse that both major political parties are officially committed to reserving gas for domestic use until “proven reserves will cover 50 years of domestic demand.”<sup>88</sup> One confidence-enhancing step might be to allow transit gas from Burma to India via Bangladesh, and this is under discussion.

#### **THE CASE FOR A SOUTH ASIA ENERGY CHARTER**

6.43 Energy trade requires costly infrastructure that can be stranded without continuing cooperation, so the case for some legally binding treaty underwriting assurances on continued cooperation is strong. The European Energy Charter signed on December 17, 1991, might form a useful model to promote such trade. The 51 signatories agreed to cooperate under a legally binding Energy Charter Treaty “designed to promote east-west industrial cooperation by providing legal safeguards in areas such as investment, transit and trade.”<sup>89</sup> The proposed gas pipeline from Burma to India might encourage the signing of an Energy Charter and if Bangladesh believed that Burmese gas could supplement domestic gas in future if local supplies proved inadequate, then the deadlock over Bangladesh gas exports might be broken.

6.44 Similarly, India would then have access to two additional sources of gas (although both coming through Bangladesh) and would feel greater security of supply. A similar transit proposal to deliver gas from Iran through Pakistan to India would have the further advantage of securing additional gas to meet Pakistan’s rapid growth in demand for power generation, although again mistrust between the two countries (and United States hostility to trade with Iran) have hampered progress. Again an Energy Charter guaranteeing security of transit might break the deadlock. According to the EIA, Pakistan could earn US\$600 million p.a. in transit fees from this US\$3 billion project.<sup>90</sup>

6.45 Apart from the obvious benefit that India should enjoy cheaper additional supplies of gas than from LNG imports and more diverse and thus more secure sources of supply, there are further benefits from the kinds of agreements, treaties, and contracts needed to underwrite gas imports. Most obviously (and this is also a potential benefit from LNG imports), the gas would be priced in foreign exchange at market levels, and would provide pressure to set fuel and electricity

---

<sup>86</sup> <http://www.eia.doe.gov/emeu/cabs/bangla.html>.

<sup>87</sup> It is cheaper to move gas than transmit electricity, hence the preference for a pipeline.

<sup>88</sup> <http://www.eia.doe.gov/emeu/cabs/bangla.html>.

<sup>89</sup> <http://europa.eu.int/scadplus/printversion/en/lvb/127028.htm>.

<sup>90</sup> <http://www.eia.doe.gov/emeu/cabs/pakistan.html>.

prices at market levels. Second, and perhaps more important in the longer run, it ought to encourage a more commercial approach to contracts in the energy industries, and that would provide the kind of comfort that foreign private investors seek. That in turn should lower the cost of capital, which in capital-intensive industries such as electricity, feeds straight through to consumer (and creditor) benefits. Third, gas (particularly pipeline gas) has lower CO<sub>2</sub> emissions per unit of electricity generated than coal or oil. At some stage this will have a cash benefit when emissions trading is extended more widely. Finally, creating a regional gas market with proper pricing would encourage private investors to develop indigenous gas fields, and might eventually lead to gas-on-gas competition (as occurred in the United States and Britain) to mutual benefit.

6.46 The other major potential source of mutually beneficial trade relates to the more efficient exploitation of hydro resources, particularly in Nepal and Bhutan, where domestic electricity demand may be inadequate to justify large dams, but where exporting electricity to India would earn valuable foreign exchange and relieve India's power shortages in a zero-emissions way. Nepal has large untapped hydro potential, estimated by EIA at 43,000 MW (of which 244 MW has been developed).<sup>91</sup> Promisingly (at least from the viewpoint of regional energy cooperation),<sup>92</sup> in October 2002 "Australia's Snowy Mountains Hydro signed a Memorandum of Understanding for the development of the 750-MW West Seti hydroelectric dam. It is scheduled for completion in 2005 and will export power primarily to India. Renewable power sources are increasing in Nepal through rural electrification programs which aim to lessen the disparity in electricity access between rural (30 percent) and urban (90 percent) areas. The overall quality of Nepal's electricity infrastructure, however, is low and is frequently a target for attack by Maoist rebels."<sup>93</sup> In 2003, Nepal's industrial sector was reported as losing US\$25 million annually, 4.4 percent of its gross output value. If hydropower were developed for export, the annual contribution to GDP could rise from \$96 million in the early years up to US\$1.51 billion by 2027. By 2010 royalty earnings at 10 percent of electricity sales would yield US\$46 million p.a. and rising (USAID, n.d.).

6.47 Bhutan's hydropower potential is estimated by EIA at 30,000 MW (of which 16,000 MW are safe and exploitable). Bhutan and India have been actively cooperating in its exploitation since the signing of the Jaldhaka agreement in 1961, and hydroelectric exports are the largest single source of foreign exchange, demonstrating the value of such regional cooperation. According to *Bhutan News Online*,<sup>94</sup> "the Chukha Hydro Power Corporation has been earning more than 40 percent of the national (government) revenue of Bhutan." Exports in 1995–6 were 1,564 GWh, and are projected to rise to 6,400 GWh in 2006 when the 1020 MW run-of-river Tala Hydroelectric Project Authority is commissioned. "India's Tata Power Company and the Power Grid Corporation of India Ltd. have formed a partnership to construct the 1,020-MW Tala hydropower project in Bhutan and a 750-mile transmission line to export power produced by the Tala project to New Delhi and surrounding areas of India."<sup>95</sup>

---

<sup>91</sup> <http://www.dams.org/kbase/submissions/showsub.php?rec=opt024>.

<sup>92</sup> As always, large dams attract considerable criticism, and there are particular concerns that a high (195 meter) rock-filled dams might be unsafe in such a geologically active area. See <http://www.nepalnews.com.np/contents/englishweekly/spotlight/2004/dec/dec31/opinion.htm> and <http://www.dams.org/kbase/submissions/showsub.php?rec=soc031>.

<sup>93</sup> <http://www.eia.doe.gov/emeu/cabs/nepal.html>.

<sup>94</sup> [http://www.bhutannewsonline.com/hydro\\_electricity.html](http://www.bhutannewsonline.com/hydro_electricity.html).

<sup>95</sup> <http://www.eia.doe.gov/emeu/cabs/nepal.html>.

6.48 Clearly it would be desirable to develop a regional electricity grid connecting India, Bhutan, Nepal, and Bangladesh to increase security, allow profitable exports from land-locked countries, and further build confidence in regional energy trade and investment. The Bhutan example shows what can be achieved, although the political obstacles remain significant. The USAID (n.d.) study reports estimates of the benefits of a regional grid in reducing power losses by 90 MW (sic), saving US\$79 million in investment.

## CONCLUSIONS

6.49 South Asia started the 1990s with growing disillusionment with the existing inefficient and bankrupt state-owned vertically integrated electricity supply industry and strong internal and external pressure to reform the sector. The incompletely understood diagnosis was to encourage private investment to overcome the lack of finance for the investment needed to address shortages and power cuts. The simplest route appeared to be to allow IPPs to sell power under PPAs to the largely unreformed SEBs.

6.50 Buying increasing amounts of higher cost power when these SEBs could not even cover the cost of underpriced wholesale electricity from state-owned generators was a recipe for financial distress and conflict. Reforming the SEBs, through unbundling, creating commercial disciplines in retailing electricity, and subjecting the sector to multiannual regulation insulated from clientelist political pressures, is therefore an essential first step, although one that was bound to be keenly resisted by current beneficiaries. When this has been successfully completed, privatization is the logical next step to ensure that the reforms are sustainable (Ranganathan 2005; Ruet 2005a). With commercially viable privatized distribution companies successfully operating under multiannual cost-reflective tariffs, the way is open for more sustainable private investment in generation.

6.51 In India the central government appears to have relatively few effective levers with which to reform the SEBs, although the Electricity Act 2003 has good intentions, particularly in requiring metering, multiannual regulation, and requiring regulated third-party access to large customers through the national transmission grid. Elsewhere, central governments may have more control and may even use that wisely to press for effective reform, although progress appears to be slower than expected.

6.52 Perhaps the main leadership role that governments in the region could contribute would be to agree and enforce a regional energy charter to underwrite increased energy trade. Such steps have been effective in integrating the transition countries of Central Europe into the European Union, and stimulating foreign direct investment into the power sector, and might have similarly stimulative effects in South Asia, quite apart from creating profitable trade opportunities and increasing regional security of supply and greater resilience against external oil shocks. Opening access to industrial customers would help assure the financial viability of investments in cross-border infrastructure.

ANNEX: DATA AND ANALYSIS OF ENERGY SUPPLY AND DEMAND

Table A.1: Energy Supply Indicators: South Asian Countries

	Fossil fuel proved reserves			Fossil fuel production			Electric generating capacity (million kilowatts)	Crude oil refining capacity (thousand barrels per day)
	Crude oil, (million barrels)	Dry natural gas, (trillion cubic feet)	Coal, (billion short tons)	Petroleum <sup>a</sup> (thousand barrels per day)	Dry natural gas (trillion cubic feet)	Coal (million short tons)		
Bangladesh	56.0	10.6	0	5.0	.38	0	3.6	33
Bhutan	0	0	0	0	0	0.06	0.4	0
India	5,371.2	30.1	93.0	661.8	.88	392.6	120.3	2,135
Maldives	0	0	0	0	0	0.01	0.03	0
Nepal	0	0	0	0	0	0.01	0.4	0
Pakistan	288.7	26.8	2.5	60.9	.81	3.7	18.0	269
Sri Lanka	0	0	0	0	0	0	2.1	48
Total	5,715.9	67.5	95.5	727.7	2.07	396.4	144.8	2,485

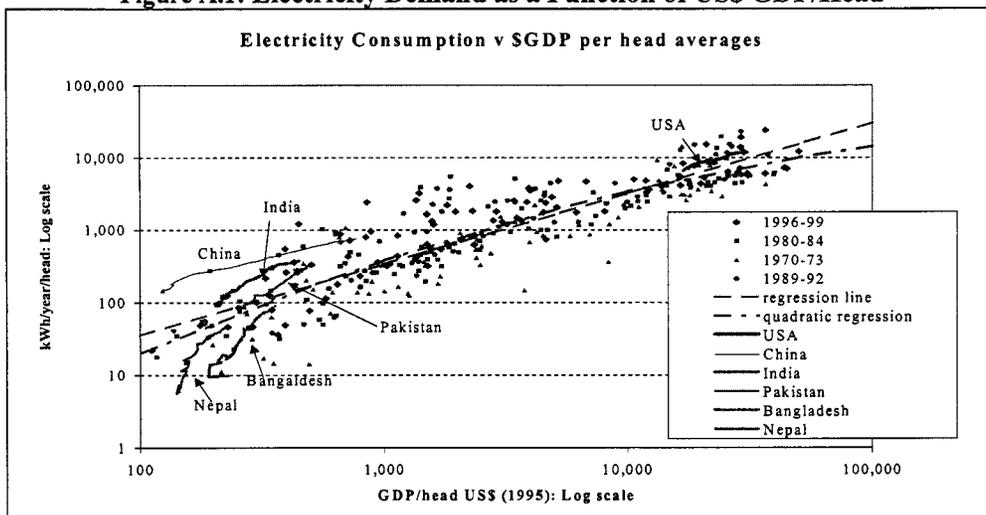
Sources: Crude oil and natural gas reserves: *Oil & Gas Journal* (2003, Dec. 22). Crude oil refining capacity: *Oil & Gas Journal* 2003, Dec. 22). All other data: EIA, International Energy Database, October 2004, <http://www.eia.doe.gov/emeu/cabs/nepal.html>.

a. Includes crude oil, natural gas plant liquids, other liquids, and refinery processing gain.

The Relationship between Electricity Consumption and GDP

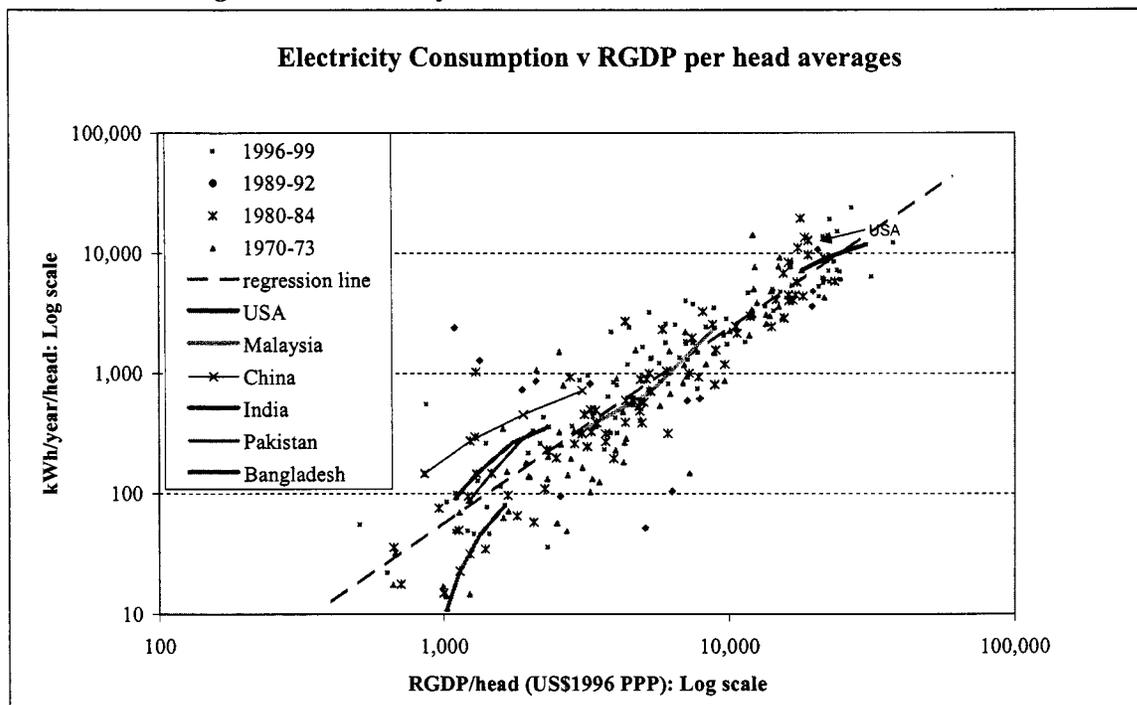
6.53 Figure A.1 shows the scatter plot of the three-year average values of per capita annual electricity consumption against the corresponding three-year average values of per capita GDP at constant 1995 US\$, plotted on a double log scale, together with the regression line of best linear fit and the evolution of the annual per capita annual electricity consumption against the corresponding annual values of per capita GDP (US\$1995) for selected South Asian countries, China, and the United States. The value of  $R^2$  is 0.8 and the slope coefficient is 0.98 (s.e. = 0.03), not significantly different from 1, so that the income elasticity of demand for electricity is unity. The quadratic regression shown has a slightly higher  $R^2$  of 0.81 and both GDPpc and GDPpc squared terms are significant at the 1 percent level, but if anything this regression line suggests that India and Pakistan are even more electricity intensive than might be expected.

Figure A.1: Electricity Demand as a Function of US\$ GDP/Head



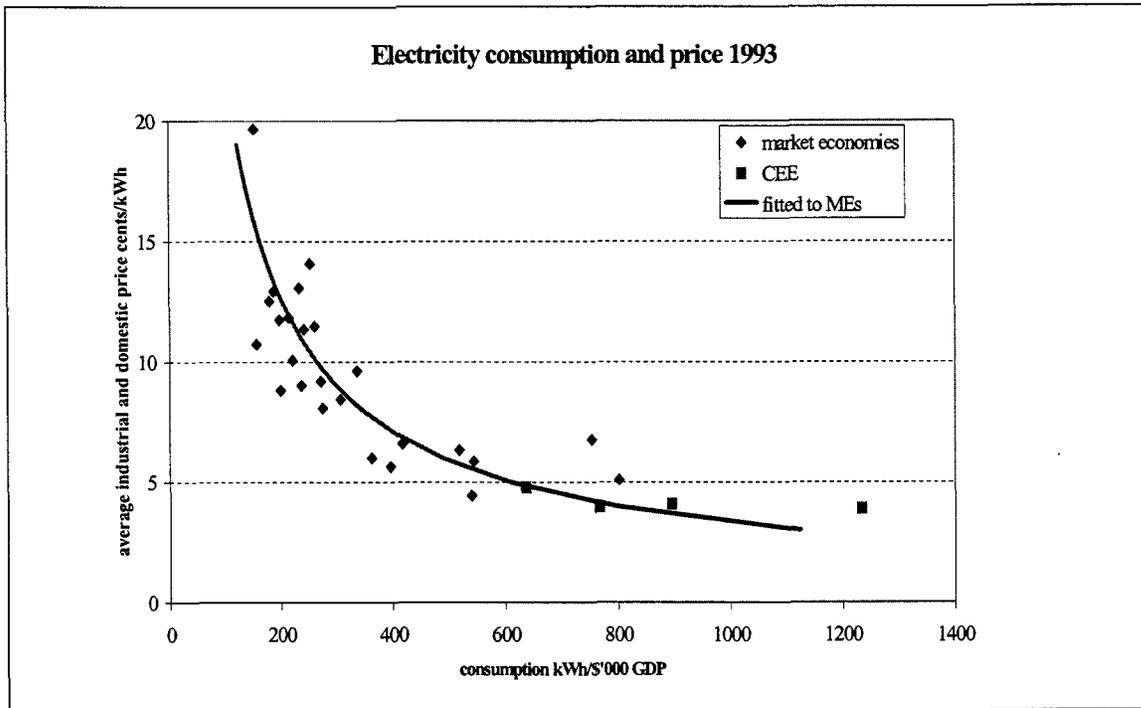
6.54 Figure A.2 repeats the exercise but using real or PPP GDP per capita from the Penn World tables which gives a slightly better fit ( $R^2 = 0.85$ ) but a considerably higher PPP income elasticity of 1.63 (s.e. = 0.04), reflecting the higher ratios of real to market GDP at lower income levels. The quadratic terms are not significant. The obvious reason for the higher elasticity is given by noting that a regression of  $\ln(\text{RGDP})$  on  $\ln(\text{\$GDP})$  has a coefficient of 0.6; that is,  $\ln(\text{RGDP}) = 3.84 + 0.6 \cdot \ln(\text{\$GDP})$ , or  $Y/L = (R/L)^{1.66}$  explaining the higher PPP elasticity exactly. The regression results are used to predicted South Asia consumption in Figure A.2

**Figure A.2: Electricity Demand as a Function of Real GDP/Head**

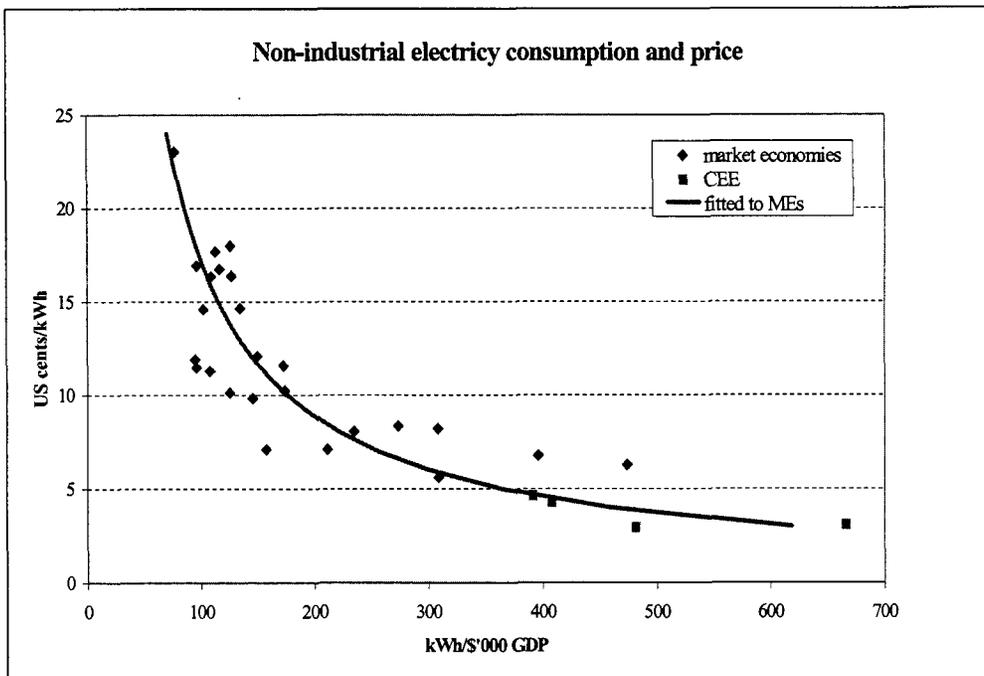


6.55 Figure A.3 shows the importance of price in influencing electricity demand. The cross country partial regression has  $R^2 = 0.9$  and a price elasticity of -1.2 (s.e. = 0.11). Figure A.4 shows that this relationship continues to hold for nonindustrial consumption ( $R^2 = 0.83$ , and a price elasticity of -1.04, s.e. = 0.15).

**Figure A.3: The Relationship between Price and Electricity Consumption for Developed Market Economies and Transitional Countries**



**Figure A.4: The Relationship between Nonindustrial Electricity Consumption and Price**



6.56 Good electricity price data are not readily available, but if effective retail prices should be raised by 50 percent to address losses and underpricing of wholesale power, then demand might (eventually) fall by about 50 percent, and would return India and Pakistan to the regression line in Figure A.1.

6.57 Note that both Bangladesh and Nepal fall considerably below either regression line, even though there is no reason to believe that pricing is higher in those countries than in India and Pakistan. The obvious explanation is that electricity penetration is considerably lower than in those two countries, and the movement toward the regression line probably reflects increasing coverage of the population.



## 7. TRADING CHOICES OF SOUTH ASIA<sup>96</sup>

### INTRODUCTION

7.1 Trade economists have identified three main avenues to trade liberalization: unilateral, multilateral, and bilateral. Unilateral trade liberalization refers to a country going on its own; that is, removing trade barriers without waiting for its trading partners to do the same. Unilateral trade liberalization, unlike unilateral disarmament, is in a country's own interest since it promotes specialization in products of its comparative advantage and allows imports to come from the most efficient source abroad. Much of India's liberalization that began in the late 1970s, with the reintroduction of the open general licensing, and which was considerably accelerated in the early 1990s falls into this category.

7.2 Multilateral trade liberalization refers to liberalization under the auspices of the World Trade Organization (WTO) and is generally a response to the liberalization by the country's trading partners. This avenue seeks reciprocity from other WTO members. The last round of such liberalization took place under the Uruguay Round Agreement that led to the establishment of the WTO. Currently, the Doha Development Round is pushing the multilateral liberalization frontier further out.

7.3 The bilateral (or plurilateral) trade route manifests itself in what trade economists have come to call preferential trade areas (PTAs), in which two or more countries reciprocally liberalize trade with each other but not the rest of the world. The Sri Lanka-India Free Trade Area and South Asian Free Trade Area (SAFTA) are both examples of PTAs. When the member countries go so far as to eliminate all trade barriers among them, as is the case with the North American Free Trade Agreement, the arrangement is called a free trade area (FTA). If, in addition, the countries also adopt a common external tariff as with the European Union, the arrangement becomes a customs union.

7.4 An important characteristic shared by unilateral and multilateral liberalizations is that they are both nondiscriminatory: trade barriers are removed with respect to all trading partners. These forms of liberalization, thus, adhere to the fundamental Most Favored Nation (MFN) principle of the WTO that requires each member to treat all other members with equal favor. In contrast, bilateral liberalization removes trade barriers preferentially, discriminating in favor of union members and against nonmembers. Trade barriers are removed only against goods imported from union members, with nonmembers continuing to pay the higher MFN duties.

7.5 While trade economists generally favor unilateral and multilateral trade liberalization, they are less sanguine about preferential trade liberalization because of its discriminatory nature, the fragmentation of the trading system such discrimination entails, and the ambiguous welfare effects it engenders. Indeed, in recent years, trade economists have increasingly turned against such liberalization. leading Pascal Lamy, the then European Union Trade Commissioner and now

---

<sup>96</sup> This Chapter was prepared by Arvind Panagariya, Professor of Economics, Jagdish Bhagwati Professor of Indian Political Economy, Columbia University. The views in this paper are solely the author's and do not necessarily reflect those of the World Bank or its Executive Directors.

WTO Director General, to remark that half of the world's economists now oppose bilateral free trade arrangements.

7.6 PTAs have, nevertheless, proliferated because potential exporters like them because of the protected access they provide to the partner country market. For example, when Singapore forms an FTA with India, its steel exporters get to sell steel duty free in an Indian market that is otherwise protected by high duties. PTAs have also acquired a life of their own because other countries have them and they offer the country leaders opportunities to hold summits, stay virtually continuously in the limelight, and make political statements to the effect that they too are fellow travelers in pursuit of free trade.

7.7 Therefore, in thinking about trading choices of South Asia, the issue whether the countries in the region should liberalize unilaterally or multilaterally is not a difficult one, at least for a trade economist. The experience of the countries themselves since the early 1990s testifies to the benefits such liberalization confers. The critical and controversial question, instead, is whether the region should promote preferential trade liberalization among its members and with other countries.

7.8 Here we will argue against expending scarce political capital on turning the South Asia region into an FTA. This should not surprise those familiar with our published works on PTAs in general and SAFTA in particular. The new element here is to bring the evidence from SIFTA to bear on the argument. We will then argue that if the countries in the region want to seriously pursue the option to form a trade bloc, they must look toward an Asia-wide bloc. Though we have generally opposed PTAs because they fragment the world trading system and throw barriers in the path of nondiscriminatory liberalization at the national as well as multilateral level, proliferation of PTAs already in place has taken the teeth out of this argument. The world trading system is now hugely fragmented with a "spaghetti bowl" of tariffs characterizing the global trade regime. The only effective solution to it will be the eventual worldwide free trade under the WTO auspices. In the meantime, having been subject to huge discrimination in North American and European markets by the numerous PTAs in those regions, Asia perhaps needs to strategically respond with a bloc of its own and force those blocs to open up. The starting point for an Asia-wide bloc is an India-China FTA, however, not SAFTA.

## TRIUMPH OF TRADE LIBERALIZATION

7.9 After more than three decades of near stagnation in per-capita incomes during 1950–80, South Asia showed signs of growth beginning in the 1980s that accelerated in the 1990s and beyond. Table 7.1 summarizes the growth rates in gross domestic product (GDP) in Bangladesh, India, Pakistan, and Sri Lanka during 1981–2004.

**Table 7.1: Annual Growth Rates of GDP**

Country	1981–90	1991–2004
Bangladesh	3.7	4.9
India	5.8	5.7
Pakistan	6.3	4.0
Sri Lanka	4.2	4.8
China	9.4	9.7
World	3.1	2.7

*Source:* Author's calculations using the annual GDP growth rates in the *World Development Indicators* (World Bank 2005).

7.10 Throughout the period, the region has grown at rates nearly twice those of the world economy. Because India accounts for more than three quarters of the region's GDP, its growth has decisive impact on the overall regional growth. India grew 3.2 percent during 1965–81, shifted up to 5.1 percent during 1981–7, and then to 6.0 percent rate during 1987–2004.<sup>97</sup> It is this steady rise of the Indian economy, especially since the late 1980s, which has attracted the world's attention to the region.

7.11 This acceleration in growth has taken place in an environment of declining trade barriers in the entire region. The recent comprehensive regional study by the World Bank (2004) offers an excellent documentation of this liberalization.<sup>98</sup> Rather than repeat it here, exports and imports of goods and services as proportions of the GDP are presented in Table 7.2. According to this table, both ratios rose in all four South Asian Association for Regional Cooperation (SAARC) countries shown between 1990 and 2000 except the imports/GDP ratio in Pakistan. In India, exports/GDP ratio rose from 7.1 percent to 15.3 percent and imports/GDP ratio from 8.6 to 14.6 percent. Likewise, in Bangladesh, exports rose from 6.1 percent of the GDP in 1990 to 14.6 percent in 2000 while imports rose from 13.7 percent to 19.2 percent over the same period. Thus, the shift in the growth rate has clearly happened in a more open trading environment.

**Table 7.2: Exports and Imports of Goods and Services as Proportion of the GDP**

Country	Export/GDP		Imports/GDP	
	1990	2000	1990	2000
Bangladesh	6.1	14.0	13.5	19.2
India	7.1	13.9	8.6	14.6
Pakistan	15.5	16.3	23.4	18.0
Sri Lanka	29.2	39.0	38.0	49.6
China	17.5	25.9	14.3	23.2
World	19.0	24.7	19.2	24.9

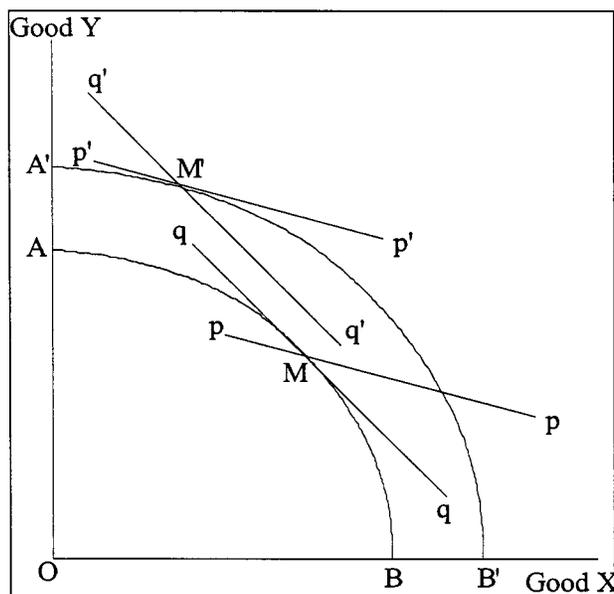
Source: World Bank 2005.

7.12 There are at least two reasons why the GDP growth actually understates the actual gains from liberalization. First, in so far as opening to trade better aligns the domestic prices with the world prices, the measurement of the GDP at domestic prices understates the true value of output that must be measured at the world prices. This is readily seen from Figure 7.1. Thus, suppose AB in Figure 7.1 gives the economy's initial production possibilities frontier and good X is the import competing good. Though the slope of pp represents the world price, protection to good X establishes the price shown by qq in the domestic market. Production takes place at M, and the GDP is given by line qq. Suppose next that the economy frees up trade fully and simultaneously the production possibilities frontier shifts to A'B'. Because producers now face the world price shown by p'p', production moves to M'. But if we continue to measure the GDP at the old protection-ridden domestic price, qq, GDP would be given by line q'q'. When growth is computed as the proportionate change between qq and q'q', it will turn out to be less than when measured as the proportionate change between pp and p'p'. From the welfare standpoint, the latter rather than the former measures growth accurately.

<sup>97</sup> During 1988–90, India grew 7.4 percent, which is the reason why the average growth rate during 1981–90 appears as high as during 1991–2004. Once we separate 1988–90 from the remaining years in the 1980s, the two periods are no longer comparable. Growth during 1988–2004 was distinctly higher than during 1981–7.

<sup>98</sup> Earlier accounts of trade policies for the major countries of the region can be found in Panagariya (1999) and for India in Panagariya (2004).

**Figure 7.1: Measuring GDP at Preliberalization Domestic Prices Understates Growth**



7.13 The second reason why GDP even if measured at postliberalization prices would understate growth is the appearance of many new and higher-quality products not previously available. To a consumer in India, these benefits of liberalization are obvious today. Many of the top quality computers, electronic equipment, cell phones, automobiles, clothing, and even fruits available today would not have existed under a protected regime. Even when the final assembly of these products is done at home, it is safe to say that the components used to produce them would not be available in the absence of relatively free trade. While economists have increasingly recognized the gains from trade liberalization along the new variety and quality dimension, traditional GDP Figures still fail to capture them.

7.14 Given that liberalization has so far been good for growth and welfare, the obvious question to ask is how best to proceed further. Specifically, should PTAs be a part of the future trade liberalization strategy? Answering this question requires a critical look at the efforts to promote PTAs within the South Asia region. We begin with some history of PTAs followed by their critical examination.

### **PREFERENTIAL TRADING IN SOUTH ASIA: A BRIEF HISTORICAL BACKGROUND**

7.15 During the first three years of their independence, intraregional trade among India, Pakistan, and Sri Lanka as a percentage of their total trade was in the double digits (World Bank 2004). In part, this large proportion reflected the relatively protectionist trade regime in developed countries that had come to exist in the 1930s and 1940s. But it also reflected low barriers to trade within the subcontinent. In the subsequent years, while the developed countries opened their markets, and thus opening the door to trade between them and other countries including those in South Asia wider, those other countries themselves turned inward. Import-substituting industrialization, with massive public-sector participation in the production activity and tight control of the private sector, became the cornerstone of the development strategy pursued in the region.

7.16 The import-substitution policies worked toward limiting not just total trade but in some ways asymmetrically toward limiting intraregional trade. Once boundaries had been drawn between India and Pakistan, they deliberately attempted to replace imports from across the new borders. For example, before independence, the region that became East Pakistan had grown most of Bengal's jute and textile mills in Calcutta processed it. After 1947, India protected and promoted jute farming by restricting the imports that had traditionally come from the east, while East Pakistan imposed restrictions on imports of processed jute established from India and established its own jute textile mills to process jute. Similarly, India restricted imports of raw rubber from Sri Lanka (and Malaysia) to promote the development of a rubber industry in Kerala.

7.17 After Bangladesh emerged as an independent country in 1971, it chose to follow the same essential road. Nepal and Bhutan, both landlocked, had more open trade relations with their dominant neighbor, India, but they too followed similarly restrictive policies with respect to the rest of the world. Consequently, though they came to trade more intensively with India, like other countries in the region, they too remained relatively closed with respect to the outside world. The only exception to this general pattern in South Asian was the Maldives, a tiny island state in the Indian Ocean.

7.18 With the possible exception of Sri Lanka that had undertaken significant liberalization in the late 1970s, antitrade policies remained dominant in the region for nearly four decades. The collapse of the Soviet Union and the success of China under outward-oriented policies finally convinced the policy makers in the region that rapid growth could not be achieved without wholesale opening of their trade regimes. As noted above, unilateral trade liberalization policies, which had begun to be introduced in the second half of the 1980s, were introduced on a more systematic basis in the 1990s. The change contributed to a more rapid expansion of trade of India, Pakistan, Bangladesh, and Nepal not only with the outside world but with one another as well.

7.19 Quite apart from the general opening up, the countries in the region also began to see increased cooperation and trade among them as a key objective. This was reflected partially in the founding of SAARC in 1985 to promote dialogue and cooperation. In 1993, the member nations of SAARC went on to sign an agreement to forge the South Asian Preferential Trade Area, which became operational in December 1995. Though the actual exchange of preferences remained extremely limited, the process of negotiation kept the dialogue among the member countries alive.

7.20 But the worldwide proliferation of preferential trade arrangements in the 1990s has now led to a change in thinking in the region, especially India, which has begun to negotiate a series of preferential trade agreements of its own. Within the region this has recently led to the signing of SAFTA with the ultimate objective of turning South Asia into a full-fledged FTA with the internal liberalization beginning in 2006. This agreement has come in the wake of a bilateral FTA agreement between India and Sri Lanka in 1998 that became operational on March 1, 2000. In addition, India has also had prior trade agreements involving an FTA with Bhutan and substantial one-way preference to Nepal.

### **SAFTA: A CRITICAL EXAMINATION**

7.21 Similar to 180 other existing PTAs notified to the WTO and in force as of July 8, 2005, SAFTA also adds to the fragmentation of the global trading system. But it would be wrong to judge the arrangement on this basis since the responsibility for the maintenance of a sound global trading system must rest with the larger, developed countries. If these latter countries abdicate

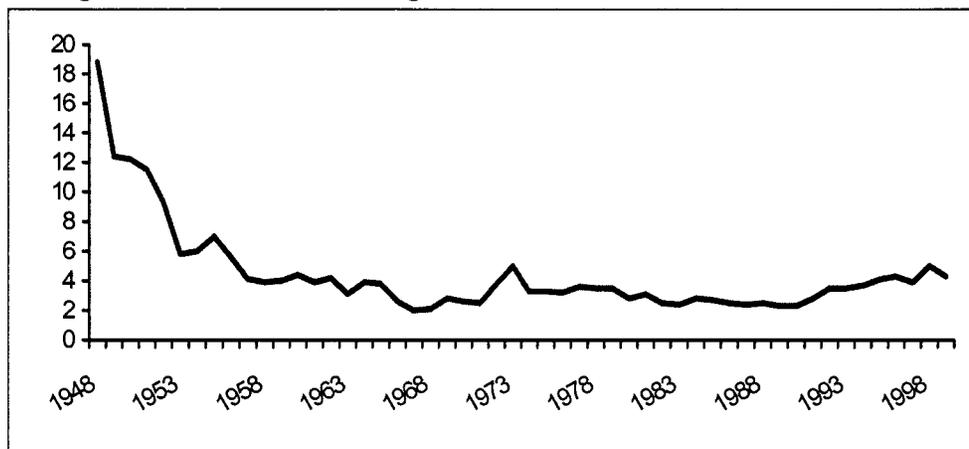
their responsibility, the smaller countries can scarcely be blamed for putting the self-interest ahead of the public good. Therefore, SAFTA must be judged not by what harm it inflicts on the global trading system but by what benefits it confers on its member countries.

7.22 In his pioneering analysis, Viner (1950) noted that PTAs that are predominantly trade creating make its members better off whereas those that are trade diverting make them worse off. Thus, for example, when Bangladesh allows Indian cement to be imported duty free and this leads the more efficient Indian cement industry to out compete the less efficient Bangladesh cement industry, we have what Viner called trade creation: Increased imports into Bangladesh represent a shift from high-cost Bangladeshi producers to low-cost Indian producers. On the other hand, if duty-free access to Indian computers into Bangladesh allow the less efficient Indian computer manufacturers to displace more efficient Korean suppliers who remain subject to the duty, we have what Viner called trade diversion: Increased imports from India in this case represent a switch from low-cost outside sources to the high-cost within-union sources of supply.

7.23 Therefore, the critical factor in determining whether SAFTA would raise or lower the real incomes of the member countries depends on whether it will be predominantly trade creating or trade diverting. Many analysts have suggested using the share of intraregional trade in total trade as a measure of potential trade creation by an FTA. It is claimed that the larger this trade, the more “natural” the union. Bhagwati and Panagariya (1996) have systematically shown, however, that the extent of intraregional trade has little bearing on whether the union is beneficial or harmful in welfare terms. The reason is that the change in intraregional trade owing to a tariff preference *at the margin* bears no obvious relationship to the *existing* volume of intraregional trade. Depending on the precise structure of the model, it is entirely possible that when intraregional trade is small, its further expansion does not lead to the diversion of trade from extraregional partners.

7.24 Nevertheless, since intraregional trade remains a key target of PTAs, we will briefly describe its evolution without any suggestion that its existing level has a bearing on the likelihood of either trade creation or trade diversion dominating upon the formation of the union. Figure 7.2, taken from World Bank (2004), shows the evolution of the total intra-regional trade in South Asia since the end of the British rule in the region. Until 1951, this trade as a percentage of the region’s total trade was in the double digits.

Figure 7.2: South Asia’s Intraregional Trade as a Share of Total Trade, 1948–99



Source: World Bank 2004.

7.25 As noted previously, this pattern reflected two facts: The world markets were relatively closed and South Asia was relatively open. In the years that followed, the two trade regimes exchanged places: The world markets opened up while South Asian borders became progressively closed. Moreover, in the case of India and Pakistan, political tensions virtually closed official international trade between them. By 1967, intraregional trade had already fallen to just 2 percent of the region's total trade. It recovered briefly in the early 1970s, but declined steadily thereafter until 1990 when it fell back to the 1967 level of 2 percent of total trade. The share began to recover again only when the region, especially India, began to open its trade regime in the 1990s, reaching 4.2 percent in 1999.

7.26 Tables 7.3 and 7.4 show country-level data on the direction of exports and imports, respectively. The pattern at the country level essentially mirrors that at the aggregate level. On the exports side, the countries trade mainly with developed countries and relatively little with South Asian partners. For India and Pakistan, this fact also holds true on the imports side. But Bangladesh and Sri Lanka import as much as 20 and 15 percent of their respective total imports from South Asian sources, mainly India. These volumes remain relatively small proportion of the total Indian exports, however. What remains true is that even Indian exports to the South Asian partners have expanded significantly during the 1990s rising from 3 percent in 1990 to 5 percent in 2002. The change has come about mainly due to liberalization of the MFN tariffs in the region.

**Table 7.3: Direction of Exports by Major Destinations (Percent)**

	United States		European Union		Japan		ASEAN		South Asia	
	1990	2002	1990	2002	1990	2002	1990	2002	1990	2002
India	15	21	21	22	9	4	3	5	3	5
Pakistan	12	25	36	27	8	1	3	2	4	2
Bangladesh	32	35	32	50	4	2	1	0	2	2
Sri Lanka	26	38	26	30	5	3	1	1	4	5

Source: COMTRADE via Wits.

Note: ASEAN, Association of Southeast Asian Nations.

**Table 7.4: Direction of Imports by Major Origins (Percent)**

	United States		European Union		Japan		ASEAN		South Asia	
	1990	2002	1990	2002	1990	2002	1990	2002	1990	2002
India	11	7	22	20	8	3	3	5	0	1
Pakistan	13	6	24	17	12	6	5	9	2	2
Bangladesh	6	4	16	11	9	7	7	7	9	20
Sri Lanka	8	4	16	15	12	6	9	8	7	15

Source: CONTRADE via Wits.

Note: ASEAN, Association of Southeast Asian Nations.

7.27 Against this background, we see three important features of the South Asian economies that make an FTA among them *economically* unattractive.<sup>99</sup> The economies are relatively small in relation to the world both in terms of the GDP and trade flows. Table 7.5 shows the population, GDP, and the volume of trade in the SAARC-5 (Bangladesh, India, Nepal, Pakistan, and Sri Lanka) in the year 2001. In terms of population, the region is substantial: one fifth of the world. This clearly indicates the future potential of the market if per-capita incomes reach the

<sup>99</sup> Some of these concerns are discussed in greater detail with the associated analytics in Panagariya (2003).

levels prevailing currently in the Association of Southeast Asian Nations (ASEAN) economies. But the current per-capita incomes are tiny in relation to the latter so that the economic size of the region remains small: less than one twentieth of the world in terms of the GDP. And if we take India out of the picture, this proportion drops to 0.4 percent. The probability that the most efficient suppliers of the member countries are within the region is slim. Correspondingly, the probability that the FTA is likely to be largely trade diverting is quite high.

7.28 Trade-related indicators reinforce this conclusion. Thus, the last column of Table 7.5 shows the share of SAARC countries in the world trade (exports plus imports). Together, the countries in the region account for only 1.1 percent of the world trade. Again, if India is excluded, the proportion drops to 0.4 percent. The scope for trade diversion due to tariff preferences is indeed very large.

**Table 7.5: Population, GDP, and Trade in SAARC-5 (2001)**

Country	Population (million)	GDP (US\$ billion)	Trade (US\$ billion)
Bangladesh	133.30	48.60	15.60
India	1,032.40	477.40	93.10
Nepal	23.60	5.80	2.30
Pakistan	141.50	60.00	20.30
Sri Lanka	18.70	16.40	11.10
SAARC-5	1349.50	608.30	142.30
World	6,130.10	31,400.00	12,560.00
As Percent of the World			
Country	Population	GDP	Trade
Bangladesh	2.2	0.2	0.1
India	16.8	1.5	0.7
Nepal	0.4	0	0.0
Pakistan	2.3	0.2	0.2
Sri Lanka	0.3	0.1	0.1
SAARC-5	22.0	1.9	1.1
World	100.0	100.0	100.0

Source: World Bank 2003.

7.29 The second reason for why prima facie the economic case for SAFTA is weak relates to the relatively high level of protection among the SAARC economies. If the country participating in a regional arrangement were itself open, it would not suffer from trade diversion even if it were tiny. For example, Singapore does not have to fear trade diversion in its own market since its union partners must compete with the outside union countries on equal footing: Everyone faces near zero tariffs in Singapore. In an India-Singapore FTA, it is India that must suffer all the negative consequences of trade diversion. Against this background it is useful to consider the existing trade barriers in the SAARC countries. This is done in Table 7.6. It is evident that the level of protection within the SAARC region remains high in all countries except, arguably, Sri Lanka. The simple average of the applied duties in nonagricultural goods ranges from 10 percent in Sri Lanka to 21 percent in Bangladesh. In India, this tariff is approximately 20 percent. In agriculture, the level of protection is even higher and ranges from 25 percent in Pakistan to 100 percent in India.

7.30 The third and final reason that makes the economic case for SAFTA weak concerns the political economy of the selection of excluded sectors and rules of origin. When countries are allowed to choose sectors that can be excluded from tariff preference of free trade, domestic lobbies make sure that the sectors in which they may not withstand competition from the union partner are the ones that get excluded.

**Table 7.6: Informal Trade Between India and its SAARC Partners**

<b>Trading Partner (year of estimate)</b>	<b>Indian informal exports (\$US million)</b>	<b>Indian informal imports (\$US million)</b>
Pakistan (1996)	100–500	n.a.
Bangladesh (1992–3)	299	14
Sri Lanka (1991)	142	121
Sri Lanka (2000–1)	185	21

*Sources:* Pakistan: Nabi et al. (1996). Provides two estimates: the “low” estimate (based on visits to various markets for smuggled goods) suggests Indian informal exports to Pakistan were US\$100 million and the “high” estimate (based on interviews with customs officials) estimates about US\$500 million. Bangladesh: Chaudhary (1995), based on a detailed survey of Bangladesh-India informal trade. Sri Lanka: Sarvanathan (1994) gives the estimates for the year 1991 and Taneja (2002) gives the one for 2000–1.

7.31 On the other hand, lobbies go along with free trade in the sectors in which they are competitive and the preference will threaten the imports from outside countries. In the same vein, lobbies tend to go for tight rules of origin or outright quantitative restrictions in precisely those sectors in which they fear the competition from the partner most. On the other hand, when the threat is mainly to the imports from outside countries, they are willing to accept greater liberalization.

7.32 The rules of origin can also be subject to abuse by the bureaucrat administering them. In cases where imports from the partner may be threatening an inefficient domestic competitor, bureaucratic discretion may be employed to block entry of the imports.

7.33 A common argument advanced in favor of SAFTA is that there is a substantial informal trade among the countries of the region (Table 7.6) and that this trade involves large real costs. For example, the bulk of India-Pakistan trade is routed through Dubai, which is costly. An FTA may help eliminate these costs. There are three issues relating to this argument that must be examined critically. First, insofar as the illegal trade between India and Pakistan is concerned, it is important to find out what part of it is due to the restrictions that preclude trade at the MFN terms and what part tries to evade even the MFN tariff.

7.34 Second, is it possible that informal trade is largely driven by considerations other than the evasion of tariffs? Taneja et al. (2003) studies the transacting environments in the formal and informal trading between India and Sri Lanka. They find that the transaction cost in formal trading in India as well as in Sri Lanka is significantly higher than in informal trading.<sup>100</sup> Thus, the presence of informal trade may simply reflect excessive transactions cost of passing the goods across the border through formal channels. An FTA will likely add to this cost, especially for small and medium firms, by adding the costs of complying with the rules of origin.

7.35 Therefore, paradoxically, the FTA might divert trade from the low- to high-transactions cost channel. Finally, even if the real costs associated with informal trade are higher (contrary to what the Taneja et al. study shows), benefits from such cost savings through the FTA must be weighed against the costs of trade diversion.

7.36 Given this pessimistic economic assessment, why has the move toward SAFTA gathered momentum. We suggest that the answer to this question is rooted in politics. First, with most countries in the world moving forward with more and more PTAs, there is a clear sense in the

<sup>100</sup> This is analogous to the international financial transactions. Despite the adoption of the current-account convertibility by India, many traders continue to prefer moving funds through Hawala because of the lower transactions costs and its substantially more rapid transmission mechanism.

region that it may be falling behind in this race. In the absence of hardnosed economic analysis, the view that “if all others are doing it, it must be good” dominates. Second, the region has definitely suffered from the trade diversion generated by the many FTAs in the Americas and the European Union and its neighbors. The leaders in the region may therefore see a strategic advantage in forging ahead with as many of their own FTAs as possible in response. Third, politicians do not seem to distinguish between discriminatory and nondiscriminatory liberalization as sharply as economists do. As a result they see bilateral agreements as one of the instruments of liberalizing trade. Sometimes they even see it as a superior instrument because it leads to reciprocal liberalization in the partner countries. Fourth, SAFTA is also seen as a vehicle of promoting better political ties among neighbors, especially India and Pakistan, which have had a long history of rivalry. The common example the proponents of this argument have in mind is that of the European Economic Community, which is claimed to have joined France and Germany into a tight economic union and made future conflicts between them very costly.<sup>101</sup>

7.37 In the context of SAFTA, this last argument has its limitations. For example, one may argue whether SAFTA is itself feasible in the absence of political harmony between India and Pakistan. The case of France and Germany involved a victorious power and a vanquished one and the military presence of an outside superpower that made compliance feasible. The circumstances facing India and Pakistan are altogether different. With an ongoing conflict and closed borders, they effectively deny MFN status to each other.

7.38 But even if feasibility can be persuasively argued, is SAFTA the first-best instrument of promoting peace between India and Pakistan. For example, trade between them would likely grow substantially if they were to just open the borders to each other on a genuine MFN basis, which is a precondition for SAFTA in any case. Moreover, even if preferential trade is an essential aspect of the promotion of peace, can this not be accomplished more directly by an India-Pakistan bilateral FTA? Or will the promotion of cultural ties through the movement of people across the border not be a more direct means of achieving the objective? These are the tough questions that the proponents of the “peace argument” have not confronted to date.

### **SRI LANKA-INDIA FTA: SECTORAL EXCEPTIONS AND RULES OF ORIGIN**

7.39 The reservations to the SAFTA based on sectoral exceptions and rules of origin expressed in the previous section have been found to apply to SIFTA in a recent study by Baysan et al. (2004). Without providing full details of the study, here are some of its key observations.

7.40 The Sri Lanka-India Free Trade Area made generous use of sectoral exceptions. For example, top 20 exports of Sri Lanka (to the world and not just India) at the 6-digit HS level accounted for 46 percent of Sri Lanka’s total exports in 1999. India subjects 15 out of these 20 products to either a tariff rate quota (meaning the tariff preference applies only up to a prespecified quantity of imports) or negative-list exception. Thus, the exclusionary policies applied with potency to products in which Sri Lanka showed the greatest comparative advantage.

---

<sup>101</sup> This argument, while quite fashionable, is not without flaws. For one thing, it was the military presence of the United States in both Germany and Japan that ensured peace in the respective regions. If the PTA was such a potent force, why is it that the U.S. military presence continued in Germany? Indeed, no FTA or customs union was formed in the Far East and yet a lasting peace could be established there because the U.S. military was present in Japan. Moreover, even without any regional arrangement, the Far Eastern economies have come to be as integrated economically as those in Europe.

7.41 The rules of origin and rules of destination requirements further restrict the exports. For example, apparel exports from Sri Lanka are not only subject to the tariff rate quota of 8 million pieces but at least 6 million of these pieces should be manufactured from fabrics of Indian origin exported to Sri Lanka from India. Likewise, exports of tea from Sri Lanka at the preferential tariff are not to exceed 12.5 million kilograms within a calendar year. Both products are also subject to a uniquely South Asian restriction that may be called the rule of destination: the preference applies only if the products enter through specific Indian ports.

7.42 Similar observations apply to preferences given by Sri Lanka to India. As Weerakoon (2001) points out in her excellent paper, at the time the lists of concessions were finalized, of the 319 items on which Sri Lanka offered zero duty to India, the latter exported only three to the former. Looked another way, of the 2,907 products exported by India to Sri Lanka, only 21 percent received any tariff preference at all. Conversely, of the 1,351 items in the zero-tariff list of India, Sri Lanka exported only 68 items to the former. Of the 380 items exported by Sri Lanka to India, 50 were on the Indian negative list, 44 received a 25 percent tariff preference, 218 received a 90 percent preference (expanded to 100 percent as of March 1, 2003), and 68 received a 100 percent preference.

#### **THE WAY FORWARD: AN ASIAN BLOC VIA INDIA-CHINA FTA**

7.43 There is surely scope for cooperation within South Asia on a project-by-project basis in areas such as infrastructure and trade facilitation. SAFTA itself contains a host of worthwhile areas of cooperation. But it has been a mistake to put these nontrade issues into SAFTA since there is no reason to hold progress in one area hostage to progress in the other areas.

7.44 But insofar as the promotion of PTAs is concerned, as the largest country in the region, India needs to think big and focus its efforts on forging an India-China FTA with the eventual goal of creating an Asia-wide FTA. In 1994 we wrote arguing against an East Asian discriminatory trade bloc (Panagariya 1994). But the circumstances have changed considerably since then requiring reevaluation.

7.45 In particular, since the conclusion of the North American Free Trade Association, PTAs have proliferated in North America, Latin America, and Asia. Whereas as of 1990, only 32 such agreements notified to the General Agreement on Tariffs and Trade (GATT) were still in force, they had gone up to 170 by January 1, 2005.<sup>102</sup> There is no member of the WTO that does not belong to at least one PTA today and some belong to as many as 20!<sup>103</sup> More than 70 agreements are being negotiated or signed that have not yet been notified to the WTO.

7.46 This proliferation of trade blocs has created very substantial discrimination against Asian exports in North America, Europe, and Latin America. Of course, it will be best if the Doha Round would bring about free trade in industrial products and substantial liberalization in agriculture and services. In that case, discrimination faced by Asian goods in these markets will end at the source since preferences against zero tariffs are also zero. But the ground reality is that the Doha Round will not eliminate trade barriers entirely even in industrial products let alone agriculture and services. Therefore, the current discrimination is likely to persist.

---

<sup>102</sup> The total number of agreements notified to the GATT and WTO as of January 1, 2005, was 312. But only 170 of them were still in force with the rest having either lapsed or been superseded by new agreements. Of the 124 agreements notified to the GATT during 1948–94 before it was replaced by the WTO on January 1, 1995, only 32 are in force currently. See Crawford and Fiorentino (2005) for further details.

<sup>103</sup> See [http://www.wto.org/english/tratop\\_e/region\\_e/regfac\\_e.htm](http://www.wto.org/english/tratop_e/region_e/regfac_e.htm).

7.47 Against this background, a strategic argument can perhaps be made for an Asia wide trade bloc that would provide the leverage necessary to pry open the North American and European trade blocs. If one accepts this argument, an India-China FTA is probably the best starting point for such an Asian bloc. For example, an alternative route would be the development of such a bloc around ASEAN. Currently, both India and China have framework agreements to form FTAs with the members of ASEAN, and they could proceed with turning those into real FTAs. But a truly credible movement towards an Asian bloc would eventually require an FTA between these two countries. Rather than take this alternative route, if India and China were to sign an agreement, chances are much greater that the remaining countries in Asia (and outside) will rush to sign agreements with them. Presently, the ASEAN is driving the integration process in Asia, but with the emergence of India and China as major economic powerhouses and the relative stagnation faced by the most populous ASEAN country, Indonesia, its ability to serve as the engine of the Asian integration has substantially diminished.

7.48 An India-China FTA also has the advantage that it will help promote an alternative FTA template that focuses on trade integration rather than nontrade subjects including labor standards, intellectual property rights, and even restrictions on the use of capital controls. These subjects are integral parts of the U.S. FTA template that the United States may eventually want to turn into the WTO template. An Asian bloc that relies on a "trade only" template will be an effective instrument of countering the U.S. template in the future WTO negotiations. With their vast pools of labor supply, India and China have the greatest interest in ensuring that market access does not get linked to labor and environmental standards.

7.49 Internally, India can surely benefit from cooperation with China in shaping its labor-intensive industry. In particular, direct competition with China may help push some of the key reforms necessary to stimulate the expansion of the labor-intensive industry. With the wages in China now rising, the time for India could not be more opportune for moving in a big way into such labor-intensive sectors as apparel, footwear, and toys. Likewise, China could gain from increased interaction with India in the information technology sector.

7.50 Criticisms of preferential trade liberalization offered in the context of SAFTA apply to India-China FTA as well though with less potency since China is a large player in the world market and a super-efficient producer of many goods. The latter fact means that the scope for trade creation is greater with the benefits of trade preference translating into lower prices for consumers. Nonetheless, as long as India continues to have substantially higher tariffs than China, the danger of potential losses from trade diversion reflected in the transfer of tariff revenue to the Chinese firms in the form of higher profits remains. As such, in thinking of such an FTA, it must be assumed that India would remain committed to its current nondiscriminatory liberalization and bring the external tariffs down to the Chinese levels in two or three years' time.

7.51 Objections to an India-China FTA in India are principally grounded in the fear that Indian entrepreneurs will be unable to withstand competition from the super-efficient Chinese firms. There are two responses to this argument. First, competition is what trade liberalization is all about. Benefits from liberalization accrue precisely from competing against the best in world. India will not produce top-class cricket players if it were to ban its players from playing in the test cricket. Its top-class software engineers will also fail to achieve their full potential if they were restricted to use their skills for domestic industry alone. In terms of trade creation and trade diversion, the more efficient the trading partner, the less fear that the FTA will result in trade diversion.

7.52 The second reason why this fear is misplaced is that India's own experience during the 1990s and the 2000s demonstrates that Indian entrepreneurs are perfectly capable of competing with the best in the world. From a regime with strict import licensing and more than 100 percent average tariff rate in 1991, India has moved to a regime with free imports with the highest tariff of 15 percent (with some exceptions) on industrial products. This transition has not slowed down industrial growth in India. On the contrary, Indian industry today is perhaps much more efficient than 20 years ago. Though more progress is required, its specialization is also closer to its comparative advantage than 20 years ago.

7.53 These arguments are reinforced by the fact that India-China trade has been one of the most rapidly growing bilateral trade relationships since the early 1990s. And while the bilateral balance remains in favor of China, rapid growth has taken place in both directions with concomitant benefits to both countries. According to the Indian Commerce Ministry data, India's exports to China rose from a paltry US\$18 million in 1990-1 to approximately US\$4.6 billion in 2004-5. India's imports from China expanded equally rapidly, from US\$35 million to US\$6.7 billion over the same period. While China is now the largest source of India's imports, it is also the second largest destination of its exports (not counting the United Arab Emirates, which is only a way station for Indian exports).

#### **CONCLUDING REMARKS**

7.54 We have argued that the case for the SAFTA on both economic and political grounds is not especially persuasive. Economically, the region is small in relations to the outside world and remains heavily protected. *Prima facie*, these features imply that trade preferences to regional partners will likely be trade diverting rather than trade creating. Based on the experience with the Sri Lanka-India FTA, the rules of origin and sectoral exceptions are more likely to restrict the expansion of intraregional trade in precisely those sectors in which the countries have comparative advantage; that is, the sectors in which trade creation is more likely.

7.55 A political case for the SAFTA is sometimes asserted by appeal to the experience of France and Germany but to date we have not seen it clearly articulated. The circumstances of France and Germany after Germany had been decisively defeated and the U.S. military forces occupied Germany were quite different from those of India and Pakistan. Border hostility and dispute between these nations are ongoing and unresolved. This difference raises serious doubts about successful implementation of the SAFTA. On the other hand, if the arrangement is implemented, it is not going to result in the kind of integration and impact observed among the member states of the European Economic Community. The European Economic Community was a much larger market to begin with and chose the instrumentality of a customs union that eventually aimed to even introduce factor mobility. In contrast, so far SAFTA can only be seen as intending to promote selective trade preferences with even the goal of a full-fledged FTA five-seven years having limited credibility. Finally, it remains to be argued persuasively that the SAFTA is the best means to break the hostility between India and Pakistan.

7.56 Therefore, it stands to reason that the instrumentality of SAARC be deployed not in promoting SAFTA but project-by-project cooperation in areas of mutual interest. Projects in areas of infrastructure, energy, and trade facilitation are clearly good candidates for such cooperation.

7.57 Insofar as preferential trading is concerned, its goal should be an Asia-wide trade bloc for which the best starting point is an India-China FTA. These are growing economies and together reasonably large. Because of the highly competitive nature of China's firms in many products on

the worldwide scale, risks of trade diversion for India are much lower than in SAFTA. An India-China FTA also offers the best prospects for forging the Asia wide FTA eventually.

7.58 A final word must be said in support of a successful completion of the Doha Round, of course. Developing countries have the greatest stake in bringing this round to a successful end. The negotiations are now largely limited to trade liberalization, which offers win-win bargains. Since India has the most trade concessions to give owing to its high level of protection, it has a pivotal role to play. Its importance in the negotiations is perhaps next only to that of the European Union.

## 8. THE ROLE OF TRADE FACILITATION IN EXPORT GROWTH AND INTER-REGIONAL TRADE<sup>104</sup>

### INTRODUCTION

8.1 Increasing global competition has led to an expansion of market areas. Producers are willing to procure inputs from more distant locations, large retailers contract for production from multiple countries, and wholesalers order goods from throughout the world. In parallel, there has been a transformation from integrated manufacturing activities producing specific products for local markets to global production of product components with subsequent assembly, customization, and packaging arranged for specific national and metropolitan markets. This has dramatically increased the demand for international warehouse-to-warehouse transport as well as for better monitoring of goods during processing and while in transit. In order to integrate these activities, global supply chain management has become a major industry providing coordination for delivery of goods produced in different locations to various markets worldwide within fixed time schedules and at reduced cost.

8.2 Suppliers are now differentiated not only according to the scale, cost, and quality of their production but also according to their lead time from placing an order to receipt of goods. These order cycles are evaluated in terms not only of average delivery time but also reliability in meeting agreed delivery schedules. The last two decades have witnessed an increasing demand for reliability in all types of shipments as wholesalers, retailers, manufacturers, and traders have sought to minimize their inventory costs and coordinate deliveries to multiple outlets. Supply chain performance has received increasing attention because it has a significant impact on all four dimensions of export competitiveness: cost, quality, time, and reliability.

8.3 For our purposes, trade facilitation is defined to include improvements in all aspects of supply chain performance.<sup>105</sup> Among the primary initiatives associated with trade facilitation are simplification and harmonization of trade procedures and modernization of customs and other regulatory structures. To this must be added improvements in transport and communications services, increased use of information technology to monitor product flow, and supply chain integration. These initiatives can be divided between government efforts to improve policy and procedures and private sector efforts to improve management and use of logistics services.

8.4 Public sector efforts address problems associated with technical barriers to trade (for example, cumbersome licensing and clearance procedures, increasingly stringent sanitary and phytosanitary requirements, and restrictions on trade finance, as well as inefficient public management of transport infrastructure). Private sector efforts address problems of complex transactions, excessive number of participants in the supply chain, poor quality or limited variety of logistics services, and lack of coordination among logistics service providers in a supply chain. We address these problems by focusing on the performance at the international borders and gateways as well as on the corridors connecting them with the major domestic markets.

---

<sup>104</sup> This Chapter was prepared by John H. Arnold, Consultant, World Bank.

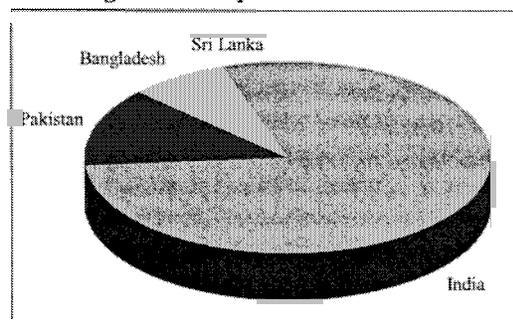
<sup>105</sup> This is more expansive than the Doha Declaration regarding "expediting the movement, release and clearance of goods, including goods in transit." It is similar in scope to the International Chamber of Commerce, which emphasizes "improvements in the efficiency of the processes associated with trading in goods across national borders ... simplifying and reducing the cost of international trade transactions, and ensuring that all relevant activities take place in an efficient, transparent, and predictable manner, based on internationally accepted norms, standards and best practices." (This is from "ICC Recommendations for a WTO Agreement on Trade Facilitation," a policy statement of the International Chamber of Commerce's Commission on Customs and Trade Regulations.)

## CHARACTERISTICS OF TRADE IN SOUTH ASIA

8.5 India's economy as measured by gross domestic product (GDP) has been growing at about 7 percent, while Pakistan's grew by 8.4 percent in fiscal 2005 and the economies of Sri Lanka and Bangladesh expanded at about 5.5 percent. In comparison, India reported export growth of 24 percent in fiscal 2005 while Pakistan's exports rose 17 percent, Bangladesh's 13 percent, and Sri Lanka's 12.2 percent. Part of this growth was attributable to higher unit prices for basic commodities, but most of the growth was associated with increased volume of shipments. For example, the removal of worldwide textile quotas on January 1, 2006, led to significant increases in exports to the United States by all four countries.<sup>106</sup>

8.6 India continues to have a dominant share of the region's exports of goods as shown in Figure 8.1. Its exports are more diversified and include durable consumer goods, intermediate materials, and certain machinery that is competitive not only internationally but also in South Asian markets, especially Bangladesh and Sri Lanka. The other economies are smaller and their exports more specialized in labor-intensive products, especially textiles, garments, leather goods, seafood, and agricultural products. This difference can be seen in the proportion of exports accounted for by different commodity groups (2-digit HS) as shown in Table 8.1. For India, 12 commodity categories (HS 2-digit) account for 95 percent of the exports by value with no category accounting for more than 22 percent. In contrast, in Bangladesh and Maldives, fewer than five categories account for 95 percent of exports. Bangladesh is the most specialized with textiles accounting for more than 85 percent. The combination of textiles and garments, leather products, fruits and vegetables, and fish and crustaceans account for 96 percent of the value of Bangladesh's exports and more than 80 percent for Pakistan and Sri Lanka but only about one-third of the value of India's exports.

Figure 8.1: Export Share FY 2005



<sup>106</sup> Some of this growth has been stimulated by European Union and U.S. constraints of Chinese imports as permitted under the World Trade Organization up through 2008. Despite this growth, total exports for the region remained less than half that of China.

**Table 8.1: Percentage of Export Goods Trade According to Commodity Groups Based on Value (2-Digit HS Code)**

India		Nepal		Pakistan		Sri Lanka		Bangladesh		Maldives	
Textiles	21.5	Textiles	50.6	Textiles	68.9	Textiles	53.4	Textiles	85.8	Animals	55.4
Stone	17.2	Metal	10.2	Vegetables	7.3	Vegetables	17.3	Animals	5.6	Textiles	32.0
Chemicals	10.6	Fats and Oils	9.3	Leather	5.8	Plastic	6.5	Leather	3.0	Foodstuffs	12.3
Minerals	9.1	Chemicals	6.6	Vehicles	3.0	Stone	4.7	Chemicals	1.4	Other	0.3
Metal	9.0	Vegetables	6.0	Furniture	2.8	Mechanical	3.2	Other	4.2		
Mechanical	7.0	Foodstuffs	5.5	Minerals	2.8	Metal	3.0				
Vegetables	6.4	Plastic	2.9	Animals	1.5	Animals	2.1				
Plastic	3.2	Paper	1.9	Foodstuffs	1.5	Vehicles	2.0				
Vehicles	3.1	Leather	1.4	Plastic	1.3	Foodstuffs	1.9				
Animals	2.8	Minerals	1.1	Chemicals	1.1	Furniture	1.1				
Foodstuffs	2.7	Other	4.5	Other	4.0	Other	4.8				
Leather	2.5										
Other	4.9										

Source: U.N. COMTRADE, <http://unstats.un.org/unsd/comtrade>.

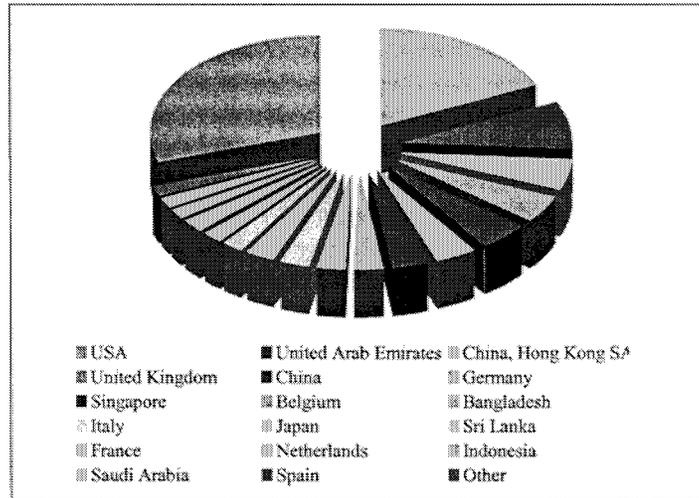
8.7 Each of these commodity groups have different requirements in terms of cost, time, and reliability of their logistics. Competition in the garment and textile industry has been driven by cost, but as the global outsourcing has matured and retailers have refined their supply chains, time has become increasingly important component of competitive advantage. Reduced order times permit a reduction in inventories to avoid liquidation of over stockage while guaranteeing replenishment of fast moving items so as to minimize the possibility of lost sales. Leather goods tend to be less sensitive to cost but are more demanding in terms of time and reliability, especially for semi-finished goods used in manufacturing shoes. Fruit and vegetable exports are the most time sensitive because of the shift from processed to fresh products. The challenge is to deliver the products at the proper time in their ripening cycle with high reliability and lower cost. Reliability becomes more important for large-scale retailers that schedule the days of the week on which fresh produce is placed on display. Seafood is less of a problem because most of the fresh products are shipped frozen with relatively long shelf lives. Timing and reliability are most important in the supply chain activities linking the boat and the processing plant.

8.8 The region's principal export markets are North America and the European Union. While East and Southeast Asia are important sources of supplies for the production of its manufactures, especially garments, they are less important as destinations for the exports. The principle markets for the major commodity groups are shown in Table 8.2. The diversity of markets served by each of the countries varies significantly, with India having a significant level of trade with the largest number of countries (Figure 8.2) followed by Pakistan, Bangladesh, and Sri Lanka (Figure 8.3). The least diversity in markets occurs for exports from Nepal and Maldives (Figure 8.4).

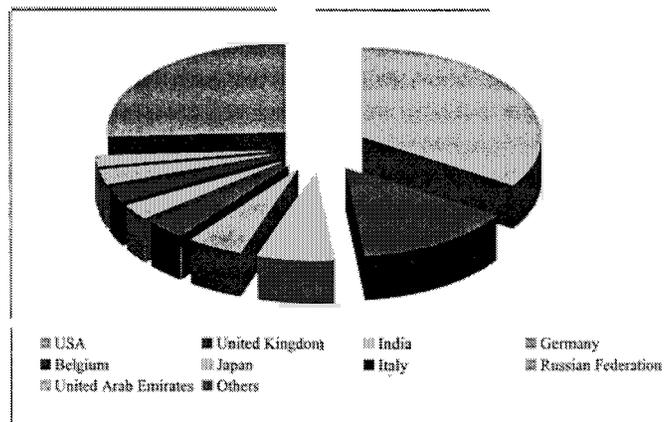
**Table 8.2: Major Non Bulk Export**

	ASEAN	European Union	NAFTA
India	Vegetables	Fish, vegetables, textiles	Fish, vegetables, textiles
Bangladesh		Textiles	Textiles
Nepal	Textiles	Textiles	Textiles
Pakistan	Vegetables	Textiles	Textiles
Sri Lanka		Vegetables, textiles	Textiles

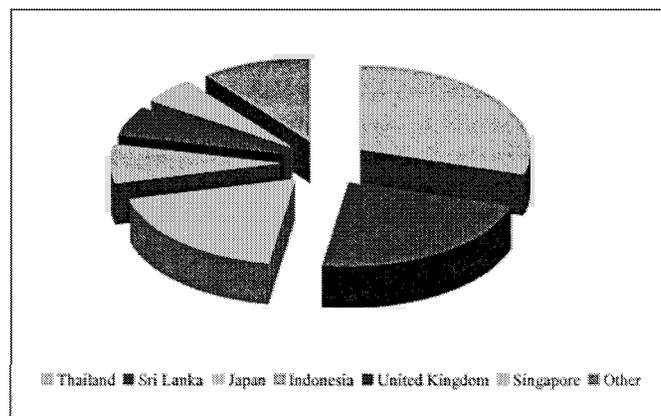
**Figure 8.2: India Export Trade by Value 2003**



**Figure 8.3: Sri Lanka Export Trade by Value 2004**



**Figure 8.4: Maldives Export Trade by Value 2003**



8.9 The shares of exports based on weight, rather than value, for the principal markets and commodities are shown in Table 8.3 (additional detail in annex Tables A.1 and A.2). Textiles and apparel are dominant among the three major commodity groups, except for India where there is a comparable volume of fruits and vegetables and significant exports of fish and crustaceans. The European Union is the dominant market for Bangladesh while there are more balanced shipments to the European Union and North America for India, Sri Lanka, and Pakistan. Only Nepal ships significantly more to North America than the European Union. Although there have been fluctuations from year to year, these shares have been relatively stable over the last five years.

**Table 8.3: Export Trade by Volume, in Percent (2003)**

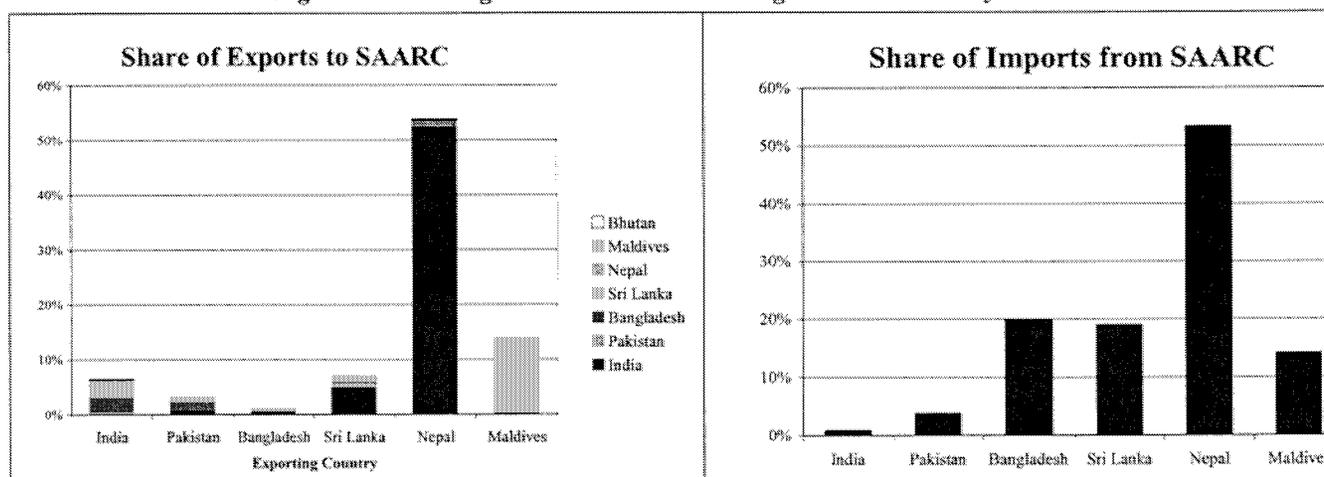
	India	Bangladesh	Nepal	Pakistan	Sri Lanka
ASEAN	24	2	2	13	1
European Union	42	65	14	45	49
NAFTA	34	32	84	42	50
Fish	18	7	1	8	4
Vegetables	46	1	0	20	10
Textiles	36	92	99	72	85
Total (000 tons)	1,071.9	597.0	13.2	364.8	174.1

Source: U.N. COMTRADE data from importing countries, adjusted by author.

Note: ASEAN-10 (Association of Southeast Asian Nations) countries; European Union-25 countries; NAFTA, North American Free Trade Agreement.

8.10 The amount of intraregional trade in South Asia is quite small relative to extra-regional trade. This is due primarily to government constraints on bilateral trade, especially nontariff barriers. As shown in Figure 8.5, only Nepal has a substantial trade within the region, specifically with India. India is involved in most of the other trade with the exception of that between Sri Lanka and Maldives.

**Figure 8.5: Interregional Trade as a Percentage of Total Trade by Value**



## LOGISTICS AND COMPETITIVE ADVANTAGE

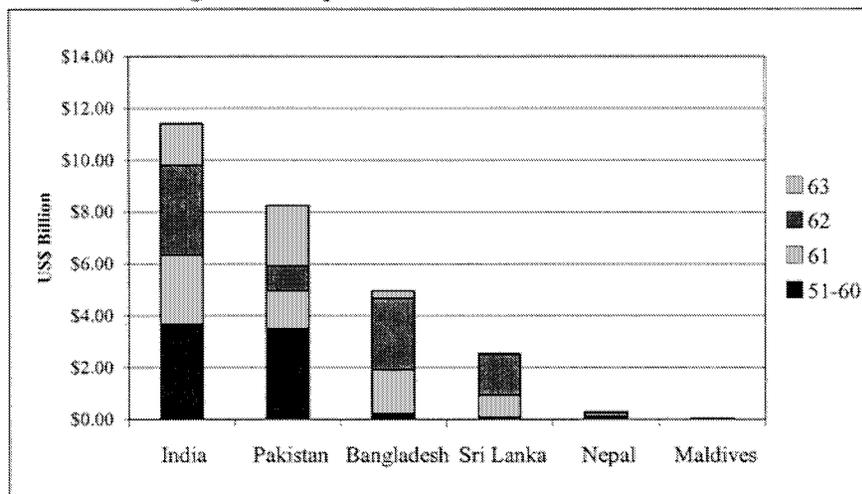
8.11 Competitive advantage in both international and regional trade is increasingly defined by logistics as other factors decline in importance. The capacity to produce consumer goods, other than those protected by patents, can be replicated in most countries. Low labor costs are a common feature of developing countries and represent a decreasing portion of delivered cost. Tax benefits have become a standard offering with relatively little difference between countries. The traditional advantage of

proximity to raw materials has increasingly been replaced by proximity to markets. Although labor cost and productivity create some basis for differentiation, these can be overcome through the introduction of low-cost computer-enhanced manufacturing equipment. As the opportunities for differentiation in price have diminished there has been more emphasis on product quality and order cycle.

8.12 There are a broad range of improvements in logistics that can be introduced to stimulate growth in trade. To select and prioritize among these, it is necessary to examine the trade strategy that they are meant to complement. One general strategy is to diversify trade in terms of products and markets. This is especially important for Bangladesh but also interesting for Pakistan, Sri Lanka, and Nepal. It requires the introduction of new supply chains and complementary improvements in logistic services. Another strategy is to improve the quality of existing exports or to move to higher value products. Because of increasing labor costs, this is an important strategy for India and Pakistan. This would require complementary improvements in logistics services. A third strategy is to mobilize smaller producers by exploiting niche markets or using subcontracting to increase their production capacity. This is important for all South Asian countries, where there is a significant number of small and medium enterprises (SMEs) producing for export. However, niche markets and small-scale shipments have more challenging international logistics while subcontracting requires better domestic logistics.

8.13 The textile and apparel industry, which represents a significant source of revenues as shown in Figure 8.6, provides a good example of the impact of logistics on competitive advantage. While labor productivity and capital investment remain the principal determinants of the structure of production and composition of garment exports, logistics has a major impact on the ability to compete in foreign markets. For instance, Pakistan's ability to compete with China in textiles is based on not only quality but also shorter delivery time to Europe and the U.S. east coast which offsets the shorter production times. Its industry is moving toward integrated plants not because of economies of scale but rather because of the half month reduction in order time that this allows.

Figure 8.6: Exports of Fabric and Garments, 2003



8.14 The growing reluctance of manufacturers, wholesalers, and retailers to hold more than essential inventories has meant greater attention is paid to restocking time and reliability of delivery. Thus Bangladesh and India garment manufacturers are willing to use airfreight for delayed shipments and accept the loss in profit rather than risk losing a client. The trend toward even tighter delivery times and increasing penalties for missed delivery dates is expected to continue.

8.15 There is a fundamental difference between apparel production in Pakistan and India, which is based on domestic textiles and accessories, and the production in other countries that rely on imported fabrics and accessories. India has the advantage in that it produces both cotton and synthetic yarn and has a large dye manufacturing industry. This affects the structure of production activities. Bangladesh takes advantage of its low cost labor to produce large volumes of relatively simple garments. For these Cut Make Trim (CMT) operations, most of the value added is labor. Pakistan has higher cost labor and has focused on large-order household furnishings (towels, bed sheets, and so on). These are less labor intensive and less demanding in terms of delivery time but take advantage of the ready availability of cotton textiles. By comparison, their production of woven garments has been relatively stagnant. India has higher labor costs and focuses on medium-value apparel produced for medium-size orders. This is mostly contract manufacturing but with very higher value-added content. All three countries have a rapidly growing knitwear industry but with a similar differentiation by product value and local content. Nepal has small production facilities and focuses on small volume, higher value niche markets as well as some small-order, low-value exports to countries with a favorable trading relationship.

8.16 The organization of production is also affected by the sources of textiles. In India, garment producers order woven fabric from the large textile mills. In Pakistan, there has been a tendency to integrate the weaving mills and the garment manufacturers. For knitwear, the spinning mills and garment production are integrated in Bangladesh and Pakistan but less so in India, where manufacturers buy fabric direct from the mills.

8.17 The garment industries are similar in that imported inputs are purchased c.i.f. and the products are sold f.o.b. or ex-factory. As a result, the buyer arranges for the international transport and nominate the forwarder so that the goods are delivered to the forwarder's warehouse near the gateway rather than direct to the port or airport. The role of the nominated forwarder may be extended up to inland container depots or to the factory depending on the terms of sale for example, f.o.b, ex-factory). As a result, manufacturers have little involvement in the outbound logistics.

8.18 The inbound logistics for Bangladesh and Sri Lanka are more challenging as manufacturers are responsible for transporting imported textiles, dyes, and accessories from the port of entry to the factory. It is also necessary to maintain inventories in order to reduce the lead time, since imports can add four–six weeks to the total order cycle. Local fabrics can be obtained from the mills in Pakistan and India in less than a week for standard products but may require a month or more for special orders. Despite these differences, all three countries are competing in the three–four month order cycle market for f.o.b. delivery. International transport adds another three–five weeks, which implies that exports must compete in the four–six month door-to-door order cycle market. This precludes them from competing in the high fashion market where new styles must be produced and delivered to final destinations in less than three-month cycles. While reorder times can be as little as 1.5 months for an f.o.b. delivery, the distance to the final market prevents South Asia from competing in the rapid replenishment market in Europe or the United States.

8.19 For Bangladesh and Nepal, the longer times for ocean shipping time and delivery of inputs constrains production to low-value goods with longer order times and relatively infrequent changes in style. Where they compete for higher value goods, they must rely on maintaining an inventory of inputs and using air freight for exports, both of which add to the delivered cost. Pakistan and India benefit from ocean shipping times that are one–two weeks shorter for inputs inbound and products outbound. This allows them to compete in markets for higher value goods. India also uses airfreight to compete in higher fashion markets and ocean freight for medium fashion markets. Since most of Pakistan exports are household goods with relatively little fashion content, exporters rely almost entirely on ocean freight. Sri Lanka has the shortest shipping times, which allows it to compete in the medium-value market despite dependence on imported inputs.

8.20 With the exception of Sri Lanka, these countries, have costly domestic transport owing to the distance between the production area and the major ports. Bangladesh has the shortest distance, about 250 kilometers, but its transport services are relatively costly owing to highly congested roads, and more expensive port and feeder shipping. Both India and Pakistan have travel distances that exceed 1,000 kilometers. India has sought to minimize this cost through the development of a rail services that provide shorter transit times with door-to-door costs that are less than road transport. Pakistan manufacturers rely on low-cost road transport and four-lane road connection to minimize time and cost. Nepal faces the greatest challenge. The road distance from Katmandu is more than 1,000 kilometers and requires a transshipment at the Nepal/India border. There are also greater delays at the ports of Haldia and Calcutta and higher port and feeder costs for shipment.

8.21 While most of the supply chains in these countries are relatively simple, the emphasis on low-cost transport services has prevented the introduction of value-added logistics services and higher quality transport. Trucking industries remain fragmented and truck fleets are old and inefficient. Warehousing is limited to storage space provided by godown operators. Value-added services such as consolidation, packaging, and inventory management services are provided primarily by foreign companies that act as nominated forwarders. Supply chain management is left to the foreign suppliers and buyers. Communications are by fax and email, although more sophisticated information and telecommunications technology (ICT) systems are beginning to appear in the larger production activities.

8.22 The relationship between logistics and export products for the region's garment trade is mapped in Table 8.4. Similar relationships can be developed for other major exports. The relationship is stronger for perishables such as fresh fruits and vegetables and seafood and for intermediate goods such as automotive parts but also applies to high-value pharmaceuticals and electronic components that are shipped by air.

**Table 8.4: Relationship of Logistics and Products for the Apparel Industry**

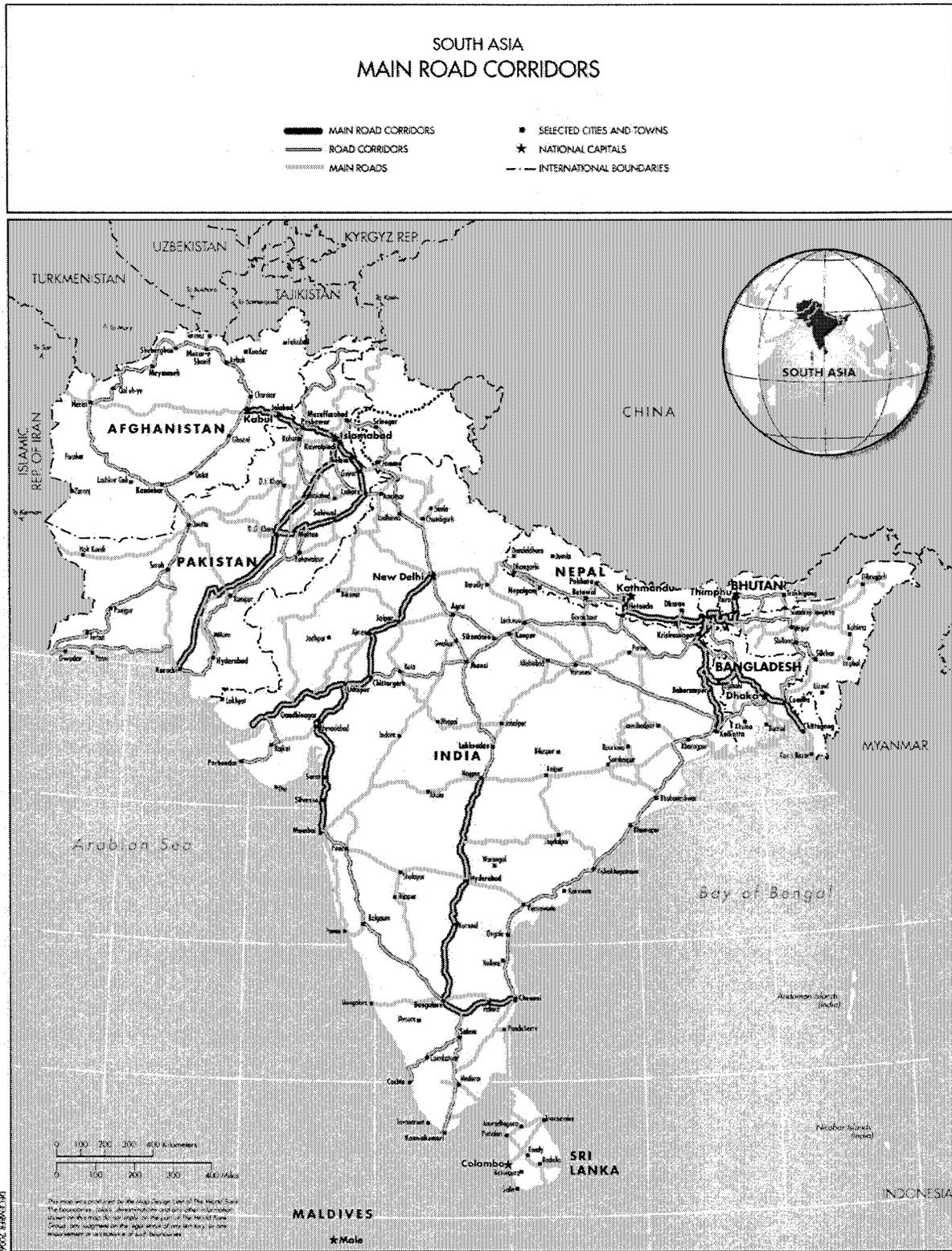
	Goods	Order cycle	Domestic transport	International transport	Customs, ICT, finance	Value	Maximum order size
Bangladesh	CMT knitwear	3	3	3	2	Low	Medium
India	Woven and knit garments	1	2	1	1	Medium	Medium, large
Nepal	Woven	4	4	3	3	Medium	Small
Pakistan	Home furnishings knitwear	1	1	1	1	Medium	Medium

Note: 1 = best, 4 = worst.

## CORRIDORS

8.23 In order to be effective, initiatives for trade facilitation need to be focused. A corridor focus is useful, since the majority of trade is concentrated along relatively few corridors. These corridors are a combination of routes connecting common endpoints. The routes are made up of links and nodes often with more than one mode of transport. Some of the major corridors in the region are listed in Table 8.5 and shown in Figure 8.7. Performance is measured in the same terms as for supply chains (that is, the time, cost, and reliability for delivery of inputs to productive activities and products to their final market). Different combinations of logistics services provide a range of total time, cost, and reliability for movement from one end of the corridor to the other.

Figure 8.7: Map of Major Corridors



**Table 8.5: Principle Corridors**

- Delhi-Mumbai
- Delhi-Gujarat
- Bangalore-Chennai
- Guwahati-Siliguri-Kolkata<sup>a</sup>
- Peshawar-Lahore-Karachi
- Dhaka-Chittagong
- Katmandu-Birgunj
- Thimpu-Phuentsholing
- Colombo-Galle

a. Phuentsholing, Karkhabitta, Haldia

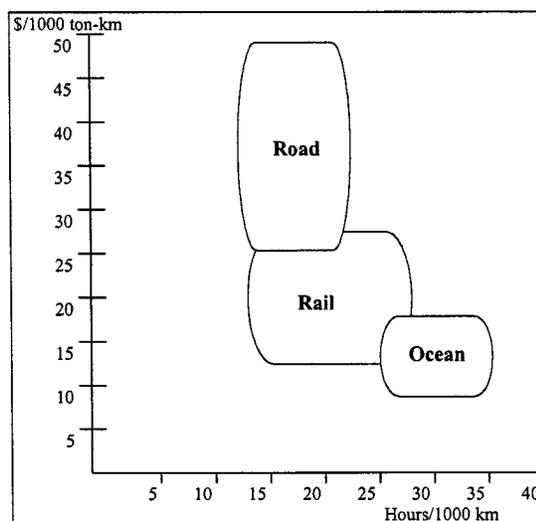
8.24 For the corridor, it is the performance of the routes, rather than individual components and the alternatives available, that matters.<sup>107</sup> An indication of the range of cost and time for the basic land transport modes is shown in Figure 8.8. A comparison of the time and cost for the principal routes in the main South Asian corridors is shown in Table 8.6. Not included is reliability, which would be measured in terms of variation in transit time. Road transport usually provide greatest reliability because it offers a single vehicle door-to-door connection. However, in cases of poor road infrastructure and congested roads, the rail can offer a more reliable service. In India, the rail service is most reliable whereas in the other countries trucking is more reliable.

**Table 8.6: General Performance for Main Corridors**

Corridor	Road	Rail
Dhaka-Chittagong	220 km	298 km
One way	7 hours	3.5 days <sup>a</sup>
TEU, one way factory port	US\$100	US\$145
Kathmandu-Haldia	1137 km	
One way, factory port	6–8 days	4–5 days
TEU, round trip, factory port	US\$1200	US\$750
Lahore-Karachi	1300 km	
One way, factory port	48 hours	48 hours
Delhi-Mumbai	1408 km	
one way, factory port	3 days	48 hours
TEU, one way, factory port	US\$450	

<sup>107</sup> The separation of transport services by modes and of networks into nodes and links is useful when devising strategies for improving performance of specific activities but less effective when improving door-to-door performance.

**Figure 8.8: Relationship of Transport Time and Cost**



8.25 The selection of the best route for a trade depends on the characteristics of goods shipped as well as the sensitivity of market demand to time and cost. Since high-value cargoes are usually more sensitive to time than to cost, they are more likely to be moved using trucks for land transport and air transport for international movements. Low-value cargoes move by rail and ocean because they are more sensitive to cost. For medium-value goods, the preference depends on the final market. For the international movement, ocean shipping is preferred since container movements provide reliability and reasonable transit times. However, in the last decade, long distance trucking has captured an increasing share of these cargoes as new corridors have been opened and border crossings have become more efficient.

8.26 Public sector efforts to improve corridor performance have traditionally involved investment in infrastructure but may also involve provision of transport services. In the last two decades, private sector involvement has been broadened to include responsibility for financing, construction, and maintenance of the infrastructure. The extent of private sector involvement varies by mode. Private sector involvement in road construction and maintenance has been successful whereas its involvement in rail track construction and maintenance has had mixed results. Private operation of transport services has provided significant gains in efficiency. Despite this, the public sector in South Asia continues to be an important provider of rail and air transport as well as transport infrastructure (Table 8.7).

8.27 Technology has also been important in improving transport efficiency. The steady increase in size of transport unit has reduced transport costs. Improvements in navigational systems have allowed for tighter operating schedules. Higher throughput cargo-handling equipment has allowed for faster turnaround. Better planning of freight movements have provided an increase in load factors. The logistics industry has responded by increasing its capacity to track and trace services, by developing seamless reconsolidation, by introducing real-time inventory control for goods in transit, and by offering vendor-managed inventory.<sup>108</sup>

<sup>108</sup> To the extent that the logistics provider for Marks and Spencer is involved in restocking the store shelves after the stores close.

**Table 8.7: Extent of Divestiture Transport Services**

Country	Road	Rail	Air	Ocean <sup>a</sup>
India	Divestiture compete	Little or no private sector involvement <sup>b</sup>	Majority control by government	Majority control by government
Pakistan	Divestiture compete	Little or no private sector involvement	Majority control by government	Majority control by government
Bangladesh	Divestiture compete	Little or no private sector involvement	Majority control by government	Majority control by government
Nepal	Divestiture compete	n.a.	Little or no private sector involvement	n.a.
Bhutan	Divestiture compete	n.a.	Little or no private sector involvement	n.a.
Country	Road	Rail	Air	Ocean <sup>a</sup>
India	Divestiture compete	Little or no private sector involvement <sup>b</sup>	Majority control by government	Majority control by government

Gateway Services			
Country	Rail ICDs	Airports <sup>c</sup>	Seaports Containers <sup>d</sup>
India	Majority control by government	Little or no private sector involvement	Almost complete
Pakistan	Little or no private sector involvement	Little or no private sector involvement	Divestiture compete
Bangladesh	Little or no private sector involvement	Little or no private sector involvement	Little or no private sector involvement
Sri Lanka	n.a.	Little or no private sector involvement	Almost complete
Nepal	n.a.	Little or no private sector involvement	n.a.
Bhutan	n.a.	Little or no private sector involvement	n.a.

Note: n.a., not applicable; ICD, inland container depots.

a. All countries allow free access for international freight, but some continue to control the national fleet.

b. Although operated along commercial lines, Concor is majority owned by the government.

c. Refers to cargo handling operations within the airport.

d. Private stevedoring is relatively common; this concerns wharf handling and terminal management.

8.28 Underlying these changes has been the unitization of cargo,<sup>109</sup> which is entering a new phase as cargo units are increasingly defined as both physical and data units. As the use of electronic data interchange has expanded and the cost of radio frequency identification (RFID) has declined, the ability to monitor and control cargo movements has improved dramatically. There appears to be no limit to the size of the items that can be tagged.<sup>110</sup> This technology complements the increasing demand for tracking goods in transit<sup>111</sup> and after sale. It will also allow government agencies to perform their regulatory duties without impeding the flow of goods in transit.

<sup>109</sup> Indeed, it can be argued that the last transformation in freight transport was the introduction of containers in the 1960s. The impacts of containerization, and unitization in general, continues to drive transport innovation as new applications are developed and the share of freight that is unitized increases.

<sup>110</sup> Hotel and restaurant uniforms now carry RFID tags so that the suppliers can monitor their use and number of washings to schedule their replacement.

<sup>111</sup> Not only for security but also for customs purposes.

## ROAD TRANSPORT

8.29 Road transport is the primary mode for freight in all countries in the South Asian Association for Regional Cooperation (SAARC). Most of the international and intraregional trade moves along the major corridors. Despite the high volume of traffic on these corridors, most have low capacity roads. There are only a few limited-access, dual carriageways. In India, the Golden Quadrilateral and its diagonals will provide dual carriageways for the major corridors but without limited access. In Pakistan a limited access road between Karachi and Lahore similar to that between Lahore and Islamabad has been proposed but is not yet under construction. Bangladesh is in the process of widening the road between Dhaka and Chittagong to four lanes but there are no plans for a limited access. Nepal has considered widening the road between Kathmandu and the Terai but so far traffic levels are too low to justify this investment.

8.30 The trucking industries in the SAARC countries have similar characteristics. There are relatively few modern articulated trucks. Most of the vehicles are rigid body 4-, 6-, and 10-wheel trucks that are 15 years or older. Local technologies have been developed to strengthen these trucks for hauling containers including reconfiguring them as articulated vehicles. The engines are primarily naturally aspirated and therefore less fuel efficient. Because of their age and configuration, there is very little investment, and capital costs are a very small part of total operating costs.

8.31 The fuel costs are the largest component of operating costs despite the relatively low cost of diesel, and these are expected to increase. Most trucks are operated with a driver and assistant whose daily costs are very low. The maintenance costs are minimal because of relatively simple maintenance requirements and emphasis on use of local parts. Operating costs per ton per kilometer are reduced by overloading of the trucks 80–100 percent over official axle limits. The trucks carry minimal insurance and have limited liability in the event of accidents. Because of these factors, road transport costs are among the lowest in the world.

8.32 The estimated costs per kilometer for these countries are shown in Table 8.8. Differences in transport costs occur owing to different size and type of trucks. The mountainous terrain in Nepal restricts movements to four- and six-wheel trucks, which are more costly per ton per kilometer. Bangladesh has significant congestion, smaller loads, and shorter distances, so that most shipments are made using four- and six-wheel vehicles, even for 20-foot containers. In Pakistan and India, 10- and 14-wheel trucks are used on the main corridors. Pakistan appears to have the best operating conditions, but India benefits from a large domestic truck manufacturing industry, which reduces the cost of vehicles and parts.

**Table 8.8: Estimated Truck Operating Costs**

	Wheel	Load <sup>a</sup>	US\$/km
Bangladesh	6		0.55
India	6	9	0.26
	10	16	0.35
	14	27	0.56
Nepal	6	10	0.26
	10	20	0.34
	14	30	0.53
Pakistan	6	10	0.23
	10	18	0.43
	14	27	0.50

Source: Author's estimates, India, TCI 2002.

a. Load limit, actual 50–100 percent more owing to overloading.

8.33 The trucking industries are highly fragmented. In India, about 85 percent of the truck fleet is owned by operators with only one or two vehicles. Large companies, those with 50 or more trucks, account for about 10 percent of the fleet. The situation is similar in other countries. This reflects the competitive nature of the business with relatively few barriers to entry and a large supply of secondhand vehicles. Because of the low cost and ready availability of trucking capacity, very few manufacturing or retailing companies maintain their own fleet. Most of the haulage is contracted in the spot market by brokers who receive requests from the cargo owners and identify operators with available capacity. The result is a system that provides low cost but discourages efforts to improve the quality of the fleet or services provided.

8.34 In lieu of government efforts to enforce load limits or introduce effective annual inspections for pollution and road worthiness, it is unlikely that the government can change the nature of the industry. However, the industry is expected to change in response to market forces. If the trend for large manufacturers and retailers to purchase transport capacity for a fixed period of time using competitively performance-based contracts continues, then owners will be able to upgrade their fleets. This assumes that the contracts are for sufficiently long periods and large amounts of transport service.

8.35 It might also improve in response to changes in infrastructure. The development of a network of high capacity, limited access highways within the region would change the nature of long-distance trucking and the structure of national and regional distribution systems. Larger, articulated trucks are not competitive with the smaller trucks unless they can achieve relatively high levels of utilization. This requires regular demand, long hauls, higher travel velocities, and quick turnarounds. The main corridors in India and Pakistan, including that used by Nepal transit traffic, can provide such opportunities once the roads are improved. There will be fewer opportunities in the other SAARC countries because of shorter average travel distances.

## RAIL SERVICES

8.36 India, Pakistan, and Bangladesh have extensive rail networks. India's is the largest as shown in Table 8.9. Pakistan's rail network is almost entirely broad gauge while about two-thirds of the India's is broad gauge. Bangladesh's system is divided between broad gauge in the west and meter gauge in the east. In terms of rolling stock productivity, Pakistan has about 2.5 times the productivity of Bangladesh for both locomotives and freight wagons, but Indian Railways has achieved twice the locomotive productivity of Pakistan and about six times the wagon productivity.<sup>112</sup>

**Table 8.9: Railroad Performance (FY03)**

	India	Pakistan	Bangladesh
Route, km, (thousands)	62.8	7.8	2.8
Broad gauge	45.1	6.9	
Track, km (thousands)	81.5	11.5	4.7
Traffic (mn net tonne, km)	353.2	5.3	3.9
Average freight rate	0.74	1.03	1.52
Average load/train (net tons)	1315	731	595
Approx average trip length <sup>a</sup>	670	900	270
Loco (thousands km p.a.)		92	57
Wagon (thousands ton-km p.a.) <sup>a</sup>	1,122	187	67
Staff (thousands)	1,511	85	34

Source: PR Annual Report.

a. World Bank database.

<sup>112</sup> Despite this achievement, the productivity of Indian Railways is considerably below that achieved in China.

8.37 These railways are predominantly passenger railways. Because of the priority given to passenger traffic and the lack of commercial management, the railroads have experienced a decline in freight traffic for much of the last half century. This trend was reversed beginning with the Indian Railways at the start of the 1980s and including Pakistan and Sri Lankan railways at the beginning of the current century. Even with this reversal, the market share of the railways is low. In Bangladesh and Pakistan, the share is only about 5–6 percent and continues to decline. In India, the share is about 33 percent but is likely to continue losing share as the national road network is upgraded

8.38 Much of the recent increase in traffic volume has been due to the introduction of dedicated container train operations, which allowed the railways to recapture a significant portion of the import/export container traffic. In India, Concor has been successful in providing container train services on several of the major freight corridors, most notably Delhi-Mumbai. There are similar, but less successful, services operating on the Dhaka-Chittagong and Lahore-Karachi corridors. Currently, Bangladesh Railways carries about 60,000 TEU annually and Pakistan Railways about 160,000. These represent 10–12 percent of the international container traffic, but there is significant unmet demand. Indian Railways carries about .85 million TEU of marine containers, about one-fifth market share and there is relatively little unmet demand. The rail market share is likely to decline as road infrastructure improves and the regulatory problems facing road transport is reduced. So far, the rail services have not been able to achieve their full potential or to develop a sustainable competitive advantage over truck transport because of capacity constraints, the failure to develop an efficient door-to-door service, and the lack of a commercial business model.<sup>113</sup>

8.39 Nevertheless, the Indian Railways was successful in developing a substantial business through its subsidiary Concor, which is now 37 percent owned by the private sector.<sup>114</sup> It was granted the monopoly for carriage of containers by rail but developed a commercial management with the ability to introduce and discontinue services based on profitability. It began with a substantial investment in containers and flat wagons and quickly established a network of inland container depots (ICDs). Its national presence and all-weather scheduled rail service allowed it to offer better transit times and greater reliability at competitive prices. Because of the poor road network and difficulties transiting state boundaries, the railways have a competitive advantage for movements beyond 400 kilometers.

8.40 Since most of the container traffic moves along relatively few corridors, it is possible to concentrate investment in rail services to capture a larger market share. In Pakistan, the dominant container traffic is between the industrial area of Punjab (Lahore, Sialkot, and Faisalabad) and the port of Karachi with a connection to Qasim. There are only 1–1.5 container train pairs operating daily on this route although there is unused track capacity since the rail's major cargo, petroleum, has now been shifted to pipeline. For Bangladesh, the principal container traffic is between north of Dhaka and the port of Chittagong, but there are only two container trains operating daily in each direction. There is a bottleneck in certain sections of the route that are operating close to capacity. For India, the primary traffic is between Delhi/Ludiana and Mumbai/JNPT. Currently there are 13 container train movements daily in each direction. Since the route is operating close to capacity, consideration is being given to add a new dedicated freight line to this corridor.

8.41 There is growing recognition that rail operations on major freight corridors can provide an efficient and competitive service for container movements while at the same time alleviating road congestion and limiting the investment in road capacity on these corridor. The difficulty is to establish a

---

<sup>113</sup> The Indian government is now considering introducing competition in order to stimulate an increase in market share for rail movements.

<sup>114</sup> Incorporated in 1988, Concor enjoys monopoly in handling the import and export of nation's trade in containers through rail route, but is soon to face some level of competition and as one or more operators are allowed to provide similar services .

competitive rail service given that railways are publicly operated with priority given to the movement of passenger trains. While this is best done through private sector participation, Concor has been able to simulate a commercial business model. Pakistan has recently decided to implement a similar model by transferring container operations to a separate company, PARCS. Bangladesh has yet to develop a separate service and continues to limit capacity below demand in part to maintain high rates.

8.42 While efforts to increase private sector participation in the rail sector have had mixed results, most problems have arisen where the private sector operates passenger services and maintains a rail network. Experiences with private freight train operations have been quite successful. It is anticipated that the region's railways will eventually adopt this model, and this will lead to a significant increase in bulk and container traffic.

## SHIPPING

8.43 South Asia has experienced dramatic growth in international container traffic over the last several decades as shown in Table 8.10. The fastest growth rate has been in Bangladesh and India, although the former is from a smaller base. Container traffic in India's major ports was 3.9 million in FY04<sup>115</sup> and is expected to reach 7 million TEUs by 2007. Pakistan and Sri Lanka's traffic has experienced slower growth, but the former accelerated significantly in the last few years. Sri Lanka has been dependent on transshipment traffic and has experienced increasing competitive pressure over the last decade.

**Table 8.10: Container Statistics 1990–2004**

	Mn TEU			Percent annual growth	
	FY90	FY01	FY04 <sup>a</sup>	1990–2001	2001–4
Bangladesh	.11	.49	.60	14.5	7.5
India	.69	2.32	3.90	11.7	19.0
Pakistan	.39	.87	1.24	7.6	12.5
Sri Lanka	.58	1.73	2.20	10.4	8.5
ESCAP total	36.18	118.29		11.4	
World total	85.60	245.80		10.1	

*Source:* Containerisation International Yearbook; published data on ports. 2000 and 2001 Shipping Consultants, *Global Container Terminals: Profits, Performance and Prospects* (Drewry: London, 2002).  
FY04, preliminary port statistics, \* 1995–2001

8.44 The larger ports in South Asia receive calls from all of the major container shipping lines (annex Table A.3). The two largest carriers, Maersk Sealand and American President Lines, provide primarily feeder services through their transshipment hubs in the Gulf, Southeast Asia, and Colombo. However, the proportion of direct calls has been increasing, especially for the larger Indian ports.<sup>116</sup> The major alliances, especially the Grand and CYKH alliances, provide direct regional services. At the same time, the larger lines have developed strings along their primary routes that create additional competition and limit the rates that the feeder services can charge.

<sup>115</sup> This does not include the traffic in the minor ports, most notably the ports in Gujarat, which handle about .3 mn TEU.

<sup>116</sup> In FY04, only about 43 percent of Indian container traffic was transhipped versus nearly all of Pakistan's and Bangladesh's traffic.

8.45 The evolution of the port sector together with ongoing changes in global container shipping have led to significant changes in traditional shipping patterns. While the main transshipment hubs remain Singapore/Tanjung Pelepas, Colombo, and Dubai/Salalah (Table 8.11), the port of Nhava Sheva is beginning to handle transshipment cargo for South Asia's west coast. Colombo has lost market share relative to Singapore and Dubai and will face additional competition if the effort to develop a major terminal at Vallarpadam (ICCT) is successful.<sup>117</sup>

**Table 8.11: Transshipment Share for Indian Container Traffic FY04**

Singapore	38 percent
Dubai	12 percent
Colombo	33 percent
Salalah	06 percent
Kelang	03 percent
Others	08 percent
Total	100 percent

Source: IPA, ports.

8.46 While there is continuing interest in obtaining direct calls, the greater frequency afforded by feeder services offsets many of the advantages of direct calls in all but the largest ports. The increase in the size of the feeder vessels, growing efficiency of the major transshipment ports, and competition from direct services has meant that both the transit times and freight rates are not significantly different from direct calls.

8.47 Nhava Sheva and Karachi now offer sailing times comparable to those from Colombo on eastbound routes while the difference on westbound routes is relatively small and attributable to the greater sailing distances (Table 8.12). The services from west Bengal and Bangladesh have the longest transit times due to problems in the ports as well as the smaller volumes of traffic. The major ports in Pakistan and India now have day-of-the-week services both eastbound and westbound. Bangladesh and west Bengal continue to have flexible voyage schedules due to uncertainties on port turnaround times. The result is a substantial increase in shipping times (Annex Table A.4).

**Table 8.12: Typical Shipping Times**

	North Europe	U.S. east coast	U.S. west coast
Nhava Sheva	17-22	19-23	26
Karachi	15-21	19-22	22-29
Kolkata	23-28	30-35	27-30
Chittagong	22-30	27-35	19-28
Colombo	17-21	22-26	21-27

8.48 Attempts to compare freight rates are extremely problematic given the volatility since as a result of the rapid growth in worldwide demand. Nevertheless, the rates appear comparable for most of the major ports in the region as shown in Table 8.13. A more detailed comparison of freight rates suggests that differences of US\$200 per TEU or more exist between the larger, more efficient ports that have direct services and the smaller, less efficient feeder ports. There is less evidence of a difference between feeder and direct services due to the competition between the two.

**Table 8.13: Tariffs to Europe USS/TEU, 2005**

Pakistan	1,350
India west coast	1,250
India east coast	1,300
Bangladesh	1,400

## GATEWAYS

8.49 The principal gateways for the SAARC region, as shown in Table 8.14, include not only international airports and seaports but also land border crossings. They act as a source or terminus for the domestic portion of a supply chain. They differ from normal transport nodes because they have a significant regulatory burden associated with customs, security, and certification (Table 8.15). These gateways provide intermodal and intramodal cargo transfer services) but most of the time and cost incurred at these gateways is a result of nontransport activities often characterized by uncertain delays and informal payments

<sup>117</sup> Vallarpadam will not be operational for several years. In the interim, Dubai Ports International will operate the Rajiv Gandhi Container Terminal at the Kochi port, with a draft of only 12.5 meters.

**Table 8.14: Major Gateways**

Sea	Land	Air
India	India-Pakistan	India
<i>Mumbai</i>	<i>Wagah</i>	<i>Delhi</i>
<i>Kolkata/Haldia</i>	India-Bangladesh	<i>Mumbai</i>
<i>Chennai</i>	<i>Benapole/Petrapole</i>	<i>Kolkata</i>
Pakistan	<i>Hili</i>	<i>Chennai</i>
<i>Karachi/Qasim</i>	India-Nepal	Pakistan
Bangladesh	<i>Birgunj/Rauxal</i>	<i>Karachi</i>
<i>Chittagong</i>	<i>Biratnagar/Jogbani</i>	<i>Lahore</i>
Sri Lanka	India-Bhutan	Bangladesh
<i>Colombo</i>	<i>Phuentsholing-Jaigoan</i>	<i>Dhaka</i>
		<i>Chittagong</i>
		Sri Lanka
		<i>Colombo</i>

**Table 8.15: Regulatory Functions**

• Collection of duties and taxes
• Enforcement of trade agreements
• Interdiction of drugs and weapons
• Immigration control
• Certification of transport units crossing the border
• Health, safety and environmental
• Anti-terrorism and borders security

8.50 Efficient gateways should be relatively seamless with a minimum number of transactions and transaction time. In contrast, most of the South Asian gateways introduce significant delays and costs that decrease the reliability of the supply chains that pass through them. Efforts to improve their performance generally require changes in procedures rather than additional infrastructure.<sup>118</sup> For border crossings (and increasingly for airports and seaports) this requires bilateral coordination as delays on one side of the border can be caused by procedures on the other side or by lack of communication between the two sides.

8.51 By addressing the problems of the gateways separately, it is possible to isolate the regulatory constraints and to obtain benefits from reducing them. It is also possible to ensure that the capacity is adequate to provide unimpeded flow. However, the development of seamless gateways is becoming more difficult because the border remains the point at which government can most easily collect taxes and duties, enforce trade treaties, certify that goods meet specific health, safety, and environmental standards, and interdict trade in contraband. Governments need to coordinate various inspection activities or move them off the border in order to minimize the crossing times. The difficulties increase for international corridors that provide landlocked countries access to seaports and connections for noncontinuous countries. The challenges of providing efficient border crossings will increase as nations join regional groupings, either free-trade areas or customs unions.

8.52 Efforts to reduce the transactions at the gateways have focused on the simplification of customs procedures. The success of these endeavors has served to highlight the delays and costs associated with other border transactions including:

- Technical certification including sanitary and phytosanitary (SPS), safety, and country of origin
- Compatibility and connectivity of the transport services using the gateway
- Availability and utilization of modern communications services, and
- Availability of behind the border services (for example, inland clearance and export processing zones).

<sup>118</sup> In some situations, especially border crossings, capital investment can be counterproductive by introducing complementary activities, such as storage or processing, that impede the flow of traffic.

## Land Borders

8.53 The principal intraregional border connections are located along the west Bengal border between India and Bangladesh, with the primary crossings at Petrapole/Benapole and Hilli; Bhutan, with the major crossing at Jaigoan-Phuentsholing; and Nepal, with the largest crossings at the Birgunj/Rauxal and Biratnagar.

8.54 The crossings are reached by two-lane, often congested, state roads. As a result the primary crossings between India and Bangladesh are heavily congested, and queues often exceed 1,000 trucks on the Indian side with the result that transit times are very long (Table 8.16). There is some queuing at the major crossings on the Nepal border, but this is much less severe. The crossing to Pakistan at Wagha does not have a problem since there is relatively little traffic at present.

**Table 8.16: Performance Statistics for Petrapole/Benapole (Hours)**

Activity	If no delays	Actual average	Coefficient of variation
Load at Kolkata	2.5	6.6	2.48
Transport to Petrapole	2.4	5.6	.28
Time at Petrapole	21.3	99.4	.25
Time waiting at Benapole	n.a	n.a	n.a
Unload at Benapole	1.8	10.8	1.32
Return to Petrapole	1.6	6.3	.41

*Source:* Das and Prohit, National Council for Applied Economics Research .

8.55 Difficulties at the land borders are aggravated by:

- Requirements for back-to-back exchanges of cargo
- Narrow and congested access roads
- Agencies with overlapping jurisdictions and enforcement activities
- Poor communication/coordination across the border
- Lack of financial and testing facilities at the border
- Insufficient infrastructure for inspection and protection of cargo

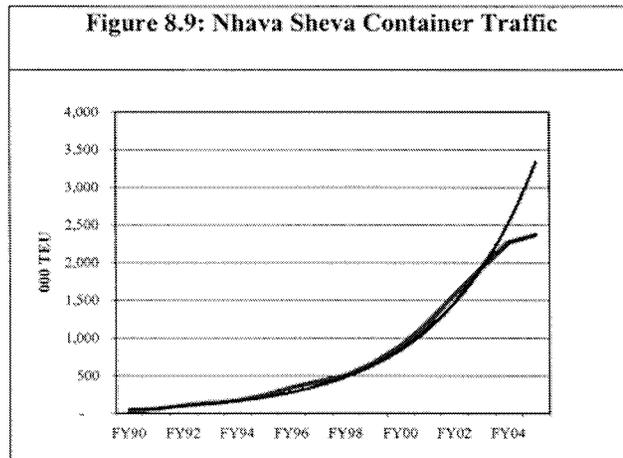
8.56 These create an environment in which the collection of duties is not very effective and there is substantial informal payments. These problems also act as nontariff barriers (NTBs) and have been used in the past to protect not only local manufacturers but also the local transport industry.

## Ports

8.57 The South Asian ports have experienced significant growth in container traffic. This has been matched by significant increases in both capacity and productivity (see Table 8.17). Even so, the current rate of growth will require a doubling in capacity every five–six years. With a construction time of two–three years, this requires a nearly continuous cycle of planning and construction. So far, the rate of development of berths has been satisfactory even though problems with productivity (Chittagong) and landside access (Nhava Sheva) have caused significant delays during peak demand.

8.58 Nhava Sheva, India's top container port handled 2.3 million TEUs in fiscal 2005 despite having only 1,280 meters of berth at two container terminals. The increasing congestion over the last few years caused growth to ease off as shown in Figure 8.9. However, the rate of growth is expected to rebound once the third terminal, which will be operated by a joint venture of APM Terminals, is operational and rail access to the port is improved.

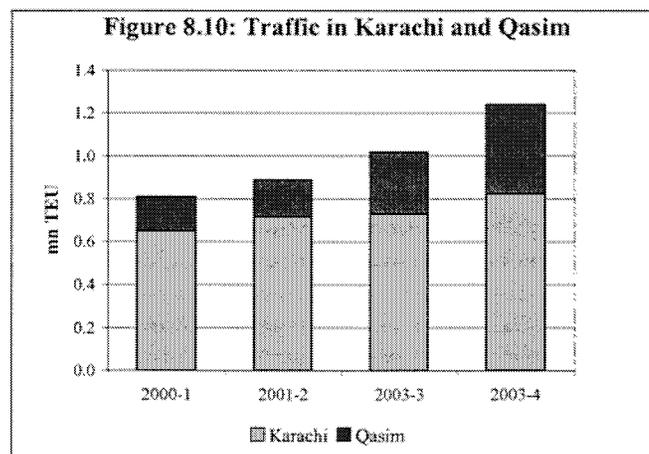
Region	Draft (meters)
Pakistan	10.5–11.5
India	12–13 <sup>a</sup>
Colombo	12.5
Bangladesh	9
Gulf Ports	13–14
Singapore	14
Salalah	16
China	14
a. West Bengal ports 9.5–10.5 meters.	



8.59 The container terminals in the top three Indian ports (JNPT, Chennai, and Tuticorin) achieved crane productivities in the range of 20–25 containers per Ship to Shore Gantry Crane (SSG) crane hour. This is a reasonable level for ports of this size, though well below the 28–35 boxes per hour that larger transshipment ports have been able to achieve. Further increases in productivity are expected once the new terminal is introduced, the landside access is improved and larger ships with more boxes per call become more common.

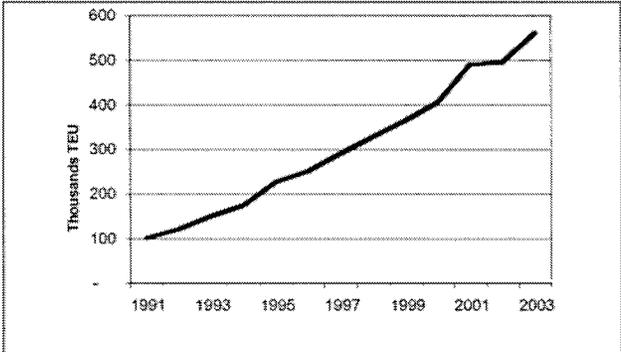
8.60 Most of the improvements in berth productivity have been achieved through a combination of investment in new equipment and a transfer of operations from public sector to the private sector management. In 1997, all container operations were in the public sector. Now seven of the nine terminals have been concessioned to private operators.

8.61 The traffic at the container terminals in Pakistan has grown at a slower but steady rate (Figure 8.10). These container terminals are privately operated. The granting of the concessions allowed the introduction of modern quay cranes and an end to chronic congestion. Berth productivity at the Karachi container terminal has increased to 25 moves per crane hour while Qasim terminal achieved 22–24 moves per crane hour. Vessel turnaround times average about 16 and 21 hours, respectively. For both, the berth throughput is limited by having only two cranes per berth and by increasing yard congestion. Capacity should increase with the arrival of the new equipment now on order. Pakistan has plans to expand capacity at Karachi and Qasim and introduce additional capacity at Gwadar, but it is unclear if this will be required.



8.62 Bangladesh ports have experienced steady growth in traffic as shown in Figure 8.11 despite a congestion-related slowdown in 2001–2. However, this has been achieved without significant improvement in berth productivity. The terminal does not have SSGs and handling rates remain at about five–six moves per vessel hour. As a result, vessel turnaround time averages about five days and is difficult to predict. Despite discussion over the years about introducing private operations, the handling of containers remains a monopoly of the public sector.

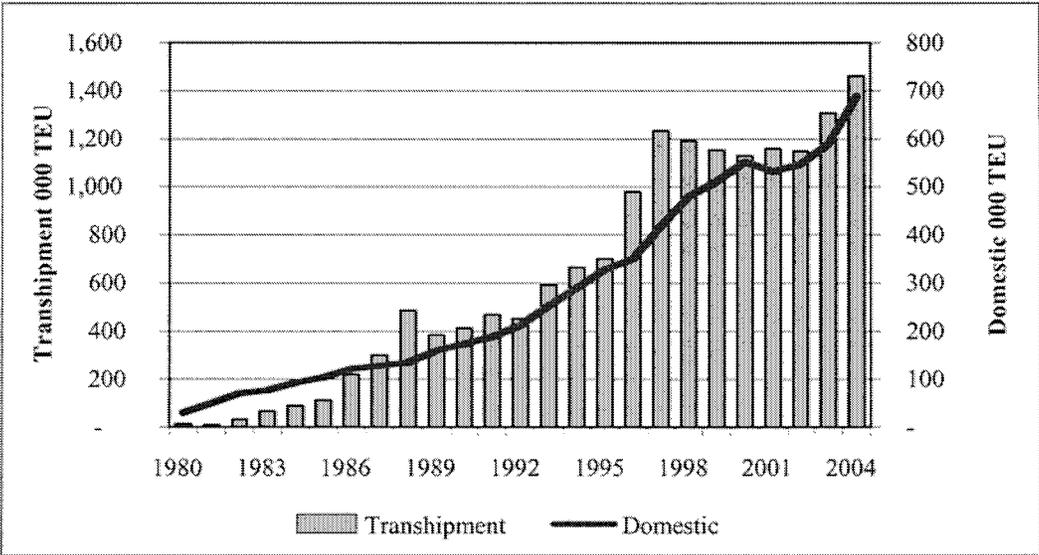
**Figure 8.11: Chittagong Container Traffic**



Source: CPA statistics

8.63 Colombo handles predominantly transshipment containers. The domestic traffic has shown relatively steady growth whereas the transshipment trade has experienced spurts of growth followed by periods of stagnancy (Figure 8.12). About 70 percent of India’s transshipment cargo goes through Colombo. The other regional hubs at Singapore and Salalah serve the remaining 30 percent. Since Colombo is a transshipment hub, only about one-third of its container traffic was domestic. The two major container terminals have been able to achieve throughput of 25 containers per crane hour and 75 boxes per vessel hour.

**Figure 8.12: Growth in Colombo Container Traffic**



8.64 Two of the three terminals at Colombo are privately operated. The larger one, SGCT, is relatively new but rapidly increased its market share by providing higher quality of service.

8.65 As traffic has increased, so has the size of vessels, and some of the ports are facing depth constraints. The feeder vessels has been steadily increasing to the point where the largest exceeds 3,000 TEU and the largest vessels calling at the ports exceed 4,000 TEU. Most of the ports have available drafts of 11–12 meters. While it is not expected that the mega ships requiring 14.5 meter draft will call within the next decade, it is possible that drafts of 12.5–13 meters will be needed at the major ports. This presents a problem for some of the larger Indian and Pakistani ports.

## **REGULATORY IMPEDIMENTS**

8.66 An important impediment to both regional and international trade has been the regulatory constraints introduced at the gateways and border crossings. Until recently, customs procedures were the greatest impediment, but these have been reduced through a combination of factors including:

- A worldwide effort to reform customs to address the problems of corruption and bureaucratic inefficiency
- Increasing reliance on computers and modern communication to facilitate the processing of cargo information and reduce the discretion granted to individual customs personnel
- Reduction in tariffs, their importance to government revenues, and the incentive for misrepresentation by traders
- A change in strategy from interdiction at the border to auditing in the marketplace

8.67 However, the effectiveness of these efforts has been very much dependent on leadership and government commitment to professionalize the customs service and eliminate the culture of corruption. As such, it requires not just a reengineering but also a continuing diligence.

8.68 As this problem has come under control, new challenges have arisen. The introduction of a value added tax and a goods and services tax to be collected at the border has created new incentives for malfeasance. The growing concern over the smuggling of weapons and drugs has led to more active involvement of security personnel at gateways.

8.69 Recognition of the common features of interdiction has led to greater emphasis on coordination at the border. Initially this took the form of “single window” operations and in some case joint border facilities. These attempted to provide a common point for submitting cargo information using computers to distribute information to the various border agencies. They were supposed to provide greater coordination between the parties involved in regulating border activities. However, these have had relatively little success in South Asia. A new approach that has had success in North America and Europe is unified border management in which a single agency, typically customs, enforces all regulations related to customs, revenue collection, and security and to coordinate the activities of other agencies concerned with certification of different commodities. So far there has been no comparable attempt to unify or otherwise integrate the activities of the various border agencies in South Asia

## **Duties and Other Taxes on Imports**

8.70 Prior to the 1990s, there was significant protection of domestic industries. This not only discouraged imports but also exports. It discriminated against agricultural sectors and discouraged direct foreign investment.<sup>119</sup> Since that time, significant reductions and simplifications of customs tariffs have allowed trade to increase rapidly.

---

<sup>119</sup> This section draws heavily on IBRD (International Bank for Reconstruction and Development). 2004. “Trade Policies in South Asia: An Overview.” IBRD, Washington, DC.

8.71 By 2003, the maximum tariff rates and the number of tariff bands had been reduced to the levels shown in Table 8.18. These bands cover 98 percent of the tariff lines with the exception of India, for which about 8 percent of tariff bands have specific duties or rates above 30 percent. Nepal and Sri Lanka were the first to open their economies and by the mid 1990s had implemented low-to-moderate protection regimes. Pakistan followed at the end of the 1990s. It continues to open its economy and has achieved a moderate protection regime. India and Bangladesh have also made progress, but still retain a range of protective instruments in addition to duties and taxes. In addition to the customs duties there are various additional charges (para-tariffs). These include Pakistan’s income withholding tax, Bangladesh’s IDSC tax, and Sri Lanka’s surcharge.

**Table 8.18: Standard Tariff Bands**

Country	Bands	Range	Average, percent <sup>a</sup>	Agricultural, percent
India	7	0/5/10/15/20/25/30	22.2	40.1
Bangladesh	5	0/7.5/15/22.5/30	26.5	32.1
Pakistan	4	5/10/20/25	18.8	22.6
Sri Lanka	6	0/3/6/12/16/27.5	13.4	28.1
Nepal	5	0/5/10/15/25	18.0	19.6

Source: World Bank. 2004. “Trade Policies in South Asia,” Report 299949, World Bank, Washington, DC.

a. Includes para-tariffs.

8.72 While India made a further reduction in maximum band to 20 percent in 2004, it also collects additional duty (Table 8.19) and has specific duties for the agricultural sector that are among the highest in the world. The nontrade barriers have also been reduced, but there continues to be selective use of quantitative restrictions, tariff rate quotas, import licensing, and requirements to use state trading enterprises. Technical standards and SPS regulations are also used to restrict imports.

**Table 8.19: Additional Taxes at Border**

Bangladesh	Infrastructure development surcharge, advance income tax, regulatory duties, value added tax
India	Additional duty
Pakistan	Income withholding, sales tax
Sri Lanka	Ports and airports levy, customs surcharge
Nepal	Local development fee, special fee, agricultural development fee

8.73 Bangladesh remains the most protected economy in the region with maximum tariff rates of more than 100 percent, additional taxes on imports, and various NTBs. It has been able to simplify procedures for imported inputs to the garment sector but continues to employ quantitative restrictions for textiles and agricultural imports used for domestic consumption.

8.74 Pakistan has reduced its maximum duty but some selective tariffs remain quite high (50 percent and 100 percent for CKD automobiles). The list of banned imports has also been reduced. At the same time, Pakistan continues to collect an income withholding tax at the border. It also has restrictions on imports from India implemented through a limited positive list controlling bilateral trade.

8.75 Sri Lanka has the lowest average tariff rates but continues to protect specific manufacturing and agricultural activities. Nepal has generally low tariffs but a few high industrial tariffs. Most of its trade is with India for which nearly all exports are duty free. The only notable quantitative restriction is on machine made wool.

8.76 The improvements in customs performance have been achieved through introduction of many of the initiatives proposed by the World Customs Organization (WCO) (Table 8.20). The basic recommendations of standardizing commodity codes and introducing a single declaration form have been implemented in South Asia as has the introduction of computers for processing customs data. Efforts to introduce green channels or computer-based risk management have been slow to be accepted. In this respect, Pakistan has been the most aggressive in introducing reforms.

**Table 8.20: Customs Reforms**

	Bangladesh	India	Nepal	Pakistan	Sri Lanka
Single Admin. Document	√	√	CTD	√	√
Harmonized code	√	Compatible	√	√	√
Direct trader input	√	√			√
EDP systems	ASYCUDA++	√	ASYCUDA++	CARE	ASYCUDA++
Green channel		Limited		√	n.i.
Risk management		2006		√	n.i.
EDI	Partial	√		√	n.i.
Trade net					
Private bonded warehouses	√	√	√	√	n.i.
Bonded factories	√	√			n.i.

Source: Interview[Au: Interview with whom?]

n.i. - no information

8.77 Bangladesh has achieved significant gains through the use its direct trade input system as well as a system of pre inspections. The Pre-Inspection Survey regime helped reduce the average clearance time for normal imports by half and in the process reduced the level of corruption. However, customs continues to inspect 5–10 percent of imported goods that have already received a Clean Report of Finding. Nevertheless, about half the imports are cleared within two days and less than 20 percent take more than a week. Most of the reforms have been focused on the garment sector where a liberalized regime including bonded warehouses and factories and temporary admission of goods expedites the import of fabric and accessories. The clearance time for exports of apparel has almost been reduced to one day despite requirements for checking shipments against bilateral trade requirements. The handling of customs documents has been improved, but importers are still required to submit a large number of documents even for the relatively liberalized garment sector as shown in Table 8.21.

**Table 8.21: Documents Required for Clearance of Goods Related to the Garment Trade**

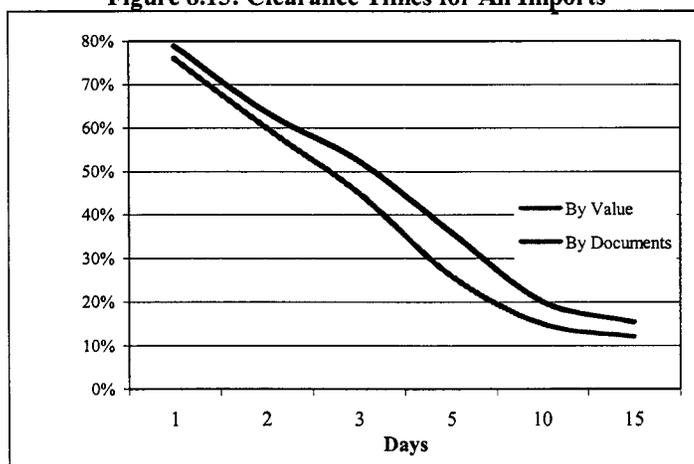
Yarn and fiber imports	Garment exports
Import permit issued by the Export Processing Zone Authority	Export bill of entry
Original bill of lading endorsed by importer	Commercial invoice issued by exporter
Letter of credit endorsed by issuing bank	Undertaking by exporter on commercial letterhead
Packing list endorsed by issuing bank	Packing list issued by exporter
Insurance policy and risk and duty bond supplied by importer	Export permit issued by Bangladesh bank
Utilization declaration issued by Bangladesh Garment Manufacturers Export Authority, certifying that goods to be used to manufacture exports	Consumption statement for yarn issued by exporter
Importers pass book issued by Bangladesh customs for recording import information	Receipt issued by truck operator
Bonded warehouse license issued by customs	Risk bond
Certification of value added tax registration	

8.78 Pakistan has had greater success in expediting cargo clearance. First, by introducing a single declaration replacing 10 separate documents and simplifying the supporting documents submitted as shown in Table 8.22 and then by introducing a risk management system and effective green channel, Pakistan has been able to reduce its clearance times for imports to the levels shown in Figure 8.13. However these results are similar to those achieved by Bangladesh with a much less sophisticated system.

**Table 8.22: Pakistan Supporting Documents**

Imports	Temporary Admission
Bill of lading Delivery order Certificate of origin Packing list Invoice Copy sales tax return	Bill of lading Packing list Invoice

**Figure 8.13: Clearance Times for All Imports**



8.79 India has achieved similar improvements in performance despite a more cumbersome trade regime. Most of these improvements have taken place since 2000 in the last four years with the introduction of its computerized system for customs clearance at all of its major gateways. At the same time, the government has allowed the establishment of 35 dry ports to allow goods to move inland for clearance of cargo. This was initially limited to rail cargo but has been liberalized to include imports carried by truck. This is in addition to a large network of bonded warehouses and factories. Clearance procedures are expected to improve significantly with the roll out of the computer-based risk management system and the establishment of a green channel system. The remaining problem, aside from a cumbersome trade regime, is the land borders, where clearance procedures continue to be done manually, in primitive conditions and with little consistency. This has been beneficial at the Nepal and Bhutan borders where trade moves with relative ease but has created severe congestion at the Bangladesh border.

## REGIONAL TRADE AND TRANSIT AGREEMENTS

8.80 There are various bilateral agreements covering the trade between the South Asian countries (Table 8.23) as well as some multilateral agreements, which have been introduced though not fully adopted. The most important of these are those between India and its neighbors.

**Table 8.23: Trade and Transit Agreements**

<b>India with Bangladesh</b>	<b>India with Bhutan</b>
Trade 1980	Trade and Commerce and Protocol to Agreement 1995
<b>India with Nepal</b>	<b>Bangladesh with Nepal</b>
Treaty of Trade and Protocol to Treaty 1991	Trade and Payment 1976
Treaty of Transit and Protocol to Treaty 1999	Transit 1976
Rail services	<b>Bangladesh with Bhutan</b>
Cooperation to control unauthorized trade	Trade and Protocol to Agreement on Trade 2003
	Transit 1980

8.81 India's trade and transit agreements with Nepal have been evolving since the 1950s. The most recent revisions have focused on rules of origin in order to reduce the importing of goods into Nepal under favorable tariffs for re-export to India with no value added. The present treaty requires that the content added in India and Nepal must be at least 30 percent. The agreement also includes export quotas for certain goods combined with requirements that they be handled through an Indian state trading enterprise. Nepal, for its part, grants a relatively small reduction in import duties for goods from India. Nevertheless, most of the bilateral trade between the countries moves across the border with relatively little delay.

8.82 It is the transit cargo that presents a greater difficulty. The agreement sets up a relatively cumbersome regime for certification of imports from third countries and limits the movements of transit goods to routes connected with Haldia and Calcutta, thus denying Nepal access to the more efficient ports of India.

8.83 Nepal Transit and Warehousing Corp. manages all of the transactions for goods moving through Haldia/Kolkata. All documents must be verified by the Nepalese Consul in Kolkata. Nepalese trucks are limited in the time they are allowed to be in India. Furthermore, the difference in terrain discourages continuous movement of trucks from the plains of India to the mountainous roads leading to Kathmandu. While Indian trucks can be used to carry cargo the entire distance, it is quite expensive and done only for high value cargo. Nepalese trucks can carry goods to Haldia/Kolkata but have difficulty in obtaining a backhaul cargo and are prohibited from carrying Indian domestic cargo.

8.84 The situation with Bhutan is more open since India has traditionally accepted Bhutan's exports on a duty-free basis. However, the current trade is dominated by exports of electricity. For imports, the Bhutanese government does not levy duties but does collect a value added tax. The transit agreement limits the movement of Bhutanese trucks to travel up to Siliguri. This combined with the difficult law and order situation along the border has made Bhutan dependent on Indian trucks for transporting their imports and exports. Third-country trade is more problematic because of the lengthy movement and the limitation to the use of Calcutta/Haldia. For cargo clearance, Bhutan has a customs liaison and transit office located in Calcutta that submits the import license and other clearance documents to Indian customs and is responsible for any charges and fees.

8.85 Bangladesh is the second-largest export destination for Bhutan. Their bilateral trade agreement provides trade preferences for imports into Bangladesh, but the levels of protection remain relatively high. The movement is complicated by the need to transit India and the requirement to transship goods at the Indian-Bangladesh border. This adds significantly to the costs of transport and has a negative impact on the fruits and vegetable exports to Bangladesh.

8.86 The major regional trade, that between India and Bangladesh, is regulated by the Trade and Transit Agreement established in 1972 and revised in 1980. The original agreement was for inland water transport and, even with the revisions, makes the cross-border trade difficult, thus encouraging a large informal trade across the lengthy border between the two. The agreement contains a substantial negative list that limits the types of goods that can be traded. It also requires that goods be transferred between Indian and Bangladeshi trucks at the border, a cumbersome back-to-back procedure that results in significant delays. It also introduces selective restrictions that require some goods to travel the long way by sea. Despite these impediments, the trade is substantial and growing.

8.87 India's free trade agreement with Sri Lanka was signed in 2000 with the objective of eliminating tariffs on all goods. While there has been significant progress on one-third of the tariff items, the target date for elimination of 80 percent of the tariff items is only in 2009. The agreement also includes a substantial negative list that covers the key potential exports from Sri Lanka to India and a broad range of products that India might export to Sri Lanka. There's also a 35 percent local content requirement. Despite these restrictions, the agreement has allowed a rapid expansion of trade between the countries.

8.88 The member countries of SAARC signed a Preferential Trade Agreement in 1993. This provides for a Most Favored Nation arrangement but differentiates between lesser and more developed members in order to provide more favorable treatment to the former. While the intention of the agreement was to expand scope of tariff concessions, progress has been limited. Furthermore, the rules regarding origin of cargo have discouraged members from taking advantage of the concessions.

8.89 The new agreement for a regional free-trade area (South Asian Free Trade Area) is scheduled to go into effect on January 1, 2006. It includes a gradual harmonization of import tariffs and a reduction of duties to a 0–5 percent range. This would be implemented by 2008 for the more developed members and by 2013 for the lesser developed members. However, most of the tariff reductions are backloaded and limited to customs duties, not the other taxes and charges. Also the agreement provides for "sensitive lists" that have yet to be determined and "rules of origin" that have to yet to be negotiated.

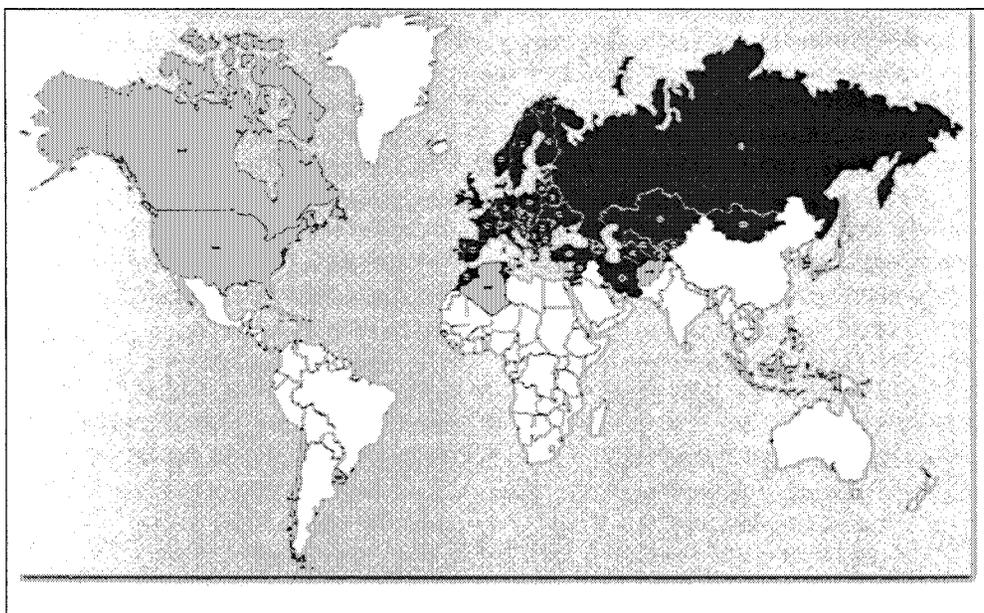
8.90 While there are a number of international conventions that have been developed to facilitate cross-border trade, as shown in Table 8.24, the South Asian countries are not signatory to any of them. The exception is the oldest conventions on road traffic, which was approved by India and Sri Lanka, and the convention on road signs and signals, which has been approved by India. While most of these were established to facilitate cross-border trade in Europe, they have gradually been introduced in other areas that trade with Europe and are now being introduced either in their original form or with modifications to support regional trading blocks such as ASEAN.

**Table 8.24: Signatories to U.N. Conventions Related to Transit Cargo**

	<b>Last revision</b>	<b>Number</b>
Customs convention: Temporary Importation of Commercial Road Vehicles	1956	42
Convention: Contract for the International Carriage of Goods by Road	1978	47
Convention: Road Signs and Signals	1968	93
Convention: Road Traffic	1968	71
Customs convention: Containers	1972	
Customs convention: International Transport of Goods Undercover of TIR Carnets (TIR Convention)	1975	68
International convention: Harmonization of Frontier Controls of Goods	1982	48

8.91 Of particular importance is the convention for TIR International Routiers carnets. This allows trucks to carry goods in bond across borders by providing regional insurance cover for the duties due should the cargo remain in one of the transit countries. This has been essential for allowing regional truck transport across Europe and Central Asia to Russia and down to the Middle East (Figure 8.14). If introduced in the South Asian region, it could eliminate most of the delays at the border and implies an end to the anachronistic practice of back-to-back transfers of cargo at the border.

**Figure 8.14: Countries Adopting the TIR Convention**



*Source:* International Road Transport Union.

*Note:* Blue, established operations; yellow, contracting parties.

## **SUPPLY CHAIN MANAGEMENT**

8.92 The development of modern supply chains is only beginning in the South Asian region. The predominance of f.o.b. export shipments and charges and freight (C&F) import shipments for traders results in extremely simple supply chains. At the same time, domestic movements, especially distribution networks for agricultural production and wholesale/retail, have complex supply chains that involve large numbers of middlemen despite relatively short travel distances (Figure 8.15). The development of more sophisticated supply chains for manufacturers and exporters will extend the range over which businesses can compete and allow them to utilize more elaborate networks of subcontractors for distributed manufacturing. The simplification of the farm-to-market and SME-to-retailer supply chains not only increases returns to the producer and consumer but also provides more direct connection between producer and consumers allowing the former to adjust output to meet the needs of the latter.

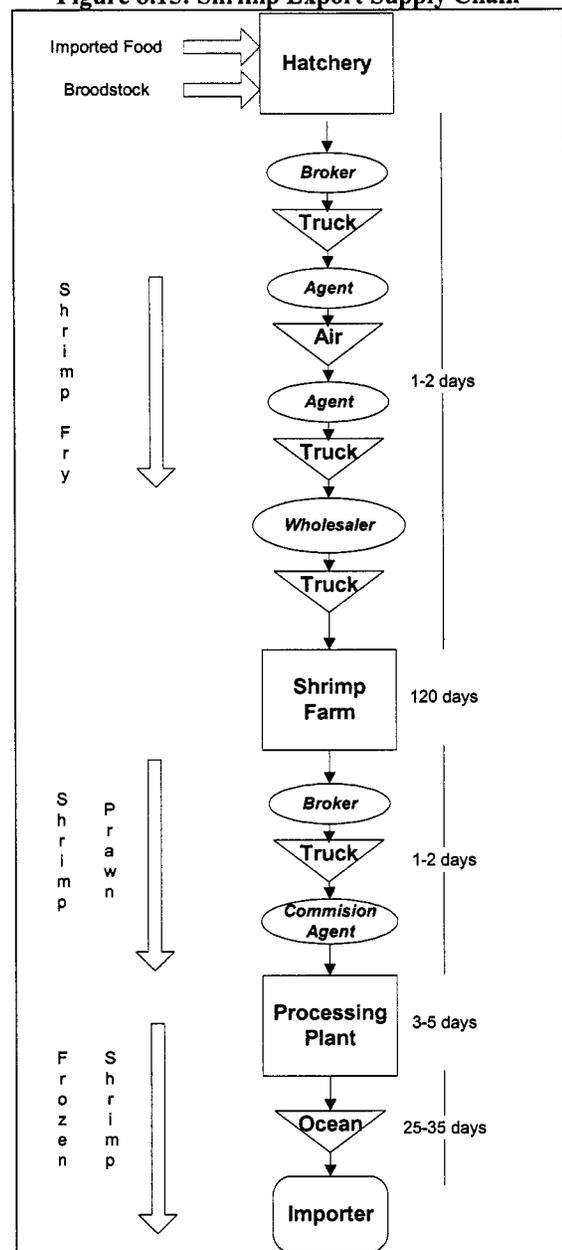
8.93 More sophisticated supply chains are built around better use of information technology and communications and greater management attention to improving logistics. This is complemented by vertical integration within the logistics sector as third-party logistics providers combine to form four-party logistics integrators.

8.94 The effectiveness of the supply chains using South Asian corridors and gateways has improved over the last few decades due not only to better quality of logistics services but also to the way in which these services are organized. Advances in supply chain management have been achieved by increasing the use of computers, electronic data interchange (EDI), and Internet to prepare and exchange data and documents. The dramatic reduction in the cost of communications allows better coordination between the participants in the supply chain and tighter operating schedules. The growth in popularity of paperless transactions between logistics providers and government regulatory agencies has reduced transaction time and increased reliability for movement of goods along the supply chain. Sharing of data and simplification of the documentation has reduced the cost and time and improved the accuracy of transactions. At the same time, it has led to a reduction in the number of transactions required to move goods through the supply chain. These improvements are most obvious in India and Pakistan where the changes are most advanced.

8.95 Despite these improvements, the logistics industry in the SAARC countries provides very little integration of basic services or value added services. While there has been integration in the provision of transport and warehousing, most of the forwarders providing only one of these services and subcontracting the other. Customs clearance agents may provide warehousing but rarely provide additional logistics services. The exceptions are the international freight forwarders who handle project cargo and exports for their overseas clients. While a significant number of forwarders are able to offer multi-modal service through the issue combined bills of lading, the services they provide are relatively limited and most of the supply chain management is provided by the correspondent forwarders or the buyer.

8.96 It is difficult to develop integrated logistics service providers. The technology transfer is provided by the foreign logistics providers who train and hire staff that later migrate to domestic companies. They also provide support for the development of better supply chain management by their customers. Some efforts such as the establishment of the National Trade and Transport Facilitation Committee in Pakistan have helped to accelerate the development of the sector. However, as long as there is little demand for national distribution networks or large-scale merchandizing through chain stores, then there will be little demand for domestic integrated logistics providers. Given the focus on cost rather than quality in the provision of transport and other logistics services, the opportunities for selling value added services will remain limited.

Figure 8.15: Shrimp Export Supply Chain



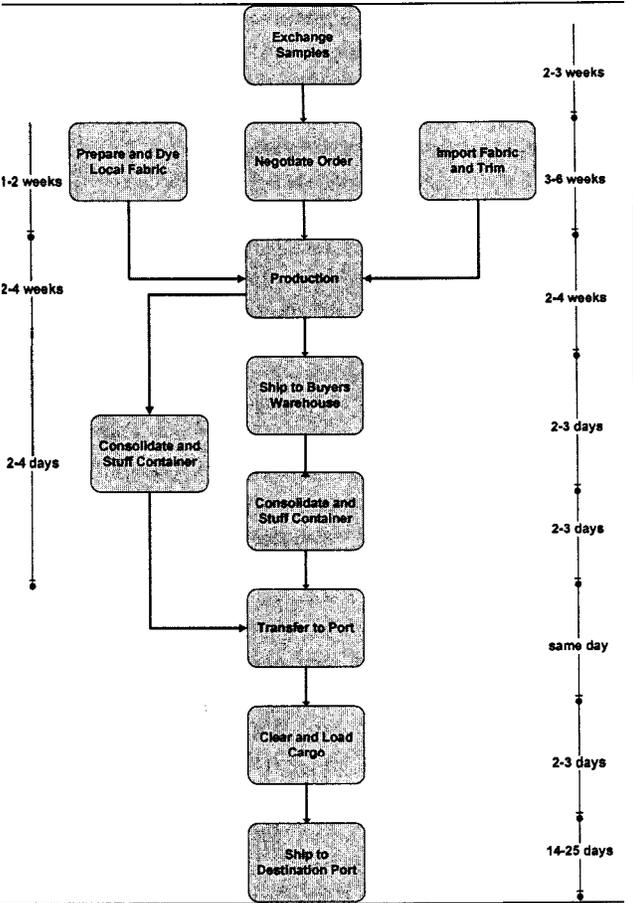
8.97 The exporters will continue to simplify their supply chains in order to meet market demands for faster delivery. The analysis of the existing supply chain can provide insights for both the exporter and the government regarding which changes would have the greatest impact. As an example, the flow chart in Figure 8.16 indicates the savings in time to be achieved by stuffing outbound cargo at the warehouse for direct delivery to the port rather than via a consolidator's warehouse or inland container depot.

**CONCLUSIONS AND RECOMMENDATIONS**

8.98 There are a number of conclusions that have been suggested in this report. The principal ones are:

- Competitive advantage in both international and intraregional trade is increasingly being defined by logistics.
- Trade facilitation encompasses a broad range of initiatives to improve the delivery of exports and thereby improve competitive advantage. It is important to coordinate strategies for trade growth with initiatives to improve logistics.
- It is important to consider the performance of corridors including various routes and services since different trades require different combinations of time, cost, and reliability
- While the costs of road transport in South Asia are among the lowest in the world, the quality of transport service is also very low. It is important to develop high capacity, limited access highways along the major trade corridors in order to allow the introduction of modern truck transport.
- Rail transport is expected to have a significant role in the transport of containerized exports but will require the introduction of commercial operations through private sector participation.
- Private sector participation is an effective method of improving the productivity of transport infrastructure.
- Regulatory constraints are often a significant impediment to trade. While customs reforms have been effective, it is important to continue these efforts and to expand them to other regulatory functions
- Development of modern supply chains is only beginning in the South Asian region. It is important to simplify the supply chains of smaller exporters and to introduce value added services for those of larger traders.

**Figure 8.16: Timeline for Garment Productions**



8.99 The increasing attention given to time and reliability in the delivery of goods to market requires not only better transport infrastructure and services but also better integration of supply chains and few regulatory impediments. Modern supply chains also require greater use of ICT and the introduction of value added services that allow manufacturers and traders to focus on their core business. The transfer of responsibility for logistics and transport services to the private sector has significantly improved their efficiency. It is now necessary to improve the transport infrastructure to allow transition to better quality and more efficient transport services. Based on these considerations, a set of eight priority initiatives have been identified as follows:

- Perhaps the most important, but also the most difficult, is negotiation of effective bilateral and multilateral trade and transit agreements. These would facilitate trade in a more diverse range of goods. Efforts to develop multilateral agreements have been used to standardize the terms included in bilateral agreements but are not expected to become effective for a long time. Therefore, it is necessary to focus on bilateral agreements. This effort would take advantage of the reforms that have been introduced through the World Trade Organization membership and through efforts to introduce greater transparency into the procedures required for clearing cargo. The growing awareness of global competition and the need to develop competitive advantage has allowed the region to open up to international trade, but this has not been translated into a formal awareness of the benefits of intraregional trade despite the substantial amount of informal trade.
- Complementary to the first is the simplification and harmonization of border procedures. Currently there is a lack of transparency but there are ongoing efforts to reform customs and to standardize cargo documents. This has been combined with the introduction of risk management techniques and greater use of EDI to expedite cargo flows. However, most of the improvements have focused on seaports and airports rather than land borders where most of the intraregional trade occurs. There the requirement for back-to-back transfer of goods substantially increases the time and cost for intraregional trade. It is important to introduce modern procedures at these land borders and to coordinate activities of the agencies on both sides of the border so as to minimize the transactions involved in crossing the border. An important reform would be to allow the movement of goods in transit under customs seal either to a point of clearance behind the border or through the country to a third-country destination. This would require improvements in vehicles and sealing techniques and also the introduction of TIR or a comparable system for coverage of unpaid duties. Finally, it would be necessary to introduce scanners to improve the detection capabilities at the border for both customs and security without seriously impeding trade.
- The third initiative would be to introduce corridor management techniques in developing the major freight corridors. This would involve focusing both planning and related capital investment on those corridors that serve the major gateways and centers of production and consumption. The analysis would include all modes of transport as well as multimodal options. It would include gateways both individually and as part of clusters serving the corridor. Clusters would also be used to define the centers for production/consumption. By focusing government's investment in infrastructure on a corridor rather than a mode or specific activity, it is possible to remove the bottlenecks in the corridor and to ensure that there are competitive alternatives available to encourage efficiency. These corridors can also be used to concentrate export production activities. The development corridor concept can be extended to intraregional trade. While there are long-term efforts to develop regional networks such as the Asian Highway, in the short to medium term it is necessary to focus on the bilateral corridors.

- There are a number of initiatives ways to increase the efficiency of road transport but perhaps the most important is to reduce and improve regulation and taxation of trucking services. Efforts to improve safety and reduce overloading would generate significant savings for society but have generally been ignored. Instead, attention has been given to enforcement of regulations that generate revenues for local governments and officials. Poor road networks, lawlessness, differences in state regulations, and uncontrolled use of checkpoints prevented the development of interstate road transport services. Now that trade requires these services, it is necessary to eliminate these impediments. This can begin within the scope of the freight corridors using the power of the national government to harmonize standards and allow unimpeded movements across state boundaries.
- While it is anticipated that road transport will be the dominant mode for transport of imports and exports within the country, it is important that there be a competitive rail service to reduce the demand for road transport and provide more fuel (and cost) effective transport of containers over long distances. The railroads in Pakistan, India, and Bangladesh have all developed container haulage services with varying degrees of success. However, none has developed a truly competitive service because they are all publicly operated on networks that give priority to passenger railroads. In order to reverse the situation, it is necessary for governments to recognize the importance of rail transport in international trade and to allow commercial operators to participate in the provision of unit container train operations
- While the improvements in road transport regulation can be implemented in the short run and will improve the utilization of existing assets, it is necessary to improve the road network in order to encourage the investment in better transport assets. This would involve the construction of intercity expressways. These limited-access toll roads would allow high-speed travel with minimal roadside friction and thereby let long distance trucking operations flourish. Higher average travel speed and large annual kilometerage is required to justify the purchase of modern articulated trucks.
- The seaports remain the most important gateways for international trade but also that part of the supply chain most often associated with delays. Considerable improvements in performance have been achieved through the introduction of private sector terminal operations, but the transformation of the port sector to a system of small landlord authorities overseeing privately developed and operated terminals is not yet complete. For Bangladesh, it has not yet begun. This transformation creates a contestable market for cargo handling services through both interport and intraport competition. It is important not only because it improves port performance but also because it attracts better shipping services. While some degree of regulation is required to prevent anticompetitive behavior, there is adequate competition between logistics service providers as long as the terminal concessions are designed to encourage it.
- The final initiative would take advantage of the growing regional capability in software development. Modern supply chain analysis is based on the effective use of ICT for planning and monitoring cargo movements and status and for expediting the transactions involved in moving down the chain. It also improves the allocation of transport and other logistics assets. The advantage of these systems is that they are scalable and can be applied to the relatively small enterprises that are typical of both producers and logistics service providers. Already small-scale manufacturers and truckers have introduced systems for activity cost accounting. These systems allow them to allocate their resources in more efficient ways. Although the

enterprises are small there are enough of them with common requirements to attract commercial developers of software.

8.100 Table 8.25 presents a summary of the proposed initiatives, the type of activity involved, and the likely participants. All but one requires government involvement and nearly all would require private sector participation.

**Table 8.25: Priority Initiatives for Improving Regional Logistics**

Initiatives	Activity			Implementation		
	Capex	Operations	Regulation	Public	Local private	Foreign private
Trade and transit treaties			X	X		
Border procedures	X	X	X	X		
Freight corridors	X		X	X	X	
Trucking services		X	X		X	
Container rail services	X	X		X	X	X
Port systems	X	X	X	X	X	X
Mobilize ICT		X			X	X
Expressways	X			X	X	

8.101 These initiatives would improve trade competitiveness by reducing the time and cost and increasing the reliability and flexibility of the door-to-door movement of imports and exports. In addition, they provide specific benefits (Table 8.26). The development of effective bilateral and multilateral trade will not only allow an increase in trade but also diversification of the types of goods traded. It will improve export competitiveness by allowing producers in one country to obtain unique, less costly, or better quality inputs from suppliers in neighboring countries. The focus on development of freight corridors will allow limited funds to be concentrated in a way that will have the most impact on the growth of producers of exports. It also optimizes investment by identifying specific bottlenecks and taking advantage of the capacity provided by all modes. The improvement in border procedures will not only stimulate trade but also improve the level of scrutiny, thereby improving security and maximizing the collection of duties and taxes.

**Table 8.26: Specific Benefits and Risks Associated with the Initiatives**

Initiatives	Specific Benefits	Risk
Trade and transit treaties	Diversification of trade	
Border procedures	Improved security and revenue collection	Failure to diminish corruption
Freight corridors	Focus investment and development	Concentrated development
Trucking services	Improve quality of service	Increasing costs
Container rail services	Limit road congestion, increase port capacity	
Port systems	Efficient capital investment	Insufficient competition
Mobilize ICT	Reduced transaction costs	Compatibility
Expressways	More efficient trucking	Cost recovery

8.102 The harmonization of regulation of trucking and improvement in management of trucking services will improve the quality of trucking services offered allowing for better integration with other supply chain activities both domestic and internationally. Improved rail transport for containers will reduce the congestions on the road network and allow ports to increase capacity, which would otherwise be limited by available road capacity. The increase in private sector participation and competition in the port sector will not only insure lower costs for users but will insure more efficient capital investment. This will not eliminate the occasional ill-conceived mega-project but will make their occurrence less likely. The introduction of expressways on the main freight corridors will allow the transition to effective long haul trucking. The increased use of ICT will significantly reduce the transaction costs within the international supply chains and provide the information needed to integrate supply chains without having to integrate the logistics service providers.

Annex Table A.1. Export Volumes for Selected Commodities (Tons)

		2001	2002	2003	2001	2002	2003
		<b>Bangladesh</b>			<b>India</b>		
ASEAN	Fish	3,362	1,860	3,882	53,228	14,389	24,217
	Vegetables	727	790	1,648	179,081	169,499	209,737
	Textiles	6,640	7,867	9,375	7,635	13,814	22,786
	Subtotal	10,730	10,518	14,906	239,944	197,702	256,740
EU-25	Fish	17,087	22,818	26,452	80,156	94,134	106,383
	Vegetables	4,897	4,496	6,669	125,299	130,679	152,091
	Textiles	251,706	257,595	355,136	176,543	178,356	194,690
	Subtotal	504,333	284,909	388,257	381,999	403,170	453,164
NAFTA	Fish	9,836	9,351	9,139	47,870	60,625	60,882
	Vegetables	160	108	246	123,325	126,477	133,005
	Textiles	160,838	164,165	184,467	127,539	184,637	168,069
	Subtotal	170,835	173,623	193,852	298,734	371,739	361,955
<b>Total</b>		685,898	469,050	597,015	920,677	972,612	1,071,860
		<b>Pakistan</b>			<b>Sri Lanka</b>		
ASEAN	Fish	6,273	6,734	10,318	868	971	1,001
	Vegetables	50,580	44,642	35,888	49	93	288
	Textiles	693	827	929	322	1,062	1,186
	Subtotal	57,545	52,202	47,135	1,238	2,125	2,475
EU-25	Fish	9,151	13,926	16,707	2,837	3,162	3,839
	Vegetables	13,108	14,125	19,898	33,250	14,257	16,869
	Textiles	98,044	111,335	127,137	51,889	57,784	64,091
	Subtotal	120,302	139,385	163,742	87,976	75,203	84,799
NAFTA	Fish	1,680	976	552	1,550	1,453	2,491
	Vegetables	5,360	6,007	18,620	897	1,833	923
	Textiles	107,605	115,022	134,761	80,476	83,737	83,393
	Subtotal	114,645	122,005	153,934	82,923	87,022	86,807
<b>Total</b>		292,493	313,592	364,810	172,137	164,350	174,081
		<b>Nepal</b>					
ASEAN	Fish			1			
	Vegetables	23					
	Textiles	742	189	238			
	Subtotal	765	189	239			
EU-25	Fish	1	0				
	Vegetables	33	15	80			
	Textiles	1,247	1,526	1,820			
	Subtotal	1,281	1,541	1,900			
NAFTA	Fish						
	Vegetables						
	Textiles	10,915	9,103	11,037			
	Subtotal	10,915	9,103	11,037			
<b>Total</b>		12,961	10,833	13,175			

Source : U.N. COMTRADE as reported by importing countries, adjustments by the author.

**Annex Table A.2. Market Shares Based on Volumes over the Last Three Years (Percent)**

	Bangladesh			India			Nepal		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
ASEAN-10	2	2	2	26	20	24	6	2	2
EU-25	60	61	65	41	41	42	10	14	14
NAFTA	38	37	32	32	38	34	84	84	84
Fish	7	7	7	20	17	18	0	0	1
Vegetables	1	1	1	46	44	46	0	0	0
Textiles	92	92	92	34	39	36	100	100	99
Total (thousand tons)	685.9	469.1	597.0	920.7	972.6	1,071.9	13.0	10.8	13.2
	Pakistan			Sri Lanka					
	2001	2002	2003	2001	2002	2003			
ASEAN-10	20	17	13	1	1	1			
EU-25	41	44	45	51	46	49			
NAFTA	39	39	42	48	53	50			
Fish	6	7	8	3	3	4			
Vegetables	24	21	20	20	10	10			
Textiles	71	72	72	77	87	85			
Total (thousand tons)	292.5	313.6	364.8	172.1	164.4	174.1			

Source: U.N. COMTRADE as reported by importing countries with adjustments by the author.

**Annex Table A.3. Lines Calling at Colombo**

Maersk Sealand/Safmarine	ACL
MSC	China Shipping Line
New World Alliance	CMA-CGM Lines
APL/NOL	CSAV
MOL	Delmas (merged with CGM)
Hyundai	Donngnama Line
Grand Alliance	Evergreen
Hapag Lloyd	Gold Star
NYK	Hatsu Marine
OOCL	Laurel Navigation
MISC	Lloyd Trestino
CYKH alliance	Marfret
COSCO	Norasia
K Line	PIL
Hanjin	Samudra Shipping
Senator	Shipping Corp. of India
Yang Ming	United Arab Shipping
CP Ships (merged with Hapag Lloyd)	Wan Hai
P & O Nedlloyd (merged with Maersk)	Zim

**Annex Table A.4. Travel Times via Transshipment Hubs**

<b>To</b>	<b>From</b>	
	<b>Colombo</b>	<b>Kolkata/Haldia Via Colombo</b>
North Europe	13–20 days	25–32 days
U.S. east coast	24–29 days	36–41 days
Mediterranean	12–17 days	24–29 days
	Singapore	Kolkata/Haldia Via Singapore
China	7–9 days	19–21 days
U.S. west coast	18–24 days	30–36 days
Australia	12–14 days	24–26 days

*Source:* Selected shipping schedules.

## **9. CUTTING TRADE COSTS AND IMPROVED BUSINESS FACILITATION IN SOUTH ASIA: ESTIMATING THE BENEFITS OF REFORM<sup>120</sup>**

9.1 The overall trade performance of countries in South Asia since the 1980s has been poor relative to other regions, aside from increased exports of services. Exports from South Asia have doubled since the 1980s to approximately US\$100 billion. In contrast, East Asia's exports grew 10 times over the same period. The low level of intraregional trade has contributed to weak export performance in South Asia. Intraregional trade in South Asia is extremely limited, even when geographic proximity and levels of gross domestic product (GDP), population, and trade arrangements are taken into account. Collective and concrete action to lower trade barriers, advance domestic reform, and support capacity building in the region is increasingly important. In particular, measures to facilitate trade and lower logistics costs in South Asia are among the most important steps to promote intraregional trade and economic integration.

9.2 A review of trade facilitation and transport logistics in the region illustrates continued weakness of South Asian countries in port and transport infrastructure, regulatory environments, and service-sector infrastructure. Delays at seaports owing to congestion and outdated infrastructure, for example, raise costs for exporters throughout the region. Furthermore, landlocked countries in the region confront additional delays owing to congestion in road and transit caused by the poor road infrastructure and networks. Continued reform in regulation and harmonization of standards, accelerating the diffusion of technology to lower transactions costs, and promoting efficiency in customs regimes are also needed. Given this context, the region is likely to gain from programs to stimulate trade and the complimentary investments in these areas. What, then, are the potential gains to trade in the region with such programs to raise capacity in trade facilitation?

9.3 The empirical analysis in this paper demonstrates gains to trade in the region from capacity building in four areas of trade facilitation based on those introduced in Wilson, Mann, and Otsuki (2004): port efficiency, customs environment, regulatory environment, and service-sector infrastructures. We estimate the gains to the South Asia region in manufacturing trade from capacity building in the four categories of trade facilitation in the context of both intraregional trade and interregional trade (trade with the rest of the world). Indicators are developed for each category of trade facilitation for individual countries. The East Asia region (excluding Japan) is used as a benchmark, and the target levels for capacity building are set for each country in each category of trade facilitation at the halfway up to the East Asia's average.

9.4 When considering intraregional trade, if countries in South Asia raise capacity halfway to East Asia's average trade is estimated to rise by US\$2.6 billion. This is approximately 60 percent of the total intraregional trade in South Asia. The area that will produce the greatest gains is service-sector infrastructure (US\$1224 million), followed by efficiency in air and maritime ports (US\$712 million). South Asia also has a stake in the success of efforts to promote capacity building outside its borders. If South Asia and the rest of the world raised levels of trade facilitation halfway to the East Asian average, gains to the region are estimated at US\$36 billion. Out of those gains, about 87 percent of the total gains to South Asia will be generated from South Asia's own efforts (leaving the rest of the world unchanged). The category of trade facilitation

---

<sup>120</sup> This Chapter is prepared by John S. Wilson, Lead Economist, the Development Economics Research Group of the World Bank, and Tsunehiro Ostuki, Associate Professor, the Osaka School of International Public Policy, Osaka University. The views in this paper are solely the authors and do not necessarily reflect those of the World Bank or its Executive Directors.

that will produce the greatest gains is also found to be service-sector infrastructure (US\$17 billion). The important role of India in advancing reform should also be noted. India represents 80 percent of total GDP in South Asia and can act as a catalyst along with partners in the region to advance a trade facilitation agenda.

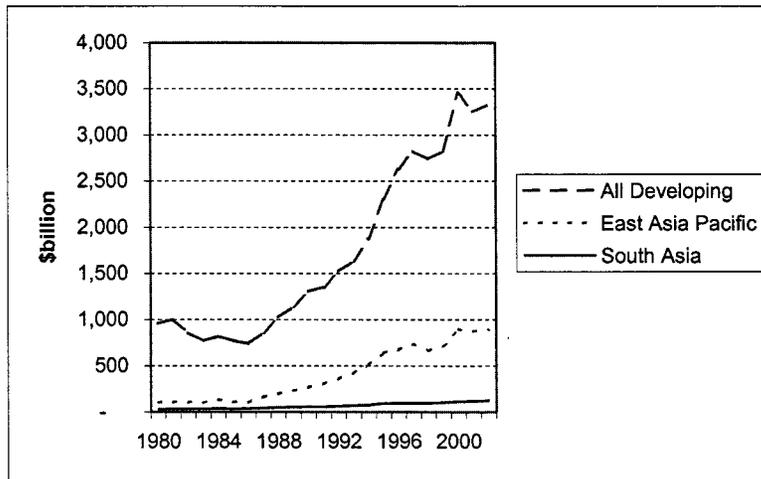
9.5 Priority areas for reform in South Asia center on port and service-sector infrastructure improvements. However, collective action to streamline regulations and improve customs also produce gains to trade. Much of these gains attributes to capacity building within the region rather than that in the rest of the world.

9.6 The success in any reform agenda to implement capacity building in trade facilitation in South Asia—or any other region—must necessarily involve complementary investments in policy areas beyond those related to barriers that affect trade logistics costs. Reducing barriers to foreign direct investment, lowering tariff rates of protection, and eliminating other non-tariff barriers that slow productivity and block private sector growth are also important. Macroeconomic policy stability and many other factors will clearly affect any reform agenda as well. The bilateral relationship between India and Pakistan, among others in region, will also shape progress ahead. It is clear that regional integration can be advanced, however, with serious programs of concrete action to address barriers in trade facilitation, such as those reviewed here.

## **INTRODUCTION**

9.7 The trade performance of South Asian countries since the 1980s has been poor relative to other regions. Exports from South Asia have only increased from US\$17 billion since the 1980s to approximately US\$120 billion in 2004. In contrast, exports in East Asia grew from US\$80 billion to nearly US\$1 trillion (Newfarmer and Pierola 2006 ). South Asia's share to the total exports from developing countries has declined owing in part to its relatively slow export growth (Figure 9.1). This reflects both South Asia's limited trade integration with the rest of the world and the limited intraregional trade. In particular, Newfarmer and Pierola, (2006) note that South Asia's intraregional trade as a percentage of its total trade volume has barely changed from around 2 percent in 1980 to 3 percent in 2004. This is very low compared to approximately 12 percent for East Asia, for example (Figure 9.2). Overall intraregional trade in South Asia constitutes about 1.2 percent of GDP while it contributes to 7 percent of the GDP in East Asia.

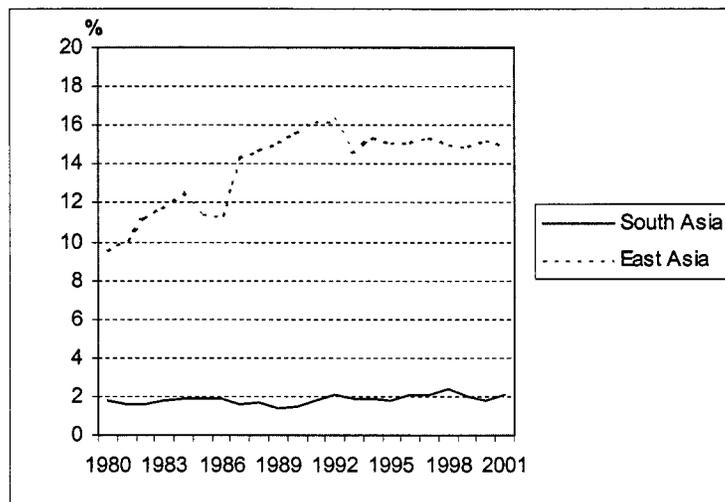
**Figure 9.1: Exports from Developing Countries, 1980–2002**



*Source:* Calculated by the authors based on U.N. COMTRADE data.

*Notes:* South Asia includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. East Asia Pacific includes American Samoa, Cambodia, China, Fiji, Indonesia, Kiribati, Korea, Lao People's Democratic Republic, Malaysia, Marshall Islands, Micronesia, Mongolia, Myanmar, Palau, Papua New Guinea, Philippines, Samoa, Solomon Island, Thailand, Tonga, Vanuatu, and Vietnam.

**Figure 9.2: Intraregional Trade as a Share in Region's Total Trade**



*Source:* Calculated by the authors based on U.N. COMTRADE data.

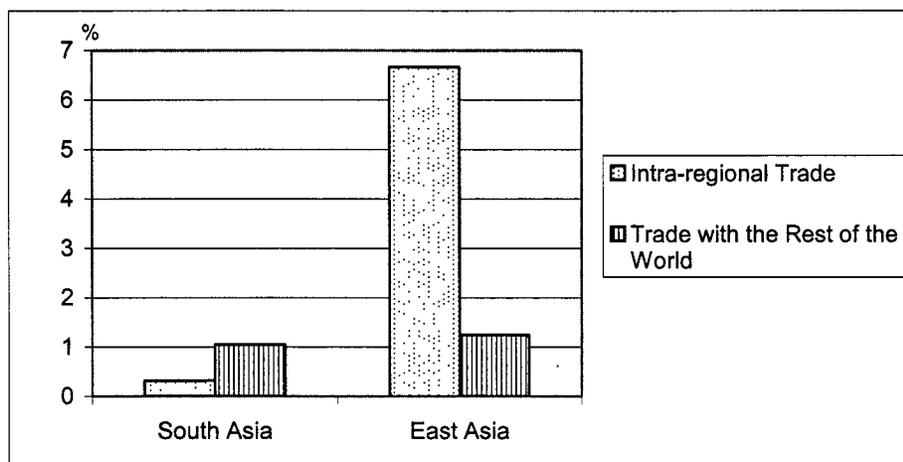
*Notes:* East Asia includes Brunei, Cambodia, China, Hong Kong, Indonesia, Lao People's Democratic Republic, Macao, Malaysia, Mongolia, Myanmar, Palau, Papua New Guinea, Philippines, Singapore, Solomon Islands, Thailand, and Vietnam. South Asia includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.

9.8 South Asian countries should explore more trade opportunities within the region. Figure 9.3 shows the observed amounts of intraregional and interregional trade relative to a predicted value of trade for both South Asia and East Asia. The latter is an expected value given the average geographical distance, levels of GDP, and other relevant factors. The figure demonstrates that intraregional trade in South Asia is lower than that of East Asia, even when geographic proximity, levels of GDP, population, and trade arrangements are taken into account.

9.9 On the other hand, trade with the rest of the world for both regions are similar. In fact, South Asia has been engaged in trade with the major industrialized countries, most importantly, with the European Union, the United States, and Japan. In reality, however, the distances from these major markets impose significantly higher transport costs for exporters in South Asia. Therefore, the region is likely to gain by expanding intraregional trade through the complimentary investments in infrastructure, continued regulatory reform, and other policy initiatives that will be discussed.

9.10 South Asia should facilitate intraregional trade in order to stabilize its economy which is currently vulnerable to external shocks. As indicated in Figures 9.1 and 9.2, the financial crisis in the late 1990s severely affected developing countries as a whole, including those in South Asia, and most severely in East Asia. Exploring opportunities to expand intraregional trade would give South Asia greater chances not only to benefit from trade but also to increase stability against external shocks. The region can and should take steps to move toward accelerated growth paths, leveraging both intraregional and interregional trade. See Figure 9.3.

**Figure 9.3: Actual to Predicted Ratios for Intraregional and Interregional Trade**



*Source:* Authors' calculation based on U.N. COMTRADE data and *World Development Indicators*.  
*Notes:* Actual trade implies value of trade recorded in COMTRADE data. The predicated trade represents the value of trade that is predicted by a gravity model by taking geographical distance, GDP, and other relevant factors into account. The bilateral value of trade is predicted according to GDP, population, distance, and arrangements between importer and exporter. The share of observed trade that is smaller than 100 percent infers the presence of trade barriers.

9.11 There are a number of barriers to promoting intraregional trade and expanding exports as a whole. Tariff rates are one of the highest among developing countries. They have been reduced in the past decade, however, and are no not the only constraint to growth. This implies the presence of other obstacles to trade liberalization and nontariff barriers, including transactions costs and behind the border barriers.

9.12 Specifically, constraints in supply chains and trade logistics include a number of increasingly important barriers to exports for South Asian countries. The lack of harmonized transport systems, frequent reloading of goods, port congestion affecting turnaround time for ships, complicated customs-clearance procedures, and nontransparent administrative procedures at the customs are often at the center of trade constraints.<sup>121</sup> These constraints are often more serious in developing countries than in developed countries. One study shows, for example, that for 168 out of 215 U.S. trading partners, transport cost barriers outweigh tariff barriers (World Bank 2002a). Given that income growth is greater with more cross-border trade at least in theory, eliminating nontariff barriers contributes to trade integration. Until recently, trade facilitation generally referred to policy measures that targeted at reducing costs in transportation. It now encompasses a broader set of interrelated factors that reduce nontariff barriers in order to lower cost of moving goods between destinations and across international borders.

## **TRADE FACILITATION**

9.13 The definition of trade facilitation varies depending on the extent of measures to be included. In a narrow sense, trade facilitation simply addresses the logistics of moving goods through ports or at customs checkpoints at national borders. A broader framework for understanding trade facilitation and its impact on international commerce includes a number of interrelated factors. These include port reform and modernization and streamlining regulatory requirements and harmonizing standards, as well as customs regimes. Common to all these areas is expanding the use of information technology to lower trade transactions costs. This might involve, for example, compiling a unique set of computerized information for each shipment entering a port so that cargo is processed more rapidly at arrival. Modern customs methods of profiling consignments or traders based on risk-assessment techniques can help expedite cargo clearance (World Bank 2004a). The use of technology in services and business-to-business e-commerce is also a rapidly expanding area of trade that broadens markets while significantly reducing logistics and transactions costs.

9.14 In order to realize the benefits of improving transport or customs administration at the border, regulatory and institutional reforms are essential. These inside the border measures play a crucial role in trade transactions costs. Domestic regulatory procedures and institutional structures based on international best practice models can improve transparency and professionalism in border clearance procedures. Streamlining regulations to remove technical barriers and liberalizing transport and telecommunications regimes can also facilitate trade. Privatization and deregulations in the transport sector can also increase competition and improve efficiency.

9.15 Security is also an important part of trade facilitation in modern commerce. Terrorism and threats to security can disrupt global supply chains across borders and damage economic progress. The terrorist attacks on September 11, 2001, in New York and Washington, D.C., have increased calls for strengthening border security, transport, and maritime systems. In response, a number of new security programs have been initiated. The United State introduced the Container Security Initiative in January 2002.<sup>122</sup> The International Maritime Organization developed the

---

<sup>121</sup> For a more detailed description of these factors see World Bank (2004a).

<sup>122</sup> The initiative is aimed at preventing “terrorists from concealing personnel or weapon of mass destruction in U.S.-bound cargo.”

International Ship and Port Security Code, which was adopted by more than 100 countries and went into effect on 1 July, 2004.<sup>123</sup>

9.16 In the short run, tightened security at the borders may cause delays in border crossings. The wider use of technology such as bar codes for containers, wireless communication systems, and other technology upgrades will impose additional costs on transport companies. Over the long term, however, new technology and security can add certainty and stability to the global economy and accelerate trade with a streamlined supply chain.

9.17 Initiatives to reduce nontariff barriers associated with trade facilitation have also been affected by the multilateral trade agenda in the World Trade Organization (WTO) disciplines. During the Singapore Ministerial Conference of the WTO in 1996, trade facilitation was added to the agenda for explicit discussion. The Cancun Ministerial Conference of the WTO in September failed to launch the negotiation on trade facilitation. This was due, in part, to disagreement over the merits of starting talks on trade facilitation, including increased transparency and streamlined administrative requirements. Some developing countries were initially unwilling to place these on the formal negotiating agenda of the WTO (Wilson 2003; Bagai, Newfarmer, and Wilson, 2004).

9.18 On July 31, 2004, WTO members reached consensus to launch negotiations on trade facilitation. The negotiations will focus specifically on three articles of the General Agreement on Tariffs and Trade (GATT). This includes Article V (freedom of transit) which relates to conditions in which the transit of goods is free from barriers to transport and discrimination among suppliers, firms, and traders. GATT Article VIII (fees and formalities on imports and exports) addresses customs clearance procedures and a commitment of nondiscrimination and transparency in fees and rules applied to goods crossing borders. GATT Article X (publication and administration of trade regulations) includes commitments to assist in ensuring timely publication of regulations on imports, including fees, customs valuation procedures, and other rules. It also includes obligations to maintain transparent administrative procedures for disputes in customs. Developing countries have an important role in shaping the negotiations to further reduce barriers associated with trade logistics.

## **MEASURING THE IMPACT OF TRADE FACILITATION**

9.19 A critical question of direct relevance to trade facilitation in a development context is to what extent do factors affecting trade transactions costs matter. This drives the need of measuring the impact of trade facilitation on economic growth. Yet, quantifying the gains of trade facilitation is complex and challenging. The Organisation for Economic Co-operation and Development (OECD 2001) summarizes available studies, most of which are limited in their definition of trade facilitation or use data collected many years ago.

9.20 Thus we stress the importance of updating and improving available data on the benefits of trade facilitation. Walkenhorst and Yasui (2003) argue that it is impossible to measure the income gains from trade facilitation in absolute U.S. dollar terms while they point out that the degree of potential benefits of trade facilitation vary across countries, sectors, and types of traders.<sup>124</sup> Therefore, instead of measuring overall welfare impacts of trade facilitation, their study

---

<sup>123</sup> Sets security-related requirement for governments, port authorities, and shipping companies in order to monitor freight flows and reduce the threat of terrorist attacks.

<sup>124</sup> For instance, Walkenhorst and Yasui (2003) mention that trade transaction costs (TTCs) range from 1 to 15 percent of traded goods depending on the country's pretrade facilitation condition. Furthermore, border costs for agro-food products are 50 percent higher than those for manufacturing products and that TTCs for small medium enterprises are 50 percent higher than those for big enterprises.

focuses on looking at the distribution of gains among groups of countries and comparing the income effects of trade facilitation in various scenarios determined by different combinations of countries, sectors, and types of traders.

9.21 There are a number of other empirical studies that have addressed specific policy changes related to trade facilitation. A study by the Asia-Pacific Economic Cooperation (APEC 1999) finds that “shock” reduction in trade costs from trade-facilitation efforts vary from 1 percent of import prices for industrial countries and the newly industrializing countries of Korea, Chinese Taipei, and Singapore to 2 percent for other developing countries. The study estimates that effects of APEC trade liberalization and facilitation would increase the volume of APEC merchandise exports in 1996 by 3.3 percent by 2010.

9.22 A study by Maskus, Wilson, and Otsuki (2001) evaluates the gains to trade facilitation related to harmonized regulations and standards. Moenius (2004) looks at how bilaterally shared standards and country-specific standards affect trade respectively, and finds that the former standards raise trade volume and, therefore, harmonization of standards promotes trade. Against author’s hypothesis, the results show that country-specific standards also promote trade on average. To be specific, country-specific standards promote trade in the manufacture sector while those standards have negative impacts on trade in non-manufacture sectors. This is so because institutional standards like the International Standards Organization (ISO) would lower information gathering costs that are particularly high in the manufacture sector.

9.23 By employing a general equilibrium model, several studies assess the impact of reduced transaction costs on trade flows. For instance, Baier and Bergstrand (2001) examine the impacts on the trade growth of transport-cost reductions, trade liberalization, and income convergence. They find that 8–9 percent of the average growth in real bilateral trade flows among 16 OECD countries during the late 1950s to the late 1980s is explained by transport-cost reductions. A study by United Nations Conference on Trade and Development (UNCTAD 2001) shows that a 1 percent reduction in the cost of maritime and air transport services could increase Asian GDP by some US\$3.3 billion. If trade facilitation is considered in a broader sense to include an improvement in wholesale and retail trade services, a 1 percent improvement in the productivity of that sector would lead to an additional gain of US\$3.6 billion.

9.24 With respect to the impacts of improved customs clearance, Hummels (2001) concludes that each day saved in shipping time in part due to a faster customs clearance is worth 0.5 percent reduction of ad-valorem tariff. In order to analyze the significance of border delays in measuring the welfare impacts of trade liberalization, Cudmore and Whalley (2004) compares results of a conventional equilibrium model with the one that incorporates border delays. While the former model shows that trade liberalization would result in a welfare gain by 0.044 percent, the latter model indicates that trade liberalization would cause a welfare loss by 0.13 percent. This implies that reducing border delays is critical in order for trade liberalization to have positive impacts on welfare.

9.25 Other examples of empirical studies include Hertel, Walmsley, and Itakura (2001). They examine the impact on trade of greater standards harmonization for e-business and automating customs procedure between Japan and Singapore. The authors find that reforms would increase trade flows between these countries as well as their trade flows with the rest of the world. The Australian Department of Foreign Affairs and Trade and Chinese Ministry of Foreign Trade and Economic Cooperation (2001) suggest that moving to electronic documentation for trade would result in a cost savings of some “1.5 to 15 percent of the landed cost of an imported item.” If a simple average of a 3 percent reduction in landed costs were applied to intra-APEC merchandise

trade, the gross savings from electronic documentation could be US\$60 billion. Other empirical studies measure the impact on trade of e-commerce (Freund and Weinhold 2000), communication costs (Fink, Mattoo, and Neagu 2002), and standards (Moenius 2000; Otsuki, Wilson, and Sewadeh 2001a, 2000b).

9.26 An increasingly important policy question in international trade and development concerns estimating the gains from capacity building in trade facilitation and the relative impact of specific reform measures and investments. Wilson, Mann, and Otsuki (2004) find that enhanced capacity in global trade facilitation would increase world trade of manufacturing goods by approximately US\$377 billion, an increase of about 9.7 percent.<sup>125</sup> This is based on a scenario in which capacity building is raised half way to the global average across 75 countries. Wilson, Mann, and Otsuki specifically examine four areas: port efficiency, customs, regulations and standards, and information infrastructure. They find that the improvement in customs environment results in about US\$107 billion (0.8 percent) gain. The gain from the improvement in regulatory environment is US\$83 billion. The largest gain comes from improvements in services sector infrastructure and e-business usage (US\$154 billion or 4.0 percent).

9.27 Wilson, Mann, and Otsuki (2004) find that the gains from exporter's improvement in trade facilitation exceed those from the importer's gain. That is, countries could increase exports most through domestic reform and capacity building in trade facilitation. These results also suggest, in general, that increased capacity to comply with GATT Article V (freedom of transit), Article VIII (fees and formalities connected with importation and exportation), and Article X (publication and administration of trade regulations) along with other reforms could raise global trade for all WTO members.

9.28 Given the recent introduction of security as a new dimension of trade facilitation, studies that measure economic gains from improving security are also relevant. Leonard (2001) estimated the new security-related costs at 1–3 percent of the value of traded goods. The analysis by the OECD (2002a, 2000b) suggests a more modest impact (World Bank 2004a). Walkenhorst and Dihel (2002) quantify the impact on welfare of frictional trade costs resulted from the implementation of new measures to tighten security after the September 11 events, and find that a 1 percent ad-valorem increase in frictional costs to trade would lower world welfare approximately by US\$75 billion per year. In relative terms, such welfare loss is greater in South Asia, North Africa, and the Middle East than in North America, because these regions are heavily dependent on international trade (Walkenhorst and Dihel, 2002).

## **SUMMARY OVERVIEW OF CONDITIONS IN SOUTH ASIA**

9.29 This section provides a summary overview of trade facilitation in South Asia. Trade facilitation in South Asia has become increasingly important as the region has adopted more open trade policies since the late 1980s. In 1985, India, Pakistan, Bangladesh, Sri Lanka, Maldives, Nepal, and Bhutan formed the South Asia Association for Regional Cooperation (SAARC). This started with the SAARC Preferential Trading Agreement. Recently, the SAARC member countries signed the South Asian Free Trade Area (SAFTA) pact in Islamabad, Pakistan. The free trade area is expected to come into effect on January 1, 2006.

9.30 The significance of SAFTA in regard to trade facilitation is that Article 3 in the accord states members' commitments to trade facilitation reform. This includes plans to integrate more closely transport systems and harmonize standards in the region, among other steps. India has

---

<sup>125</sup> See the data annex section for a detailed description of the data set and analytical framework for these estimates.

specifically indicated interest in providing the “main technical support and other trade facilitation steps in the field of harmonization of customs procedures and standards for products of trade interest to the region” (*Hindu Business Line* 2000). Some experts expect the SAFTA to be “a step towards better physical, industrial and communication infrastructure development in the region” (Nayar 2004).

9.31 There are also subregional and bilateral initiatives aimed at liberalizing trade among SAARC countries and promoting trade and investment facilitation efforts. Among the important subregional initiatives are Bangladesh-Bhutan-India-Nepal Growth Quadrangle Initiative and Bangladesh-India-Sri Lanka-Thailand Economic Cooperation. With respect to bilateral initiatives, South Asian countries have also exhibited interest in promoting trade through cooperative arrangements, including initiatives such as the India-Bhutan Economic Cooperation, India-Nepal Economic Cooperation, Pakistan-Nepal, and also free trade agreements between Pakistan-Sri Lanka, India-Bangladesh, and the Sri Lanka-Maldives (RIS 2004).

9.32 More efficient trade logistics and facilitation policies are recognized as essential for economic growth and success in the SAFTA. South Asia continues to face, however, critical constraints to trade and the need for coordinated programs to address common goals.<sup>126</sup> For example, Subramanian and Arnold (2001) provide examples of continued impediments along a logistics chain in the South Asia subregion, consisting of Bangladesh, Bhutan, Nepal, and eastern India and the seven northeastern Indian states.<sup>127</sup> This study examined commodity flows in domestic, regional, and international routes currently in use and associated logistic barriers.<sup>128</sup> In another recent study, the Research and Information Systems for the Non-Aligned and Other Developing Countries (RIS 2004) examined transport infrastructure in road, rail, air, and port networks in South Asia. The authors identify the potential for regional cooperation in improving the conditions in each area.

9.33 In order to highlight conditions in South Asia it is useful to compare the region’s performance with others. This includes in particular East Asia, given its geographic proximity and emergence of China as an important economic actor, among other factors. The following section provides a brief outline of efficiency and capacity constraints in South Asia within this context in: (a) port efficiency and infrastructure, (b) land transportation including roads and railways, (c) customs and border crossing, (d) standards and technical regulations, and (e) information technology and e-commerce.

---

<sup>126</sup> Complying with rising security standards in international trade is also a challenge for South Asia. For example, the U.S. Customs Security Initiatives (CSI) requires preloading inspection of inbound cargo by security officials stationed at exporting countries’ customs facility. Among South Asian countries, only Sri Lanka signed the CSI in June 2003 (*Daily Monitor*, June 27, 2003). In July 2004, the International Ship and Port Facility Security Code (ISPS) became effective. The code requires governments, merchant vessels, and port facilities to seek accreditation by meeting set security standards. The ports of Colombo (Sri Lanka); Chennai, Mumbai, Nhava Sheva, Kolkata, and Kochi (India); Chittagong (Bangladesh); and Karachi (Pakistan) have obtained necessary approvals under the ISPS (see Kruk 2004). The costs of meeting these and other security protocols and extending coverage to other ports in the region, however, are likely substantial. New mechanisms to support regional cooperation and infrastructure upgrades in security will be critical to expanded trade opportunities.

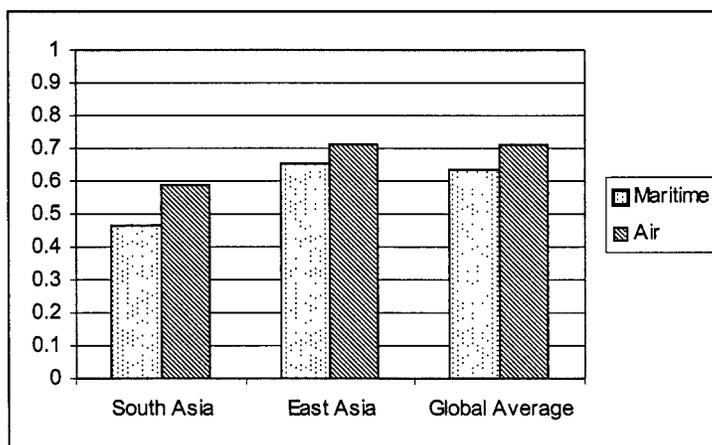
<sup>127</sup> The states in eastern India are West Bengal, Uttar Pradesh, Bihar, and Orissa. The northeastern Indian states include Assam, Mizoram, Nagaland, Arunachal Pradesh, Tripura, Meghalaya, and Manipur.

<sup>128</sup> See Subramanian and Arnold (2001, p. 34) for the list of routes and commodities.

## PORT INFRASTRUCTURE AND EFFICIENCY

9.34 Air and maritime ports in South Asia are generally considered less competitive than those in East Asia. Figure 9.4 shows that infrastructure and efficiency in ports in South Asia are lower than those in East Asia. For example, it takes only a couple of hours at the port of Singapore or Laem Chaband in Thailand to clear a vessel. In contrast, it takes two–three days for ports in Bangladesh (RIS 2004).<sup>129</sup> It takes 30–35 days for goods shipped via container from the U.S. west coast to Pakistan. Port efficiency is highly correlated with shipping costs. Clark, Dollar, and Micco (2004) find that improving port efficiency from the 25<sup>th</sup> to 75<sup>th</sup> percentiles lowers shipping costs by more than 12 percent.<sup>130</sup> Tariffs for port entry are part of this total and can be high in South Asia. The port at Jawaharlal Nehru in India of which about 75 percent of calls are direct, for example, averages US\$20,000 for a call by a 4000 TEU ship. Cargo dwell time at the Dehli airport averages 2.5 days where the norm is 12 hours (Roy 2004). Given the current low level of port efficiency in the region, South Asia could expect significant gains from improving ports to lower transactions costs and facilitate trade.

Figure 9.4: Port Efficiency Indicators (Maritime and Air)



Source: Wilson, Mann, and Otsuki (2004) database.

9.35 Air and maritime ports play a pivotal role in trade for South Asia. There are three types of maritime ports: transshipment hubs, regional hub ports, and regional seaports (Subramanian and Arnold 2001). Transshipment hubs are located on or close to major shipping routes and attract frequent calls by large shipping lines. The port of Colombo in Sri Lanka is presently the only transshipment hub and is the most developed and successful port in the region. Colombo's ranking in the top 100 container ports in the world is declining, however, primarily owing to intense competition from Chinese ports.<sup>131</sup> Nhava Sheva port, India's largest port, is considered as a regional hub port. Regional seaports handle feeder services from the major transshipment hubs. Examples are the port of Calcutta, port of Haldia in India, and port of Chittagong in Bangladesh.

<sup>129</sup> One recent study found that the major barrier to export logistics in Bangladesh centers on inefficient ports and the shipping sector. See Arnold (2004).

<sup>130</sup> Among the factors that affect port efficiency, Clark et al. (2004) examine infrastructure, organized crime, and regulation. They find that infrastructure and organized crime exert a significant positive and negative influence on efficiency, respectively. In addition, excessive regulation reduces efficiency.

<sup>131</sup> Kruk (2004).

9.36 South Asia's low port efficiency ranking today, as noted in Figure 9.4, is reflected in a number of problems. There is congestion in regional hub ports and regional seaports and the associated delays prevent exporters from guaranteeing just-in-time deliveries. For example, on August 6, 2004, *Business Standard* reported continued problems of congestion at the Nhava Sheva port in India. At this regional hub port, exporters are "estimated to lose around Rs800 core a month because of delayed shipments." They usually pay 4 percent of the product value for shipment. Owing to congestion, however, an exporter had to send his consignment by air, which cost "40 per cent of the value of the product" (*Business Standard* 2004). Delays at regional seaports are longer. In contrast to transshipment hubs and regional hub ports, regional seaports do not operate on a fixed day-of-the-week schedule. This can cause delays and uncertainty in turnaround time at the ports. Subramanian and Arnold (2001) also highlight the problem of excessive delays in moving cargo through the ports of Calcutta and Chittagong in Bangladesh and the associated impact on trade.

9.37 There are clear indications of progress being made in addressing the obstacles noted above. Global container terminal operators are moving to invest in upgrading facilities in South Asia. India has instituted a policy to encourage private sector investment in ports, including inland waterways. As part of these developments, India has awarded US\$460 million in contracts to upgrade the Rajiv Gandhi Container Terminal in Cochin and build a new terminal at Vallarpadam. Maersk, a liner shipping company, has been awarded the concession for the second private container terminal at Jawaharlal Nehru Port Terminal in Mumbai. In Pakistan, international operators, Hutchinson and P&O, are operating container terminals in the Ports of Karachi and Qasim.

## LAND TRANSPORTATION

9.38 The lack of cross-border transit points and road connections across the region are significant hindrances to intraregional trade.<sup>132</sup> For example, barriers to trade and commerce in Afghanistan are centered, in part, on both problems in infrastructure as well as cargo transshipment.<sup>133</sup> There is an inland water transport route between India and Bangladesh. Goods moving between India and Pakistan often must be transshipped through a third country. The lack of integrated transport networks in the region clearly raise cargo shipping costs. This is a critical problem particularly for landlocked countries, including, for example Afghanistan, Bhutan, and Nepal. A significant factor driving costs and barriers is that at most every border in the region goods must be transshipped. In addition, labor strikes in the region can cause delays in transit and congestion in land transport networks. These constraints keep shippers from taking the routes that offer the most efficient shipping route in terms of time and cost.

9.39 Inland roads are a major means of moving goods across South Asia and India has "an extensive 3.3 million km road network making it one of the largest in the world" (RIS 2004). A number of road corridors in the region, however, are not maintained and of limited capacity.<sup>134</sup> This makes it expensive to move commodities across long distances with countries imposing load limits. For example, in India the percentage of paved roads is about 63 percent (World Bank 2005).

---

<sup>132</sup> See, for example, World Bank (2002b) and World Bank (2004b).

<sup>133</sup> World Bank (2004b).

<sup>134</sup> For a more detailed discussion see Subramanian (2001).

9.40 The costs of road transport can be high. For example, the average transport costs on the Kolkata-Petrapole route between Bangladesh and India is Rs2543, which is about 40 percent higher than other highways (Das and Pohit 2004). Costs are also a function of vehicle maintenance. A carpet manufacture in Kathnabdu reported that because of the poor quality of the local roads, it must “repair one of its vehicles every week and spends NR100,000 a year on maintenance” (Biggs et al. 2000). Road transport is also affected by aging bridges and lack of capacity. This in turn limits truck and cargo weight and therefore efficiency in freight movement. Other restrictions are based in licensing restrictions; for example, foreign trucks are not permitted to enter Bangladesh. All of these conditions prevent shippers from taking the most efficient routes, extending time and cost that impede opportunities for international and intraregional trade.

9.41 There have been a number of projects to upgrade railway networks over the past decade; however, problems remain. For example, India has moved to electrify tracks and convert from meter gauge to broad gauge to harmonize its system infrastructure (UNESCAP 2001). Freight accounts for 41 percent of traffic units on India’s railway system. However, in contrast freight accounts for 76 percent of traffic on China’s rail network.<sup>135</sup> Moreover, the types of rail gauge still varies among countries and regions.<sup>136</sup> The railways in India and Bangladesh suffer from “over-staffing, poor maintenance, and old rolling stock” (Subramanian and Arnold 2001). Reportedly Bangladesh railways have a serious problem with maintenance especially in the parts of the country where flooding is a problem. Owing to these and other factors, the railway sector has lost share to the road sector and exporters consequently limit use of railways.

### **Border Crossings and Customs**

9.42 Border crossings most often include interrelated infrastructure and facilities such as customs clearance checkpoints, truck waiting areas, storage depots, rail yards, and loading or unloading areas at ports. The border crossing at Benepole is reportedly one of the most developed in the region with facilities for warehousing, well-developed services, and other facilities. In contrast, some border crossings do not even have customs facilities (Subramanian and Arnold 2001). Problems arise when customs clearance centers are located far away from other border-crossing facilities. For instance, the sanitary and phytosanitary testing laboratory in Calcutta is located 1,000 kilometers from the customs facility at Birgunj, Nepal. Exporters have to pay additional fees for vehicle detention charges for weeks while waiting for test results (Karmacharya 2002). This not only raises the costs but also clearly affects the quality of export products.

9.43 Poor management at customs is not a major constraint compared to the problems with ports and land transportation; however, there are costly delays in transactions in border crossings. Some of these delays are associated with the preparation of customs documents and inspections owing to a lack of standard documents. At the India-Bangladesh border a consignment needs at least 22 documentations, more than 55 signatures, and minimum 116 copies for the final approval (RIS 2004). Each country requires different documents, such as transit, export, and import declarations. Exporters must prepare separate documents at each side of the border. Furthermore, the region uses different product classification systems for commodities: the Standard International Trade Classification is used by Pakistan and the Harmonization System by other countries (Krueger et al. 2004). This contributes to a general lack of transparency and problems in product classification in trade.

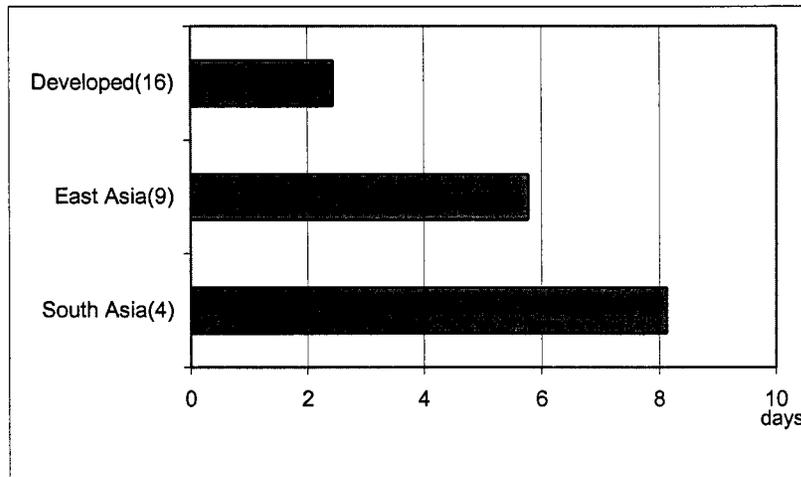
---

<sup>135</sup> Data are from 2002 (Simon Thomas, personal communication, World Bank).

<sup>136</sup> For example, most of the network in Eastern India is broad gauge (Subramanian and Arnold 2001).

9.44 There are other administrative problems with customs that continue in the region.<sup>137</sup> They include limitations on staff working hours and lack of uniformly applied import duty rates, among others. Nontransparent inspection procedure in any country reduces efficiency and slows customs clearance times. As a result of these and other factors, customs clearance in South Asia requires dedicated improvements administrative rules applied at the border and associated reform.<sup>138</sup> Figure 9.5 shows that it takes more than eight days on average to clear customs by sea in South Asia, while it takes less than six days in East Asia.

**Figure 9.5: Average Days Required for Customs Clearance by Sea**



Source: World Bank (2004a).

Notes: Calculated from International Exhibition Logistics Associates data. Developing countries include Australia, Belgium, Denmark, Germany, Finland, France, Great Britain, Italy, the Netherlands, Norway, Portugal, Sweden, United States, Canada, and Japan. East Asia includes Hong Kong, Indonesia, Malaysia, China, Philippines, Singapore, Taiwan, Thailand, and Vietnam. South Asia includes Bangladesh, India, Pakistan, and Sri Lanka.

9.45 Countries in the South Asia region have moved over the past decade, however, to improve customs. For example, India has launched a modernization project in customs that includes leveraging Electronic Data Interchange (EDI) technology, which allows exchanging documents and forms electronically, to streamline clearances. With assistance from the World Bank, Pakistan has started reforms in the Central Board of Revenue including customs offices and is expected to have a revenue increase by Rs65 billion of in the fiscal year 2004–5 (Rizvi 2004).

9.46 Pakistan has also introduced electronic filing of a single shipping document at Port Qasim as part of an effort by its customs service to streamline clearance and reduce transaction costs (World Bank 2004a). In Bangladesh, the steps required for import and export clearance of fiber, fabric, and garments have been reduced by 75 percent (World Bank 2004a). Afghanistan is working on customs modernization in a new US\$31 million World Bank project. Nepal is currently undertaking reforms under a Three Year Customs Reform and Modernization Action

<sup>137</sup> For a more detailed description see Subramanian (2001).

<sup>138</sup> Policy programs and action to reduce corruption in the region is also an issue that must be addressed within this context. In some countries, exporters have to pay informal payments not only to customs officers but also to police at checkpoints along the routes and to cargo handlers at ports. In the South Asia region, there are examples of payments of 30 percent of invoice value for a consignment on the Bangladesh-Phulbari corridor through Kakarvita and of US\$150 per consignment on imports and exports via Haldia (Subramanian and Arnold, 2001).

Plan. Reforms include upgrading physical facilities, administrative structure, automation of customs, and simplification and harmonization of procedure. The reforms resulted in a revenue increase by Rs900 million in the first six months of 2004 from the same period in the previous year (*Gorkhapatra Daily* 2004).

9.47 Compared to East Asia, however, South Asia continues to lag behind in deploying technology in customs administration. For example, EDI is widely adopted in East Asian countries, such as Singapore, Thailand, the Philippines, and Indonesia (World Bank 2003). In contrast, EDI systems are not yet to be implemented in Bhutan, Nepal, and Sri Lanka (UNESCAP 2001).<sup>139</sup> India moved to adopt EDI systems in 1992 and the Confederation of Indian Industry has been promoting implementation of EDI in all major customs points (*Hindu Business Line* 2004).

9.48 In order to advance reform, South Asia can learn from experiences in East Asia. One such example is the Philippines' modernization of customs.<sup>140</sup> Like many countries in South Asia, the Philippines relied on multiple customs clearance documents to clear exports and imports. It was reported that customs clearance involved 10 separate documents in multiple copies, with more than 90 steps and more than 40 signatures (World Bank 2001). By implementing the ASYCUDA system for customs clearance developed by UNCTAD, there has been a significant reduction in paper transactions. Another example is the customs administration reform in China. In October 2003, Shanghai customs began on a seven day schedule to reduce congestion and accelerate trade (Shanghai WTO Affairs Consultation Center 2003). Together with the application of information technology, administrative reform contributed to Shanghai's high efficiency rating among Chinese customs clearance posts.

### **Standards and Technical Regulations**

9.49 Like other developing countries, those in South Asia confront challenges and can realize opportunities for market expansion in meeting standards and technical regulations. These measures are directly related to trade facilitation. Based on data in the World Bank Technical Barriers to Trade database, South Asian firms in India and Pakistan report standards and technical regulations as very important to export success, at a higher percentage than countries in other regions (Figure 9.6). There are specific examples across the region in other countries that suggest standards as a means to facilitate trade are critical.

9.50 For example, Nepal's woolen carpets industry was severely affected when Germany, an importer of 90 percent of the products, required eco-labels on the products (Shrestha and Shakya 2002). Nepalese exporters often fail to present "quarantine and health standard certificate" at the border with India (Shrestha and Shakya 2002). Similarly, the Indian coffee industry has had difficulties in meeting market standards.<sup>141</sup> On the one hand, the industry must comply with sanitary and phytosanitary measures in agricultural trade. Firms also must address increasing pressures to comply with national pollution laws to protect biodiversity. These regulations impose significant financial constraints on the coffee industry (Damodaran 2002).

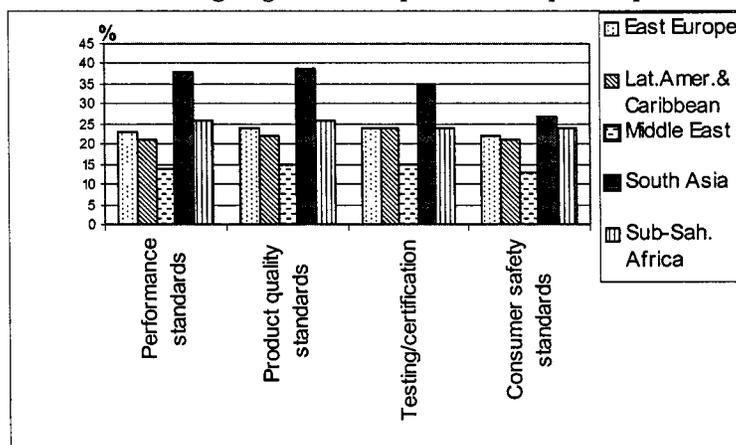
---

<sup>139</sup> Sri Lanka has been a member of the Asia Pacific Council for Trade Facilitation and Electronic Business since 1995 and sponsors the National EDI/EC Committee which promotes the application of EDI.

<sup>140</sup> For an overview of reform efforts in the Philippines see Parayno (2004).

<sup>141</sup> For an overview of standards and technical barriers in India see Saqib (2003).

**Figure 9.6: Technical Regulations and Standards: Percent of Firms Ranking Regulations Important to Export Expansion**



Source: Authors' calculations based on the World Bank Technical Barriers to Trade database.

9.51 South Asian countries have recognized the importance of harmonization of standards in the context of trade facilitation. In 1999, SAARC and the European Union signed a Memorandum of Understanding to enhance cooperation to assist the harmonization of SAARC standards (EUROPA 2004). India and Nepal included issues of standards in discussions on their bilateral agreement (*Hindu Business Line* 2001). The Nepal Bureau of Standards and Metrology tries to harmonize national standards with international standards such as ISO, and provides the Nepalese industries with quality assurance services, consignment inspections, and programs of environmental labeling for export industries (Shrestha and Shakya 2002). Additional efforts are required in Nepal and other countries—many of which can be supported through regional cooperation platforms—in standards.

### Information Technology and Services Sector Infrastructure

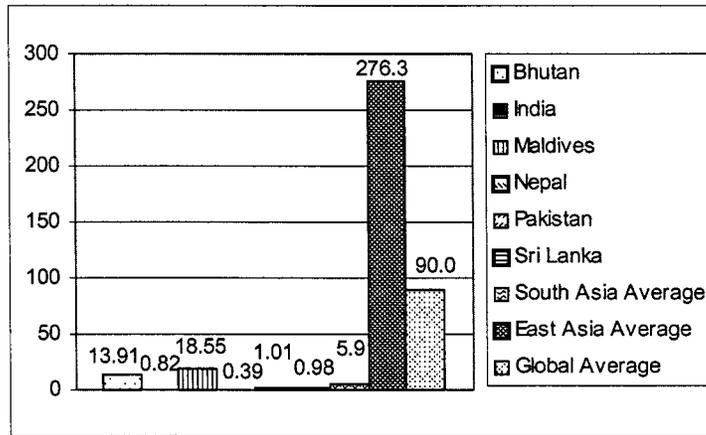
9.52 The countries in the South Asia region have made progress in improved access to information technology and application of technology in trade transactions. As noted above, technology is being applied in customs and border clearance to facilitate trade transactions, such as EDI systems and networks. India's performance in information technology production, in particular the software sector, are widely known.

9.53 In Pakistan, the progress has been rapid in the past years. Currently, there are more than 1,812 cities, towns, and villages have Internet facilities in comparison to only 850 in June 2002 (Ministry of Finance 2002–4). The number of fixed working telephone connections has increased from 2.4 million in 1996 to 4.2 million by the end of February 2004. Over 700 IT companies had been established by 2003. At the same time, the fixed line and mobile deregulation policies have been recently introduced in order to enhance competition and attract private investment (Ministry of Finance, 2003–4).

9.54 There remains, however, significant work ahead in broadening the use of information technology and electronic commerce to expand trade in the region. The number of Internet hosts in the region relative to others, for example, is low and has significant room for expansion. The number of individuals with access to the Internet also needs to be expanded, including those in government and private sector engaged in trade transactions. Figures 9.7 and 9.8 show that the

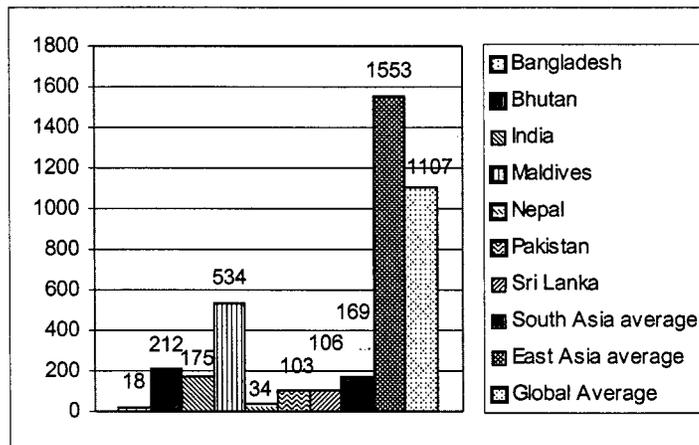
numbers of Internet hosts and users per 10,000 in 2003 for East Asia are higher than those for South Asia.

**Figure 9.7: Internet Hosts per 10,000 Inhabitants in 2003**



Source: Authors' calculation based on International Telecommunication Union data.

**Figure 9.8: Internet Users per 10,000 Inhabitants in 2003**



Source: Authors' calculation based on International Telecommunication Union data

9.55 In considering the number of main telephone lines per 1,000 people—both fixed and cellular—India trails behind Malaysia, Thailand, Philippines, China, and Indonesia. Miller (2001) analyzes the reasons why the Internet has not spread as widely in India. First, the country is not economically developed enough so that the cost of access is relatively high. Second, telephone connections are not well established for widespread Internet use. Third, tariff rates on phone calls are high. Fourth, the lack of modern physical infrastructure networks to deliver products to customers imposes limits on expansion of e-commerce (Miller 2001).

9.56 Improvement in information technology services is as equally important as development of physical infrastructure. Biggs et al. (2000) examines the case in Nepal where service is poor and hinders business activities. For example, phone lines usually do not work well outside of the cities. Services are not available all day, and when available, voice quality is often poor (Biggs et

al. 2000). Continued efforts to deregulate telecommunications, open markets to competition and investment, and expand financing for infrastructure promises better quality of service, lower transactions costs and expanded trade across the region.

9.57 What is lacking in South Asia compared to East Asia in part is derived from limited cooperative action to promote progress. For example, APEC has targeted achieving paperless trading among all member countries by 2010. This is being advanced by computerizing custom procedures through United Nations Rules For Electronic Data Interchange for Administration Commerce and Transport and reducing the number of documents required for sea, air, and land transport. Under this initiative, each member country incorporated strategies to achieve paperless trading in its Individual Action Plans in APEC. For instance, Vietnam established a development plan to employ information technology for customs administration during the period of 2001–5, and “has been marking a new progress in the process of modernization, simplification and harmonization of customs procedures” (APEC 2003). The overall savings from this paperless trading initiative is expected to be “between 1.5 to 15 per cent of the landed cost of an imported item” (Australian Department of Foreign Affairs and Trade and Chinese Ministry of Foreign Trade and Economic Cooperation 2001).

9.58 With strong regional initiatives like those in East Asia, South Asia could accelerate development of information technology infrastructure and concurrently lower transactions costs. Other examples of regional cooperation, such as those supported by the World Bank in the Trade and Transport Facilitation in Southeast Europe project on customs and border reform, could also be considered as one model of reform for South Asia.<sup>142</sup>

## **ESTIMATING THE GAINS FROM CAPACITY BUILDING IN SOUTH ASIA**

9.59 The previous section outlined a number of specific areas for reform and modernization in South Asia to facilitate trade. In this section we draw on Wilson, Mann, and Otsuki (2004) indicators for 75 countries in the trade facilitation to evaluate: port efficiency, customs environment, regulatory environment, and service-sector infrastructure. Port efficiency in this analysis is designed to measure the quality of infrastructure of maritime and air ports. Customs environment is designed to measure direct customs costs as well as administrative transparency of customs and border crossings. Regulatory environment is designed to measure the economy’s approach to regulations. Service-sector infrastructures indicates the extent to which an economy has the necessary domestic infrastructure (such as telecommunications, financial intermediaries, and logistics firms) and networked information to improve efficiency and transform activities to enhance economic activity.

9.60 While these indicators cover a range of performance in trade and transport facilitation, they do not cover all areas discussed in the previous sections. Data availability for cross-country analysis is lacking in a number of areas (for example, direct use of information technology in customs and associated costs and benefits of such improvement). New datasets and cross-country indicators on trade facilitation, such as those planned for the World Bank Doing Business 2006 report, among others, should help expand understanding of the link between trade and logistics costs.

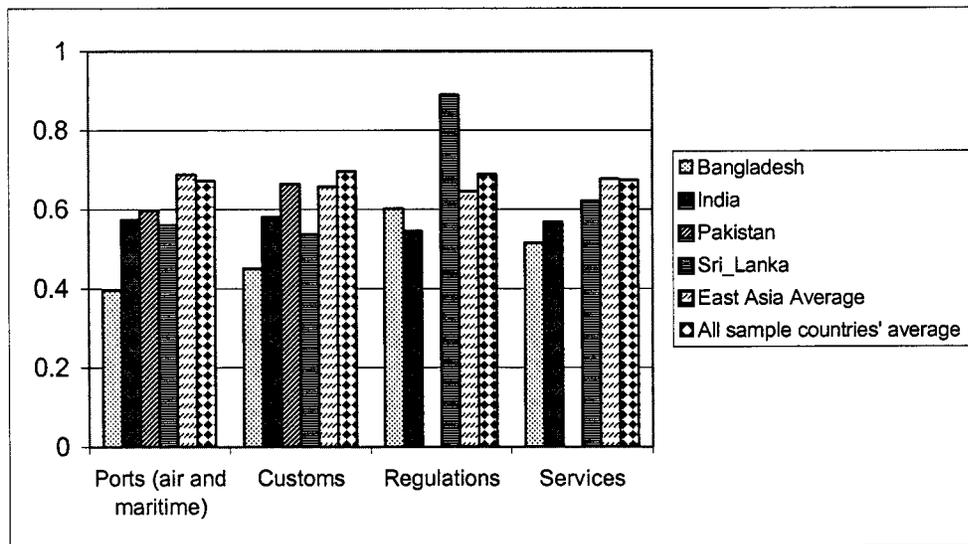
---

<sup>142</sup> The Trade and Transport Facilitation in Southeast Europe Program initiated in 2000 by the national governments in southeast Europe, the World Bank, and the United States in collaboration with the European Union. The project is aimed at reducing transport costs, eliminating corruption, and providing European Union-compatible customs standards, and some progress have been made. For details, see <http://www.seerecon.org/tfse/>.

9.61 The analysis here and indicators draw on three sources: *Global Competitiveness Report*, *World Competitiveness Yearbook*, and a dataset compiled in Kaufmann, Kraay, and Zoido-Lobaton (1999). Each indicator is constructed as a simple average of two inputs as presented in the annex.<sup>143</sup> We have expanded the Wilson, Mann, and Otsuki dataset for this analysis by including Pakistan given the availability of data in the most recent version of *Global Competitiveness Report 2003/2004* for port efficiency and customs. Trade facilitation indicators are available for Bangladesh, India, Pakistan, and Sri Lanka among countries in South Asia, but not for Afghanistan, Bhutan, Maldives, and Nepal. The first country group represents the South Asia region well, however, as these countries represent approximately 98.6 percent of the region's GDP.

9.62 The four South Asian countries exhibit a low performance in port efficiency relative to the sample average (Figure 9.9). In customs environment all the South Asian countries except Pakistan score lower than the global average. Pakistan is slightly above the sample average. In regulatory environment, Sri Lanka has a relatively high score, which falls just under the range of best practice.<sup>144</sup> Service-sector infrastructure is estimated to be the most developed in Sri Lanka among the South Asian countries. It is ranked at slightly below the sample average.

**Figure 9.9: Trade Facilitation Indicators**



Source: Wilson, Mann, and Otsuki (2004) database.

Notes: Data on regulatory environment and service-sector infrastructure are not available for Pakistan.

9.63 The East Asia region is located close to South Asia. However, it is clearly more developed. East Asia also is more advanced in almost all aspects of trade facilitation than the South Asia region.<sup>145</sup> This implies that the South Asian countries are confronting significant

<sup>143</sup> Each input is normalized by the score of the highest ranked country such that the highest score for each input is one.

<sup>144</sup> The "regulatory environment" indicator reflects transparency of government policy and control of corruption. This category is less objective than the other three categories and, therefore is sensitive to the way the evaluation is made. For example, Bangladesh is rated as the most corrupt in the world according to Transparency International 2000–2.

<sup>145</sup> The sample for East Asia does not include the OECD countries.

obstacles to trade facilitation and that the potential benefits from raising capacity toward levels in the more advanced countries outside the region—such as East Asia—could be considerable.<sup>146</sup>

9.64 It is important to note that capacity building in South Asia and the rest of the world will simultaneously increase both region's intraregional trade and the trade with the rest of the world. Yet, by looking at the simulation results for intraregional trade and the trade with the rest of the world, respectively, we identify how much gains come from South Asia's own improvement and how much gains of the region depend on gains in trade with its partners. The first set of the analysis will explicate the benefits that accrue to South Asia from its own capacity building in trade facilitation. The second set of the analysis will demonstrate the region's benefit from its capacity building as well as capacity building undertaken by the rest of the world.

### EXPANDING INTRAREGIONAL TRADE

9.65 In this section we estimate gains from regional integration with a focus on collective programs in capacity building within South Asia. We investigate the gains to regional trade with a program to raise capacity in trade facilitation across the region. The trade gains to a country from unilateral action correspond to gains from improvement by that country alone in a given category of trade facilitation. The gains to a country from collective capacity building in a given category of trade facilitation are equal to the gains to that country from the improvement by its trading partners *plus* those from unilateral capacity building.

9.66 Wilson, Mann, and Otsuki (2004) include estimated elasticities for the value of bilateral manufacturing trade with respect to each trade facilitation indicator. The analysis here draws on the data and elasticities estimated in Wilson, Mann, and Otsuki (2004). The performance of the East Asia region is set as a goal for the South Asia region. This is both due to the geographic proximity of the regions and the fact that East Asia is more advanced in trade facilitation. We will set the target level at halfway to the East Asia average.<sup>147</sup> We calibrated the Pakistan's values of regulatory environment and service-sector infrastructure by using predicted values based on GDP per capita in order to avoid a significant underestimation of trade gains in Pakistan, hence, those in the South Asia region.<sup>148</sup>

9.67 In this analysis we ask how would intraregional trade change if South Asia would act collectively to raise capacity in trade facilitation. We assume that only countries in the region improve in these measures. We find that such action taken together by the South Asian countries is estimated to create considerable gains to trade within the region. Table 9.1 indicates that the total estimated gain from capacity building in all four categories of trade facilitation is approximately US\$2.6 billion. This is almost a 60 percent rise in total intraregional trade in South Asia.

9.68 The projected gains from both unilateral and partners' capacity building are significant. The country with the largest projected gains in South Asia is India. Trade flows for India is expected to increase by US\$1.1 billion, as shown in Table 9.1. Capacity building in service-sector infrastructure contributes the most to those gains. Sri Lanka gains the most from other South

---

<sup>146</sup> The benchmarks of trade facilitation for four South Asian countries are higher than those for most of the developing countries with similar income levels. Therefore, in setting capacity building goals for the region, it is appropriate to compare performance with countries at more advanced stages of development.

<sup>147</sup> Clearly given financial and others resources are limited, achieving 100 percent of the East Asian level may not be feasible in a short term.

<sup>148</sup> We used the predicted value for each of regulatory environment and service-sector infrastructure indicators once it is fitted on log of GDP per capita using the 75 country sample in the Wilson, Mann, and Otsuki. (2004) database.

Asian countries' capacity building relative to gains from its own action. This is because Sri Lanka has relatively high scores in the indicators, which suggests more limited improvement needed to reach East Asia levels. Figure 9.10 also illustrates trade gains in percentage. It is estimated that India and Bangladesh, in particular, could significantly increase trade across all the areas examined.

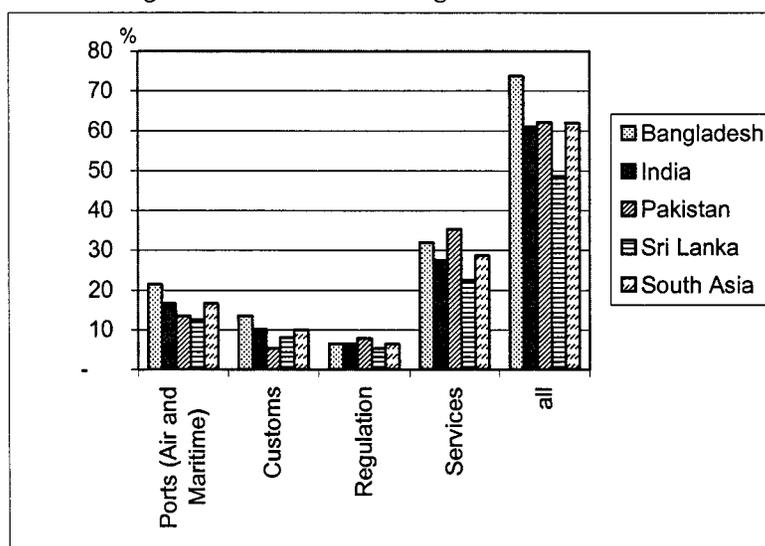
**Table 9.1: Trade Gains (US\$ Million) From Capacity Building by Each of South Asian Countries and Entire South Asia Region in Trade Facilitation**

	Port efficiency (air and maritime)	Customs	Regulation	Service-sector infrastructure	All
Bangladesh	228	144	71	339	782
India	314	193	123	519	1,149
Pakistan	74	29	42	191	336
Sri Lanka	97	63	41	175	377
South Asia	712	429	278	1,224	2,644

Source: Authors' calculation based on Wilson, Mann, and Otsuki (2004) database.

Note: To calculate the predicted values of regulation and service infrastructure, we regressed the indicators with logarithm of GDP and obtained the fitted value.

**Figure 9.10: Trade Gains (Percentage) From Collective Capacity Building in the Context of Intraregional Trade in South Asia**



Source: Authors' calculation based on Wilson et al. (2004) database.

9.69 Among the four trade facilitation indicators, results suggest that capacity building in information technology and services infrastructure, reflected in expanded Internet access and use, would lead to the greatest gains to intraregional trade. Capacity building in port (air and maritime) efficiency would achieve the second largest trade gains. This suggests that the South Asia region is currently underdeveloped more in areas related to information technology infrastructure than in administrative or regulatory aspects of trade facilitation at the border. These results should be considered an indication of where priorities may be most important, however, and not viewed alone. For instance, the services-sector infrastructure may reflect to some extent the effect of other variables (for example, inland transport, or specific policy and institutional issues related to border clearance) that the model does not include. This highlights the importance of new datasets and data gathering for analysis, among other issues.

## Global Trade and the South Asia Region

9.70 Now we turn to the analysis of gains from collective action in capacity building between the South Asia region as one group and the rest of the rest of the world as another group. The rest of the world is represented by 76 countries in the Wilson, Mann, and Otsuki dataset. In the previous section we estimated the gains to trade from action only by South Asia and the implications for intraregional trade. Capacity building in trade facilitation by countries in the region is also expected to generate gains from trade with the rest of the world *even if the rest of the world does not reform or invest in capacity building measures*. If the rest of the world would upgrade capacity in trade facilitation simultaneously, however, the estimated gains to South Asia would rise further. For example, consider development assistance and reform undertaken through obligations in the WTO in trade facilitation by all WTO members.

9.71 A similar simulation scenario as in the previous section is used here to examine how would trade change if South Asia and the rest of the world acted together to reform and raise capacity in trade facilitation. What are the implications for South Asia from global reform? We set the target level of each trade facilitation indicator at halfway up to the East Asia average. The same scenario also is employed for the rest of the world in order to make a comparison possible between South Asia's trade gains from its intraregional trade and its trade with the rest of the world. The analysis will focus on trade between South Asia and the rest of the world within the sample of 76 countries. (We do not include gains from capacity building between countries in South Asia or gains between countries within the group of the rest of the world.)

9.72 As shown in Table 9.2, the total gains to South Asia from unilateral capacity building in the region are estimated at approximately US\$27 billion. This represents about 32 percent of the region's trade with the rest of the world. It is important to note that 87 percent of the total gains to South Asia are generated from *South Asia's own moves* to upgrade infrastructure in ports and information technology, harmonize regulations, and improve customs. This stresses the importance of capacity building in trade facilitation in South Asia as a means of strengthening global ties outside the region, as well as fostering intraregional trade. The most promising area for focus appears to be service-sector infrastructure as demonstrated in Figure 9.11. The gains from capacity building in service-sector infrastructure should also be considered along with the significant gains from associated with raising port efficiency. This is similar to the conclusions reached in the analysis of intraregional action above.

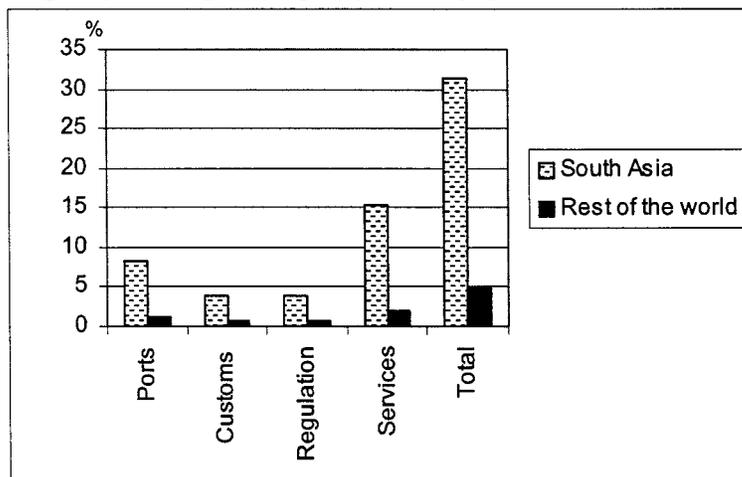
**Table 9.2: Trade Gains (US\$ Million) From Unilateral and Collective Capacity Buildings between South Asia and the Rest of the World**

	Port efficiency (maritime and air)		Customs		Regulation		Service-sector infrastructure		Total	
	Unilateral	Partners	Unilateral	Partners	Unilateral	Partners	Unilateral	Partners	Unilateral	Partners
South Asia	8,421	1,268	3,881	755	3,809	836	15,452	1,941	27,560	4,800
Rest of the world	1,268	8,421	755	3,881	836	3,809	1,941	15,452	4,800	27,560

Source: Authors' calculation based on Wilson, Mann, and Otsuki (2004) database.

Note: The rest of the world includes a group of 76 countries excluding the South Asian countries.

**Figure 9.11: Trade Gains to South Asia (Percent) From Its Own (Unilateral) Capacity Building and Capacity Building by the Rest of the World**



Source: Authors' calculation based on Wilson, Mann, and Otsuki (2004) database.

9.73 Table 9.2 indicates that the relative importance of South Asia's capacity building to that of the rest of the world. By construction, the gains to the South Asia region from unilateral capacity building coincide with the gains to the rest of the world from its partners' (South Asia's) capacity building. Trading partners outside of the region clearly gain from improvements made in South Asia. As indicated in Figure 9.9, the average performance in trade facilitation in South Asia is lower than that in East Asia's and the sample average. Therefore, raising capacity in South Asian countries could significantly contribute to both trade expansion within the region and outside of the region.

## CONCLUSIONS

9.74 The South Asia region has a significant opportunity in 2004 to accelerate economic growth and reduce poverty through concrete actions to facilitate trade. This includes taking steps to realize the promise of collective gains through platforms which advance regional integration. The drive to implement SAFTA and initiatives of SAARC offer such opportunities. Based on the analysis in this note there are significant potential gains to trade for South Asia associated with collective action to raise capacity in trade facilitation. This includes specifically investments in upgrading ports and information technology infrastructure in the region.<sup>149</sup> There are also gains directly related with continued reform in customs clearance procedures and regulatory harmonization. Results from our analysis also show that steps to reduce barriers to trade logistics in the region promise expanded trade opportunities with the rest of the world. In this regard, collective action under regional initiatives is particularly important.

9.75 When considering intraregional trade, if countries in South Asia raise capacity halfway to the East Asia's average, trade is estimated to rise by US\$2.6 billion. This is approximately 60 percent of the total intraregional trade in South Asia. The category of trade facilitation that will produce the greatest gains is service-sector infrastructure (US\$1224 million), followed by efficiency in air and maritime ports (US\$712 million). South Asia also has a stake in the success of efforts to promote capacity building outside its borders. If South Asia and the rest of the world

<sup>149</sup> The SAARC members specifically decided on special projects in telecommunications and information technology at meetings in Islamabad in July 2004.

raised levels of trade facilitation halfway to the East Asian average, gains to the region are estimated at US\$36 billion. Out of these gains, about 87 percent of the total gains to South Asia will be generated from South Asia's own efforts (leaving the rest of the world unchanged). The important role of India in advancing reform should also be noted. India represents 80 percent of the total GDP in South Asia and can act as a catalyst along with partners in the region to advance a trade facilitation agenda.

9.76 The success in any reform agenda to implement capacity building in trade facilitation in South Asia—or any other regions—must necessarily involve complementary investments in policy areas beyond those related to barriers that affect trade logistics costs. Reducing barriers to foreign direct investment, lowering tariff rates of protection, and eliminating other nontariff barriers that slow productivity and block private sector growth, are also important. Macroeconomic policy stability and many other factors will clearly affect any reform agenda as well. The bilateral relationship between India and Pakistan, among others in region, will also shape progress ahead. It is clear that regional integration can be advanced, however, with serious programs of concrete action to address barriers in trade facilitation, such as those reviewed here.

## ANNEX

9.77 Data come from the World Economic Forum, *Global Competitiveness Report, 2001-2* (GCR), IMD Lausanne, *World Competitiveness Yearbook 2000* (WCY), and Kaufmann, Kraay, and Zoido-Lobaton (2002) (KKZ). All survey data in GCR comes from the World Economic Forum's Executive Opinion Survey. A total of 4022 firms were surveyed. "In order to provide the basis for a comparative assessment on a global basis, it is essential that we interview a sufficient number of senior business leaders in individual countries and that the sample in each country is not biased in favor of any particular business group. We have taken a number of steps to ensure this. First, we have asked each of our partner institutes, the organizations that administer the surveys in each country, to start with a comprehensive register of firms. From this, they were asked to choose a sample whose distribution across economic sectors was proportional to the distribution of the country's labor force across sectors, excluding agriculture. They were then asked to choose firms randomly within these broad sectors (for example, by choosing firms at regular intervals from an alphabetic list), and to pursue face-to-face interviews, following up for clarifications where necessary. The employment distribution was taken from data in the 1998 *Yearbook of Labour Statistics* of the International Labour Office. The respondents to the survey are typically a company's CEO or a member of its senior management."

9.78 The WCY uses a 115 question survey sent to executives in top and middle management of firms in all 49 countries of the WCY. The sample size of each country is proportional to GDP, and firms "normally have an international dimension." The firms are selected to be a cross section of manufacturing, service, and primary industries. There were 3,532 responses to the survey.

9.79 KKZ updates the data on governance that were developed in Kaufmann, Kraay, and Zoido-Lobaton (1999) "Governance Matters." The database contain more than 300 governance indicators for 175 countries compiled from a variety of sources in 2000/1. Six aggregate indicators are constructed corresponding to six basic governance concepts: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption.

9.80 The various raw data series were chosen because of their relevance to the four concepts of trade facilitation.

- Port efficiency for each country  $J$  is the average of two indexed inputs (all GCR):
  - Port facilities and inland waterways: 1 = underdeveloped, 7 = as developed as the world's best, GCR
  - Air transport: 1 = infrequent and inefficient, 7 = as extensive and efficient as the world's best, GCR
- Customs environment for each country  $J$  is the average of two indexed inputs (all GCR):
  - Hidden import barriers other than published tariffs and quotas
  - Irregular extra payments or bribes connected with import and export permits
- Regulatory environment for each country  $J$  is constructed as the average of four indexed inputs:
  - Transparency of government policy is satisfactory (WCY)
  - Control of corruption (KKZ)
- Service-sector infrastructures for each country  $J$  is as the average of three indexed inputs (all GCR):
  - Speed and cost of internet access: 1 = slow and expensive, 7 = fast and cheap
  - Internet contribution to reduce inventory costs: 1 = no improvement, 7 = huge improvement

## REFERENCES

- Acemoglu, Daron, and Simon Johnson. 2005. "Unbundling Institutions." *Journal of Political Economy* 113 (5): 949–5.
- Acemoglu, Daron, and Simon Johnson. 2005. "Unbundling Institutions." *Journal of Political Economy* 113 (5): 949–95.
- Acemoglu, Daron, Simon Johnson, and James Robinson. 2001. "The Colonial Origins of Comparative Development." *American Economic Review* 91 (5): 1369–401.
- ADB (Asian Development Bank). 2005. *Key Indicators 2005: Labor Markets in Asia: Promoting Full, Productive, and Decent Employment*. Manila: ADB.
- Ahmed, Sadiq. 2006. *Explaining South Asia's Development Success: The Role of Good Policies*. Washington, DC: World Bank.
- Alcala, Francisco, and Antonio Ciccone. 2004. "Trade and Productivity." *Quarterly Journal of Economics* 119 (2): 613–46.
- Alexander, I., A. Raza, and J. D. Wright. 2003. "KESC's 2002 Multiyear Tariff Determination: Lessons for Pakistan and South Asia." World Bank, Washington, DC. [http://info.worldbank.org/etools/docs/library/86459/ses2.1\\_kesc2002tariff.pdf](http://info.worldbank.org/etools/docs/library/86459/ses2.1_kesc2002tariff.pdf).
- APEC (Asia Pacific Economic Cooperation). 1999. "Assessing APEC Trade Liberalization and Facilitation: 1999 Update." Singapore.
- Arnold, John. 2004. "Bangladesh Logistics and Trade Facilitation." Mimeo, World Bank, Washington, DC.
- Australian Department of Foreign Affairs and Trade and Chinese Ministry of Foreign Trade and Economic Cooperation. 2001. "Paperless Trading: Benefits to APEC." [www.dfat.gov.au/publications/paperless/paperless\\_trading.pdf](http://www.dfat.gov.au/publications/paperless/paperless_trading.pdf).
- Bagai, Shweta, Richard Newfarmer, and John S. Wilson. 2004. "Trade Facilitation: Ways WTO Disciplines Could Promote Development." Trade Note 15, World Bank, Washington, DC.
- Baier, S. L., and J. H. Bergstrand. 2001. "The Growth of World Trade: Tariffs, Transport Costs, and Income Similarity." *Journal of International Economics* 53 (1): 1–27.
- Banerjee, Abhijit, and Lakshmi Iyer. 2005. "History, Institutions and Economic Performance: The Legacy of Colonial Land Tenure Systems in India." *American Economic Review* 95 (4): 1190–213.
- Barro, Robert, and Jong-Wah Lee. 2000. "International Data on Educational Attainment, Updates and Implications." Working Paper 7911. Cambridge, MA: National Bureau of Economic Research.
- Baysan, T., A. Panagariya, and N. Pitigala. 2006. "Preferential Trading in South Asia." Policy Research Working Paper 3813, World Bank, Washington, DC.

Baysan, Tercan, Arvind Panagariya, and Nihal Pitigala. 2004, "Preferential Trading in South Asia." Background Technical Paper, South Asia, World Bank, Washington, DC.

Bhagwati, Jagdish, and Arvind Panagariya. 1996. "Preferential Trading Areas and Multilateralism: Strangers, Friends or Foes?" In *The Economics of Preferential Trade Agreements*, ed. Jagdish Bhagwati and Arvind Panagariya, pp. 1–78. Washington, DC: AEI Press.

Biggs, Tyler, John Nasir, Kiran Pandey, and Lan Zhao. 2000. "Pilot Investment Climate Assessment: The Business Environment and Manufacturing Performance in Nepal." Report. World Bank Regional Program for Enterprise Development and Federation of Nepalese Chambers of Commerce and Industry, Washington, DC.

Bosworth, Barry P. 2005. "Economic Growth in Thailand: The Macroeconomic Context." Draft manuscript.

Bosworth, Barry P., and Susan M. Collins. 2003. "The Empirics of Growth: An Update." *Brookings Papers on Economic Activity* 2003 (2): 113–206.

*Business Standard*. 2004, August 6. "Nhava Sheva Port in Jam." <http://www.businessstandard.com/common/storypage.php?hpFlag=Y&chklogin=N&autono=163402&leftnm=lmmu2&lselect=0&leftindx=2>

Canning, D. 1999. "Infrastructure's Contribution to Aggregate Output." Policy Research Working Paper 2246, World Bank, Washington, DC. <http://ssrn.com/abstract=629182>.

Canning, D., and E. Bennathan. 2000. "The Social Rate of Return on Infrastructure Investments." Policy Research Working Paper 2390, World Bank, Washington, DC. <http://ssrn.com/abstract=630763>.

CEA (Central Electricity Authority). 2004. National Electricity Plan, 2004. New Delhi: Ministry of Power.

Chaudhari, S. K., 1995, "Cross Border Trade Between India and Bangladesh." Working Paper 58, NCAER, New Delhi.

Clark, Ximena, David Dollar, and Alejandro Micco. 2004. "Port Efficiency, Maritime Transport Costs, and Bilateral Trade." Working Paper 10353, World Bank, Washington, DC.

Crawford, Jo-Ann, and Roberto V. Fiorentino. 2005. "The Changing Landscape of Regional Trade Agreements." Discussion Paper 8, World Trade Organization, Geneva.

Cudmore, Edgar, and John Whalley. 2004. "Border Delays and Trade Liberalization." University of Western Ontario and NBEER Peking University CESinfo.

Dahlman, Carl, and Anuja Utz. 2005. *India and the Knowledge Economy: Leveraging Strengths and Opportunities*. Washington DC: World Bank.

*Daily Mirror*. 2003, June 27. "US Takes Lanka on Board Container Security Initiative."

Daily Times. 2004, May 11. [http://www.dailytimes.com.pk/default.asp?page=story\\_5-11-2004\\_pg7\\_12](http://www.dailytimes.com.pk/default.asp?page=story_5-11-2004_pg7_12).

- Damodaran, A. 2002. "Conflict of Trade-Facilitating Environmental Regulations With Biodiversity Concerns: The Case of Coffee-Farming Units in India." *World Development* 30 (7): 1123–35.
- Das, Samantak, and Sanjib Pohit. 2004. "Quantifying Transport, Regulatory and Other Costs of India-Bangladesh Trade." National Council of Applied Economic Research, New Delhi. <http://www.ncaer.org/WP92.pdf>.
- Delong, J. Bradford, and Andrei Shleifer. 1993. "Princes or Merchants? City Growth Before the Industrial Revolution." *Journal of Law and Economics* 32 (2): 671–702.
- Devarajan, Shanta. 2005, September 10. "South Asian Paradoxes." *Economic and Political Weekly*, 4013-15, Mumbai.
- Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2003. "Courts." *Quarterly Journal of Economics* 118 (2): 453–517.
- Diamond, P. A., and J. A. Mirrlees. 1971. "Optimal Taxes and Public Production I: Production Efficiency." *American Economic Review* 61: 8–27.
- Docquier, Frederic, and Abdeslam Marfouk. 2004. "Measuring the International Mobility of Skilled Workers (1990–2000): Release 1.0." Policy Research Working Paper 3381, World Bank, Washington, DC.
- Dollar, David, Mary Hallward-Driemeier, and Taye Mengistae. 2005. "Investment Climate and Firm Performance in Developing Economies." *Economic Development and Cultural Change* 54 (1): 1–31.
- Easterly, William, and Ross Levine. 2001. "It's Not Factor Accumulation: Stylized Facts and Growth Models." *World Bank Economic Review* 15(2): 177–219.
- Economic Integration 16 (4): 446-84.
- EUROPA. 2004. "Regional Cooperation." [http://europa.eu.int/comm/europeaid/projects/asia/regional\\_en.htm](http://europa.eu.int/comm/europeaid/projects/asia/regional_en.htm).
- Fink, Carsten, Aaditya Mattoo, and Cristina Ileana Neagu. 2002. "Assessing the Role of Communication Costs in International Trade." Working Paper 2929, World Bank, Washington, DC.
- Framework for Analyzing Technical Regulations and Trade." In *Quantifying the Impact of Technical Barriers to Trade: Can It Be Done?*, ed. Keith Maskus and John S. Wilson. Ann Arbor: University of Michigan Press.
- Freund, Caroline, and Diana Weinhold. 2000. "On the Effect of the Internet on International Trade." International Finance Discussion Papers 693. Board of Governors, Federal Reserve System, Washington, DC.

- Galal, A., L. Jones, P. Tandon, and I. Vogelsang. 1994. *Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*. New York: Oxford University Press.
- Ghani, Ejaz. 2004. "South Asia Regional Integration: Opportunities and Challenges." Paper presented at the Wilton Park Conference on South Asia, London.
- Gorkhapatra Daily*. 2004, January 24. "Reform in Customs Boosts Revenue."
- Government of Nepal, Ministry of Finance. 2003–6. "Three Years Customs Reform and
- Hall, John, and Charles I. Jones. 1999. "Why Do Some Countries Produce so much more Output per Worker than Others?" *Quarterly Journal of Economics* 114 (1): 83–116.
- Hall, Robert E., and Charles Jones. 1999. "Why Do Some Countries Produce So Much More Output per Worker Than Others?" *Quarterly Journal of Economics* 114 (1): 83–116.
- Hertel, Thomas W., Terrie Walmsley, and Ken Itakura. 2001. "Dynamic Effect of the 'New Age' Free Trade Agreement Between Japan and Singapore." *Journal of Economic Integration* 16 (4): 446-84.
- Heston, Alan. 2001. "Treatment of China in PWT 6." Unpublished manuscript.
- Hindu Business Line*. 2000, May 11. "India: Panja for Rapid Economic Integration."
- Hoekman, B., and M. Schiff. 2002. "Benefiting From Regional Integration." In *Development, Trade, and the WTO*, ed. B. Hoekman, A. Mattoo, and P. English. Washington, DC: World Bank.
- Hulten, Charles R. 2001. "Total Factor Productivity: A Short Biography." In *New Developments in Productivity Analysis*, ed. Charles Hulten, Edward R. Dean, and Michael Harper, *Studies in Income and Wealth* vol. 63, 1–54. Chicago: University of Chicago Press.
- Hummels, David L. 2001. "Time as a Trade Barrier." Report. Department of Economics, Purdue University, Lafayette, IN.
- ICRA Limited. 2004, Jan. 29. Power Sector Ratings. <http://powermin.nic.in>
- Irwin, T., and C. Yamamoto 2004. *Some Options for Improving the Governance of State-Owned Electricity Utilities*. Washington, DC: World Bank.
- Karmacharya, Binod K. 2002. "Facilitating Trade in SASEC Region in the Perspective of Recent Developments: A Case Study of India and Nepal." Paper presented at the South Asia Business Forum, South Asia Sub-Regional Economic Cooperation, New Delhi, August 12–3.
- Kaufmann, D., Kraay, A., and Zoido-Lobaton, P. 1999. "Governance Matters." Working Paper 2196, World Bank, Washington, DC.
- Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2005. "Governance Matters IV: Governance Estimates for 1996-2004." Policy Research Department Working Paper 3630, World Bank, Washington, DC.

- Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2005. "Governance Matters IV: Governance Estimates for 1996-2004." Policy Research Working Paper 3630, World Bank, Washington, DC.
- Kessides, I. 2004. *Reforming Infrastructure: Privatization, Regulation, and Competition*. Washington, DC: World Bank.
- Kikeri, S., and J. Nellis. 2004. "Privatization: Trends and Recent Developments." *World Bank Research Observer* 19 (1): 87–118.
- Klenow, Peter, and Andres Rodriguez-Clare. 1997. "Economic Growth: A Review Essay." *Journal of Monetary Economics* 40 (3): 597–617.
- Klenow, Peter, and Andrés Rodriguez-Clare. 1997. "The Neoclassical Revival in Growth Economics: Has It Gone Too Far?" In *National Bureau of Economic Research Macroeconomics Annual 1997*, ed. Ben S. Bernanke and Julio Rotemberg. Cambridge, MA: MIT Press.
- Knack, S. 2006. "Governance and Growth: Lessons of the 1990s." Mimeo, World Bank, Washington, DC.
- Knack, Steven, and Philip Keefer. 1995. "Institutions and Economic Performance: Cross-Country Tests Using Alternative Measures." *Economics and Politics* 7: 207–27.
- Kochar, K., U. Kumar, R. Ram, A. Subramanian, and I. Tokatlidis. 2005. "India's Pattern of Development: What Happened, What Follows." Paper presented at the Carnegie-Rochester Conference, Pittsburgh, PA.
- Krueger, Elizabeth, et al.. 2004. "Impact of South Asia Free Trade Agreement."
- Kruk, Bert. 2004. "Note on South Asian Port Environment." World Bank, Washington, DC.
- Kumar, N. 2004. "Policy Briefs on Regional Cooperation in South Asia." RIS, New Delhi.
- Kessides, I. 2005, July. "Infrastructure Privatization: Gone Too Far? Or Too Early to Tell?" Privatization Barometer Newsletter. <http://www.privatizationbarometer.net/>.
- Leonard, J. 2001. "Impact of the September 11, 2001, Terrorist Attacks on North American Trade Flows." Manufacturers Alliance, Arlington, VA.
- Levchenko, Andrei. 2004. "Institutional Quality and International Trade." Working Paper 04/231, International Monetary Fund, Washington, DC.
- Levinsohn, James, and Amil Petrin. 2000. "Estimating Productivity Functions Using Inputs to Control for Unobservables." Report 7819, National Bureau of Economic Research, Cambridge, MA.
- Maskus, Keith E., John S. Wilson, and Tsunehiro Otsuki. 2001. "An Empirical
- Mauro, Paolo. 1995. "Corruption and Growth." *Quarterly Journal of Economics* 110 (3): 681–712.

- Miller, Robert R. 2001. "Leapfrogging? India's Information Technology Industry and the Internet." International Finance Corporation, Washington, DC.
- Ministry of Finance. 2003–4. "Transport and Communications." *Pakistan Economic Survey 2003–04*. Islamabad: Government of Pakistan. <http://www.finance.gov.pk/survey/home.htm>.
- Modernization Action Plan 2003–2006."
- Moenius, Johannes. 2000. "Three Essays on Trade Barriers and Trade Volumes." Ph.D. dissertation. University of California, San Diego.
- Nabi, Ijaz, and Anjum Nasim. 2001. "Trading With the Enemy: A Case for Liberalizing Pakistan-India Trade." In *The Regionalism and Globalization*, ed. Sajal Lahiri, 170–98. New York: Routledge.
- Newfarmer, R., and M. D. Pierola. 2006. "SAFTA: Promise and Pitfalls of Preferential Trade Agreements." Mimeo, World Bank, Washington, DC.
- Newfarmer, R., and M. D. Pierola. 2006. "SAFTA: Promise and Pitfalls of Preferential Trade Agreements." Mimeo, World Bank, Washington, DC.
- North, Douglass, and Barry Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in 17th Century England." *Journal of Economic History* 49 (4): 803–32.
- Newbery, D. M. 2002. "Issues and Options for Restructuring Electricity Supply Industries." CMI EP01, <http://www.electricitypolicy.org.uk/pubs/wp.html>.
- Newbery, D. M. 2005. "Why tax energy? Towards a More Rational Policy." *Energy Journal* 26 (3): 1–39.
- Nayar, Lola. 2004, August 5. "SAFTA a Step Forward for Regional Development: Experts." *South Asia Monitor*.
- New York Times. 2005, Oct. 18. <http://www.nytimes.com/ads/global/pakistan/three.html>.
- OECD (Organisation for Economic Co-operation and Development). 2005. *Education at a Glance*. Paris: OECD.
- OECD (Organisation for Economic Co-operation and Development). 2001. "Business Benefits of Trade Facilitation." TD/TC/WP(2001)21 FINAL. Paris: OECD.
- Otsuki, Tsunehiro, John S. Wilson, and Mirvat Sewadeh. (2001a). "What Price Precaution? European Harmonisation of Aflatoxin Regulations and African Groundnut Exports." *European Review of Agricultural Economics* 28 (3): 263–84.
- Panagariya, Arvind. 1994. "East Asia and the New Regionalism in World Trade." *World Economy* 17 (6): 817–39.
- Parayno, Guillermo. 2004. "Philippines Case Study." In *Customs Modernization Initiatives*, ed. Luc De Wulf and Jose B. Sokol. Washington, DC: World Bank.

- Parente, Stephen, and Edward Prescott. 2000. *Barriers to Riches*. Cambridge, MA: MIT Press.
- Policy Analysis Workshop, Public Affairs* 869 (Spring).  
<http://www.lafollette.wisc.edu/publications/workshops/2003-2004/pa869/2004-SAFTA.pdf>.
- Precaution? European Harmonisation of Aflatoxin Regulations and African Groundnut Exports." *European Review of Agricultural Economics* 28 (3): 263–84.
- Ranganathan, V. 2003, Jan. 13. "World Bank and India's Economic Development." *Economic and Political Weekly*.
- Ranganathan, V. 2005. "Issues in Determining Transmission and Distribution Losses in India and its Impact on Distribution Privatization and Regulation." *Economic and Political Weekly* 40 (7): 657–68.
- Rigobon, Roberto, and Dani Rodrik. 2004. "Rule of Law, Democracy, Openness, and Income: Estimating the Interrelationships." Manuscript. Cambridge, MA: MIT and the John F. Kennedy School of Government.
- RIS (Research and Information System for the Non-Aligned and Other Developing Countries). 2004. *South Asia Development and Cooperation Report 2004*. New Delhi: RIS.
- Rizvi, Shamim Ahmed. 2004, June 7–13. "Reforms in the CBR." *Pakistan Economist*.
- Rodrik, D. 2002. "Trade Policy Reform as Institutional Reform." In *Development, Trade, and the WTO*, ed. B. Hoekman, A. Mattoo, and P. English. Washington, DC: World Bank.
- Rodrik, Dani, Arvind Subramanian, and Francesco Trebbi. 2004. "Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development." *Journal of Economic Growth* 9 (2): 131–65.
- Romer, Paul. 1993. "Idea Gaps and Object Gaps in Economic Development." *Journal of Monetary Economics* 32 (3): 543–573.
- Roy, Jayanta. 2004. "Consequences and Benefits of Implementing a Multilateral Approach to Trade Facilitation." Paper presented at the World Bank Seminar, Dakar.
- Ruet, J. 2005a. *Privatizing Power Cuts? Ownership and Reform of the State Electricity Boards in India*. New Delhi: Academic Foundation.
- Ruet, J. 2005b. "Cost-Effectiveness of Alternative Investment Strategies for the Power Sector in India: A Retrospective Account of the Period 1997–2002." *Utilities Policy* 14 (2): 114–25.
- Saqib, Mohammed. 2003. "Technical Barriers to Trade and the Role of Indian Standard-Setting Institutions." In *India and the WTO*, ed. Aaditya Mattoo and Robert M. Stern. Washington, DC: World Bank.
- Sarvanathan, M. 1994, July 23. "Contraband Trade and Unofficial Capital Transfers Between Sri Lanka and India." *Economic and Political Weekly*.
- Sen, Amartya. 1981. *Poverty and Famines*. New York: Oxford University Press.

Shanghai WTO Affairs Consultation Center. 2003. "Pudong's Economic and Social Development After China's Accession to the WTO." [http://www.sccwto.net:7001/wto/english/shanghai2003\\_8.htm](http://www.sccwto.net:7001/wto/english/shanghai2003_8.htm).

Shrestha, Puspa Raj, and Bijendra Man Shakya. 2002. "Status of Standardization and Conformity Assessment in Nepal." Paper presented at World Trade Net Tropical Workshop on Business Implications for the Private Sector in Asia of the WTO-TBT Agreement, Manila, December 3–5.

Singh, A. 2006. "Power Sector Reforms in India: Current Issues and Prospects." *Energy Policy* 34: 2480-90.

Spence, Mike. 2005. "Some Thoughts on Growth in South Asia and China." Paper presented at the SAARC Business Conclave, New Delhi.

Srinivasan, T. N. 2006. "Information Technology Enabled Services and India's Growth Prospects." In *Brookings Trade Forum 2005: Offshoring White-Collar Work—Issues and Implications*, ed. Susan M. Collins and Lael Brainard Washington, DC: Brookings Institution.

Subramanian, A., 2006, "India's Institutions: The Race between Rot and Regeneration." Paper presented at SAIS, John Hopkins University, Baltimore, MD.

Subramanian, Uma, and John Arnold. 2001. "Forging Subregional Links in Transportation and Logistics in South Asia." World Bank, Washington, DC.

Subramanian, Uma. 2001. "Transport, Logistics, and Trade Facilitation in the South Asia Subregion." In *Integration of Transport and Trade Facilitation: Selected Regional Case Studies*, ed. T. R. Lakshmanan, Uma Subramanian, William P. Anderson, and Frannie A. Leautier. Washington, DC: World Bank.

Taneja, Nisha, Muttukrishna Sarvanathan, and Sanjib Pohit. 2003, July 19. "India-Sri Lanka Trade: Transacting Environments in Formal and Informal Trading." *Economic and Political Weekly* 3095–8.

Taneja, Nisha. 1999. "Informal Trade in the SAARC Region." Working Paper 47, Indian Council for Research on International Economic Relations, New Delhi.

Taneja, Nisha. 2002. "India's Informal Trade with Sri Lanka." Working Paper 83, Indian Council for Research on International Economic Relations, New Delhi.

*The Dawn*. 2005, April 9. <http://www.tribuneindia.com/2005/20050410/world.htm>.

*The Hindu*. 2005, May 30. <http://www.thehindu.com/2005/05/30/stories/2005053007010100.htm>.

UNCTAD (United Nations Conference on Trade and Development). 2001. *E-Commerce and Development Report*. Geneva: UNCTAD.

UNCTAD (United Nations Conference on Trade and Development). Various years. *World Investment Report*. Geneva.

UNESCAP (United Nations Economic and Social Commission in Asia and the Pacific). 2001. "Logistics, Transport Facilitation and Multimodal Transport." In *Review of Developments in*

*Transport and Communications in the ESCAP Region 1996-2001 Asia and the Pacific*. New York: United Nations

USAID (U.S. Agency for International Development). n.d. *Economic and Social Benefits Analysis of Power Trade in the South Asia Growth Quadrangle Region*. Washington, DC: USAID. [http://dec.usaid.gov/index.cfm?p=search.getCitation&rec\\_no=139254](http://dec.usaid.gov/index.cfm?p=search.getCitation&rec_no=139254).

Walkenhorst, Peter, and Nora Dihel. 2002. "Trade Impacts of the Terrorist Attacks of 11 September 2001: A Quantitative Assessment." Paper prepared for the Workshop on the Economic Consequences of Global Terrorism, Berlin, June 12–3.

Walkenhorst, Peter, and Tadashi Yasui. 2003. "Quantitative Assessment of the Benefits of Trade Facilitation." TD/TC/WP2003(31)/FINAL. Paris: OECD.

Weerakoon, Dushni. 2001, February 24. "Indio-Sri Lanka Free Trade Agreement: How Free is It?" *Economic and Political Weekly* 627–9.

Wilson, John S. 2003. "Trade Facilitation: New Issues in a Development Context." Trade Note 12, World Bank, Washington, DC.

Wilson, John S., Catherine Mann, and Tsunehiro Otsuki. 2004. "Assessing the Potential Benefit of Trade Facilitation: A Global Perspective," Working Paper 3224, World Bank, Washington, DC.

World Bank. 1994. "Pakistan: Power Sector Development Report." Energy and Infrastructure Operations Division Staff Appraisal Report, World Bank, Washington, DC.

World Bank. 2001. "e-Government: Philippine Customs Reform." World Bank, Washington, DC. <http://www1.worldbank.org/publicsector/egov/philippinecustomscs.htm>.

World Bank. 2001. *Building Institutions for Markets*. Washington, DC: World Bank

World Bank. 2003. *World Development Indicators*. Washington, DC: World Bank.

World Bank. 2004. *World Development Report 2005: A Better Investment Climate*

World Bank. 2005. *World Development Indicators*. Washington DC: World Bank.

World Bank. 2005. *World Development Indicators*. Washington, DC: World Bank.

World Economic Forum. 2004. *Global Competitiveness Report*. New York: Oxford

———. 1998. "Bangladesh Energy Strategy Note." Internal Memo, Washington, DC, World Bank.

———. 1999. "Trade Policy in South Asia: Recent Liberalization and Future Agenda." *World Economy* 22 (3): 353–78.

———. 2001, August 10. "India, Nepal Discuss Trade, Transit Treaty." <http://www.thehindubusinessline.com/businessline/2001/08/10/stories/141032bb.htm>.

———. 2001b. "Saving Two in a Billion: Quantifying the Trade Effect of European Food Safety Standards on African Exports." *Food Policy* 26: 495–514.

- . 2002. *World Development Indicators*. 2002. Washington, DC: World Bank.
- . 2002–4. “Transport and Communications.” *Pakistan Economic Survey 2002–04*. Islamabad: Government of Pakistan.
- . 2002a. “The Impact of the Terrorist Attacks of 11 September 2001 on International Trading and Transport Activities.” Unclassified Document TD/TC/WP (2002)9/Final. Paris: OECD.
- . 2002a. *Global Economic Prospects and the Developing Countries 2002*. Washington, DC: World Bank.
- . 2002b. “Economic Consequences of Terrorism.” *OECD Economic Outlook* 71: 117–40.
- . 2002b. “India: Evaluating Bank Assistance for Transport Sector Development in the 1990s—A Country Assistance Evaluation.” Departmental Working Paper 24580, World Bank, Washington, DC.
- . 2003. “South Asia: Does Preferential Trade Liberalization Make Sense?” *World Economy* 26 (9): 1279–91.
- . 2003. “Vietnam Individual Action Plan: Customs Procedures.” <http://www.apec-iap.org>.
- . 2003. *East Asia Integrates: A Trade Policy Agenda for Shared Growth*. Washington, DC: World Bank.
- . 2004, July 4. “CII Urges Use of Electronic Media for Trade Facilitation.” <http://www.blonnet.com/2004/07/05/stories/2004070501580500.htm>.
- . 2004. “India’s Trade Reform.” *India Policy Forum* 1: 1–57.
- . 2004. “Information Versus Product Adaptation: The Role of Standards in Trade.” Kellogg School of Management, Northwestern University, Evanston, IL.
- . 2004. “Trade Policies in South Asia: An Overview.” Report 19939, vol. 2, World Bank, Washington, DC.
- . 2004. *Country Assistance Strategy Progress Report for the Islamic Republic Of Pakistan*. Washington, DC: World Bank.
- . 2004a. *Global Economic Prospects: Realizing the Development Promise of the Doha Agenda 2004*. Washington, DC: World Bank.
- . 2004b. “Trade and Regional Cooperation between Afghanistan and Its Neighbors.” Report 26769, World Bank, Washington, DC.
- . 2005. *World Development Indicators*. Washington, DC: World Bank.
- . 2005. *World Development Indicators*. Washington, DC: World Bank.
- . 2005a. *Doing Business in South Asia in 2005: Removing Obstacles to*

- \_\_\_\_\_. 2005b. *Doing Business in 2006: Creating Jobs*. Washington DC: World Bank.
- \_\_\_\_\_. 2005a. *World Development Indicators*. Washington, DC: World Bank.
- \_\_\_\_\_. 2005b. *Doing Business in South Asia in 2005*. Washington, DC: World Bank.
- \_\_\_\_\_. 2006a. "Global Monitoring Report, 2006." Washington, DC: World Bank.
- \_\_\_\_\_. 2006b. "India Inclusive Growth and Service Delivery: Building on India's Success." Development Policy Review Report 34580-IN, World Bank, Washington DC.
- \_\_\_\_\_. 2006c. *Global Economic Prospects 2006*. Washington, DC: World Bank.
- \_\_\_\_\_. 2006d. *World Development Indicators*. Washington, DC: World Bank.
- Growth*. Washington, DC: World Bank.





